HDK

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MEANING IN THE MAKING

– Introducing a Hermeneutic Perspective on the Contribution of Design Practice to Innovation

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Abstract

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In recent years interest has grown in how design can contribute to innovation in business and society, such as through the management concept of design thinking. However, up-close studies on design's contribution to innovation are still scarce. This may be one reason why rhetoric arguing the benefit of design in innovation contexts is often related to pervasive innovation concepts, such as idea generation and problem-solving, rather than to concepts that capture tacit and embodied dimensions of design as an aesthetic practice.

The purpose of this study is to develop an understanding of the contribution of design practice to innovation. This has been achieved through an experimental research-approach in which five designers, through different interventions, involved multi-disciplinary groups of non-designers in experiencing design practice "hands-on" in five "non-designerly" companies. The aim of the interventions was to strengthen the innovativeness of the organizations. The interventions have been studied through ethnographically inspired methods and an interpretative and reflexive methodological approach.

In the interventions established product understandings in the companies were challenged, initially leading to friction. However, the immersion in design hands-on meant that established meaning-spaces were gradually expanded through processes of entwined conversation and hands-on making. In these processes new product understandings were developed through aesthetic deliberation and material practice, which in three cases lead to innovative concepts that could not have been developed within the meaning-space in the organization before the interventions. This study thus sheds light on how the emergence of innovative concepts can be understood as processes of meaning-making, and how design practice may provide processes for such innovation work in multi-disciplinary contexts. It also suggests that when design practice is abstracted away, as is common in design thinking rhetoric, relevant dimensions of design's contribution to innovation may be lost.

The main theoretical contribution is to show the relevance of hermeneutics as an explicit concept for understanding the contribution of design practice to innovation. This can be seen as establishing a missing link between design theory, design management studies and innovation management theory. Beyond articulating the contribution of design practice to innovation, this thesis also supports the relevance of understanding meaning-making as central to innovation.

This thesis is dedicated to my mother, Mildred Gille, an invisible mender[1] by trade. Thank you for the privilege of growing up in your atelier, in the middle of a practice that was never discussed, but with an impact that was clear in the faces of the people who came and went: in their sad expressions when they left their torn or cigarette-burned favourite garment in your care, and in their awestruck and grateful expression when, about a week later, they picked up the very same garment, searching for signs of the vanished hole or tear. Thank you mother, for letting me experience the magic that you could achieve through your craft.

1. In Swedish "konststoppning". A beautiful illustration of the craft can be found in Isabelle Godfroy's homepage www.stoppage-art.com. The blog Parisian Gentleman made a hommage to invisible mending when the last atelier in Paris, Le Maison Perrin, closed in 2012. (http://parisiangentleman.co.uk/2012/01/11/invisible-mending-an-amazing-craft-under-threat/) The hommage contained a translation from the French Wikipedia site on invisible mending. There are no entries on invisible mending in either the Swedish or English speaking Wikipedia sites, a clear sign that that craft has all but vanished.

CONTENTS

ACKNOWLEDGEMENTS

INTRODUCTION

PERSONAL AND PRACTICAL BACKGROUND TO THE STUDY

Bumping into Design: A Personal Background

One day when I was walking home from school, through an older part of a suburban neighbourhood, I heard the high-pitched sound of a revving Citroën 2CV[1] engine coming from the garden of an old house. I had recently bought a 2CV and just had to investigate what was going on inside that garden: perhaps someone was fine-tuning their car, but judging by the strain of the engine sound this did not seem to fit. I peeked over the hedge just when there was a pause in the sound. The 2CV was sitting well inside the garden with a rope tied to its front bumper. The other end of the rope was tied firmly around the base of a gnarly bush. A few seconds later the rope was pulled tight when the driver, or rather, the operator of the 2CV, once again gunned the engine, making the car heave back and forth on its soft suspension, slowly yanking the bush out of the ground. I was im-

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1. Car maker Citroën's equivalent of Volkswagen's Beetle, the French "people's car" and a cultural icon, easily recognized for it's foldable plastic roof, rounded "Bauhaus-circle" shape and leaning stance when cornering due to its soft suspension that was allegedly developed to make sure that a farmer would be able to drive cross an unploughed field with a basket of eggs on the floor without any of the eggs breaking, and the vehicle *par préférence* among European intellectuals and hippies in the 60's and 70's.

mediately intrigued, what an innovative way of using a car – the car as a "garden tool", and a Citroën 2CV at that!

When the bush was well out of the ground I ventured inside the garden and said hello to the operator, whose name was Morgan Ferm, telling him that I also owned 2CV. I was immediately invited for coffee. Morgan, and the 2CV, needed a break anyway. After some small talk I asked Morgan about his occupation. At that time I was in my final year of engineering studies on college level and was trying to find some kind of direction in life. I also studied painting when not working on my 2CV or occupying buildings to protest against the state of affairs in society in general, and environmental issues in particular. Judging by the many paintings and sculptures, and by the general "artiness" of Morgan's home, coupled with his apparent interest in mechanical things, here was someone with a combination of interests similar to mine. When Morgan told me he was an industrial designer I was clueless. I had never heard about that profession and asked him to tell me more. Morgan told me how he helped companies develop products, and how that involved both functional aspects as well as aesthetics - both engineering and art, so to speak. Great I thought, while at the same time thinking, "Why had no one told me there was an occupation like that before?" By the end of the coffee break, before going back to pulling out bushes with his car, Morgan invited me to come and visit his design studio some day.

The studio mirrored Morgan's home. Here was a well-equipped model workshop as well as tables for drawing and working with paper. There were inspirational photos, books and images mixed with art objects and half finished sketch models. To enter the studio felt like coming home and I spent quite some time there, working on my own little projects and observing how Morgan developed products for his clients, for example walkers for Swedish company Etac that were both beautiful, and thus less stigmatizing Morgan explained, and also incorporated innovative mechanical solutions developed by Morgan to make them less bulky and easier to handle.

At the time when I entered Morgan's studio the recession of the early 90's was looming and I soon found that to make a living I needed to return to school, this time to combined university studies of innovation engineering and environmental technology: design

was "put on hold". After graduation I began working at the Volvo Group, with the their recent focus on environmental management systems.[2] The work included responsibility for integrating environmental requirements in the stage-gate product development procedure of Volvo Cars. At first the job felt like a perfect combination of my studies and my ambition to contribute to positive environmental change. Soon however, I realized that change would not come quickly, that environmental management systems did little to actually improve environmental performance in products, and that innovation work for the most part went on "inside the box", with more or less the same products being churned out year after year.

Then one day I bumped into design again, when I entered a conference room at Volvo Cars that had been turned into a makeshift design studio. Just like in Morgan's studio, the walls were plastered with sketches, renderings and images of cars, lifestyles, and other inspirational motives. The room housed industrial designer Per Gyllenspetz and his team of engineers who were developing a lightweight and more sustainable concept car. But while doing this they not only developed innovative weight-saving solutions, they also posed some rather existential questions about the purpose and experience of the car as such, for example, exploring how cars could be developed from the perspective of children, investigating their experience as passengers concerning both practical needs and the car riding experience in general. Unfortunately the concept that was developed had a hard time gaining interest and legitimacy in the rest of the organization, a fate it seemed to share with other concept car projects.

Questions began to form in the back of my mind based on these design-related experiences and a feeling that radical innovation needed to take place more regularly for sustainable development to

2. In the second half of the 90's I worked with environmental management systems across the Volvo Group as an internal consultant to develop and implement "VEMS", the Volvo Environmental Management System that was based on the EU regulation EMAS (the EU Eco-Management and Audit Scheme) and the international standard ISO 14001. This included training and supporting about ten units across the Volvo Group in the process of being third party certified.

be achieved in industry. I asked myself, "Design seems to hold some kind of innovation potential: could design be used to instrumentally strengthen innovation in industrial, and for the most part "non-designerly", organizations?" If so, "*How* could design be integrated as an explicit approach to innovation, given that design with its more artistic tradition is a practice on the fringe of most industrial organizations?" Further, my disappointment with the approach of hastily "implementing" environmental management systems was that they didn't seem to change behaviour or lead to lasting change. Instead, this approach often spurred organizational resistance to the in-built logic of planning, routinization, and control.[3] This prompted my thought, "Wouldn't a learning-oriented approach be more effective for change in organizations, an approach where the organization would participate in developing the change effort rather than be at the receiving end?"

Pivotal Events: The Practical Background

I will continue my story just a little further, to describe the more practical background of the empirical study that this thesis builds on, before turning to the current design and innovation context.

A couple of years later, after a stint in the building sector[4] with similarly discouraging experiences regarding the state of innovation work, the experiences described above and the associated questions, led me to at last immerse myself in design. I began studies at HDK, the School of Design and Crafts at the University of Gothenburg, and soon experienced a major shift in understanding when I was challenged to let go of my urge to define a task up front and instead engage in a more open process of exploration. This way of engaging with projects more resembled my flickering art practice

than my engineering practice and gradually I became comfortable with this way of working; little by little I began to *know* what I was doing. At the same time it was difficult to verbally articulate this experience of *doing* design, of designing.

This difficulty of articulating the experience of design practice became painfully clear when, together with colleagues in the international O_2 network on sustainable design I tried to describe how design could contribute to innovation of more sustainable products to a group of representatives of Teknikföretagen,[5] a Swedish sector organization for engineering-oriented companies. Somehow we couldn't express an understanding of design's contribution to innovation that made any sense to the audience, even when using popular concepts such as "prototyping to learn" and "thinking outside of the box". The reaction was, "Yes, ok, but what's so special about design?" The embarrassment made me even more motivated to better understand the relationship between design and innovation. Shortly thereafter two pivotal events coincided.

After graduating from HDK with a collection of "less gender stereotypical" children's clothing[6] I participated in setting up a research project on gender and design with CFK, the Centre for Consumer Science at the University of Gothenburg. As part of the project we looked for examples of more gender-inclusive products[7] and in this work I came across the project "Employees and Companies in Good

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3. Peter Beusch shows the difficulties of integrating a more top-down and facts-and-figures oriented management system (Ford's) in a more decentralized and bottom-up oriented company culture (Volvo Car Corporation's), and expresses this as a "clash of contradicting management control ideologies" (Beusch, 2007).

4. After the Volvo position I worked with similar issues as environmental manager of NCC Construction, a division within the Nordic building company NCC.

5. Teknikföretagen approximately translates to "the Technology Companies".

6. Challenged by the predominantly gender stereotypical range of children's clothing in shops, my ambition was to subvert established gender norms as reproduced in clothing for children. Instead of reducing away expressions that may be problematic from a gender perspective, for example the colour pink, which is the strategy used in "unisex" clothing, the resulting collection TROTS mixed traditional boyish and girlish expressions (Jahnke, 2005).

7. One such case that we studied is the well-known Volvo YCC concept car (e.g. Elmquist, 2005; Petersson McIntyre, 2010).

Shape",[8] a collaboration between Swedish steel producer SSAB, the union organization LO,[9] and SVID, the Swedish Industrial Design Foundation.[10] SSAB had the ambition to improve gender equality and diversity in its organization and had recently hired more female workers. However, the protective work-wear available did not fit the women well as the clothing was of traditional male styles and sizes, and the female workers issued a complaint about this to their union LO. The project addressed this complaint and worked with the female workers and a fashion designer to design work-wear garments that would better acknowledge their needs.

To learn more about the project, ethnographer Magnus Mörck and I visited Marie Loft, the project manager at SVID, and it immediately struck a chord in me when Marie described how designers in her project engaged with different organizations to work collaboratively with staff to improve work-place situations, and how such collaborations often resulted in innovative concepts. Could this also be an approach for integrating design as an explicit approach

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8.   In the "Employees and Companies in Good Shape" project a number of organizations explored workplace-related health and safety issues through participatory design processes facilitated by external designers associated with SVID. These processes involved teams of stakeholders such as employees, union representatives, and users, with the focus on co-design to improve working environments, equipment, utensils and other artefacts and environments that had an impact on the health and safety situation of the organization in question. The outcomes were concrete improvements, including some innovative concepts such as a new type of cart for sorting mail at the Post office and a radically lighter helmet for firemen. Source: www.svid.se/upload/Om_SVID/Vad%20vi%20gör/Projekt/Avslutade%20 projekt/Anstallda_o_foretag_i_god_form/Anstallda_o_foretag_i_god_form. pdf
9.   LO is the umbrella organization for 14 affiliates that organizes workers within both the private and public sectors in Sweden. Source: www.lo.se
10. SVID (the Swedish Industrial Design Foundation) is a national agency for promoting design, financed by the Ministry of Enterprise, Energy and Communications. The aim of SVID is to "improve the awareness within the private and public sectors of the importance of design as a competitive tool and to encourage the integration of design methodology into their activities." As part of SVID's tasks, regional and national programmes are conducted in collaboration with different partners. Source: www.svid.se/English/About-SVID/

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to innovation[11] in companies? We began to discuss the possibility of conducting an experimental study where professional designers would intervene in non-designerly companies to let multi-disciplinary groups involved in product development experience design "hands-on". In the study Marie would be responsible for the company contacts while I would do the research. A key metaphor was to regard the process as a "journey", rather than as an implementation process. Each process would be workshop-based, with the designer defining the content and sequence of the respective journey in relation to the needs of the company concerned and the designer's own practice experience.

If coming in contact with Marie and the Employees and Companies in Good Shape project was the first pivotal event, the second was when I learned about Business & Design Lab, a recently established collaboration between the School of Design and Crafts (HDK) and the School of Business, Economics and Law at the University of Gothenburg. The research focus of Business & Design Lab resonated with the study that Marie and I had discussed. In the same period of time, VINNOVA, the Swedish governmental innovation agency, launched the "LEKA – Leadership, Creativity and Work Organization"[12] programme that would be a suitable funding context for our project. Marie and I approached Professor Ulla Johansson, the director of Business & Design Lab, with our proposal of applying to the LEKA-programme with an experimental study on design's contribution to innovation.

Ulla had just finished an evaluation of the "Design as Develop-

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11. I will throughout the thesis use the word of innovation in a broad sense that include the standard definition of innovation as coming up with and introducing something new, but also to denote innovation oriented work and processes in the organizations.
12. In Swedish: LEKA – LEdarskap, Kreativitet och Arbetsorganisation. The word "leka" means "play" in Swedish. The LEKA-programme funded ten projects and the total budget was about 40 million SKr – about 4 million Euros with its over-arching aim to "strengthen the innovativeness of companies in developing new products, services and businesses… and thereby contribute to their growth." Source: www.vinnova.se/sv/Ansoka-och-rapportera/Utlysningar/Utlysningar---forteckning/Tidigare-utlysningar-2006/ Ledarskap-kreativitet-och-arbetsorganisation---LEKA/

ment Force 2003-2005"[13] programme that SVID had managed on commission from the Swedish Government, a programme that also included Marie's Employees and Companies in Good Shape project. The evaluation concluded that the programme was successful in terms of direct effects such as improved products and sales, and that there had also been interesting indirect effects (Johansson 2006). Managers interviewed said that the organization had become more creative, that there had been "organizational surges" in the creative climate in the wake of the designers. Ulla also noted that these effects had not previously been studied and thus deserved more attention from academia. So when Marie and I described our proposal of an experimental study Ulla saw this as an opportunity to have those secondary effects, that she had identified *ex post facto*, studied up-close and in more fine-grained detail as they emerged in organizations, in "real-time" so to speak. Ulla, Marie and I thus found that we shared an overlapping interest in design's possible contribution to innovation in companies, leading to the realization of the study that is the immediate context of this thesis.

CONTEXTUAL AND THEORETICAL BACKGROUND

Even though I didn't know it when working at Volvo in the late 90's, I was of course not alone in considering design's potential contribution to innovation. Around the turn of the millennium several design management scholars had begun to explore and write about design in relation to innovation (Bruce & Bessant, 2002; Cooper & Press, 1995; von Stamm, 2003) and a when I studied at HDK in the mid 00's I first heard about the concept of "Design Thinking". In this section I will give an overview of relevant concepts and research results to provide a context for the continued discussion in the thesis.

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13. Swedish title: "Design som utvecklingskraft". In the programme about 500 different design-oriented projects were carried out in companies and other organizations, many with the aim of improving product design and others, for example, concerned with strategic design in change situations and with service developments.

Design and Innovation in the Design Management Discourse

The academic field of design management has, despite it short history, influenced how design is understood in industry and policy contexts. It is therefore important to explore how design and innovation has been discussed in the design and innovation management discourses, especially since the concept of innovation has not been used actively in the design discourse until quite recently.[14]

To understand how the discussion about design and innovation has evolved in the design management discourse it may be a good idea to start at the beginning.[15] The advent of design management and industrial design as specific practices is often traced back to 1907, when German electronics goods manufacturer AEG began to consult artist and architect Peter Behrens concerning AEG's complete corporate communication, including the architecture of buildings, product design and graphic design. In this work Behrens emphasised the logic of a complete, ordered and consistent corporate identity that would permeate the company in every detail. Since then this ideal has been adopted by many companies, with typical examples of Olivetti and Philips, and has been promoted by national design councils since the establishment of the Deutscher Werkbund in 1907.

The academic field of design management is considerably younger. It was not until the mid 70's that design management became an academic topic in a business school context when business professor Peter Gorb arranged the first master course in design management at the London Business School. Around the same time the Design Management Institute (DMI) was established in the US to support the development of "the business knowledge of design managers, and the design knowledge of business managers" and

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14. Even though the innovation-related concept of problem-solving has been discussed in the general design discourse since the 60´s, as will be further discussed in the chapter *A Reflection on the Pervasive Concept of Problem-Solving.*

15. I have drawn on several sources for this background. A comprehensive and up-to-date historical overview of both the practice and academic fields of design management can be found in Cooper and Junginger's general introduction to *The Handbook of Design Management (2011).*

to address design management as "the business side of design".[16] In the early days of DMI most participants were designers, but in the late 80's a cooperation between DMI and Harvard Business School was established in the so called TRIAD Project, the first research project on design management in companies that involved management researchers.

One of the first academic texts to discuss the relevance of design from a business perspective was management scholars Philip Kotler and Alexander Rath's 1984 article in the *Journal of Business Strategy*, "Design: a powerful but neglected strategic tool" (1984). In the article Kotler and Rath argue, as the title suggests, that the strategic relevance of design is neglected in most companies and that design should be regarded as a strategic tool for companies to gain competitive advantage. In the design management literature of the late 80's and early 90's Kotler and Rath's "tool-metaphor" was commonly used when discussing the usefulness of design for strategic purposes.[17]

In the beginning of the 90's design management literature often referred to then-popular management concepts such as Total Quality Management (TQM) and the notion of stage-gate systems for organizing product development (Cooper, 1988). It was typically argued that design should contribute strategically by being *integrated* into such systems. Paradoxically, these were systems that could hamper innovation as they promoted linearity and control (Sundgren & Styhre, 2003), something that was not examined in the design management literature at the time.

16. Source: The Design Management Institute homepage: http://www.dmi.org/dmi/html/aboutdmi/aboutdmi_s.htm
17. Such ideas seem to have had at least some effect on Swedish discussions in relation to innovation policy at the time. In 2002 when VINNOVA prepared a first national innovation policy for Sweden, an inquiry was made in which innovation scholars were asked what should characterize such a policy. In the report of the inquiry the word design was mentioned twice, and in adjacent sentences, at the very end of the report, when the editor noted: "When we discuss the demand side it may be proper to briefly mention the role of design. An increased use of design in traditional sectors may […] be as efficient as the development of new high-tech products when it comes to creating value." (Edquist, 2002).

In the mid 90's, when industry was facing increasingly daunting challenges, such as globalized competition and sustainable development, innovation became a buzzword in management literature. In the same period a first "turn" in the design management discourse occurred when design was explicitly related to innovation for the first time. Leading scholars, such as Rachel Cooper and Mike Press, began to argue that design, in addition to being utilized as a strategic tool for enhancing corporate identity, could also contribute to the *creativity* of companies as designers, "As part of their education process, [designers] develop skills in creativity (i.e. original thinking), in idea generation, in problem solving creatively, and in innovation and design (i.e. taking ideas through to a finished product)." (1995, p. 168).

It was typically said that these creative skills should be "harnessed" for the benefit of innovation (Ibid.). In the literature of this time a clear distinction was made between innovation activities and design activities, as evident in a quote by Peter Gorb: "… innovation is the creative process in industry… it follows that design is not a creative process, although it involves creative people." (Cooper & Press, 1995 p. 39). To a large extent Gorb's view reflected the commonly held understanding that innovation was restricted to technology development and R&D activities, an understanding that is still common today.[18]

Related to the suggestion that designers develop creativity skills through their training, it was first and foremost design´s creative *methods* that were seen as a contribution to innovation work in

18. And this can in turn be seen as sign of how innovation has become a central concept in modernity, a concept that has meant the direction of attention to certain things while others are ignored, or as expressed by Benoît Godin in a historical overview of the concept of innovation: "One observes a dialectics here between reality and language. With the changes in the world came changes in ideas and categories. For example, the material culture contributed to the rise of innovation as a central category and to a representation of innovation as technological and commercialized invention. In turn, categories, as part of representations, discourses, laws and policies, theories and statistics make events visible, bring to light novelties and changes in the world, and contribute to these changes." (2008, p. 45).

R&D units, methods that designers were supposed to teach engineers who had been over-analytically trained (Gorb, 1987, p. PG2). An exception to this emphasis on methods was Svengren's observation as a researcher in the TRIAD-project that, "… it is the aesthetic dimension that is significant of industrial design in comparison to most other activities in the product development process." (1995, p. 25).

In the late 90's a second turn in the design management discussion on innovation occurred, especially in the UK. This turn was closely related to the shift to more neo-liberal economic politics in Europe, driven by Tony Blair's "New Labour" government in the United Kingdom and Gerhard Schröder's Social Democratic Party government in Germany. In an ambition to come to terms with Europe's changing demography, with fewer tax payers and a growing social sector, in part due to an aging population, the idea was that citizens needed to become more creative and entrepreneurial, and more "consumer-like" when interacting with a public sector that was increasingly being slimmed-down and privatized. Blair found inspiration in the thinking of Charles Leadbeater, a British journalist and writer who argued that the new social media meant that everyone held the creative means to become a participant in social development, as expressed in his book *The Rise of the Social Entrepreneur* (1997).

The momentum to enhance creativity was further strengthened when American sociologist Richard Florida published a similarly titled book, *The Rise of the Creative Class* (2002). Florida argued that politicians and urban developers should consider how the concentration of a "creative class" consisting of artists, technology workers, musicians, gays, and lesbians makes for dynamic environments that breed innovation and attract new business and capital. Apart from influencing innovation policy and spurring the idea of the *experience economy* (Pine & Gilmore, 1999) in the mid-00's, these ideas were also directly translated into the new ideal of *lifelong learning* for the European citizen, with its emphasis on creativity: "Creativity is a factor for innovation and a key factor for the development of personal, occupational, entrepreneurial and social

competences and the well-being of all individuals of a society".[19]

This new context, with its emphasis on individual creativity as a way to deal with fundamental issues in society, also meant new possibilities for design, especially in the UK. Here, in the early '00's design made a first jump from more traditional fields of product and brand-oriented applications to the social sector through the British Design Council *RED-projects* that engaged in social issues such as crime prevention, health care and energy conservation (Emilson, 2010). Much of this work was done by service design consultancies, like livelwork and Engine, and was based on design methods (Wetter Edman, 2011). This field of design has since been labelled social innovation, or transformation design, the latter a term used by the design consultancy Participle that grew out of the RED-projects, and which included Charles Leadbeater as a key member.

In this context design in the design management discourse was discussed in a broader and more multifaceted way than in the "Thatcherite glory days" (Press & Cooper, 2003, p. 7) when "… design was seen solely as the engine of added value and competitiveness, and designers were seen as part of the business consultancy industry whose main job was to downsize, re-engineer, rationalise and tart up public utilities before they were sold off." (Ibid.), that is, less influenced by the branding and styling orientation of the discussion in the 80's and 90's.[20] In the new discussion the clear distinction in the previous turn between innovation as technological R&D and design as about "corporate communication" also began to dissolve, and for example, Cooper and Press argued that:

19. Source: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:200 8:348:0115:01:EN:HTML
20. Public utilities here meant British Telecom, British Aerospace and British Petroleum, among others. It could be argued that this critique could be equally valid for design's role in the privatization of the public sector, when service design rather than branding was deployed. But at the time design's new role was more or less uniformly applauded in the design management discourse. Problematic issues related to the application of design as a way to ensure user involvement through methods developed for the commercial service sector by consultancies unfamiliar with the social sector's inherent social, political and power-related challenges have since been discussed (Blyth & Kimbell, 2011), but the topic is outside the scope of this thesis.

Design and innovation are complementary, design being a core element of technical or product innovation yet also broader in its influence on product. Innovation is also broader than design in terms of the management areas in which it can occur alone. Together design and innovation are in effect the drivers of any successful business. (Press & Cooper, 2003, p. 43)

Design, in the context of innovation discussions was now also discussed in *practice*-oriented terms rather than only as a set of creativity methods for idea generation, and references were now increasingly being made to design theory, for example to scholars such as Ezio Manzini with his focus on social innovation (e.g. 2003) and Klaus Krippendorff with his focus on meaning-making in design and consumer culture (e.g. 1989). New potential designer roles were also discussed, for example the role of the designer as a "facilitator of communication" (Press & Cooper, 2003), and design research was increasingly being referenced in the design management literature, for example Tomes, Oates, and Armstrong's ethnographic study "Talking Design" (1998) on how designers combine verbal and visual communication when interacting with clients.

Two management books that in the early 00's explicitly related design to innovation were Bettina von Stamm's book *Managing Innovation, Design and Creativity* (2003) and Margaret Bruce and John Bessant's *Design in Business* (2002). However, even though published within the second turn in the design management discourse on design and innovation, it could be argued that both belong to the earlier discussion. Typical of design management, both books spent "A lot of energy… on fitting design into the management paradigms and with aligning design processes with those that were established and accepted in management." as discussed by Cooper and Junginger (2011, p. 18).

Bettina von Stamm argued that it is paramount that design is integrated in the strategic development of companies as "… innovation and design share the same frame of mind" (2003, p. 10), which resonated with the more dissolved distinction between design and innovation of the early 00's. But then von Stamm made a clear distinction between the act of coming up with an idea, that she defined

as creativity, and the notion of design as "… the conscious decision-making process by which information (an idea) is transformed into an outcome, be it tangible (product) or intangible (service)" (2003, p. 12). The focus on "decision-making" was attributed to Herbert Simon's decision-making and problem-solving oriented definition of design that will be further explored in the thesis. Bruce and Bessant adhered to a similar understanding when they argued that design is "… primarily concerned with problem solving" (2002, p. 19).

Another notion that permeates both texts was the notion of creativity as an *individual* act, or as argued by von Stamm: "As opposed to commonly held opinion, creativity, the act of coming up with an idea, is an inherently individual act – it is the development of an idea and the implementation of the idea where the team is needed." (2003, p. 2). After similarly emphasising individual creativity in their book, Bruce and Bessant made the following comment that also points to another perspective:

> … much of the discussion has focussed on individual creativity and this is already a valuable asset within the organization. But it is something which benefits from interaction; research shows that group creativity – provided that the interpersonal dynamics are managed – can be an even more powerful resource than that of individuals. (Bruce & Bessant, 2002, p. 28).

Both books related the discussion on design's contribution to innovation to quite typical concepts in innovation theory, for example, to the common understanding of innovation as problem-solving and decision-making, to the general notion that creativity was about idea generation, and to the associated notion that creativity was an inherently individual act, an act that can be favoured by social interaction.

A few years later, in the mid 00's, with the attempt to re-launch the Lisbon treaty, creativity was suddenly found in all kinds of EU texts, expressed as a fundamental ability and force for the economic

growth and social development of the European Union.[21] Since then creativity has quickly climbed to the top of the policy-ladder, and design is increasingly related to as a creative practice that may explicitly contribute to innovation, as expressed in a public presentation in 2011 by the Head of European Union Innovation Policy, Peter Dröll:

> We need to capitalise on Europe's creative potential. This increases dramatically the role of designers, because, if we have a broader understanding of innovation, we need more power for design and design thinking in companies as much as in the public sector. (Thomson, 2011)

The major change in the rhetoric since the 90's is that the creative potential can be found in everyone and everywhere, not only in R&D units and artists. Creativity is now not so much about methods but more about practices, where artistic practices, such as design, are put forward as role models for creativity. The notion of problem-solving remains, but now problems are typically described as "wicked" (Rittel, 1973), or ill defined, that is, contextually dependent and inherently social. New inclusive approaches are thus needed to deal with problems when traditional idea generation methods do not suffice. Such approaches, it is argued, can be found in the new concept of design thinking that Dröll refer to above, a concept that I will explore next.

The Rise of Design Thinking

Following design's jump to social innovation in the mid 00's, in the European context design has also been increasingly discussed in relation to innovation in industry, however, that "jump" has been more evident in North America where the notion of "design thinking" has emerged.

It can be seen as paradoxical that when design management schol-

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21. VINNOVA's LEKA-programme, launched in 2006, that this study is part of, can be seen as direct response to this "call for creativity" in the European innovation policy context.

ars von Stamm and Bruce & Bessant published the first books that explicitly focused design and innovation, books that made a huge effort to provide a complete picture of strategic design integration by drawing on most management and creativity theories available at the time, American design consultancy IDEO did just the opposite. Instead of trying to "grasp it all", and instead of relating to innovation theory, they instead focussed on multi-disciplinary design practice, and only on this. Further, they did this at a period in time around the turn of the millennium when management research and business schools experienced what has been termed "the relevance crisis in management research", a period when companies increasingly felt that advice from consultants and managers trained in business schools, and presented in models and cases derived from management research, had little effects on actual profitability (Augier & March, 2007; Bennis & O'Toole, 2005; Boland & Collopy, 2004). One reason for the lacking relevance, it was argued, was that these models and cases reflected a more steady-state oriented environment with stable competition and markets that could be anticipated with a high level of certainty, thus emphasising generalizable actions such as resource efficiency and planning.

This tendency to emphasise structure and planning was also reflected in innovation research that tried to structure innovation work along approaches that had been successful for structuring product development and quality work (e.g. Burchill & Fine, 1997; A. Khurana & Rosenthal, 1998). But this approach did little to provide useful advice on how to actually *enable* innovation (Maria Elmquist, 2007), and with increasingly globalized and ever-fiercer competition, and complex issues such as sustainability and corporate citizenship gaining in relevance, industry instead began searching for approaches *outside* of academia.

In this climate, in 1999, IDEO "opened the doors" to its design studio and showcased its design process, its "secret weapon for innovation", in the nation-wide TV-show "ABC Nightline". A twenty-minute episode followed a multi-disciplinary team from IDEO as it "reinvents the familiar shopping cart in just five days". The compelling show introduced design as an innovation approach to a larger audience, as expressed by CEO David Kelley:

The point is that we are not experts at any given area. We are kind of experts the process of how you design stuff. So we don't care if you give us a tooth brush, a tooth paste tube, a tractor, a space shuttle… It's all the same to us. We like wanna figure out how to innovate by using our process and applying it.[22]

Two years later David Kelley released the bestseller book *The Art of Innovation* that further expanded on IDEO's user-centred and multi-disciplinary design process. Soon after that the concept of "design thinking" was introduced, a term that emerged during IDEO's work with Procter & Gamble in the early 00's (Tischler, 2009).[23]

The interest in design thinking also involved Roger Martin, Dean of Rotman School of Management, who became an important advocate on the business side. Martin also set up a "D-school" at Rotman to train management students in design thinking, inspired by Stanford's D-school where much of the IDEO-experiences were taught. Since then D-schools have been established in a number of places in both the US and Europe, a further reason for the rapid spread of the design thinking concept. Another key figure was journalist Bruce Nussbaum,[24] who wrote extensively about design thinking in the weekly magazine *Business Week* in the second half of the 00's,

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22.   There are several versions of the episode available on YouTube.
23.   The concept of design thinking is often seen as a concept defined by IDEO (Hassi & Laakso, 2011). However, "design thinking" has been used in design research at least since Peter Rowe's book *Design Thinking* (1987). When I use the term "design thinking" in this thesis I refer to the recent management concept and relate to the rhetoric and representations typical of this discourse. There is overlap between the content of the design thinking concept and the knowledge developed in design theory, for good reasons, as it all comes back to designing in one way or the other, but there are also important contrasts that will be explored in this thesis. Hence, to use the label design thinking to cover all knowledge about designing may involve the risk that important aspects and nuances are neutralized, if the management concept is equated with the knowledge that has been developed in design theory and is represented in design practice.
24.   In 2011 Nussbaum dramatically denounced design thinking as a "failed experiment", instead proposing what he called CQ – Creative Intelligence, as more promising. Source: (FastCompany 2011, April 6th): http://www.fastcodesign.com/1663558/design-thinking-is-a-failed-experiment-so-whats-next

paving the way for numerous books with design thinking in their titles in the years 2008 and 2009 (Johansson-Sköldberg,Woodilla & Cetinkaya, 2013). Typical representations of design thinking in the popular management literature includes a plethora of concepts in different combinations,[25] such as prototyping to learn, abductive reasoning,[26] iteration between divergence and convergence, empathy with users, the inclination to experiment, the ability to tolerate ambiguity, and a future oriented and optimistic outlook.

One way to think about design thinking is to see it as a reaction to the relevance crisis in management research described above. Related to this, it can also be seen as a direct answer to a specific need in industry, the need to innovate, formulated as a clear and easily accessible concept directed towards managers. From this perspective design thinking can be seen as a typical management *hype* or *fashion,* (Johansson & Woodilla, 2010; Rylander, 2009), similar to other concepts such as TQM, Six Sigma, and Lean Management, with the clear and important difference that design thinking, as perhaps the first management fashion that actually emphasises *less* analytical approaches, or "less algorithmic approaches" as expressed by Tonkinwise (2011, p. 536), while hitherto management fashions have done the opposite, that is, have reinforced the rational side of organizations, as described by Meyer (1977).

As a management oriented concept, design thinking emphasises design as a problem-solving approach to innovation, with its rhetoric rooted Herbert Simon's definition of design. Problems are typically seen as wicked, where a multi-disciplinary and user-oriented design process is needed to come up with relevant solutions. The concept is criticised for "repressing" the aesthetic, material and embodied knowledge of design *practice* when cognition, that is *thinking*, is favoured (Kimbell, 2009; Tonkinwise, 2011). Another

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25.   For a comprehensive overview of recurring themes in the popular design thinking literature see Hassi and Laakso's literature study (2011).
26.   Abduction is a concept originally developed by American Pragmatist philosopher Charles Pierce to describe a process where something is interpreted and given new meaning in a new context, as an alternative or complement to inductive and deductive logics which stay within the same context (Danermark, Ekström & Karlsson, 2003).

critique concerns how, typical of management fashions, the cases that are referred to are "success stories" that portray the adoption of the concept as a straightforward affair. I will return to these critical issues further on in the thesis.

Emerging Theoretical Concepts in the Intersection of Design and Innovation

In parallel with the rise of design thinking as a popular management concept for innovation, over the last ten years others have also discussed design's possible contribution to innovation. Interestingly, these concepts do not come from the design management discourse, but from business management and innovation studies.

For example, in the book *Managing as Designing* business scholars Richard Boland and Fred Collopy criticize the "decision attitude to problem solving" (2004, p. 4) of current management practice, arguing that this is "doomed to mediocrity" (2004, p. 6). Inspired by the experience of following architect Frank Gehry when designing a new faculty building for the Weatherhead School of Management, Boland and Collopy argue that management practice needs to learn from design's attitude to problem-solving.

Innovation scholar Roberto Verganti, by building on design theorist Klaus Krippendorff's notion that design is about meaning-making (1989), suggests that "innovation of meaning" should be seen as an innovation area in its own right (e.g. 2008). In an extensive study of companies in northern Italy Verganti found that designers and architects were often engaged as "interpreters" of the socio-cultural realm, and as "brokers of product languages", to propose to new product meanings, beyond what users could express or imagine, and further, that this focus on meanings also hold the potential to radical innovation in technology (Norman & Verganti, 2012). Verganti also shows that the ability of managers to facilitate and engage in a cultural exchange with networks of interpreters is crucial to this type of innovation work. Verganti's meaning-orientation was not explored theoretically at first (Digerfeldt-Månsson, 2009, p. 22), but recently innovation scholar Åsa Öberg developed theory based on the philosophical field of hermeneutics for understanding how

the ability to "envisioning new meanings" can lead to innovative concepts in technological products (Öberg, 2012).[27]

A related proposal is made by MIT Professors Richard Lester and Michael Piore who argue, based on a study of innovation work in companies in a number of sectors, that *interpretation* can be seen as a missing dimension in innovation as well as in innovation theory (Lester & Piore, 2004). Lester and Piore argue that successful innovation needs to build on two processes in parallel, analytic problem-solving is and interpretation, and further, that from a knowledge and practice perspective, these are in opposition to each other: that is, while analytic problem-solving demands early closure, interpretation requires postponed judgement. Lester and Piore found that when there were interpretation-oriented processes in the companies that they studied most managers gave these "an analytical cast that obscured the importance and undermined its role" (2004, p. 11). Managers lacked the vocabulary and the concepts needed both to explicitly discuss and develop interpretative processes, and to manage them effectively. When discussing interpretation Lester and Piore use design as an example (1998) and also relate theoretically to language theory and hermeneutics.[28]

Another design-related concept in innovation theory is "C-K theory", developed by innovation scholars Armand Hatchuel, Pascal Le Masson and Benoit Weil (e.g. Hatchuel, 2001; Le Masson, Weil & Hatchuel, 2010). Hatchuel et al. argue that when economist and political scientist Herbert Simon based his seminal theory of design on decision-making and *bounded rationality*, which, as already discussed, is the foundation of much innovation theory to-

27. As acknowledged by Öberg (2012), Öberg's theory building has also been inspired by and refer to an earlier draft of this thesis and the article Revisiting Design as a Hermeneutic Practice: An Investigation of Paul Ricoeur's Critical Hermeneutics (Jahnke, 2012).

28. Even though in the book where Lester and Piore they popularize their findings, they only refer to hermeneutics in a passing note, they acknowledge that the analysis of the empirical cases is based on collaboration with Kamal Malek who studied product development processes in the automobile sector by explicitly drawing on Heidegger, Gadamer and Lakoff & Johnson (2001).

day, Simon failed to account for the creativity necessary to come up with novel concepts to decide among in the first place. Hatchuel et al. instead propose a theory that accounts for an *expandable rationality* where the social dimension is crucial in innovation work. In social situations *learning-devices*, for example drawings, mockups, prototypes and so on, help groups explore unpredictable areas. From this perspective learning-devices are not means to test a solution, but ways to open up new "learning-paths" that can breed new knowledge (K), and novel concepts (C) in an iterative sequence that is described in detail based on formal logics.

Without discussing these concepts further here, it can be concluded that there are several over-lapping concepts and discourses at work in the current design and innovation context that are specifically related to design rather than problem-solving. Also Saras Sarasvathy's seminal research in entrepreneurship theory is interesting in this context. Sarasvathy build on Simon's problem-solving theory of design and argue that *effectuation*, the generation of alternatives is a distinctly different process than making decisions based on existing alternatives, as is otherwise the main tenet of economic theory according to Sarasvathy (2001). Sarasvathy's theory is outside the scope of this thesis, but the major interest in Sarasvathy's research can be seen as a sign that theory development has shifted towards more design-oriented concepts across the board since the relevance crisis in management research. I will return to Verganti & Öberg, Lester & Piore and Hatchuel et al., and when discussing the implications of the empirical findings towards the end of the thesis.

Discussion

As I have already mentioned, the developments described above have also resulted in discussions and critique relevant for this thesis. For example, the elevation of creativity as a key concept in EU policy contexts has resulted in a critique that "the imperative to be creative" (e.g. 2003) rests on out-dated ideals of artists and aesthetics that glorify the romantic notion of the lone genius, and thus also contribute to dismantling social networks, institutions, and ideals. In this discussion artistic researcher Marion von Osten argues that

the instrumentalisation of art and the ambition to *harness* creativity, as expressed in a recent EU document (The European Commission, 2012), also means to neutralize the subversive, rebellious and questioning dimension of art. It could be argued that the artistic critique is not relevant when discussing design in innovation contexts, as design is already well accepted in industry, implying that it is already instrumentalised; however, design is paradoxical with its dual nature that both embodies the pre-modern ideals of art while also being a child of modernity (Johansson, Sköldberg & Svengren-Holm, 2003). From this perspective design can be seen as a Trojan horse in which art's more intuitive methods are hidden and applied in the middle of technical and economical rationality (Edeholt & Ek, 2008). The question is then if the relationship between hopes for innovation through design resonates perfectly with design, as it sometimes seems in the current rhetoric, or if there are also tensions between design and innovation similar to those discussed in the artistic critique.

This question becomes accentuated when scrutinizing the rhetoric and representations surrounding the management concept of design thinking. Despite the plethora of concepts used to represent design thinking, these types of representations as a rule leave out the aesthetic knowledge of the practicing designer (Kimbell, 2009; Tonkinwise, 2011). Design risks being turned into a method-based and cognition-oriented approach for solving "wicked problems". This is quite contrary to how some scholars in the design management discourse have proposed that design's contribution to innovation is to be found in its aesthetic tradition (Svengren, 1995). Then again, the design management discourse has to a large extent been underpinned by a functionalist school of thought (Johansson & Woodilla, 2011), thus design management has also failed to discuss the contribution of design's artistic dimensions as argued by Thornquist (2005) and Digerfeldt-Månsson (2009). This raises a paramount question, is design's aesthetic tradition relevant in the context of innovation? Or rather, given that there is a considerable circumstantial evidence pointing to the potential relevance of design practice to innovation, *how* is the aesthetic dimension of design practice potentially relevant in the context of innovation?

Another critique is that design thinking literature tends to repeat the same popularized cases (Hassi & Laakso, 2011; Johansson-Sköldberg, Woodilla & Cetinkaya, 2013) and imply that the integration of design thinking is a straightforward affair. This tendency is typical of "organizational fashions", that are often communicated as being "... powerful, infallible and perfect... and simple..." (Abrahamsson, 1996, p. 129). So far there is a general lack of studies on the implementation of design thinking. The few empirical studies that exist on the *integration* of design in organizations indicate several problematic issues. For example, Lisa Carlgren (2009) has shown that attempts at integrating industrial design in engineering-oriented development processes lead to difficulties in communication that can be attributed to different epistemologies underpinning different practices, and other studies have identified similar friction (Perks, 2005; Persson, 2008; Persson et al., 2007). Birgit Jevnaker's study of design-oriented companies show how the interaction between designers and managers is inherently "messy", even when successful (2005), and Sabine Junginger argues, based on empirical studies of design integration in large non-designerly organizations, that integration should be regarded as extended processes of organizational learning, because it takes time to overcome differences and perspectives between practices (2008). Claudia Acklin comes to similar conclusions, based on an empirical study of integrating design in a number of SMEs, that "non-designerly" companies need to *absorb* design knowledge gradually (Acklin, 2013). Thus it may be presumed that integrating design in organizations as an explicit approach to innovation may be a more difficult process than is often portrayed.

PURPOSE AND RESEARCH QUESTIONS

This study was initiated when design management research had just begun to discuss design's more explicit contribution to innovation and creativity in organizations, and when the design thinking discourse, as well as the other more theoretical concepts described above, were still in their infancy. Despite the emerging interest in design and innovation at the time, Marie and I primarily departed from our own practice experiences when we established the experi-

mental study in which artistically trained designers would share their experience of design practice hands-on with multi-disciplinary groups in companies with little or no previous design experience, with the ambition to stimulate innovation.

Key reasons for this arrangement have thus been to foreground and explore the possible contribution of design *practice* to innovation. By emphasizing practice, design is seen as a professional, situated, and to a large extent embodied and materially oriented knowledge that is developed in studio-based training in artistic schools, and is acted out in the work of designing,[29] in *doing* design in socially and cultural determined contexts.

Another reason for the experimental set-up was that it would allow for a study of interventions in the on-going life of company organizations, to complement research in more restricted contexts, for example protocol studies of design (Lawson, 2006; Schön, 1983). Related to this, it would also allow the possibility to study the emerging events "up close", as they evolve, to complement *ex post facto* studies, conducted, for example, through interviews and questionnaires, which has been a dominant approach in design management research. *The ambition has thus been to conduct and provide a rich empirical study based on an experimental approach with the purpose to understand the contribution of design practice to innovation.*

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29. This is not to say that design does not go on elsewhere, in other practices and in the everyday life of people, quite the contrary. Design as specific occupation or profession is a recent "invention". Nevertheless, design as a professional practice also means that design knowledge is intensified. Further, design as a professional practice can on the one hand be understood as a practice tied to "the sort of expertise they [designers] lay claim to and the kinds of values they purport and add (Shove et al., 2007), and on the other hand to a multitude of *different* and *context specific* practices that may be studied in-depth as such, for example by drawing on Practice Theory (e.g. Schatzki et al., 2001). Further, design practice is not fixed or stable. However, in-depth study of specific practices is not the purpose of this thesis. For understanding the contribution of design as a professional practice, a generalized understanding of design practice will be sufficient.

The methodological approach that will be further described in the next chapter is a combination of a design-oriented experimental approach paired with an ethnography-inspired interpretative and reflexive approach (Alvesson & Sköldberg, 2009). It could be argued that with the interventions we tested the *hypothesis* that design is relevant for innovation work in companies and that it could be introduced through the experiencing of design hands-on, and in one sense this is correct. However, this is only one dimension of the methodological approach. The situations in the companies can also be understood as being intentionally *staged* to provide rich, and hopefully ambiguous, problematic and conflicting situations to interpret to better understand the contribution of design practice to innovation, as well as associated difficulties, or "mysteries" that may arise (Alvesson & Kärreman, 2007). From this perspective empirical *richness* is thus more interesting than *exactness.*

The interpretative approach also meant that it was impossible, or rather counter-productive, to define exact research questions up front. In other words, the unpredictable and emerging events in the interventions, rather than *a priori* questions, established the thrust of the research process. However, considering that this text is written at the end of the process, and as a number of issues have already been hinted at above, I will close this section with three tentative research questions, or issues, that will be explored throughout this thesis.

First, to be able to understand what goes on in the interventions, these can be seen as "meetings" between design and other practices, both as practical meetings between people, and also as meetings between different knowledge traditions, or epistemologies, embodied in the different practices. Considering the discussion above that the integration of design in organizations is often fraught with friction, an epistemological perspective both focuses attention on problematic issues that may emerge, and also on how positive "organizational surges" in the creative climate of organizations, as observed by Johansson (2006), may develop.

Second, the novel situation also means to attempt to understand the role of the designer in the interventions. Given that he or she has to convey primarily tacit and embodied knowledge in situations that are not typical for design practice, to organizations that are

hoping for the much-desired ability to innovate, in a context where the designer is sometimes regarded as almost an incarnation of innovation, what will be demanded of her or him, and how far does the knowledge and ability of a design practitioner "stretch" in such situations?

Third, informed by the emerging events in the empirical study, it will also be important to scrutinize typical concepts and rhetoric found in the discourses at the intersection of design and innovation; to juxtapose what goes on in the interventions with popular as well as academic representations, and discuss if they are appropriate for understanding the potential contribution of design practice to innovation, and if necessary propose more suitable concepts.

THE STRUCTURE OF THE THESIS

The structure of this thesis builds on my ambition to relate the empirical study to a critical investigation of common concepts used in design and innovation management theory in search of a framework for interpreting the interventions. The interpretative framework has been gradually developed in reflections between reading relevant literature, participation in and observations of the emerging interventions, and by relating to my own practice experiences. Thus, alongside theoretical investigations and empirical discussions I will also use my prerogative as a researcher situated in an artistic research context to draw actively from personal experiences.

Following this chapter is the chapter on methodology, *A Mixed Media Methodological Approach*, where I develop my methodological framework. In the "interlude" *The Story of An Emerging Something* I tell the story of a situation in which my verbal concepts about innovation, inculcated through engineering studies were challenged by my six-year old daughter Lillit and her friend Axel. This experience prompted the critical investigation of the pervasive concept of problem-solving presented in the chapter *A Reflection on the Pervasive Concept of Problem-Solving.* This chapter ends with the conclusion that the platform for interpreting the empirical cases must build on meaning-making. Meaning-making and theories of hermeneutic interpretation are explored in the chap-

ter *Design as a Hermeneutic Practice*. In the chapter *The Design of the Experimental Study* I describe the context and method of the study and in the chapter *The Interventions* I tell the stories of the five different interventions, one by one. These interventions are then further interpreted in the chapters *A Hermeneutic Perspective on the Interventions* and *Exploring a Hermeneutic Perspective in Relation to Theory in the Intersection of Design and Innovation.* Finally the relevance of the thesis is discussed in the chapter *Concluding Discussion*, before *Afterwords* ends the thesis.

A MIXED MEDIA METHODOLOGICAL APPROACH

Design theorist Klaus Krippendorff argues that most research *about* design is typically conducted from outside the design community, by other disciplines and non-designers. This, he argues, "… hardly helps the design community to understand itself… [and]… is one serious weakness of the contemporary design discourse." (2006, p. 33). Instead, he suggests a science *for* design that does "… not surrender criteria to other disciplines." (2006, p. 35). As discussed in the previous chapter, few studies in design management depart from an explicit *insider* perspective on design practice. This is probably related to the general lack of attention to artistic dimensions of design practice in the design management discourse, as noted by several scholars (Digerfeldt-Månsson, 2009; Kimbell, 2011; Thornquist, 2005; Tonkinwise, 2011), and resonating with Krippendorff's view on design research.

Following these critical perspectives I would argue that the addition of an explicit design practice perspective is valid for the design management and innovation management discourses. This validity is accentuated when the innovation potential in artistic design practice is searched for instrumentally in society and business. As will be further discussed in the coming chapter, the way design's potential contribution is typically framed in rationalistic terms, for example as problem-solving, is problematic since it both restricts an understanding of design's possible contribution and at the same time risks playing down possible conflicts and friction between design and other practices.

Another associated problem is that the innovation potential in design is often hailed beyond what is reasonable, for example in the design thinking discourse while at the same time critical issues are not discussed. From a methodological perspective I would argue that it takes a more over-arching research approach than is the norm to be able to embrace and frame such diverse and conflicting perspectives, an approach that can span the instrumental and the critical as well as provide knowledge in hitherto neglected areas. Perhaps a methodological *bridge* needs to be built that spans both a practice-based insider perspective and a critical outsider perspective. This could be one way to suggest a more encompassing and critical design management discourse. It could also be seen as possible research approach on an individual level. I have tried to achieve the latter and I will in this chapter describe this approach in more detail.

THE METHODOLOGICAL APPROACH

Danish philosopher Finn Thorbjörn Hansen suggests that designers should claim the importance of research *from*[1] design (2010), from a perspective that is deeply anchored in a phenomenological understanding of experienced design practice or of designing as *lived experience*. This is the one side or foundation of the methodological bridge that I have tried to construct. The other side is a critical perspective that directs attention to the surrounding myths, hopes and claims about design in innovation contexts, to avoid an overly instrumental view of design's possible contribution: to be less eager to please, and less keen in relating to popular concept, which is otherwise a rather common sign of the mainstream design management discourse, as noted by Johansson and Woodilla (2008) and Cooper and Junginger (2011). This side of the bridge is based on an investigation that can be characterized by questions in the form of "What is going on here?" (Alvesson & Kärreman, 2007, p. 1270).

Further, I argue that drawing on a hermeneutic *being in the world* is necessary to be able to generate qualitative knowledge from a

1. Here Hansen draws on Frayling's distinction between practice-led research as *into* art, *through* art or *for* art (1993).

study that attempts to embrace the diverse perspectives described above.[2] Such an ambition necessitates a continuous shift in positions, between action and observation, reflection and critique, and empirical material and theory. Clues to a *designerly* understanding of such an approach can be found in Schön's description of design as an on-going oscillation between involvement in, and detachment from, the situation at hand, thus enabling interrelated reflection and creativity (1985, p. 49). Maintaining the bridge metaphor, perhaps the hermeneutic process becomes the bridge span? In the case of this study, the hermeneutic process is intertwined with the experimental empirical project that gives direct access to design practice *at work*, to empirical material first hand, and to the general and problematic design and innovation discourse.[3] Further, considering the experiment as an open investigation rather than as a restricted scientific test, allows for matters to unfold in surprising ways, ensuring the high probability of uncovering interesting mysteries to solve (Alvesson & Kärreman, 2007, p. 1270).

In the following sections I will disentangle this methodological approach, and also give more background to the foundational assumptions.

The Notion of the Experiment

This study can be considered to be *experimental:* But experimental in what sense? First, the intervention underlying the study can be considered as *staged* by Marie and me, but not staged in the sense that they are not real, as a theatre-related metaphor may imply, but rather in the sense that they would not have occurred if they had not been actively set up or arranged. This staging could be a valid reason for a traditional empirical study of these situations:

2. Or in the words of Snoddgras and Coyne: "The operation of the hermeneutical circle is not the employment of a method. It is not something we can choose to use or not, in the manner of a tool. It is, rather, embedded in all thought and in all action." (2006, p. 45).
3. Indeed, the project as such is completely entangled with the instrumental hopes of a design contribution to innovation in society and business, as presented in the application for financing by VINNOVA.

Indeed, this was the first notion of the project, that by staging events it would be possible to come up-close to phenomena that otherwise are difficult to observe. Previous empirical studies of the integration of design have been typical *ex post facto* studies that have relied on interviews and other secondary empirical material. However, this raison d`être is only partly correct: Another equally valid reason for staging could be to test something. When understood in this way, the experiment seems to be close to a traditional, deductive science experiment carried out to test a hypothesis and build a theory in a controlled environment.

Such approaches are not uncommon in design related research. Much of the research that Krippendorff (2006, p. 33) calls research *about* design[4] is built on traditional experimentation, for example, the protocol studies by Lawson (2006) and many studies within the engineering design tradition. Even in artistic research science-inspired experiments as a way to investigate materials or methods are not uncommon (Borgdorff, 2011). Indeed, it could be argued that the experiment of this study is set up to test the hypothesis that it is possible to transfer the knowledge of designers to companies with little or no previous design experience, and further, to do this through a specific hands-on oriented approach[5] with hopes of distinct positive effects on the innovativeness of the companies. This would be the positivistic version of the experiment. And in a sense this is correct: I *do* test a specific and novel way of attempting to instrumentally transfer such knowledge through *experiencing* design, with hopes of positive effects. As an extension of such an approach, it would be possible to relate the experiment to a specific theory and attempt to verify or reject the theory's assumptions, for example to test and quantitatively measure if the introduction of design practice has an effect on the creative climate of the organization by using Ekvall's method (1996). But as I will attempt to make clear, the study at hand has a quite different experimental approach that nevertheless includes aspects of testing and coming *up-close.*

4.   As opposed to research *for design, that is, research on design's terms.*
5.   That is, the approach of doing this through a workshop-based intervention led by a designer.

Donald Schön approaches the notion of the experiment from a different perspective. According to Schön, trial-and-error is behind most day-to-day reflection in practices, as a process "… of continuing detection and correction of error, on-line fine tuning, all within the framework of a relatively unchanging system of understanding." (1983, p. 24). As such the process is a dynamic *knowing* process rather than a static body of *knowledge.* It is often tacit, embodied, and handled on the spot. Even though often embodied and tacit, there is a sequence here resembling the traditional experiment, or test – "this did not work, will this work instead?

However, sometimes such trial-and-error occurs when one comes across anomalies and surprises "… associated with conflicting values, conflicting ways of framing the problematic situation, even conflicting paradigms of practice." (1983, p. 25). For most practitioners this is where they enter what Schön calls "indeterminate zones of practice, where *competence takes on new meaning."* (Ibid.). Schön further argue that for designers, being in indeterminate zones of practice actually accounts for much of their day-to-day practice - that is, in design practice it is fundamental to turn to such problematic situations and sometimes even instrumentally provoke or trigger them. Schön exemplified this characteristic of design practice with the sketching situation as the archetypal process of "reflection-in-action". He further argued that in such situations the practitioner has to reflect:

> … through turning to the surprising phenomena and, at the same time, back on itself to the spontaneous knowing-in-action that triggered the surprise. It is as though the practitioner asked himself, "What is this?" and at the same time, "How have I been thinking about this?" (Schön, 1983, p. 25)

Schön argues that such reflection has a critical function to question and challenge: "… the assumptional basis of action, and a restructuring function, reshaping strategies, understanding of phenomena, and ways of framing the problems." (1983, p. 25). This is where I understand the notion of the experiment in design practice to be qualitatively different from how the experiment is understood in the

traditional scientific context. Rather than testing assumptions, it is about actively triggering ambiguous, problematic and conflicting situations to interpret. It is about doing *something* to instrumentally *open up* many possibilities rather than verifying an already defined assumption or understanding. In such situations *richness* becomes more important than *exactness.*

But I do not want to lose sight of an important similarity with the traditional experiment in the natural sciences. Even though the objectives of the experiments may differ, in both cases experiments are carried out deliberately to learn. And when science is regarded from a meta-perspective beyond the normal science situation, and instead is characterized by the "anarchistic moments in science" that Feyerabend discussed (1975), then of course also the controlled scientific experiment is part of an attempt to understand the conflicting and ambiguous.

The interventions of this study are staged with such qualities in mind; in hopes of revealing surprises and anomalies to interpret and reflect on, and at the same time opportunities for testing the assumptions described above about design practice in an affirmative way. In my mind, the metaphor of *hacking* used by design researcher Otto von Busch is fruitful, as it seems to capture these qualities. Hacking as an experimental approach reveals new possibilities by intervening and redirecting processes as a form of affirmative critique that *keeps the power on* (2008, p. 37).[6] And as I will now show, this understanding has some rather dramatic consequences for methodology.

A Resistance Inspired Approach

When adopting an experimental approach that resonates with Schön´s understanding of the design situation, I believe that meth-

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6.   It is a metaphor that also resonates well with how in earlier projects I have investigated, for example, gender norms through design, by attempting to subvert established norms as reproduced through designed artefacts. One such example is the children's clothing collection TROTS and another the Blåkläder Workwear Skirt. Both are critical and at the same time practically useable in a way that traditional "critical design" objects are usually not (e.g. Dunne, 2005; Robach, 2005).

odology has to evolve *with* the experiment, in tune with how matters unfold, something that is contrary to the traditional research notion that you have to define the methodology early on. To continuously be forced to reflect on methodology can even be seen as a kind of method in itself. On the other hand, one has to start somewhere, and I began with the notion that I would do a traditional experiment to better understand how to integrate a design perspective on innovation in companies with little or no previous design experience. At that point in time I did not see how this study could be critical in the sense described above. My supervisor indicated that an empirical, ethnographically inspired study based on a sense-making approach could use interviews and observations to yield new knowledge. This study, however, has evolved *between* these positions of critique and sense making into something that is qualitatively different than implied by either of these approaches individually.

As an example of how the evolving study has informed decisions about methodology, very often intuitively as a felt resistance or tension, I early on considered the option to quantitatively measure the creative climate before and after the experiment, using Ekvall's method for measuring the creative climate in an organization (1996). Such quantitative information *in combination* with qualitative material could help strengthen my case, as proposed by Silverman (2001). But, at the early stage when such quantitative methods should have been applied to be effective for comparison purposes, the research question was quite open to many possibilities and one way to *actively* keep it open was to refrain from defining such methods and accompanied theories. Most of all it did not *feel* right. I call this feeling the *method tension.*

The intuition I have used in such situations comes directly from experienced design practice – an urge to "keep it open" triggered a resistance to early definitions,[7] right or wrong. Instead, I moved

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7.   In response to Silverman, this is where I believe that qualitative and quantitative methodologies will have a hard time together: the quantitative perspective demands an initially well-defined question and theory scope to build method around, while the interpretative and qualitative approach demands shying away from such definition as a method.

to a more critical reflection prompted both by this fear of locking down understanding, and from a tension I felt when reading literature *about* design in innovation and design management, which I felt often pinned down design from an uncomfortably distanced, restrictive, and objective perspective: this I call the *theory tension.* This tension was further enhanced by how at that time I felt that I also risked losing touch with experienced practice when entering the realm of discourse *about* practice – precious experience that was beginning to slip away. This I call the *experience tension.*

To deal with these tensions I have opted for a research approach that actively and productively tries to use the tensions as fundamental to my methodological approach. This has resulted in a kind of mixed-media approach where few ingredients have been picked from the shelf. Rather, it is only with hindsight that I can make sense of how my approach evolved. I will now relate my approach to three established methodological approaches that in different ways resonate with my ambitions, when placed in a specific overlapping relationship to each other.

Interventionist Research

My study draws from staged interventions in which I also to some extent take an active part, so it could be argued that my approach resembles Interventionist research. According to Westin et al. (2010), in management and accounting research the Interventionist research approach has been developed as an alternative to more traditional approaches related to the functionalist and structuralist paradigms.[8] The interventionist approach instead builds on action research, a methodological approach attributed to Kurt Lewin, who suggested doing change experiments in the field rather than in the laboratory (Baard, 2010). According to Westin et al. (2010) interventionist research has its roots in the anthropological field of culture studies in social science. Here the researcher engages with an organization to build new knowledge together with the organization while attempting to solve a problem for the organization.

8. Burrell and Morgan's "Sociological Paradigms" (1979).

This ambition and approach is much in line with how design researchers have recently explored sustainability issues (e.g. Manzini & Jégou, 2003) and social issues (e.g. Hillgren, Seravalli & Emilson, 2011) by research in social situations *through* design. It thus resonates with the ambition of design to explore *what could be* (Edeholt, 2004). This was also the type of inspiration that I found in the participatory design approach[9] used by Marie in the Employees and Companies in Good Shape project. In both the interventionist research approach and similar design research approaches the researcher is immersed in the situation as an experienced practitioner so that fieldwork becomes "… a ´total social situation´, where experience, interpretation, and evaluation makes a seamless whole." (Hastrup, 1997). But as much as I subscribe to the importance of the practice perspective as relevant to building new knowledge, there are at least two problematic issues in this kind of research that I need to address.

First, the researcher who immerses always runs the risk of "going native", an old lesson from anthropology. This is considered a problem as a distanced, that is, a presumed objective perspective and critical edge may be lost. Second, and a returning perspective in most interventionist and action research oriented projects, is a persistent notion of instrumental problem-solving in the organization or other social situation in which the researcher is immersed, including associated and often normative notions of what would be preferable.[10] Instrumentalism may thus further hamper the critical perspective. It may also, as Finn Thorbjörn Hansen argues:

> … strive[s] to make the researcher or knowledge producer arrive at the situation with a special kind of 'knowing-attitude' (I know that this can be solved, it is just a question of finding the right knowledge or the right perfection of a skill). But this knowing-attitude might prevent the person from really being in the situation and being open

9. On participatory design see for example Binder et al. (2011).
10. Whether informed by social democratic notions of empowerment in the workplace or neo-liberal notions of individual freedom of choice in the social sectors.

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to the situation, that is, to be in an authentic relation to the world as it shows itself in this particular moment. (Hansen, 2010)

Thus, a dilemma opens up between the ability to stay critical and the possibility to draw from personal experience. This dilemma perfectly reflects a force field between the theory tension and the experience tension that I experienced when I immersed in the interventions. But instead of detaching myself from the experimental project entirely to better entertain a critical position, *or* choose to immerse myself deeper into activities to keep practice alive (which was an option early on). I have attempted to deal with the dilemma in a third way, by keeping it alive as a productive force field throughout the study. I will soon come back to how, as it has taken a third methodological approach to achieve this, but beforehand I wish to introduce a second significant methodological approach.

Reflexive Methodology

My ideal of a critical perspective resonates with how Alvesson and Sköldberg propose a *quadrohermeneutic*[11] approach that involves reflexion in relation to four levels or perspectives: empirical, hermeneutic, ideology-critical, and postmodern (2008, p. 490). Instead of favouring any one methodological perspective or level, it is the quality and depth of reflection *between* these levels that is essential according to Alvesson and Sköldberg. To come up with novel and critically informed concepts takes an ability to reflect in "wide circles" informed by epistemological and ontological awareness. This, Alvesson and Sköldberg argue, is a prerequisite, but certainly not a guarantee of novel interpretations.

In such a reflexive interpretation access to empirical material is favoured, but with the disclaimer that it should not be considered the only source of inspiration and should be treated with a certain distance. Engaging in the "zeal of grounded theory methodology" is seen as the worst case and counterproductive to novel interpretation because the cumbersome and time-consuming method locks down

the space for creative interpretation (Alvesson & Sköldberg, 2008). This is a sentiment that resonates with my method tension or scepticism to restrict to a single method framework, be it in research or in design practice.

Further, in my mind the researcher's ability to move in and out of the empirical material and the urge to critically reflect on the situation that Alvesson and Sköldberg advocate is also directly related to design practice, the process that Schön describes so well, of when the reflection is part of the action present and also the ability to step out of the situation: of going back to and challenging "what have I been thinking about this?" (1983).[12] Such situations require a large interpretative repertoire of knowledge, as argued by both Schön (1983, p. 98) and Alvesson and Kärreman (2007, p. 1274). In other words, there seems to be a kind of hermeneutic kinship between the reflexive approach and design practice. However, there also seems to be a difference between these approaches, at least by degrees. In design, as well as in interventionist research, you *stage* or set in motion that which you reflect on and interpret. You are also directly involved in the situation, but Alvesson and Sköldberg seems to favour distancing. I would argue, at least for this study, that the tension between distancing and immersion that Schön direct attention to is also possible fertile ground for novel interpretations.

Another prerequisite for a reflexive approach is access to interesting empirical material to interpret. In my case I have started with a similar notion, that any intervention, to be an intervention in the experimental sense described by Schön, needs to possess as one of its qualities the potential to disturb, shake up, or in one way or another open up the situation. In the study at hand there are several such opportunities, including the fact that when the designers enters non-designerly companies with his or her practice experience as the main theme, he or she brings in a contrasting knowledge tradition that may clash with that of the organization – the designer may thus challenge *the assumptional basis* of action, to use Schön's words (1983).

But maybe the difference between staging and selecting empirical

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11. My translation of the Swedish term "kvadrohermeneneutisk".

12. My story of Lillit and Axel in the *Interlude* is an example of such reflection.

material is not so dramatic. Even in more traditional reflexive methodology studies I am sure that the critical researcher develops a certain knack for actively locating appropriate empirical cases, even though not staging them actively. I also believe that to some extent the researcher also synthesizes[13] rather than finds an interpretation in relation to empirical studies, for example by directing attention to unusual and special circumstances. Further, the researcher also affects the social situation in various ways, for example during interviews (Alvesson, 2011; Silverman 2001), which is something that Alvesson and Sköldberg highlight as a reason for awareness of such influences. The remaining problematic issue is how to reconcile more direct involvement as well as personal reflection with a critical position. Alvesson and Sköldberg suggest that one possibility is autoethnography (2008, p. 185) as a way to draw on one´s own experiences in relation to an empirical situation. However, the examples they use discuss how the self can be engaged when interpreting cultures and social situations where the self is also a comfortable member in an otherwise more traditional ethnographic approach. This is not exactly what I have done, but close to it. In my case it is about the possibility of drawing on experience to see the situations under study, and established theory in the area, in a new light.

Using my study as an example, such a situation occurs when a theoretical area, that deals with a practice in one way or another, are shaped by outsiders and where empirical situations are observed from a distance. But for an ambition to break through dominant discourses to work, I hold that reflection on personal experience has to be deepened considerably, especially when personal experience is hidden even from the researcher, when practice is to a large extent tacit and embodied, as is the case with design practice. It also has to be instrumentally used as a research methodology to challenge both the interpretation of the empirical cases as well as established theory in the area. This takes, as Alvesson and Sköldberg claim, an ability to also achieve distance from one's own perspective and a

certain discipline to engage with the correct phenomenon. In my understanding, few interventionist research studies show such an articulated approach and it is only a minor approach in relation to reflexive methodology. I therefore suggest reflection on lived experience as a third methodological component to my mixed-media approach.

Phenomenological Reflection on Lived Experience

For me, in this specific situation and with the specific topic at hand, it has been absolutely crucial to draw actively on my own experience: to investigate my own *life stories*, first as an engineer and later as a designer, to be able to be both close and critical at the same time. This study was not handed to me. Instead it is a study that emerges from a deep personal interest - an urge to *understand* problematic things that I observed and was part of in industry.[14] This ambition is intertwined with an interest in design as a possible perspective on these issues where even my shift in career, from engineering and organizational development to design via an MFA degree, can be seen as a first step in this investigation: an attempt to immerse in the practice as such.

How I began working with issues of design and norms, specifically gender issues, can also be traced to an interrelated study, or second step, to better understand what design can do and how designed objects in different ways affect and interact with our everyday lives. The study at hand can then be considered the third step in my longitudinal investigation. In the current study I have returned to industry with a better understanding of designed objects and design practice to investigate design's possible contribution to innovation. I have engaged in the different interventions with an initially naïve mind-set and with instrumental hopes. However, along the way I have come across problematic and interesting issues that I

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13. I certainly do not mean fabricate here as in making up. But just as in design, there is a certain creative bricolage going on that is something other than neutrally observing and finding out.

14. How I, for example felt that sustainability issues were not handled in a proactive manner and how my work with so called environmental management systems more or less was a dead end in terms of change, as discussed in the Introduction chapter.

could not have anticipated and which have been little discussed in the current discourse - *mysteries* to use Alvesson and Kärremans words (2007), a veritable hornet's nest of conflicting views and understandings that emerged in the intersection between design and other practices. Similarly, when entering the MFA in design I was not ready for how I would go through a rather radical shift in mindset. And when starting with design and gender issues I was not ready for how deeply designed objects can be understood as social agents.

What I also could not initially see was how to bring my practice experience into the fore as an articulated experience, as this is to a large extent a tacit and embodied practice. For this reason I have had to engage in a deepened reflection on practice. To be able to tease out the tacit or taken for granted, I have searched for inspiration in philosophy inspired by the Dialogue Seminar method (Göranzon, 2006). I have also written stories of certain decisive events in an essayistic manner (Lindseth, 2004). Further, in a separate empirical "sounding board study", conducted in parallel with the interventions, I explored three empirical design cases to develop an alternative understanding of design practice to the dominant problem-solving oriented understanding in the design and innovation management discourses (Jahnke, 2011; Jahnke, 2012).[15]

While Alvesson and Sköldberg propose that autoethnography may be rather economical research time-wise, I am not so sure. My experience is that to really attempt to dig deep into experience takes both time and also intense focus in ways that may be problematic in relation to an empirical study. Then again, the empirical study in my case has also been a continuous sounding board for reflection, and if

not a guarantee, at least the interplay between reflection, observation and participation has hopefully led to relevant findings. After all, the clash in knowledge perspectives in my own past has mirrored the problematic situations in the empirical cases as well as the character of theoretical discourse. Thus the articulated perspective I developed can perhaps be characterized as that of "in-betweenness",[16] similar to how Oosterling and Plonowska Ziarek argue for an "intermedial" research approach to social relations that emphasize the *inter*, the being-in-between rather than the stable and shared (2011).

All in all, this parallel and phenomenological investigation into my own experiences has helped me to make sense of and actively direct a critical perspective to theory and discourse in the area of design and innovation management. Along the way I have also found studies with a similar approach, for example, Johannisson's investigation into the nature of entrepreneurship by actively stepping into the role of entrepreneur in a staged art project (2005), and Thornquist's critical study of design management from an auteur perspective by enlisting himself as the personal assistant of artistic manager Robert Wilson (2005). I am sure that there are other examples, especially hidden behind studies where the personal experience is not explicitly described as part of methodology, but where it still mattered. More explicit critical studies drawing on personal reflection in relation to empirical situations and theory seem rather scarce, however, perhaps because it is inherently difficult to argue for any neutrality or objectivity in a traditional sense. Instead, such investigations *have to* build on the sheer force of "wonder"[17]- an emotional force that also, as Alvesson and Sköldberg note, has to be moderated (2008). Or rather, the effects can be moderated, never the experience.

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15. The sounding board study draws from observations of an experimental design project that was part of a consumer research project called Gender and Design. In the experimental project a number of master students in design at HDK explored and reflected on gender issues through design. The brief was to design interactive artefacts for an exhibition on gender and design. The purpose of the exhibition was to broaden the general public's understanding of how designed objects are gendered. When developing innovative artefacts the students used quite different strategies, including "bending" norms, making taken for granted norms visible by exaggeration, and opening up for reflection through "Verfremdung".

16. In Swedish the invented word "mellanförskap" works even better.
17. As in the Swedish word "undran" – "… wonder is primordial a *dialogical phenomenon, which not only calls us to find our 'own personal voices' but also to hear the 'voice of the matter itself' (die Sachen Selbst)."* (Hansen, 2010).

Summary of the Methodological Approach

As discussed above, I felt that I had to deal with three tensions that were a direct consequence of the fact that I entered this project with practice experience directly related to its theme, something that is less often the case in research. Further, the interventionist approach was more or less inscribed in the experimental approach, and even though there have been opportunities to distance myself and become a traditional observer, I have felt an urge to remain closer to the action than mere observation allows. However, I also wished to reflect critically to be able to both challenge existing theory and discourse, and to better understand what was going on in the cases from an insider perspective. This was my dilemma between immersion and a critical position. To resolve the dilemma I have used a counter-intuitive move in which I tried to *both* embrace immersion *and* articulate the critical perspective by going *even deeper* into practice experience. I now consider how all this has been negotiated in a more practical sense.

PRACTICAL CONSIDERATIONS REGARDING THE RESEARCHER ROLE

Achieving this quite entangled methodological approach has taken some specific practical considerations along the way.

First, I needed to find a balance in the researcher role vis-à-vis the active role in the interventions. Here I have been lucky to be able to negotiate a continuum of possibilities or ambitions, from being totally immersed as a practicing designer to total distancing as a traditional objective researcher. Early on there was a clear option that I would engage as the designer in at least one of the cases. However, as much as this was tempting for several reasons, I opted out, fearing that I would get too caught up in this process in a way that would hamper my ability to step outside of the project and entertain a tension or dialectic that would also promote critical reflection.

Instead I found that an in-between or semi-involved role as a coach has worked best. It has allowed me the opportunity to intervene at times and thus both affect the process and also entertain and draw from a link to my practice experience. This role has also made it possible to find a dialogue on equal terms with Marie who, as a non-researcher nevertheless also reflects on the evolving project as a coach, and at times immerses in the situations with her design perspective – a harmony between our roles that has been important to the study.

The semi-distant role of coach has also made it possible to find space for critique and reflection: a space that requires distance. Part of this space is a sympathetic research situation that has required patience and has encouraged oppositional perspectives to bloom, knowing that they were only part of a much wider circle of reflection. Another part of this space is *time*, time to read up on different theories, philosophy and so on, and time to develop an interpretative repertoire by drawing on sources outside of mainstream literature, something that Alvesson and Sköldberg also encourage (2008).

Further, the role as coach made it possible, and indeed necessary from a professional perspective to take a more distanced perspective and critical look at what went on between the designer and the organization in support of the evolving process. It has also helped me to reflect on practice, something that needed both a closeness to practice and also space to venture into such reflections beyond the case at hand.

Another part of the distance was an ambition at times to bracket experience as much as possible, as one of several steps in engaging with and analysing the empirical material consisting of interviews, observation notes, photographs and so on.[18] However, bracketing in this study has been of less importance than in grounded theory, even though it has been attempted in the intersection between the reflexive and the reflective interpretations.

Underlying this whole mixed media approach is a dimension which I call fluidity, which is also directly related to design experience: that it takes a kind of fluid movement between positions in this kind of process, a momentum that needs to be entertained in going in and out of the different situations so as not get stuck in a too philosophical position (Alvesson & Sköldberg, 2008, p. 489), for example. Here I

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18. The process of analysing the empirical material is further described in the chapter *The Design of the Experimental Study*.

think that the experience of design has helped. It is the same kind of pendulum movement between the details and the whole of the situation that Schön discuss as fundamental to the "conversation with the situation at hand" in design (1985). To find this fluid motion and keep a balance between all perspectives has been an on going, and to a great extent intuitive reflection throughout the study.

CONCLUDING THOUGHTS

It may now seem as if I knew what I was doing. But this representation is very much a retrospective one. That this approach was not planned from the beginning, but was made possible through the experimental approach, which was intentional, is to me a testament to the quality of any open-ended experiment that in some way is allowed to evolve and reveal its own potential. In this process there were many trials that became errors[19] and other trials that became little successes that could have been developed much further.[20] It does not take control as much as intuition to live with such an evolving something – very far from my industry days where ideals such as the P-D-C-A cycle[21] reigned. As it now stands, it is not a ready-made methodological approach – perhaps an embryo of one in good company with others that have ventured down similar reflexive and reflective paths in management-oriented research.

19. At one stage, for example, I tried to film events but this did not turn out to be very productive.
20. Attempts to use the Dialogue seminar method together with the designers in the designer seminars were promising but came too late in the process. Another possible method could have been to make an exhibition together with the designers and companies but this felt too time-consuming and too exhausting from a focus perspective.
21. The "Deming cycle" behind quality management approaches. PDCA – Plan-Do-Check-Act.

INTERLUDE – THE STORY OF AN EMERGING SOMETHING

In the beginning of the study, to attract the companies that would be involved, I used typical innovation concepts such as problem-solving and idea generation to discuss design's potential benefits to innovation work. I did this, not only because they seemed effective for catching the attention of the companies, which they were, but also because at that time I had little else to go by. These were concepts inculcated during my engineering training almost fifteen years earlier, and further strengthened when working in industry. But I knew based on my more recent experience of design practice that design had something to offer that these concepts couldn't capture, but I had difficulties in expressing, or even understanding, what. Design at that point was for the most part a tacit practice to me.

Halfway into the study, after a review of different literature on design and innovation, I still lacked concepts for understanding what went on in the interventions, in the complex social situations that were emerging around the designers. A tensioned was mounting, until one day when I went to pick up my then five-year-old daughter Lillit at Kindergarten:[1]

I met her in the hallway:

1. Her Kindergarten has adopted the Reggio Emilia pedagogy approach where exploration and discovery are encouraged. For example, there are very few toys but a lot of different materials available for the children to use for building.

She beamed as she showed me a beautiful bracelet that she had made. It was beautiful to the point of looking like something bought in a "designer store", sort of stylish with a touch of craft inspiration.

"I made it out of a toilet roll and coloured match sticks", she exclaimed.

I was intrigued and proud.

"How did you come up with the idea of making a bracelet out of a toilet paper roll?" I asked, as I found it so incredibly clever.

"I didn´t, that was Axel."

"What do you mean, did Axel make the bracelet?" I asked, dumbstruck as I was.

"No, but he saw that it was a bracelet, and then it was a bracelet", she answered a bit impatiently now, wanting to head for home. But this was a mystery that had to be uncovered.

"But then, what did *you* do?" I asked.

"I cut the roll in half, to make it shorter, and then I glued the match sticks on to the roll. They were already coloured and didn't have that black stuff on the tip", she said - there went another illusion out the window.

"Then Axel came and saw that it was a bracelet and then I cut here, along the roll, so that I could put it on my arm – can we go home now!"

At least five assumptions that I held about innovation work were efficiently dismantled when I encountered the work of my daughter and her friend Axel. First of all, I had assumed that she had begun with an *idea*, the idea of making a bracelet. She had certainly done something in her working with the "materials at hand". She had explored and opened up possibilities. But were this would lead did not seem predetermined, perhaps not even interesting. This also meant that the linear process that I had assumed, from "idea to finished product" so to speak, was disrupted. Thus the end result did not correspond to any *problem*, "just" to a possibility immanent in the situation, in Lillit's work with the material. Further, I had assumed that innovation was for the most part a *cognitive* and *individual* process, but Lillit told the story of a process that was inherently *social*, where she and Axel together understood and agreed that

the emerging object was a bracelet, that it was a bracelet to them because of certain qualities in the object. This "braceletness" was further confirmed when Lillit wore the object as a bracelet, when its meaning was performed.

So instead of problem-solving or idea generation there had been cognitive, material, and social action that had resulted in an innovative concept. *This* resonated much better with what I observed in the unfolding interventions where the groups explored experiences, meanings and emotions rather than problems.

Now the question was where I would find literature that would support an investigation of the interventions inspired by this new understanding. As a first step in this search I decided to take a closer look at the concept of problem-solving as such, to better understand why it is such a pervasive concept in innovation and design discourses, indeed in everyday life in general. In the next chapter I will trace a historical journey through design and innovation theory centring on the concept of problem-solving. I will also attempt to push problem-solving "off-centre" to make room for an alternative platform for interpreting the interventions.

A REFLECTION ON THE PERVASIVE CONCEPT OF PROBLEM-SOLVING

The concept of problem-solving permeates most discourses on innovation. It is also a concept that is often used to describe design's potential contribution to innovation. However, as hinted in the Interlude, during the interpretation of the emerging interventions I experienced that concepts that insist that the centrality of problem-solving, including the management concept of design thinking, were not sufficient for understanding what went on in the interventions, and further, they seemed to cloud important dimensions of the contribution of design practice to innovation.

In order to better understand the limitations of problem-solving, and in a search for alternative or complementary concepts, and a more useful vocabulary, I began to reflect on the concept of problem-solving as such. This reflection was also a kind of "exorcism" of problem-solving as a dominant concept in my own thinking - an attempt to release from its force field to let my more tacit experience of design practice take centre stage when interpreting the interventions. I will in this chapter describe aspects of this reflection.

THE METAPHOR OF PROBLEM-SOLVING

In everyday speech the concept of *problem* is used prominently. By observing this frequent use, it is clear that problem can mean anything from a *negative* something which can hardly be solved, an issue that is more or less seen as an unavoidable part of life, to

problem as a concrete matter to overcome through a solution. The former is a kind of outlook on life as reflected in common wisdom like *Qué Será Será*, Murphy's Law, or even "Shit Happens", that is, such *negative matters* that come and go. The latter is derived from the scientific understanding of the problem as a matter to solve, as how a hypothesis needs its corresponding solution or theory. Both inform how we understand the types of issues that are lumped together under the notion of problem. But how did this happen, and what are the consequences?

The word "problem", which is the same in English, German and Swedish, and in French is the associated word *problème*, has a common background in the Latin word *problema*, derived from the Greek word *proballein*, which means to propose or "throw forward".[1] The first recorded use in Swedish goes back to 1673 ("Svenska Akademiens Ordbok," 1954, Column P1927), and in English a source[2] indicates that the word was first used in the late 14th century. The use was at first more or less restricted to scientific contexts to denote mathematical problems and similar. Then something happened. In the late 1800's the use is also found in relation to more societal phenomena such as discussions on poverty and the spread of disease, first in more restricted scientific and political contexts, but soon spreading to more public contexts through media. The first evidence of the word being used outside of scientific contexts in the English language is in 1920, when the word "problem child" is recorded. In 1927 the word problem is first recorded in the Swedish language, in the same combination of words as problem child – "problembarn" ("Svenska Akademiens Ordbok," 1954, Column P1927). In other words, the everyday use, and thus the construction or conceptualization of reality according to that word, is not more than about 90 years old.

American linguists George Lakoff and Mark Johnson offer a

1. As noted by Snoddgrass and Coyne, the etymological roots, and the meaning of "throw forward" is actually more related to "project" than with the mathematical connotations of problem as used today. (2006, p. 269).
2. Source: Online Etymology Dictionary, www.etymonline.com/index. php?term=problem

thought-provoking story in their book *Metaphors We Live By* (1980). An Iranian student who took one of their classes on metaphor had come across the concept of problem-solving at the Berkeley campus for the first time, and interpreted "the solution of my problems" as metaphorically denoting "… a large volume of liquid, bubbling and smoking, containing all of your problems, either dissolved or in the form of precipitates, with catalysts constantly dissolving some problems (for the time being) and precipitating out others" (1980, p. 143). According to Lakoff and Johnson the student "… was terribly disillusioned to find that the residents of Berkeley had no such chemical metaphor in mind" (Ibid.).

To Lakoff and Johnson this story illustrates how an unconventional metaphor, like thinking about *solution* as a bubbling and smoking chemical liquid provides a completely different understanding of a taken-for-granted concept, and an understanding that has the potential to describe a quite different reality, where in this case problems are seen as "… things that never disappear utterly and that cannot be solved once and for all… [and] where the reappearance of a problem is viewed as a natural occurrence rather than a failure on your part to find the 'right way to solve it.'" (1980, p. 143).

The student's metaphorical understanding seems to resonate with the expressions of problem-oriented wisdom above, for example *Qué Será Será*, rather than with a more common understanding of problem-solving, at least in Western societies. According to Lakoff and Johnson, the more conventional metaphor associated with problem-solving in the west is what they call the "puzzle metaphor", "… in which problems are *puzzles* for which, typically, there is a correct solution, and once solved, they are solved forever." (1980, p. 144). That is, to solve denotes vanishing.

Lakoff and Johnson argue that this notion of the problem to be solved as a puzzle with a correct solution underpins Western society. It is, as an *enacted metaphor*, the pervasive and powerful engine of the idea of progress in science, society and philosophy that supports the "myth of objectivism". In other words, with this pervasive concept at hand reality is regarded and constructed in a certain way. Issues that can be considered problems according to

the puzzle metaphor are noticed, and other phenomena that may not necessarily fit the metaphor, are redefined to ensure a better fit. Phenomena that do not seem to fit the puzzle metaphor at all, phenomena that are *inherently reoccurring* and *ambiguous*, are on the other hand neglected, or not even noticed for the lack of concepts for understanding them.

Interestingly, a similar attitude to the puzzle concept can also be found in the notions of repentance and salvation in Christianity. As Swedish artist and writer Jonas Gardell notes in his book *Om Jesus*[3] (2010), in Christianity *all* problems have only *one* answer – Jesus. This, that *all* problems have only *one* solution, could be the extreme outer end-point of an attempt at refracting the concept of problem-solving along a continuum. However, this notion is not so common in society in general, although the rhetoric of some politics and politicians seems to come close.[4] On a continuum of different ways of understanding problem-solving, the notion of problems that can be readily solved as puzzles is placed quite close to this outer end-point.

In 1945 mathematician George Pólya published the widely read book *How to Solve It: A new aspect of mathematical method* (1945). The book quickly became influential in the years after the Second World War when it described how all kinds of issues that could be constructed as problems could be solved according to the same analytical sequence and heuristics used in mathematical problem-solving. As a sign of the wider interest in the book, the subtitle of the Swedish edition was changed to the less mathematically specific, *A handbook in rational thinking.*[5] In the book Pólya describes how analytic problem-solving follows the sequence:

First – Understand the problem.
Second – Devise a plan.
Third – Carry out the plan.
Fourth – Look back.

Pólya was not the only author to popularize analytic or rational methods for problem-solving. For example, in 1946 the Soviet inventor Genrich Altshuller's began to develop the "theory of inventive problem solving", TRIZ, described in the book *Creativity as an Exact Science* (1984), that holds many similarities with Pólya's approach, and for good reasons as both depart from the notion of *reductionist* scientific method that dates back to René Descartes – that is, the notion that a problem should be divided into its component parts to be efficiently solved, and hence, that the whole is nothing more than the combination of its parts. The point is that both Pólya and Altschuller described analytical approaches that resonated with the triumphs of technological innovation, scientific management and rational production methods for winning the Second World War, and thus became very popular.

The track record of science and technology is indeed phenomenal, with huge positive effect on human wellbeing, for example through the amazing developments in medicine and communication technology. There can be no doubt that since Descartes the analytic method has had a quite persuasive effect in supporting the notion of objective reality and truth as well as a belief in the possible solution to almost any problematic issue. Within this analytic school of thought problems *are* overcome, they *are* solved. Universal progress on all fronts is indeed made. Or so it seems.

THE PROBLEM AND THE EXPERT

Perhaps a clue to the success of scientific method and problem-solving is that it offers radical and actual improvement in *this* world, not in the next, and has therefore replaced the hegemonic position of religion and clergy, or in the words of American Pragmatist Philosopher Richard Rorty:

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3. "About Jesus", my translation from Swedish.
4. I'm thinking here of for example Thoralf Alfsson of the Swedish right-wing party Sverigedemokraterna who argues that "It is easy to be a Sverigedemokrat, you only have to stick to the truth." My translation of the Swedish "Det är lätt att vara Sverigedemokrat, det är bara att hålla sig till sanningen." (Alfsson, 2012).
5. My translation of the Swedish subtitle *En handbok i rationellt tänkande* (Pólya, 1970).

The scientist is now seen as the person who keeps humanity in touch with something beyond itself. As the universe was depersonalized, beauty (and, in time, even moral goodness) came to be thought of as "subjective." So truth is now thought of as the only point at which human beings are responsible to something nonhuman. A commitment to "rationality" and to "method" is thought to be a recognition of this responsibility. (Rorty, 1991)

Within science and politics, different lines of investigation converged after the Second World War in the perceived need to professionalize occupations to be able to harness this scientific force and exploit it to its fullest potential. It was no longer sufficient that professions seemed fuzzy and unscientific. Belief was strong in the efficiency of rational management and decision-making techniques. Human intelligence could be measured thanks to the advent of the Binet test and the rapid development of the computer promised the imminent arrival of artificial intelligence. In addition to this, creativity could now be harnessed through creative problem-solving methods and tools (e.g. Gordon, 1961; Osborn, 1963).

In this development the notion of the academically trained *professional* became an increasingly important concept, and with it the associated concept of *expertise*. This expertise implied the ability to apply scientific knowledge and models to problematic situations to solve problems (Abbot, 1988), or as expressed by American performance artist Laurie Anderson in her song *Only an Expert* (2010).[6]

Now only an expert can deal with the problem
Because half the problem is seeing the problem
And only an expert can deal with the problem
Only an expert can deal with the problem
So if there's no expert dealing with the problem
It's really actually twice the problem

6. See for example her performance of the song on *Late Show with Letterman* July 14, 2010.

Cause only an expert can deal with the problem
Only an expert can deal with the problem

In attempts to professionalize design and architecture, which had so far eluded academization, design scholars in the 60's, as part of the new "design methods movement" (Cross, 2007) attempted to formulate a scientifically coherent and valid definition of the design process, for example Alexander (1964) and Jones (1970), on the formula of the analytic process of "analysis-synthesis-evaluation".

In the same period, troubled by how such professionalized practices as planning and engineering had been purged of knowledge that did not fit the traditional notion of science, Nobel Prize Laureate, economist and political scientist Herbert Simon in 1969 suggested the need for a "Sciences of the Artificial" (1969/1996), a science that would attempt to understand the neglected human process of designing that everyone is engaged in when devising "… courses of action aimed at changing existing situations into preferred ones" (Ibid., p. 135):

I have called my topic "the theory of design" and my curriculum a "program in design." I have emphasized its role as complement to the natural science curriculum in the total training of a professional engineer, or of any professional whose task it is to solve problems, to choose, to synthesize, to decide. (Simon, 1969/1996, p. 135)

A cornerstone of Simon's theory was his emphasis on design as a decision-making process. However, Simon also argued that the notion of strict rationality when modelling decision-making in mathematics did not correspond to actual human behaviour when dealing with problems, with the "… intellectually soft, intuitive, informal, and cookbooky" nature of human problem-solving (1969/1996, p. 112). Instead Simon introduced the concept of *bounded* rationality to capture actual human decision-making as he saw it, as not *completely* rational, and where the notion of satisficing solutions was more relevant than the notion of *optimal* ones that had been derived from mathematics, which had so far been the dominant concept in economic theory.

LIMITS OF PROBLEM-SOLVING

The 50's and 60's were also a time when the dominance of science and rationality began to be contested. For example Thomas Kuhn dealt a serious blow to the perceived notions of linearity and objectivity in scientific inquiry (1962/1970). The "happy" middle class ideal of the US was "disturbed" by the reality of racial conflict and feminist awakening. Sociologists Peter Berger and Thomas Luckmann described the functioning of "the social construction of reality" (1966), and in technology the invention of the hydrogen bomb showed that humanity had accomplished the very real potential of its own destruction. And as a backdrop to all this, the Vietnam War was not resolved, only escalated with tragic consequences made public thanks to the new journalism media of television.

From a critical perspective, people began to notice that problems did not seem to disappear at all, rather they were moved around and were even enhanced and expanded in relation to the scale and scope of proposed solutions in a never ending spiral of applied solution attempts (Schön, 1987). Further, they seemed to move from the domain of technology, where problems were ideally solved, to the spheres of culture, society and nature, where problems resurfaced, but in different ways. The worst-case scenario was still fresh in mind, of how the Nazi leaders of the Third Reich had directed the analytic problem-solving rationale towards the "problem" of unwanted people standing in the way of the optimal and *final solution* – a Volk cleansed from perceived inferior and *ambiguous* races (Bauman, 1991).[7]

At 3 PM on March 16, 1972, according to architecture historian Charles Jencks, the modernist idea that architecture could solve

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7. In society the notion of analytic problem-solving is still strong in some quarters, especially where it seems that the problem-solution duality breeds an instrumentalism blind to the dynamic and complex social reality, for example evident in recent years "solutions" such as "tear down the Ghettos" (Danish party "Dansk Folkeparti"), "Tear down the Gypsy camps" (French Government), "Prohibit Burka and Niqab in schools" (Swedish party "Folkpartiet") and "Ban minarets" (Swiss people). As Zygmunt Bauman warns, the logic behind the Holocaust is still active in society (Bauman, 1991).

societal problems died and the post-modern era was born when the first of thirty-three buildings in the building complex Pruitt-Igoe in St Louis were demolished (1987).[8] After only fifteen years the housing estate, inspired by Le Corbusier's rational planning principles, was completely run down and the social situation a disaster. The promising architecture had done nothing to curb pressing social problems, rather the opposite. Segregation and poverty had instead ensued and escalated.

In 1973, planning researchers Rittel and Webber argued that scientific, and to some extent technological problems, are so-called *tame* problems, while societal problems involved in all planning activities are *wicked* problems, problems that are "complex, contingent and socially dependent, and thus non-generalizeable" (1973). This was also a time when the design methods movement ran out of steam, and when one of its early pioneers Chris Alexander stated:

> I've disassociated myself from the field… There is so little in what is called "design methods" that has anything useful to say about how to design buildings that I never even read the literature anymore… I would say forget it, forget the whole thing. (Alexander, 1971)

Interestingly, within engineering and management studies the decision-making and problem-solving schools of thought would lead to the structuring of engineering and product development processes, for example the much applied stage-gate-process (Cooper, 1988), as well as TQM, lean product development (e.g. Karlsson, 1996) and other approaches. Similarly, according to Elmquist (2007), attempts have since been made at applying such linear models to R&D and the "fuzzy front end" of product development (e.g. Burchill & Fine, 1997; Khurana & Rosenthal, 1997; Koen, 2001). Further, Simon's notion of problem-solving as a process based on decision-making is still a dominant concept in innovation theory (Evbuomwan, 1996). And even though design scholars

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8. Exactly how spectacular can be seen in the fascinating film Koyaanisqatsi (Reggio, 1983).

like Alexander gave up the hopes of finding analytical and staged models that could represent designing, scholars within product development management have since fitted design within such problem-solving oriented processes (e.g. Ulrich, 2011; Ulrich & Eppinger, 1995).

PROBLEM-SETTING

While rationality and problem-solving have more or less continued to dominate innovation theory, within design and architecture studies attention turned to interpretative and constructivist paradigms in the early 80's and onwards, a turn that is more or less a direct consequence of the publication of the book *The Reflective Practitioner* (1983) by the professional knowledge and organizational learning theorist Donald Schön.

Schön fundamentally challenged the notion that had shaped the scientifically derived professions, that professional knowledge should be built on a positivist scientific foundation, and be taught at universities as the *application* of scientific theory and technique through models and tools to instrumentally solve problems. To argue the necessary failure of this "belief in professional man", Schön used a series of examples of situations, from the Vietnam War to Watergate, to discus how professionals had over the years failed to solve social problems. Rather, and in line with Rittel and Webber's notion of wicked problems, Schön argued that attempts of professionals to solve problems in mechanistic ways instead created new and even worse situations. The notion of applying predetermined, generalized and scientifically "approved" knowledge did not generate *new* knowledge within practice and neither did it solve any problems. A key reason for the necessary failure was that knowledge application was institutionally and hierarchically separated from knowledge *creation*, and could therefore not respond to the *uniqueness* and *completeness* of any social situation, he argued.

Schön specifically criticised Simon's proposal of a "Science of Design". Indeed, Schön and Simon shared a similar point of departure in their recognition of the failure of society and professions to handle complex social problems, and Schön granted Simon to be the one "who most clearly links the predicament of professional knowledge to the historical origins of the positivist epistemology of practice" (1983, p. 46). However, according to Schön Simon's approach must fail, not because it proposed design as a solution, but because it was based on the notion that the training of designers should be grounded in a science of design to be built on decision-theory. Thus, Schön argued, Simon fell into the "dual traps" of both arguing for the establishment of yet another rationally shaped professional practice, albeit a semi-rational or bounded one *and* believing in the possibility of reducing complex problems to ones solvable by "a calculus of decision" (1983, p. 47).

To Schön, who was inspired by American Pragmatist philosopher James Dewey,[9] "The situations of practice are not problems to be solved but problematic situations characterized by uncertainty, disorder and indeterminacy" (1983, p. 15). Schön argued that practitioners deal which such situations through *reflection-in-action*. Such reflection is a response to coming across anomalies in practice, "… associated with conflicting values, conflicting ways of framing the problematic situation, even conflicting paradigms of practice." (1983, p. 25). In such situations practitioners enter "indeterminate zones of practice, where *competence takes on new meaning*", and where reflection-in-action may or may not result in the establishing of a more well formulated problem – in *problem-setting* (1983, p. 25). In other words, reflection-in-action follows a very different logic than analytic problem-solving that begins with defining the problem and then solving it reductively *a la* Pólya's sequence. Further, reflection-in-action *reverses* the traditional means-ends relationship, that is, the 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 construct – as John Dewey pointed out

9. Donald Schön's doctoral thesis in 1955 was on John Dewey's theory of inquiry. Source: www.infed.org/thinkers/et-schon.htm

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, p. 15)

To illustrate reflection-in-action Schön's used a number of "vignettes of practice" (1983, p. viii). These episodes covered practice situations of architects, psychotherapists, engineers, planners and managers where a "senior practitioner helps a junior one learn to do something." (1983, p. 74). But even though the examples are many, Schön argues that it is especially appropriate to use the sketching situation in architecture as a representation of reflection-in-action, both as this is an intense situating of trying to understand something anomalous, and also because:

> Architects are designers; they are makers of representations of things to be built. Moreover – unlike lawyers, physicians, managers or engineers, who might also be seen as makers of things (briefs, diagnoses, mechanisms) but tend not to think of themselves that way – architects tend to be self-recognized makers. (Schön, 1983, p. 31)

In other words, in architecture and design there is recognition of the indeterminate situations that are an unavoidable consequence of *making.* In Schön's most well-known illustration of reflection-in-action architect and tutor "Quist" shows first-year architect student "Petra" how to fit an elementary school building to a specific site characterized by a "screwy slope" through "a reflective conversation with the situation." (1983, p. 43). Through sketching Quist applies possible "disciplines", for example a specific geometry, to try to order the ambiguous situation. Throughout the reflective process of sketching Quist listens to how the situation "talks back", that is, what the possible consequences of this or that move might be. Thus, he continuously "reframes" the situation in different ways, showing Petra how, by reflecting and sketching in tandem, she could get out of the problematic situation she was in. As design theorist Kees Dorst writes, "The well written description… sparks immediate, intuitive recognition by

designers. It could be one of the most accurate descriptions in design literature of some of the main problems facing designers." (1995, p. 68). However, as Dorst also notes, when Schön's attempts to develop more general methods for design based on his theory of reflection-in-action, he adopts "a partly positivist stance towards the attainment of knowledge", that is problematic:

> The reflective practice paradigm is revolutionary because it proposes a novel way of considering design that is incommensurable with the traditional rational problem solving approach, while seeking to function in the same scientific environment and addressing some of the same goals as the rational problem solving paradigm." (Dorst, 1997, p. 66)

This tendency has also been noted by others, for example Thornquist (2005) and Molander (1996), and as Dorst argues, this is a weakness that may be a reason why Schön's theory has not been widely accepted and used in design theory, other than as an inspiration, for example by design theorists Bryan Lawson (2006) and Nigel Cross (2006) in their investigations of professional design practice (2006).

This was also why I have not settled with Schön's theory of the reflective practitioner, even though it resonates to a great deal with what went on in the interventions it did not seem to capture the more nuanced aspects, especially aspects of meaning-making where Schön's insistence on a rather strict subject-object duality hampers the theory. I will return to these issues in the next chapter. But for now it is enough to recognize that Schön's understanding of problems can be positioned on the opposite side of rational problem-solving on the problem continuum that I have explored, close to the notion of the problem "as in a solution" *a la* Lakoff and Johnson, of problems that are never completely solved, but can nevertheless be dealt with, that is, a notion of problems that fit with a more constructivist understanding of reality. However, this discussion is still within the scope of problem-solving. What if it is possible to release from the concept of problem-solving entirely, without also leaving the notions of design and innovation behind?

BEYOND THE PROBLEM

On a radio show I heard this exchange between the reporter (R) and an artist (A). The artist had just opened a new exhibition on his most recent art inspired by a long stay in China (Thurfjell, 2010).

The reporter introduces the topic/spot by announcing: "When you enter the exhibition hall the first thing that confronts you is a very large insect carved in wood, damned if it isn't a cockroach, hanging in a chain from the ceiling, like a votivskepp."[10]

A: "Well, it is based on a very small sketch that I brought to a workshop in Orsa where I worked together with Chinese artists. And I knew that I had to bring something to start with and that is why I had that sketch, and made a cockroach."

R: "*Why* did you make a cockroach?"

A: "Because I had made a sketch of it in a museum in Mexico."

R: "Was there a very large cockroach there?"

A: "No I believe it was very small, like jewellery or something. I sketch as a way to interpret what I see. I don´t sketch with the intention to draw. I don´t always remember what I have seen." (giggle)

R: "And now a large cockroach hangs, I guess it is a meter long, hovering at waist height. Anchored to the ceiling by a large chain, you could say."

A: "Yes, like a votivskepp in a church."

R and A: Silence.

End

Something had been done. Something was *experienced*. But despite the efforts of the reporter to tease out a rational cause for the cockroach, the artist did not present such a beginning of the artistic process, hence the result was not a solution to anything. But it was *something*, and it had potential *meaning*. The reporter and the artist seemed to come from two different worlds - the reporter looking for a reason, a problem, and the artist referring "only" to process,

and perhaps silently to the potentially meaningful experience of the very large cockroach.

Of course this is artistic practice, not situated in the instrumental service of industry, and thus from a design practice perspective it is quite extreme. Some would argue that because the result is not a "design" in the sense of it being a practically useful and industrially produced artefact, there can be no similarity between the practices. I would disagree. As Johansson and Svengren-Holm describe (2008), design is a paradoxical practice, with its dual nature that both embodies the pre-modern ideals of art while also being a child of modernity with its emphasis on analytical rationality.

Design theorist Klaus Krippendorff offers a completely different perspective on design in comparison with the problem-solving orientation of Simon by contesting that design is primarily about "… making sense of things…" by drawing on the etymology of the word "design" (1989). To Krippendorff humans primarily respond to the *meaning* of things rather than to their physical properties (2006, p. 47). This does not mean that Krippendorff argues for an *essential* meaning *in* or attached *to* artefacts.[11] To Krippendorff meaning emerge in the use and experience of an artefact and is contextually dependent (2006, p. 56). This view thus fundamentally challenges the pervasive problem-solving understanding. Indeed, "meaning" seems to be a possible "divider", an "epistemological wrench"[12] that breaks open the primacy of the problem and offers a different paradigm in its place, or alongside it. Krippendorff offers many insights and approaches for designer's engagement in human-centered design, however, for the purpose of this thesis it is how meaning is interpreted, deliberated and manifested as such that needs to be further explored. Here Krippendorff offers less, as also observed by Le Masson et al.:

10. "Votivskepp" is a kind of model ship often found hanging in church windows or by the altar in churches by the sea, as tokens to remember the absent seamen.

11. Or as Krippendorff argues: "The conception of meaning advocated here clearly goes against semiotic notions that look for meanings in what signs stand for or represent." (2006, p. 57**).

12. A concept invented by designer and researcher Julian Bleeker, inspired by Bruno Latour. Source: www.nearfuturelaboratory.com

But the paper of Krippendorff precisely exhibits the same tension: in the first part Krippendorff insists on the design ambition to be a capacity to create meaning – but in the second part (from p. 16) meaning creation is reduced to a referential of contexts (operational context, sociolinguistic context, context of genesis, ecological context) that an engineer would be ready to consider as a good list of functional requirements. (Le Masson, Hatchuel & Weil, 2013, p. 4)

I will instead seek inspiration in other scholars that will be introduced in the next chapter where I investigate the implications of focusing on meaning in design practice.

The story of Lillit and Axel hinted at a possible meaning-making perspective for understanding how innovative concepts may develop socially. It seems that a process that will generate something new does not necessarily have to start with an idea, nor a problem. What if it starts with curiosity, or a question, or perhaps a wish to understand something of interest? What if it even ends up with a problem posed rather than with a solution offered, or an experience or fascination materialized, as with the cockroach, or with a material object understood collectively in a certain way, like the bracelet?

The point so far is that meaning and meaning-making are concepts that are overshadowed by a one-sided wiew on design as problem-solving. Even the notion of the wicked problem often used in the current design thinking rhetoric is problematic since it directs attention to negative aspects of reality while neglecting other aspects that may be equally important, even for dealing with problematic issues. What is also lost along the way is the aesthetic and social dimensions of design practice, something that worried David Pye when he wrote about the new ideal of problem-solving in the mid 60's:

The fact that compromise is inevitable in so many kinds of design has led theorists to classify design as a 'problem-solving activity', as though it were nothing more than that. It is a partial and inadequate view… It is a folly to pretend either that design is simply a problem-solving activity or to pretend that it is simply art. It is both. That does not make it easier. The world should not accept designers who are not artists, nor should it those who will not think hard. Both halves of the job need to be taken equally seriously. But for a designer to give due weight and effort to his duties as an artist is often in practice excedingly difficult and needs exceptional courage and diplomatic skill. (Pye, 1964/2007, pp. 94-95)

In subsequent chapters the aesthetic, or artistic, and social dimensions of design practice discussed by Fry will be important dimensions in understanding the contribution of design practice to innovation.

DESIGN AS A HERMENEUTIC PRACTICE

This chapter can be seen as a continuation of the reflection on the pervasive concept of problem-solving in the previous chapter. In parallel with reflecting on the limitations of problem-solving for understanding design and innovation I also searched for other concepts in philosophy and theory that better resonated with how I *experienced* design practice and what seemed to go on in the unfolding interventions. In parallel with an emerging understanding of the significance of *meaning* I began to sense that hermeneutics offered an in-depth and experience-related understanding that I could not find elsewhere. To better understand a hermeneutic perspective I chose to investigate the applicability of hermeneutics through the empirical sounding board study[1] (also described in the chapter *A Mixed Media Methodological Approach*) where I interpreted three design processes in relation to literature on philosophical hermeneutics.[2]

1. The results of the sounding board study was first presented in the 50% report, and have since been described in the conference paper *Towards a Hermeneutic Perspective on Design Practice* (2006, p. 57**), and without the empirical cases in the journal article *Revisiting Design as a Hermeneutic Practice: An Investigation of Paul Ricoeur's Critical Hermeneutics* (Jahnke, 2011).
2. I use the term "philosophical hermeneutics" to indicate that I mean more contemporary hermeneutics developed by, for example, Hans-Georg Gadamer and Paul Ricoeur, rather than the older, biblically oriented hermeneutics.

In this investigation I also explored other meaning and hermeneutically oriented sources in design theory, innovation theory, and design management studies. In design management studies I have only found sources that comment on, or find inspiration concerning specific issues, rather than drawing on hermeneutics explicitly (e.g. Digerfeldt-Månsson, 2009; Johansson & Svengren-Holm, 2008; Thornquist, 2005). The sources in design theory and innovation theory are also few but of significant importance for this study. In design theory these are Krippendorff (e.g. 2006), Coyne and Snoddgrass (e.g. 1997), Dorst (1997) and Winograd and Flores (1987). In innovation theory these are Verganti (e.g. 2008) and Lester and Piore (e.g. 2004).

Krippendorff's notion of design as "making sense of things" was discussed in the previous chapter, and Verganti's associated notion of "innovation of meaning" will be further discussed in relation to the interpretation of the interventions, as will Lester and Piore's important study on the centrality of interpretation in innovation work. In this chapter I relate to Coyne and Snoddgrass' work, but will first and foremost draw directly on hermeneutic philosophers Hans Georg Gadamer and Paul Ricoeur.[3]

BACKGROUND TO HERMENEUTICS IN DESIGN THEORY

Despite the plethora of methods, processes, and models that have tried to "explain" design since the Design Methods movement in the 1960s (Cross, 2007), there is still a general lack of studies that investigate *experienced* design practice (e.g. Kimbell, 2011; Stolterman, 2008). Although it could be argued that practice knowledge abounds in the design research discourse, this knowledge is often entangled in other research objectives, is "hidden from view" as predominantly tacit knowledge, or is sometimes developed using the terms of epistemologies that do not reflect the complexities of practice, not least positivist-inspired ones (Buchanan, 1992; Krippendorff, 2006). For

3.   I had not yet come across Coyne and Snoddgrass' work when I first investigated hermeneutics in relation to design practice in the sounding board study.

example, representations in the practice derived design thinking literature are problematic, in that they typically are dichotomous, establishing design as something fundamentally different or special, for example, when comparing designing with engineering, managing, or scientific inquiry (e.g. Brown, 2009; Martin, 2004). Also scholars that discuss more diverse understandings of design practice often inscribe their perspectives within the notion of problem-solving (e.g. Cross, 2006; Lawson, 2006).

In a response to this situation, design theorists Coyne and Snodgrass propose that the "hermeneutic circle" is a better metaphor for designing than the dominant metaphor of problem-solving because it doesn't "…destroy the complexity, subtlety, and uniqueness of the design situation; or privilege or preclude aspects of the process, but rather respects their interdependence and interaction." (1995, p. 72). Their proposal also implies to avoid distinguishing designing as distinctly *special*.

The hermeneutic circle is also a metaphor that resonates with Donald Schön's concept of the "reflective practitioner" and as Snodgrass and Coyne note: "Even a cursory examination of the protocol studies of Donald Schön indicates that the design process he describes works according to the dynamics of the hermeneutic circle, proceeding by way of a dialogic exchange with the design situation." (1997, p. 87). The concept and metaphor of the reflective practitioner indeed goes a long way to describe design as contingent, situation oriented, and reflective; that said, "philosophical hermeneutic" likely offers an alternative or complementary understanding that further deepens our understanding of Schön's seminal contribution.

In this chapter I first revisit Schön's theory of reflection-in-action and suggest three areas in need of further investigation, where philosophical hermeneutics can provide guidance. I then introduce Hans Georg Gadamer's "historical hermeneutics", the foundation for Coyne and Snodgrass's work, which at first seems to address these eas. However, after highlighting two gaps that Gadamer's historical hermeneutics leaves in relation to design practice, I direct attention to Ricouer's "critical hermeneutics" and notion of a "hermeneutic spiral" that seems to provide an even better and more comprehensive metaphor for designing.

AN ANALYSIS OF DONALD SCHÖN'S REFLECTIVE PRACTITIONER

As described in the previous chapter, when Donald Schön introduced the now well-known concept of the "reflective practitioner" in 1983, he offered a clear departure from the dominant problem-solving paradigm in research on professional knowledge (Schön, 1983). To Schön, "The situations of practice are not problems to be solved but problematic situations to engage in, characterized by uncertainty, disorder, and indeterminacy." (1983, p. 15). Schön argued that practitioners of all kinds deal with such situations through "reflection-in-action". However, as enlightening as Schön's theory of reflection-in-action is for understanding important aspects of design practice, at least three areas are in need of further investigation.

First, the theory of reflection-in-action still seems for the most part to presuppose a *negative* something, a problematic situation. However, many design situations are more open and less negatively connoted than the concept and terminology of "problem" can capture. Designers often direct their interest toward situations and phenomena that may be inspirational and may spur new understanding without being problematic and in need of improvement or a "solution." Second, the subject-object duality remains intact. In Schön's theory reflective practitioners reflect *on* something by immersing themselves in reflection, but the subject is still positioned in a traditional distanced role in relation to the object. Neither does Schön discuss the relationship between the situation and the "world". The situation is equally intact and restricted, certainly complex, but nevertheless inert. Third, the notion of reflection also seems to be restricted to a more or less inert self. Schön discusses how Quist, in the vignette of practice presented in the previous chapter, draws on his "repertoire", but does not delve into where this resource comes from or how it is related to practice. What happens with the self in the act of reflecting on, or preferably *with*, something in the conversation with the situation?

These three areas of how to understand the design situation are in one way or the other directly related to *meaning*. Schön certainly discusses meaning, but in the protocol studies of the first year tutorial case in architecture, more practical and tangible difficulties seem to take precedence, and as Molander notes, "… there is a lingering trace of objectivism in the sense that he [Schön] speaks as though there is still a fundamental world of facts." (1996, p. 158).[4] This is a tendency that has also been discussed by Dorst (1997) and Thornquist (2005) in relation to design practice.

HANS-GEORG GADAMER'S HISTORICAL HERMENEUTICS

The linguistic term "hermeneutic" goes back to ancient Greek mythology and to Hermes, the messenger between the Gods and the mortal humans who had to be able both to understand the original message from the Gods and to translate it so that intended meaning would be understood by humans (Kristensson Uggla, 1994, p. 175). Hermeneutic interpretation builds on a long history of Biblical exegesis, the process of extracting meaning from and interpreting Biblical texts, which began to develop in ancient times when the Greek and Hebrew texts were first written (Todorov, 1982, p. 111).

More contemporary hermeneutics began to develop in the eighteenth century by German philosopher and theologian Friedrich Schleiermacher. Inspired by the land-winnings in positivist science his claim was that objective knowledge about the meaning of historical texts could be reached through the use of method.[5] Gadamer's "historical hermeneutics" provides a clear departure from such ambitions, and in his *magnum opus, Truth and Method* (1960/1996) Gadamer argues that such notions of knowledge are impossible because both the subject and the object are already *situated* in history; alas, there is no objective position. Thus, when Schleiermacher, according to Gadamer argues that "… the work of art loses some

4.   My translation from Swedish of: "Det finns emellertid i Schön's första bok om den reflekterande praktikern spår av en kvardröjande objektivism, i den meningen att han talar som om det ändå fanns en värld av fakta *i botten*, även om praktikern inte får fatt på den."
5.   Gadamer's hermeneutics can be considered a European cousin to the American Pragmatist tradition in Philosophy, where Schön had his roots. Both offer a "relativist" or "constructivist" understanding of knowledge, culture, practices, social interactions, and so on, a clear contrast to the dominant "objectivist" tradition in science on both continents.

of its significance if it is torn from its original context, unless this happens to be historically preserved." Gadamer responds that "… this view of hermeneutics is as nonsensical as all restitution of past life… hermeneutics that regard(ed) understanding as reconstructing the original would be no more than handing on a dead meaning." (1960/1996, p. 166).

This view was inspired by German philosopher Martin Heidegger's ontological philosophy and the concept of "Dasein" - of being in the world, and of "thrownness" (Geworfenheit); to be in the world is necessarily to have to interpret and seek to understand (as a verb). Truth is then found not in any original meaning of a text or work, but in its application. Here, Gadamer was inspired by Aristotle's concept of Phronesis, and a striking similarity emerges to the way truth is understood also in the American Pragmatist tradition.

To reach such situated truth, or meaning, one has to be *immersed* in interpretation. Just as leaving the game means to lose touch with the "play experience," so the "Ehrfahrung" (experience) that is fundamental to understanding is lost if one is distanced from that which is to be interpreted. For this reason, Gadamer rejected attempts to build hermeneutics on the strict use of method. To Gadamer, attempts at distanced objectivity through method and distanced analysis mean that "Zugehörigheit" (belonging) is lost and therefore also any possibility to reach any relevant understanding (1960/1996, p. 104). Instead Gadamer's understanding of Ehrfahrung was drawn from how he understood the experiencing or art: "… the work of art has its true being in the fact that it becomes an experience that changes the person who experiences it." (1960/1996, p. 103).

Further, to Gadamer the practice of interpretation is truly dialectical; it is a process characterized by active *questioning* and *answering*: the "… art of entering into dialogue with the text." (1960/1996, p. 368). It is a dialogue that moves in a circular pattern centrifugally toward understanding. This concept, called the "hermeneutic circle" Gadamer borrowed from Heidegger.[6] With Heidegger's ontological understanding, hermeneutics could then be considered "… a radicalization of a procedure that we in fact exercise whenever we understand anything." (1960/1996, p. 270). In this "hermeneutic circle" the movement starts from our own prejudices, which is part of our own "horizon of understanding"; in encountering the "other" in the interpretive process, ideally our own horizon of understanding evolves and may fuse with the horizon of the other who is to be understood - Gadamer's central notion of the "fusing of horizons."

Gadamer ties these notions of situated truth, meaning, and understanding with the idea that tradition and historical texts represent the accumulated "being in the world" of others before us. This fundamental principle Gadamer calls "Wirkungsgeschichte," which can be translated "history of effect" or "effective history." A consequence of these principles is that we are always downstream of effective history and thus have access to the means necessary for true interpretation. In a move that strengthens his opposition to the notion of scientific objectivity, Gadamer thus considers prejudice, by which he means the effects of pre-understanding, as not only unavoidable but also fundamental to understanding. In other words, he "gives nuance" to the essentially negative understanding of prejudice in relation to the objectivist tradition.

In the context of history of effect Gadamer discusses the importance of "Bildung", the notion anchored in humanism of the importance to free oneself from the shackles of despotism and other powers, and the broad study of, as well as practice in many subjects, such as the arts, science, music, philosophy and so on. According to Gadamer the goal is:

> … keeping oneself open to what is other – to other, more universal points of view. It embraces a sense of proportion and distance in re-

6. Indeed, the concept had a longer tradition in hermeneutics describing a movement back and forth in the text. Heidegger saw the circle as an oscillation between meaning projected on the text by the interpreter, and the meaning of the text, and used this as a foundation for the ontological concept Dasein.

lation to itself, and hence consists in rising above itself to universality. To distance oneself from oneself and from one's private purpose means to look at these in the way that others see them. (Gadamer, 1960/1996, p. 15)

According to Gadamer, to properly position oneself in effective history and to be able to interpret means to develop such an awareness of tradition as called for in the tradition of Bildung. Only then is it possible to accomplish a relevant interpretation. Gadamer also emphasizes that Bildung has to be anchored in the now, for example that "… discovering the meaning of a legal text and discovering how to apply it in a particular legal instance are not two separate actions, but one unitary process." (1960/1996, p. 310).

Gadamer's work is fundamental to my thesis. However, Gadamer's emphasis on reconfiguring interpretation of history and tradition, and his resistance to distancing poses a problem when his approach is applied to better understand a more future-oriented design practice that contributes to the on-going creation of *new* meaning in culture. It is important to further investigate this gap in Gadamer's historical hermeneutics in relation to design practice. The second gap I investigate is how Gadamer's focus on interpretation of existing works fails to give a rich understanding of how works emerge in the first place. In design, the emerging work and the design practice behind it are of greater interest.

FROM TEXT TO ACTION - PAUL RICOEUR'S CRITICAL AND POETICAL HERMENEUTICS

One way out of the deadlock of tradition and authority is to be found in French philosopher Paul Ricoeurs' critical hermeneutics. Among many other sources, his philosophy builds on Gadamer's historical hermeneutics, but it also departs from it in several respects. Most important, it introduces a critical distancing dimension to interpretation that Gadamer could not allow in his opposition to the method-oriented approach. It also enhances how "poetic redescription" plays a crucial part in achieving *new* meaning, something Gadamer did not elaborate on.

This is also something that Dorst discuss when proposing a "dual model of design" that combines a "reflective practice paradigm", that to a large extent draws on Gadamer's hermeneutics, and a "rational problem solving paradigm" that is problem-solving oriented (1997). Dorst argues that both paradigms are relevant for understanding design practice, but with different emphasis depending on where they occur in the phases of design activity and across design situations. I agree with Dorst that what the two paradigms he emphasises are equally important, but by drawing on Ricouer's critical hermeneutics I will argue that an alternative approach is to inscribe the rational paradigm *within* a hermeneutic or reflective framework. The end result is similar, but I would argue that the latter better foregrounds an important dialectic between distancing and closeness in design work that is active across all phases of design activity, albeit to different degrees.

To understand how Ricoeur can introduce a "critical instance at the heart of interpretation," (Kristensson Uggla, 2002, p. 339) we start by seeing that Ricoeur has a different relationship to ontology than Heidegger and Gadamer. While Ricoeur acknowledges interpretation and the notion of Dasein, he rejects Heidegger's universalist ambition to let ontology determine everything. Instead, he follows German Idealist philosopher Karl Jaspers in thinking about merely "ontological indications" (1994, p. 238) - a response to the risk that ambitions toward complete ontological understanding may shut down further communication. Typical of Jasper's and Ricoeur's philosophies is that they instead accord primacy to on-going and open communication. With this Jaspers-inspired position, Ricoeur re-introduces epistemology into hermeneutics and establishes a "long detour" (1994, p. 238) to understanding in which both are involved: an ontologically derived interpretation and an epistemologically derived reflection (which might even be distanced and critical). These two are intertwined in a "hermeneutic spiral" that opens up to the "excess of meaning" of the world, rather than locking meaning to established history and tradition. This more postmodern understanding of discourse can be seen as a positive, on-going encounter of diverse interpretations - a "loving struggle" (Kristensson Uggla, 2012, p. 28) in which care has to be taken to actually keep tensions

and frictions in place because they are fundamental to the process of understanding.

To achieve this integration of a critical faculty Ricoeur found inspiration in critical theorist and sociologist Jürgen Habermas's critique of Gadamer's historical hermeneutics (1991). Habermas challenged Gadamer's historical hermeneutics to reveal alternative understandings that are obscured by dominant ideology. To Habermas, oppression occurs in the "sphere" of communicative action where language is distorted on the basis of the terms established by the dominant power, for example through tradition and history writing. Hermeneutics cannot detect this distortion if it cannot develop an *explanatory* critical perspective, Habermas argued. This understanding supports Ricoeur's assertion that critique is fundamental to the goals of keeping communication open and of enhancing the tension needed to generate *new* meaning. Ricoeur thus proposes a fusion between the critical attitude of Habermas's focus on *explaining* and the interpretative approach of Gadamer's aim for *understanding.*[7] To achieve this move, Ricoeur has to rearrange the understanding of hermeneutics in four interrelated ways.

First, *distancing* can be seen as a prerequisite for interpretation rather than as it's opposite. Indeed, the fixation of the text is a kind of distancing from the "original" meaning already there - "... the world of the text may explode the world of its author" (Ricoeur, 1991, p. 298) - making an infinite number of readings or interpretations possible in new socio-cultural contexts. In other words, distancing was in a sense already there in Gadamer's hermeneutics. Second, to overcome the devastating dichotomy between explaining and understanding, hermeneutics has to move its discourse from the work back to the practice - from the text to the act of writing (or, for example, from the designed object to designing). Third, when departing from practice instead of from text or work, it is vital to emphasize poetic *redescription* within the process of hermeneutics. To illustrate, the use of metaphorical deliberation enhances the

7. "Understanding", as a way to reach knowledge in an interpretative tradition, is often in Gadamer's and other hermeneutic texts contrasted with "explaining" as the way to reach knowledge in the objectivist tradition.

potential to open up the meaning of the text (or artefact) in relation to what is external to it - to let the text open a "world" (or many) "in front" of it (1991, p. 239). Fourth, the subject needs to be rearranged. As Ricoeur articulates it, "To understand is not to project oneself into the text but to expose oneself to it; it is to receive a self enlarged by the appropriation of the proposed worlds that interpretation unfolds." (1991, p. 301). To receive thus becomes the dialectic counterpart to distancing; to receive also means to surrender the notion of an inert self.

Gadamer saw thrownness as an essential to the practice of interpretation; we might also relate the concept of thrownness to the *result* of the practice, as Ricoeur proposes, to the work. The design, or the poem, or the "other" is also something that is "thrown into the world" as a proposal to be interpreted, and thus it holds the capacity to open up new worlds. If we then combine the poetic reference and the ability to rewrite reality with a critical perspective, we gain a subversive "... mode of the possible, or better, of the power-to-be ... therein resides the subversive force of the imaginary." (Ricoeur, 1991, p. 300). This perspective resonates with design practice as understood by, for example, design theorist Håkan Edeholt, who suggests that the innovation potential in design is to propose how things "might be." (2004).

For understanding the future-oriented meaning-making of design practice, Ricoeur's critical hermeneutics and his metaphor of the hermeneutic spiral thus provides an even richer metaphor and concept than Gadamer's historical hermeneutics and circle. Taken together, the four ways in which Ricoeur rearranged the understanding of hermeneutics correspond precisely with the two gaps that I found in Gadamer's historical hermeneutics. While Gadamer's circle and fusion of horizons suggest an inwardly centring and potentially conserving dialectic also found in the metaphor of reflection (Haraway, 1997). Ricoeur's spiral integrates both a centring movement of reflection and a decentring movement of communication with others via manifested and poetically rich interpretations: for example, designed objects that are open to yet new interpretations in ever-new iterations.

PAUL RICOEUR'S HERMENEUTICS IN RELATION TO DESIGN THEORY

Adopting the metaphor of reflection and considering problem-setting rather than problem-solving, as Schön did, is to take a giant leap toward explicitly discussing meaning. Here, Coyne and Snodgrass's Gadamer-inspired understanding of the reflective conversation further deepens Schön's contribution. However, as the previous sections show, Gadamer's interest was first and foremost in how relevant interpretations are made of existing texts - not in the practice of materializing new meaning. This mismatch with design practice revealed two missing and intertwined dimensions of design work: critique and poetic redescription. Ricoeur explicitly introduces these dimensions to hermeneutics with the notion of the hermeneutic spiral. If we now take a look at design theory from this new vantage point, what does it say about some common themes?

First, from a hermeneutic perspective, the notion of the problem is fundamentally challenged, corresponding with Coyne's postmodern understanding that even the tame problem is wicked and socially dependent (2005). The social dimension of any design project means that the designer has to deal with complex "assemblages" of more or less articulated meanings, material artefacts, embodied experiences, and more. These assemblages could be seen as a necessary expansion of Schön's "design domains," which "… contain the names of elements, features, relations, and actions and norms used to elevate problems, consequences, and implications." (Schön, 1983, p. 96) and which, as argued by Dorst, can be seen as too local (1997, p. 71). Further, these collections are often paradoxical and may have the quality of a dilemma or mystery and be characterized by their "excess of meaning", to use Ricoeur's terminology. As a result, even the concept of the wicked problem seems insufficient. It neglects the fact that what is deliberated in design is often not so much a problem, but rather typical human situations where inspiration can be found in almost anything that is intriguing and is potentially meaningful. This understanding also expands Schön's discussion of problem-setting and problem-solving to more explicitly enhance meaning.

Second, to accept this meaning-oriented understanding of design

situations implies that the interpreter is inevitably situated in[8] such complex assemblages of meanings.[9] Gadamer used the concept of history of effect, but instead of pronouncing it as solid and homogenous, as a normative and consistent "canon", as Gadamer's concept implied (Rosengren, 2006, p. 141), the situation may be understood as a more fluid context of a multitude of often conflicting, transient and inconsistent meanings which are nevertheless always involved in all interpretation and deliberation of meaning.

Other design scholars have also mentioned this broader context of meaning, for example Cross who acknowledges that "… designers are immersed in material culture" (2006) and Verganti who argues that designers as interpreters engage in the "design discourse" which includes socio-cultural perspectives on design (2009). However, a recurring theme seems to be that design researchers tend to restrict their perspective to things that are more or less typically related to design, for example trends, materials, and so on. I would argue that to better understand how designers negotiate meaning it is important to expand the scope of this context to cover more complete socio-cultural, political and historical perspectives, even though arguably the practical scope is often more narrow.

To understand design and artistic practices in these inherently fluid and complex situations, Claude Lévi-Strauss's notion of the Bricoleur and "bricolage" (1966) might be useful (Panagiotis, 1999; Rosengren, 2010). Lévi-Strauss devised the bricolage metaphor to

8. However, it is also interesting to note that the consulting designer is typically "semi-immersed", or "semi-distanced". That is, the consultancy roles also offers a distancing and outside-in perspective that can be seen as an institutionalized distancing that may further contribute to the dialectic between distancing and closeness that Ricoeur emphasises.

9. The consequence of situatedness, that designers and others do not create *ex nihilo*, that is, out of nothing, may seem self-evident, but in the more popular understanding of creativity there is still a persistent notion that creativity is a next-to-divine ability to create the new outside of any context (Jahnke, 2012). This view is for example reflected in the popular notion of "thinking outside of the box". For a thorough debunking of the concept of creativity as a specific ability see, for example Snoddgrass and Coyne, 2006 pp. 77-79.

describe how myth-making and the generation of knowledge in pre-scientific cultures seems to be a bricolage, that is collage work of an already existing and more or less coherent or ruined heritage. In other words, situatedness is in no way an obstacle to manifesting meaning in a *new* work; in fact, quite the opposite, it is a prerequisite. In addition, as Derrida proposed in a response to Lévi-Strauss's notion of the Engineer as a symbol of the modern civilized ideal that contrasted the pre-scientific Bricoleur, even the notion of the Engineer is a myth generated by the Bricoleur. Or in other words, not even "scientific" cultures are as rational as they may seem (1978, pp. 278-295). Instead, creation always implies making do with what is at hand, or in the words of Nelson Goodman:

> The many stuffs – matter, energy, waves, phenomena – that worlds are made of are made along with the worlds. But made from what? Not from nothing, after all, but from other worlds. Worldmaking as we know it always starts from worlds already on hand; the making is remaking. (Goodman, 1978, P. 6)

The metaphor of bricolage thus resonates with Gadamer's notion that being situated in the history of effect cannot be avoided. It also resonates with his idea that prejudice and pre-understanding cannot be avoided in interpretation. Prejudice is tied to and operative in everyone's own horizon of understanding, and it has to be constructively engaged in interpretation as a willingness to expand our own understanding and to be open to the possibility of the *fusing of horizons* - to the understanding of something else or of the other. Schön's Quist and Petra case did not discuss this dynamic and the matter of prejudice, although his notion of "repertoire of domains" (Schön, 1983, p. 98) seems to be similar to pre-understanding (but more objectively oriented). Such aspects have also been discussed by for example Darke as "primary generators" (Lawson, 2006, p. 46) and by Buchanan as "placements" (1992). These scholars frame primary generators and placements as preference-oriented design tools or heuristics - approaches made both inevitable and necessary by a hermeneutic perspective.

Third, to accept the involvement of the self in interpretation means also to acknowledge that the self evolves in these processes - so that a "richer self may be received," in Ricoeur's words. In this perspective, designing is as much a process of learning as of generating a design outcome. The designed object can even be seen as a secondary manifestation of this process of learning, if we for a short while bracket our understanding of design as being about the resulting object (or service). This perspective also reflects Gadamer's thought of Bildung as important - not so much as something that you *have* to better understand, but rather as something that that you *live*: Bildung as a process that makes understanding possible, as a process of being shaped or of *becoming*, as the German word connotes.

Fourth, all interpretation calls for an emphasis on the *question*. According to Gadamer: "A question places what is questioned in a particular perspective. When a question arises, it breaks open the being of the object…" (1960/1996, p. 362). Questions here are those that emerge from "wondering" - from an honest wish to *understand* in a phenomenological sense (e.g. Van Manen, 1984). When Gadamer discussed questions, he saw them as parts of a process of intimacy with the work, where "Zugehörigheit" (belonging) must not be lost. Quist's sketching in teaching Petra may be seen as just such a situation of Zugehörigheit. However, neither Schön nor Gadamer explicitly discussed the necessity of also maintaining a critical position through distancing. Schön did indeed suggest that "reflection-on-action" (Schön, 1983, p. 61) was important, but more from the point of improving practice than to understand the engaged situation. He also showed how framing and reframing is fundamental to the "conversation with the situation", but this iterative process in my mind does not capture the full tension experienced in a critical dialectic and how it can help provoke and establish new understandings and meanings.

In the cases in the sounding board study, that have inspired my Ricoeur-influenced perspective, it was clear that critical and distanced questioning was essential, and as Johansson and Svengren-Holm have shown through empirical research on the work of industrial designers, a critical perspective seems fundamental to any

design practice that wishes to propose novel concepts (2008).[10] In other words, the tension between the phenomenological question and the critical question*ing* that resonates with Ricoeur's notion of a critical dialectic "at the heart of hermeneutics" also seems relevant to design practice.

The consequence of according the question primacy is well worth considering from a power perspective. Socrates was sentenced to death because of his insistence to pose questions that were difficult to answer and thus, according to the authorities of Athens, corrupted the minds of the youth of the city, and made them look foolish in the process.

According to philosopher Slavoj Žižek, posing explicitly critical questions within a society where problem-solving and pragmatic politics is the dominant *modus operandi* is perhaps the most subversive and provocative act available, an act that has to be muffled and censored if it challenges the current order (BAVO, 2007, p. 20). As Žižek describes the situation, the dominant strategy of power is to simply turn the tables and ask for a solution: "So since *you* always seem to know better, what would you do then? ... Through this "... change of register – from a discussion of problems to one of solutions, from political critique, to pragmatic politics..." the critic is caught off guard and is exposed as a "... cowardly, impotent figure deriving some sort of hysterical satisfaction from asking critical questions for the sake of asking them." (Ibid.). Here a most problematic situation is revealed. To ask questions does not mean that you will immediately know the answers. To ask the really radical questions is to challenge the current order and to offer an alternative at the same time is nigh on impossible.

Fifth, although many design scholars have noted that metaphors can help to generate new ideas and to solve problems, (e.g. Kelley, 2001; Krippendorff, 2006; Lawson, 2006). Ricoeur's notion of meta-

10. It is interesting to note that art and design are similar in that both have clear critical streams of practice that seem to be lacking in engineering, among other disciplines. For example, in design the ambition to visualize and subvert existing power resonates with projects within the Critical Design movement (e.g. Dunne 2005; Robach, 2005), or in art inspired by Critical Theory (Hannula, 2003).

phor directs its attention to *understanding* rather than to problem-solving and idea generation (1977). To Ricoeur, metaphors are at the root of how we understand the world, beyond "seeing-as". Lakoff and Johnson hold a similar view of "experiential metaphors" as deeply connected with experienced practice and embodied behaviour (1980, p. 154).[11] In other words, while metaphors can help us see things in a new light and solve problems, as in Schön's notion of the "generative metaphor" (1993), they also are active in establishing *new* meaning, meaning that through design may be (partially) solidified in objects. Metaphorical deliberation might thus be seen as an on-going process of open communication and poetic creation of new meaning so that some objects, even in design, and often in art, may be inherently metaphorical in nature and open up to yet new interpretations.

Sixth, although I started out by questioning the problem-solving metaphor for understanding design, the question of whether a focus on meaning might obscure problem-solving in design bears asking. In the empirical projects that have informed my hermeneutic perspective, practical problem-solving has abounded, even though the resulting conceptual artefacts were oriented more toward asking questions and providing new and unexpected experiences. The point is that all problem-solving occurred *within* a process of seeking and expressing an evolving meaning. Interestingly, this experience corresponds with research in science and technology studies indicating that science and technology development is not as rational or analytic as it may seem (e.g. Hesse, 1980; Latour, 1993) Imagination, metaphor, experiences, and other "irrational" thinking are necessary to coming up with new scientific concepts and innovations.

11. For an example of the power of embodied metaphor, consider how in California in the 70's skateboarders transformed the hitherto up-right style of skateboarding by transferring the experience of wave surfing to skateboarding. Their skateboarding moves were directly carried over from the sea, leaning into the waves, cutting them low and circling back - skateboarding-as-surfing. See for example the film *Dogtown and Z-boys* (Peralta, 2002), and the book *Dogtown – the legend of the Z-boys* (Friedman & Stecyk III, 2002).

What emerges is not an eradication of objectivity and problem-solving, but a reversal of the relationship between problem solving and interpretation, particularly when wicked or ill-structured situations are concerned. Considering the strong position of the analytic problem-solving school of thought in industry and society, the risk that a focus on meaning would replace analytic problem-solving is minimal. However, a hermeneutic perspective might help lift the veil to reveal the fact that even the sudden idea that may solve a problem comes out of a process of interpretation and deliberation of meaning.

> The real nature of the sudden idea is perhaps less that a solution occurs to us like an answer to a riddle than that a question occurs to us that breaks through into the open and thereby makes an answer possible. Every sudden idea has the structure of a question. (Gadamer, 1960/1996, p. 366)

AESTHETICS AND MEANING-MAKING

As described above, a fundamental concept developed in Gadamer's hermeneutics is *experience* (Erlebnis), the need to *immerse* in interpretation. To understand this experience Gadamer found inspiration in art, arguing that art constitutes an "encounter with an unfinished event" (1960/1996, p. 85). In this event, in the experience of art, "we see a genuine experience (Ehrfahrung) induced by the work, which does not leave him who has it unchanged." (1960/1996, p. 86). Exploring this event further Gadamer comes to the conclusion that in this experience the work of art takes place *in-between* - as an experience between the work and the perceiver, or between the musician and the listener, Thus, even though Gadamer mainly discussed language and text, his understanding of aesthetics is thus rather similar to Dewey´s notion of "art as experience", as discussed by Bale (2009, p. 20).

However, when discussing the practice of interpreting text Gadamer seldom deals with the senses. In a critique against Dewey he argues that it is no less than "hermeneutic nihilism" to insist on the primacy of the senses, and to consistently understand experience as an isolated momentary event (Bale, 2009). Whether to view sensory experience as prior to interpretation or incorporated in it can be debated at length. But as it can be argued that how and what we experience through our senses are cultural and social phenomena (Howes, 2005) I would argue, as Gadamer does, that sensory experiences can be seen as part of the processes of interpretation. This does not take away the fact that the senses have often been omitted in research and society (Ibid.) and that here Dewey is important for understanding the role of experience in all human practice, not least in design.

When further on in the thesis I discuss "aesthetic deliberation" I will mean such deliberation that ties in with sensory experiencing as central to the practice of designing artefacts that may provide meaningful *experiences* in the *in-between*, between the user and the artefact, well aware that this is a distinction that may lean towards an understanding of aesthetics in design as restricted to visual appearance and form, and may also distance the discussion from a more entwined understanding of aesthetic sensibility as described by Dewey:

> In art as an experience, actuality and possibility or ideality, the new and the old, objective material and personal response, the individual and the universal, surface and depth, sense and meaning, are integrated in an experience in which they are all transfigured from the significance that belongs to them when isolated in reflection. (as cited in Higgins, 2002, p. 31)

CONCLUSIONS

I have argued that Coyne and Snodgrass's notion that design can be understood as a hermeneutical practice, and that the metaphor of the hermeneutic circle reveals things that the dominant problem-solving metaphor seems to cloud. In the process I have highlighted three areas in Schön's theory of reflection-in-action that needed further exploration. Here, Gadamer's historical hermeneutics

helped to deepen the understanding of the "conversation with the situation". However, this lens fell short of describing both critical distancing and the poetic redescription through metaphorical deliberation that is necessary for the ability to manifest meaning in design practice. Ricoeur's critical hermeneutics and communicative philosophy achieved an even better fit by articulating the practice rather than the work, and by using the metaphor of the hermeneutic spiral, which keeps the tension alive between critique and interpretation, distance and closeness, epistemology and ontology, so that interpretation opens the work to the world through poetic practice.

The contributions by Schön, Gadamer, and Ricoeur should not be seen as conflicting, quite the opposite. Taken together, they make a strong case for understanding design as a practice where new meaning, as well as new ingenious practical solutions, can emerge through a process of interpretation, and where analytic problem-solving can be understood as inscribed *within* rather than defining the process as such. The implications of this understanding will be now be further explored in relation to the interventions that will be introduced and interpreted in the succeeding chapters.

THE DESIGN OF
THE EXPERIMENTAL STUDY

In the introduction chapter I described the different interests and motives of the main actors: SVID that provided the experience background as well as the practical set up for the study, with regional officer Marie Loft as the project manager; Business & Design Lab as the "academic home" with me as the researcher and VINNOVA, The Swedish Governmental Agency for Innovation Systems that funded the study. I also described how the experimental study was conceived and how I defined a purpose that focused the exploring of what goes on when designers involve groups of non-designers in experiencing design practice hands-on to contribution to innovation. In this chapter I give more detail to important considerations behind the practical design of the study. I also present an overview of the different types of empirical material that the study has yielded and present how I have worked with that material in the analysis and interpretation of the interventions.

THE DESIGN OF THE STUDY

In the VINNOVA application the focus was on how design *methods* could be integrated in companies to strengthen innovation and creativity in the organization. However, since we first started discussing the project Marie and I most of all talked about how each company would engage in a *journey* of *experiencing* design practice *hands-*

on[1] – a journey both in the sense that we would set something in motion without knowing its direction, and in the sense of a *learning journey* for all those involved. The idea was that each journey should be *coached* by one external designer and would consist of a series of workshops and other events.

Another aspect of the journey metaphor was that we insisted that each process should actively avoid premature problem and project definitions. This was our way of establishing a resistance against an instrumental eagerness to be concrete; something we knew from experience would otherwise be a potential risk that could restrict the manoeuvring room for design. Thus we gave the designers a "carte blanche" or prerogative to engage the groups in explorative activities and a more *open* process. In connection with this emphasis on an open process we also talked about how a more concrete innovation project would *crystallize* out of the open situation.

We also considered the process in each company metaphorically as a *meeting*, both as a concrete meeting between individuals with different backgrounds as well as a more conceptual meeting between practices and knowledge traditions. This meeting metaphor has grown more important with the emerging research questions and the increased focus on epistemological issues. Considering these metaphors, a focus on methods felt too constricting, even though, and in accordance with the notion of experiencing design practice hands-on, we also encouraged the designers to introduce methods and other concrete design approaches. Beyond this metaphor-oriented framework it would be up to each designer to define the content, sequence and timing of the respective journeys in relation to the needs of the company concerned and his or hers practice experience as a designer, within the time frame of one to one and half years that Marie and I considered ample time to learn.

The metaphors were also used when we discussed the project with the companies, but we also discussed the project in more generic innovation management and industrial design terms, talking about

"strengthening the innovativeness of the firm through the creativity of the design process and methods", and similar innovation jargon. We did this, not so much because it was the strategic thing to do, but because we lacked a vocabulary to more precisely express what we meant. Or rather, because we *couldn't* express explicitly our tacit and experience-based feeling that the project would be about something more than the innovation vocabulary could express.

With hindsight it seems that between the innovation management vocabulary, and the more ambiguous metaphors the latter in one sense were more precise. While the generic innovation vocabulary contributed to the legitimacy[2] of the project it was the metaphors that made the companies curious and interested. It seems that the metaphors better connected to prior design experiences, or "first dates"[3] with design that the representatives of the companies had all had, experiences that left them curious to know more. In other words, between the lines we may have communicated something about design practice beyond the popular innovation jargon, something that resonated with an equally tacit experience of design in the representatives of the companies.

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1. Our approach was inspired by American Pragmatist John Dewey's notion of experience based and hands-on oriented learning and pedagogy (Dewey, 1938).

2. Legitimacy was probably also supported by the fact that this was a research project, thus also involving both academia and a trusted organization in SVID, rather than "only" consultants. Further, that it was financed by VINNOVA certainly also boosted legitimacy.

3. A problem with the design of the Employees and Companies in Good Shape Project was that the company or organization that conducted the project did not produce the tools and equipment that were improved. For example, it was not SSAB that produced the protective clothing that the female workers at SSAB redesigned together with an external designer. So in an effort to get the improved tools and equipment produced SVID in a couple of cases also tried to involve a product producing company. Tranemo Workwear and Kitchentech AB were such companies that were thus involved in the participator design process on the fringe. Alfa Laval, Macro and Floortech AB had also had similar "first dates" with design in student projects or with design consultancies.

THE PRACTICAL DESIGN OF THE INTERVENTIONS

Although the rhetoric might seem ambiguous there was a well-defined structure supporting the project that was based on two main considerations.

First, we looked for typical Swedish product-producing companies that represented a large portion of Swedish industry, companies that were facing challenges to become more innovative and at the same time had little or no strategic design experience. We aimed to have companies in different sectors and sizes, a combination that would have the potential to yield interesting contrasts and comparisons.

Second, we looked for experienced and proven designers, one per involved company and different designers for each company. Further, we wanted a *range* of designers from different areas of design, for example, interior design, fashion design, textile design, and so on, and we also sought an equal distribution of men and women. Our focus on a range of designers can be seen as a deviation from the dominant focus on industrial design in the design and innovation discourse, but to us it was a deviation in line with the focus on design practice that I would argue contribute to the relevance of the study. That is, as the purpose of the study was to explore the contribution of design practice to innovation, a wider range of designers has made it possible to investigate similarities and differences between designers working with different areas of design, in the context of innovation.

Achieving a "fit" between the designer and the company was crucial and here we relied on Marie's extensive matchmaking experience as a regional officer of SVID that also informs her view that only thinking about industrial designers when working with industry is a too narrow perspective on design. However, a new challenge for Marie was to find designers that were not only proficient designers, but were also able to coach a learning process. This ambition was intertwined with SVID's ambition to also support the designer's own competence development, and Marie believed that smaller design firms and self employed designers deserved more attention.

Concerning the general design of the process, at the beginning of each intervention, after the company had shown a clear commitment via a written agreement, we made an initial one-day review per company to better understand its character and needs.[4] The reviews were based on a site visit and semi-structured interviews with key personnel. I also wrote a report of the "findings" from the site visit. The report was presented at a management meeting[5] before a formal decision was taken to initiate the process. We also asked each company to organize an interdisciplinary project group of about five to eight people and to assign one person to be responsible for the project. The initial review report also served as a basis for choosing a suitable designer and served as part of the "brief" to the designer.

In parallel with the company workshops Marie and I organized a series of "management seminars", about two per year, six all in all, where two representatives of each company met to discuss progress, experiences and so on together with the representatives of the other companies. The first two management seminars were held at a conference venue and at the University of Gothenburg, and then each company in turn hosted the remaining seminars. We also organized four "designer seminars" in which the designers discussed their experiences and reflected on design practice in general.

From the very start Marie and I have had a combination of clearly different and similar roles in the project. Setting up the project has been a joint collaboration based on our different experiences. Marie's explicit responsibility has been to establish contact with suitable companies and designers through the SVID network. In practice there have been two exceptions to this: Floortech AB was introduced by designer Thomas Laurien who in turn was part of my network, and Macro International AB was found by designer Cecilia Nilsson who in turn was part of Marie's and Ulla's networks, however in both interventions Marie was immediately involved in discussing the project

4. In the Tranemo Workwear intervention I did the review myself and in the Macro International AB intervention I made the review together with designer Cecilia Nilsson who also made the report in the format of a SWOT-analysis and presentation. In the other interventions Marie and I did the initial reviews together and I wrote and presented the reports.
5. In the Tranemo Workwear, Macro International AB and Kitchentech AB interventions the report was presented to the management council of the company or unit. In Floortech AB and Alfa Laval interventions the report was presented to the manager of the concerned unit.

with the management of the companies. In the different interventions Marie Loft and I have had overlapping roles regarding coaching the designers. We have also been involved in workshops in an overlapping manner and we have arranged the management as well as designer seminars jointly. I have been responsible for all research activities but the constant reflections on the progress of the interventions between Marie and me have been invaluable, and in this sense parts of the research process can also be seen as a kind of collaboration.

ANALYSIS OF THE EMPIRICAL MATERIAL

As described in the chapter on methodology the analysis of interventions was only one of several dimensions of the "mixed media methodological approach", albeit a fundamental one. I will here describe the process of analysing the empirical material from the interventions in more detail.

The empirical material has come from many sources. The empirical material from the phase when we planned and prepared for the interventions consist of recorded interviews with twenty-four persons conducted during the initial reviews. It also consists of my notes from the initial reviews, the sound recordings of the management meetings where the initial review report was presented and the four formal initial review reports.

In the phase when the interventions were conducted I observed thirty-three of the in total thirty-eight workshops and other events that were carried out. This included taking notes and making sound recordings which amount to eighty-two hours of material.[6] Parts of this material have been transcribed. I also recorded occasional reflections with the designers after and between workshops. Further, photographs were taken on an on-going basis and during and after the intervention phase I also collected e-mails between the design-

6. The workshops and other events totalled about 145 hours. However, some workshops consisted of "break out sessions" where I instead of recording everything made "snap shot" recordings. Other events consisted of visits to museums, watching films or visiting users where it was not possible or fruitful to record everything.

ers and the companies, the designer's power point presentations and different types of company information such as product catalogues, webpages and financial reports. In parallel with the interventions I sound recorded the six management seminars and the four designer seminars, parts of which have been transcribed.

After the interventions I conducted twenty-two semi-structured final interviews with all persons involved, consisting of twenty hours of material that I have also had transcribed. Along the study I have also written reflections on an on-going basis in my research diary.

The analysis of the empirical material has been made in three main cycles. In the first cycle, right after the last intervention had finished, I wrote down my immediate or "naïve" interpretation of the interventions. This interpretation first and foremost built on my reflections on the processes in relation to theory and practice experience, but without a specific analysis of the empirical material as such. This interpretation was developed into a popularized report about the project (Jahnke & Loft, 2011), into a book chapter (Jahnke & Johansson, 2012) and a magazine article (Jahnke & Johansson, 2012).

After this first "naïve" interpretation I left the analysis process for about a year to concentrate on establishing the philosophical framework described in the previous chapter. This work, which can be seen as a second cycle, was prompted by a critical perspective on design and innovation management theory and a reflection on my own practice experiences in relation to the first naïve interpretation of the interventions. This work entailed the writing of the 50% report, two conference papers (Jahnke, 2011; Jahnke & Hansson, 2010a) and two journal articles (Jahnke, 2012; Jahnke & Hansson, 2010b). Instead of focusing on the interventions these texts were based on the analysis of the sounding board study (described in the chapter *A Mixed Media Methodological Approach)* and a critical analysis of common concepts in the design and innovation management discourses.

After this second cycle I returned to the interventions to conduct a more thorough analysis of the empirical material. As a first step in this third cycle I listened through all the recorded material from the workshops to identify important events. These were collected in a table for each company process that also included transcribed quotes and dialogues from listening more closely to these events. In a

second step I returned to the notes I took during the interventions to complement the lists with events that I had found especially interesting when observing the workshops and other events. I also returned to the photographs that I had taken throughout the interventions as these had helped me "see" work and events that were not necessarily verbal, to also include non-verbal dimensions.

When immersing in each intervention process in turn I used the transcribed final interviews to nuance and complement the emerging interpretations. I also returned to the discussions in the designer seminar that I had had transcribed to further complement the material. Also some of the other material, such as e-mails, company information, interviews from the initial review and recorded reflections with the designers between workshops were consulted when I was trying to better understand specific events. In a third step in the third cycle I then categorised the material from each intervention by assigning themes to the different events, if this had not already been done. In an intense session I cut out all one hundred and ninety-six themes, and sorted them on a big table by grouping them according to similarity. In this exercise forty-four different themes emerged. However, rather than being used explicitly as an important step in analysing the material, as in a more stringent grounded theory approach, this exercise most of all confirmed the interpretation that had emerged gradually, and also helped me to give some additional order to the material when writing about the different interventions, a process that had started about mid-way into the analysis process and which continued with a number of smaller and more rapid cycles of working back and forth between the material and the emerging texts until each text had been finished. In writing the thesis I have also used the themes to arrange the two chapters where I interpret the interventions. These two chapters correspond to two different but related sets of themes. The first set corresponds with a hermeneutic perspective on the interventions (presented in the chapter *A Hermeneutic Perspective on the Interventions*), and the second set relates the hermeneutic perspective on the interventions to relevant theoretical concepts and knowledge in the intersection of design and innovation (presented in the chapter *Exploring a Hermeneutic Perspective in Relation to Theory in the Intersection of Design and Innovation*).

WRITING ABOUT THE INTERVENTIONS

The descriptions of the interventions have been written in somewhat different styles depending on how they reveal different issues and events, but also in relation to my slightly different roles in the different interventions. Along the study my shifted from a semi-active role, especially in the first Tranemo Workwear intervention, which was the first of the five interventions to set off, to a more passive role as observer in the rest of the interventions. I believe that I gradually grew more comfortable with the researcher role as I started to "home in on" interesting phenomena and thus drifted into a more traditional researcher role. However, behind the scenes I was active throughout the project together with Marie to support the designers and companies.

The Tranemo Workear and the Alfa Laval interventions have been written on a more general level with less dialogue while the others are more "dialogue intense". Both these interventions, that started earlier than the other three, helped me to see the importance of doing the sounding board study where I explored a hermeneutic perspective on design practice. In the other three interventions, that all started later I was able to deepen my understanding of what went on when design practitioners entered the organizational contexts to share design practice hands-on.

The different styles of writing have also resulted in cases that vary in length, most of all depending on the amount of dialogue. I could have chosen to "level" the cases both in terms of style and length. But my ambition has been to write in such a way that the cases come alive *together*, so that issues may also reverberate *between* them. Therefore I have avoided trying to level them as I have felt a risk that such qualities might be lost in the process. Further, my ambition has been to write in such a way that important aspects are teased out while writing - in the process of reading notes and transcripts, when listening to workshop recordings and looking at photographs, and in trying to rearrange all these experiences into text. In other words, writing has not first and foremost been a process of illustrating but of understanding.

THE INTERVENTIONS

THE TRANEMO WORKWEAR INTERVENTION

TRANEMO WORKWEAR – A FAMILY AFFAIR

Since the 1950's, the home of Tranemo Workwear has been the purpose-built factory building at the end of the short main-street of Tranemo, a small town in south-western Sweden. Until the Second World War small-scale farming and forest tending dominated the area. Tranemo is also one of the key towns in the textile region that developed in the late 1800's, and Tranemo Textile AB,[1] established in 1934, is a typical example of this development. It was farmer's son Gustav Kjöllerström who realized that textile production could probably counter the "side-effects" of mechanized farming and provide work for the many unemployed women in Tranemo. Most people in the community supported Gustav with the little capital they could muster for the needed investments in both machinery and premises.

Before I went to Tranemo Workwear for the first time I had read that the streets of Tranemo were paved as late as in 1948,[2] and when driving towards Tranemo, through forests and past lakes. I couldn't help getting a "Twin Peaks feeling",[3] the feeling of entering a world that is just slightly "different" and where time moves a little slower. That Tranemo Textile AB is a company with a past was obvious as

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1. Tranemo Workwear is a daughter company of Tranemo Textile AB. It is also the main business of the company.
2. Source: http://sv.wikipedia.org/wiki/Tranemo
3. That is, the fictive saw mill town of Twin Peaks in David Lynch's TV-series.

119

soon as I left the recently white painted entrance hallway, with its promotion posters and catalogue stands, and turned the corner to the corridor with the "fikarum".[4] These days, the pale coloured and patterned curtains and wallpaper would be 50's kitsch in any other interior, but here they are "the real deal". The black punch-clock diligently discharges its stamping sound every full minute, as steadfast as ever, even though these days the cardholders are empty.

Around a second corner the freight elevator, with its wide double doors and corrugated steel floor, is ready to take me to a next level in historical experience: an intact textile production facility from just the after the second World War. Or rather, all the sewing machines and other equipment are here, but most of the stools by the machines are empty. The only sign of the sixty or so seamstresses that worked here as late as in the early 80's are the multitude of worn cushions of different patterns and colours on the hard wooden seats, cushions borrowed from kitchen chairs from homes all around Tranemo to provide some comfort during long working days. In the 50's and 60's the big central LM Ericsson speaker on the front wall would have played pop songs and news over the rattling and whirring machines, or so I imagine. The only signs that times have changed are the little plastic transistor radios from the 70's and 80's that are sprinkled across the room. Only one of them is playing now, for one of the few seamstresses who still work in this vast hall. Despite the sounds of her radio and sewing machine, I am struck by how silence now dominates this once bustling place.

Today the main bulk of Tranemo Workwear's production is outsourced, contracted to factories in the Far East and to Tranemo Workwear's own factories in Poland, Bulgaria and Portugal. But while most of Tranemo Textile's competitors that survived the

TEKO-crisis[5] relocated to new and more space-efficient premises, Tranemo Textile AB managed to keep its original production unit intact. A key reason for this is that Tranemo Textile AB's ownership stayed in the same family while many other businesses were sold to less patient investment banks or were bought by competitors. Another reason for being able to keep premises that other business would have considered inefficient use of capital, is that Tranemo Textile AB has always invested with money saved, never borrowed; there is more than a little Protestant ethic in the way Tranemo Textile AB has been managed during its almost eighty-year history.

Keeping close access to production, thus being able to respond quickly to customers has proven successful in times when profiling and branding have become ever more important, even among smaller businesses. The few seamstresses that still work here do adaptation and customization work to pre-sewn garments, like adding off-coloured pockets, prints and labels to identify work wear in the correct colour combinations and graphic profiles of different companies.

Having close access to a production facility that can also be used as a prototype workshop has also helped Tranemo Workwear to develop state-of-the-art protective clothing in the area of high visibility and flame retardant features. Here fast iterations and tests to ensure that the garments comply with strict standardization requirements are important, something that is difficult with production in the Far East. While Tranemo Workwear's profile business mostly caters to smaller companies, the seriously technical protective collections are sold mainly to large businesses and organizations, for example to the steel company SSAB and to the Swedish Transport Administration (Trafikverket).

An important characteristic of the work wear sector, from an innovation and design perspective, is that garments look similar be-

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4.   To twice a day have "fika", to take a break together for social "chit chat" while drinking coffee and nibbling short bread, is a long-standing Swedish tradition.

5.   Ninety per cent of the textile and clothing sold in Sweden was produced domestically at the height of the Swedish textile production in the 40's. Growth increased further in the early 50's and by then the Swedish textile industry employed about 70 000 workers. In the 60's production decreased drastically due to increased competition from the more modern European textile industry that had been rebuilt after the war. Source: http://sv.wikipedia.org/wiki/Textilindustri

01. Work station in the old textile
production of Tranemo Workwear

02. One of the many worn cushions
brought from homes around Tranemo.
03. The diligent punch-clock.

123

tween manufacturers. It is common that other companies quickly copy new styles and even innovative features. As an example of this, during the project a Norwegian upstart company copied Tranemo Workwear's entire craftsmen collection, even down to the Tranemo Workwear brand labels. Technical requirements, like flame retardant and high visibility features, are stipulated in very strict standards requirements that leave little room for innovation or the possibility of unique styling. Visible differences are instead found in little details like how pockets are placed or what kinds of buttons are used. Now and then innovative features are introduced, like Snicker's[6] well-known holster pockets, but the main differentiators are quality and price. While work wear that is sold cheaply in the retail sector to individual DIY buyers may look the same as the kind of work wear sold to a company like SSAB, the difference in quality is huge. Besides having to resist specific dangers like flares and cuts, industrial work-wear also has to stand general tough abuse as well as frequent washing at very high temperatures.

In recent years a strong brand has also become an important differentiator, and tied to this is a trend to try to reach individual users and small firms via retail chains. A reason for this trend is a generation shift among work wear users, with younger, more fashion conscious, and individualist users entering the scene. These days, work wear stores more and more resemble regular fashion stores and many companies have ramped up marketing efforts. One such example is Blåkläder's lifestyle-oriented TV commercials depicting young "jackass"[7] style daredevils doing crazy stunts in Blåkläder work wear. Tranemo Workwear has mostly stayed away from this trend, even though some attempts have been made to enter this market. Tranemo Workwear argues that to be successful when another tier is added to the distribution chain takes both huge investments in marketing as well as a decreased profit margin. A negative effect of this strategy is that while firms like Fristads and Blåkläder have

6. In Swedish "snickare" means carpenter and Snickers is a "swenglish" play on this word.
7. As in the MTV TV-series where a group of guys do tricks and stunts and get injured a lot. Source: http://en.wikipedia.org/wiki/Jackass_(TV_series

achieved brand recognition among individual users, the Tranemo Workwear brand is still more or less unknown.

Another aspect of the work wear sector is that few brands offer garments that cater to the needs of women in building and heavy industry. Or rather, sizes as well as cuts and fits are tailored on men and the typical user is seen as a male worker, something that is also reflected in all sorts of communication and marketing material that is noticeably "macho".

Considering these characteristics, product development and design within the work wear sector has mostly been restricted to garment construction work, that is, to adaptation of generic models to some company-specific characteristics like the look of pockets or colour schemes. Such construction projects are mostly initiated by the sales organization and are directly tied to a perceived demand. The most common demand is for the redesign of a garment due to complaints from users, for example, about where pockets are placed. Product development thus has a closer resemblance to product improvement and production adaptation than innovation work, and in-house initiated development projects are few, other than projects aimed at improving materials to withstand new standards requirements.

THE WORKSHOP PROCESS

In 2007, when I first came into contact with the company, an important change was about to take place. After steering Tranemo Workwear both through both difficult and prosperous times, Inga Larsson, the granddaughter of founder Gustav Kjöllerström was about to hand over the reins to her son, Max. We didn't know about this when Max came to the fall 2007 kick-off meeting with all the companies in our research project. Max came with responsibility for product development at Tranemo Workwear, not as CEO. He was joined by Roger Johansson, one of the sales persons of Tranemo Workwear, and Marie's first contact with the company a couple of years earlier. Roger, with his sales contacts with SSAB, had been Marie's contact in the Employees and Companies in Good Shape project (that has been further described in the Introduction chapter).

At the meeting both Max and Roger reflected a keen interest in innovation and it was interesting to observe how Max discussed innovation at length with Klas Bertilsson of Alfa Laval. Perhaps Max's quite recent master degree in engineering played a part in his interest in Alfa Laval's and fellow-engineer Klas's innovation work.

Maybe my memory of this earlier meeting was why I became confused when I came to Tranemo Workwear a few months later to conduct the initial review. Now there was little of the enthusiasm about innovation that Max and Roger had shown previously. Staff said that ideas were not welcome, saying that the "creative ceiling was low", and even Max told me:

> Yes we do have an innovation approach here – if one person utters an idea, three others will cut it down.

It was evident that production logic dominated the company: efficiency ruled and immaterial values were not even part of the discussion.

The fashion student workshop

In the middle of writing up the report from the initial review, Max came with a request – could we perhaps arrange a workshop to take a look at the collection of cotton work wear that needed to be updated for the next season, and to do it fast?
At first this felt a little sudden and did not fit with our set-up. But, Marie and I argued, it would give us a possibility to get a better feel of Tranemo Workwear's readiness to participate in the project. Together with fellow PhD student Otto von Busch,[8] I devised a workshop that would look at the intersection between work wear and fashion, which we called "Opposites or Meetings – A workshop on

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8. Otto von Busch had during his PhD-studies arranged a workshop called the Dale Shoe Hack at the traditional Norwegian shoe manufacturer Dale Sko. In the interventionist workshop a group of designers "hacked" the shoes produced by Dale Sko together with the production personnel to explore possible new expressions and possibilities (Palmås & von Busch, 2011; von Busch, 2008).

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fashion and work wear".[9] A specific reason for this theme was the emerging trend in individualized and fashion-oriented work wear, something in which Tranemo Workwear had recently begun to take an interest.[10]

The workshop was arranged in cooperation with master students in fashion design at the Swedish School of Textiles in neighbouring Borås. The idea was that they would come for a one-day workshop to "challenge" Tranemo Workwear's current collection of cotton work wear with their fashion perspective. During the workshop the students would be "let loose" on garments and materials, or so it was planned. At the workshop the students were enthusiastic at first, and were especially inspired by Max's tour of the nostalgic textile production site. But then one little incident defused the potentially creative atmosphere of the workshop.

The students had just begun working, and in line with instructions from Max, they started to investigate rolls of cloth, pulling them out of the stacks, when Inga walked past. Loudly, and with her full CEO authority, she commanded:

> Be sure to put those rolls back *exactly* where you found them!

Then she walked on.

The students quickly put the rolls back and instead of working hands-on they reverted to individual sketching.

Despite this incident the students came up with some interesting concepts that attracted Max's attention: innovative tool belts, a new kind of vest, and particularly a more youthful expression that included rounding off the conventional sharp-angled pocket corners that characterize all traditional work wear – a styling innovation

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9. The Swedish title: "Motpoler eller möten – en workshop om mode och arbetskläder".
10. A first attempt had been made with the casual wear collection First Grade designed by graphic designer Christer. To Max the reception had been surprisingly good in the light of that this was not "proper" work wear.

04. Two students investigating rolls of cloth in the Opposites or Meetings workshop (Photo: Otto von Busch).

05. Max showing the fashion students the Tranemo Workear facilities (Photo: Otto von Busch).
06. One of the students sketching (Photo: Otto von Busch).

129

that also has some important practical benefits.[11] In this sense the workshop was successful. But this experience, as well as our observations during the initial review, had left Marie and me with a feeling that Tranemo Workwear might not be ready for the project.

This fear was further strengthened when a couple of weeks later Marie and I visited the company to report the findings of the initial review to the management team, that is, to Inga and Max. At the meeting it was clear that Max and Inga had opposing views about the project. While Max welcomed it as in line with his intentions to structure the product development process, Inga questioned its benefits, saying:

It never pays off to be first with anything.

Even though Inga's long experience with the work wear sector surely supported this view, it did not resonate with the intentions of the project and perhaps not with on-going developments in the work wear sector in general. The only possibility we saw was that Max would be given full responsibility for the project. We communicated this and waited. Two months later Max had full CEO responsibilities.

Involving the Designer and Setting up the Group

After we finally received a clear commitment from Max, Marie began to look for a suitable designer. Her choice fell on fashion and textile designer, Charlotta Schill. Charlotta has an unusually broad background that combines fashion design with experience from designing more functional garments such as work wear for the hospital sector as well as sportswear. She also has training and professional

experience in textile cutting as well as furrier work.[12] Her work experience also includes teaching design students, both in Sweden and in India where she has lived for several years.

Max decided that the team core would consist of the staff working with textile cutting and construction, Marie A., Britt-Marie and Mona, all with long work experience at Tranemo Workwear. He also decided to hire a new person with design experience to take over the responsibility of the product development work when he stepped up to the new CEO role, and to develop the team in terms of innovation and design, Maria. Max also asked the graphic designer Christer to join the team. Christer had previously done design work on the sales catalogue and had also set up the company home page. In addition, he designed the new First Grade collection of more lifestyle-oriented sweaters, t-shirts and hoodies. Roger Johansson, however, would not be part of the team. This confused us at first because Roger had long experience working with material development and had been involved in the SSAB project. But Max wanted first and foremost that the project would be about the product development team, which Roger, as a sales representative, did not belong to.

The First Workshops

The first two workshops were held in a cramped and claustrophobic meeting room without windows on the bottom floor of the Tranemo Workwear headquarters. At the first workshop Charlotta introduced herself. In her presentation she made it a point of showing both her fashion experience and also her practical textile construction experience, to let it be known that she knew her way around the machines and the work processes of a company like Tranemo Workwear. She knew the kind of culture she would be working in, and that she would have to build trust on the team's terms.

She also pointed out that, "… to be able to think creatively it is important to feel that it is ok to open up and to express new ideas. To shoot down ideas is absolutely forbidden."

"That's why Inga is not part of the group," Max added.

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11. One functional bonus of a rounded corner is that small details like screws and nails are easier to reach. Small details tend to be lodged in sharp corners. Another benefit with round corners is that they do not get as easily snagged, when for example climbing a ladder, as sharp corners. A drawback with rounded corners is that they are more difficult to sew. From this perspective the sharp corners can be seen as a typical sign of the production logic of the work wear sector.

12. A person that designs and constructs fur garments.

Charlotta also explained how important it was that a team should be composed of persons with different backgrounds and perspectives, that everyone can contribute, and how curiosity is the single most important attitude in innovation work.

To illustrate how she understood an innovation process, Charlotta talked about how she experienced her own design process as a "spiral shaped process" that starts with her interest in fashion trends, where a large amount of inspiration material is important to set the process in motion, or as she explained:

It can be materials, magazines, art exhibitions and so on. Once I bought a perfume bottle just because the packaging was so inspiring. Then I get to a stage when I'm full, that's when it is time to start structuring the material, organizing it, because I need to find the questions. What are the colours? What are the shapes? I think you understand. And to be able to start thinking about construction, I have to start thinking with the hand and the pencil, when I know what the vision is, perhaps a tulip-shaped sleeve, or this fine stitch on the side that I wish to stand out. But to get there I have to strive a lot… I like to have two or three projects going on at the same time, but in different stages, then things happen in the back of the mind with the projects that I'm not actively working on, you don't see it, but it happens – and a nice flow is to be able to step between projects based on where I feel most inspired at the moment.

To make it more concrete in terms of innovation she told the group how she taken a course in interaction design. In the course she had been part of a team that also included a mechanical engineer, an economist, and a computer programmer. Together they had worked in a process very similar to her design process. She told the group how they also had begun with assembling inspiration material rather than starting with a specific issue, how they had "homed in" on something of interest, and how working together they had contributed with different ideas based on their different experiences, so that at the end they had had a quite innovative product concept the neither of them could have anticipated at the outset.

The group was silent and seemed a little confused, as if they did not recognize the process that Charlotta had illustrated at all.

After listening to Charlotta's presentation for a while, Max intervened:

We are asked by the customer, through our sales staff, to do this or that. We only respond to an order. But now we want to build the ability to innovate. Now we have to be the ones who make the order. But how do I know what to go for? Where the hell do you find the ideas? You know the idea, the fundamental idea – where is it?

Marie, Charlotta and I engaged in a discussion with Max about this, but I'm not sure anything became clearer at this point. Instead, I also expressed a mixed-up understanding somewhere between Max's hopes of starting with an initial idea and Charlotta's more open process. Instead of continuing the discussion, Charlotta moved to an exercise to set the process in motion.

To spur the group, she decided that the first two workshops should be about exploring possible areas of interests for Tranemo Workwear, to encourage the team get hold of "something" that could trigger their imagination. She felt that it needed to be the group working together that defined areas of interest, and that these would have to come from *their* curiosity, even though Charlotta set the process in motion by asking questions like, "Are there new cultural or religious trends that are relevant to work wear?" and, "Are there new types of jobs that require work wear?"

Charlotta also stressed the importance of using different media as inspiration. Discussions were interspersed with different exercises such as cutting out images of magazines that would represent a certain trend of interest and arranging these cut-outs on mood-boards[13] to discuss in the group. She also urged the group to assem-

13.   Mood-boards are collages mostly made of images but also for example material samples, texts and colour samples. The mood board has several purposes. It can be used as inspiration to capture a certain mood or style to depart from in design work. It can be used to represent the result of a research process. And it can be used as a communication device to discuss issues of style, emotions, moods and so on, for example with clients (e.g. Eckert & Stacey, 2003; Godlewsky, 2008; McDonagh & Storer, 2004).

ble a "library" of different magazines, Internet sources, and so on to serve as on-going and updated inspiration for future projects. She helped the group do various web searches on different themes and to do image searches, something that only the external graphic designer Christer was used to doing. Charlotta also insisted that there should be a specific computer by the library for such explorations. Throughout this part of the process the work wear sector was hardly discussed. Rather, it was inspiration from *outside* the sector that was stressed.

Continued Work

The following three workshops were characterized by continued reflection and discussion of relevant areas of investigation. Discussions were animated and full of laughter. At the same time, something seemed to be missing. Little work was done between workshops and different concepts developed slowly; "Too much talk, too little action" as Charlotta said. Despite tasks such as defining different themes based on explorations in media and on the web, and starting to sketch possible new concepts to be presented at upcoming workshops, only a little of this work happened.

The group responded that it was difficult to prioritize this work when sales people were calling in requiring changes, when a new collection of flame retardant garments had to be constructed, when next year's catalogue had to be made, despite one person on parental leave, and so on.

Increasingly, different experiences were discussed, for example, observations of trends during a visit to the Stockholm Furniture Fair by one of the members of the team. An external fashion trend analyst was also invited to speak about coming trends in fashion. Fashion trends as such, as specific phenomena, were also discussed as well as business logics around fashion. Charlotta kept returning to the need for a "library" for inspiration, and also urged the group to think about their workplace, which was quite "busy", with seamstresses interrupting work and with phones ringing constantly. This situation was now the environment in which the workshops were conducted.

During this period two concepts were developed, a small collec-

tion of vintage style work wear for the up-coming 75th anniversary, and a new collection of flame retardant work wear. The vintage collection was mainly designed by Christer who had no problems finding material for inspiration in surplus stores, magazines, and even in the basement of Tranemo Workwear. As a graphic designer he seemed quite comfortable with the inspiration-gathering part of the process. The new flame-retardant collection was developed during a one-day workshop when the group left headquarters to work undisturbed. This seems to have been a pivotal experience, as expressed by Marie A.:

> It was only us, and we just sat talking and sketching and doodling and then if I saw something I said so, and when someone else saw something they said so, and then after working like that we had the new collection right there.

The Opera Workshop

As a response to the situation where Charlotta felt that the team did not commit themselves enough, and after discussing it with Marie and me, she decided to arrange a workshop devoted to experimentation with materials, to force the team to let go of all notions of traditional functional work wear gament and engage with the materials at hand. The goal was to provoke new experiences of materials, shapes, and themes – to "shake things up a bit."

At the first workshop of 2009, called the Opera Workshop, she invited the group to design three garments on the theme of "Gala Evening at the Phantom at the Opera", an exploration into the "fantastic, the fabulous and flamboyant." In preparation Charlotta made three "toilles", or basic clothing structures, to adapt and develop. She also brought different textile materials, buttons, ribbons, technical devices, and other gadgets like LED-lights, wires etc.

Charlotta introduced the workshop as an opportunity to step up the process through play:

07. The Tranemo Workwear group
engaged in the Opera Workshop.
08. Some of the material that Charlotta
brought to the Opera Workshop.

09. One of the resulting Opera
Workshop creations.

This will be about playfulness. But somewhere in the playful there will be something - it can be a material, a gadget, a colour or a shape that gets you going, and that is also when the ideas will start to flow. And this is also why this is serious. Because if you don't have the passion to create, then there will be nothing. It is very easy to say that this is play in a condescending way, but if something is going to emerge, something new and different, then you have to allow yourself to be childish.

During the workshop there was a clear division of the group. While Maria and Christer worked, inspired by the theme and the materials at hand, Britt-Marie seemed more distanced or distracted and Marie A. seemed quite uninterested.

"What is this supposed to be good for?" Marie A. asked at the end of the workshop.

Two creative garments *did* emerge and Max later showed them with pride when the other companies came to one of the company seminars when it was held at Tranemo Workwear. Charlotta, Marie and I had mixed feelings, and had a long discussion in the car back to Gothenburg. The exercise had shown that the group was quite divided and we now understood better why the process had been slow to develop; there was more to it than just the team being too busy.

Emerging Concepts

Following the experience of the opera workshop, Charlotta felt changes had to be made to conserve and focus the energy of the little group. So as to make the group become more "operational" and independent, it would be better to divide the process into three clear stages and let the team members chose the stage where they felt most comfortable working. The different stages were "idea development", "prototype development", and "construction". Marie A., who had expressed doubts about the experimental approach at the opera workshop, but who felt very much at home in the last stage of the process, was given the responsibility for this stage. Maria was given responsibility for the first stage and Britt-Marie the second stage. Despite this division of responsibility, Charlotta felt that the

workshops should continue with the whole group, so that everyone would be involved in the discussions and contribute with their expertise and experience, but that the more practical work in-between workshops should be done according to the proposed division of work.

Finally things started to happen. Apart from the new division of work, another reason was that Maria now seemed to have become a "full member" of the Tranemo Workwear culture. She was now definitely in charge of the team. Maria and Bitte had also developed a very good working relationship. By the end of spring 2009 three themes had been defined: "technical", "environmental" and "youth". Work was now less workshop-oriented and more operative with regular check-up meetings with Charlotta, sometimes on site but more often via Skype. During workshops Max popped in now and then but he mostly let the group work alone. The more youthful and fashion-oriented expression that the student workshop had inspired was also visible in an updated craftsmen collection, and the collaboration with the students continued with a follow up workshop, this time at the Swedish School of Textiles in the town of Borås. The vintage collection that Christer had developed went into production for the 75th anniversary with two garments in a retro jeans wash. These garments attracted attention at A+A work wear fair in Düsseldorf, as "attention grabbers", much in line with the fashion logics that Charlotta had introduced earlier.

However, the eco theme was put on hold. At the fair the group judged that interest among buyers for work wear in ecological textiles was still too low. Marie, Charlotta and I felt that this was perhaps not the correct conclusion, but instead of sharing this with the group we felt that it was more important that they actually made a decision. Focus instead shifted to the technical theme, which was changed to a "future worker" theme. Other discussions revolved around the possibility of making a film about the process, as Bitte said:

To show to the sale people at the product meetings how we work, so that they better understand what goes on in a `proper` development process.

10. Max being subjected to fashion at the Swedish School of Textiles.

11. Max and the fashion students discussing prototype work wear based on the input from the students in the Opposites or Meetings workshop.

12. Max showing garments from the vintage work wear collection to the fashion students.

This idea was inspired by the IDEO "Deep Dive"[14] film that had been watched in an earlier stage of the project.

Another project going on behind the scenes was revealed when we came to Tranemo Workwear in August 2009. After the first few workshops, the group had left the little claustrophobic meeting room on the ground floor to work on the second floor, where group members normally did construction work. The big cutting table was a perfect place for discussions and experimenting. However, here the process was often disturbed by phone calls and interrupting colleagues. The top floor of the building held an old cutting room that was little used these days. The room was dominated by an even bigger cutting table from days gone by, but apart from this it was rather dusty and boring attic-like room.

During the summer months Maria had completely remodelled this floor of the building. She left the cutting table intact, but had covered it with a glass surface that could also be used as a horizontal whiteboard. On one of the walls, behind a custom made bar counter, was an old black and white photograph of the same room in the 40's with tailors and cutters busy at work (one of them being none other than Gustav Kjöllerström), blown up to full size. Along the other wall, the complete collection of work wear was mounted on custom made, spotlighted racks. The whole room had been painted white with some details in silver grey, such as the doors to the freight elevator and old radiators. The first pair of tailor's scissors purchased by Gustav Kjöllerström was displayed in the window, and a little sofa, chairs, and tables were placed in front of the windows, right by the library that had finally been assembled.

Maria and her colleagues showed considerable pride when exhibiting the finished result. What is more, for the first time they had direct access to the complete collection, as Maria described it:

> Now we can see, touch and feel it all without having to dig around among shelves and stores.

14. The well-known episode from the ABC Nightline show, discussed in the *Introduction*, in which a team of designers from the American design consultancy IDEO redesign the generic shopping cart in one week.

This space was more than a showroom in this sense. It seems that it became a kind of physical manifestation of the independent development process that the group had been striving for since the project started. From now on the workshops were held on the top floor.

When summing up this phase of the process Charlotta said:

> The team has finally entered the phase of the process that is the most fun but also the most draining. It is one thing to talk and talk, but after that you have to have action. It's like, you can walk around that phase again and again, until you feel physically ill, then you just have to enter it, and finally you are in this creative mode. That is where they are at now.

Exploring the Future Worker Theme

During the fall of 2009 the "future worker" theme developed in two parallel directions. One direction was inspired by science fiction. Ideas were developed about extreme work situations, inspired by the new Star Trek film that the group chose to see together. They experimented with new to the work wear sector materials, such as strengthened stretch cotton,[15] and new types of details, like magnetic zippers and locks. Possible new styles of work wear were also explored through sketching. It was clear that the group had a lot of energy when working with the sci-fi inspired future worker theme.

The other direction returned to the earlier project that Tranemo Workwear had been involved in on the fringe: work wear for women in the heavy steel company SSAB in the "Employees and Companies in Good Shape" project. During the fall I initiated a contact with fellow PhD researcher Åsa Wikberg-Nilsson at Luleå University because I knew that she was involved in a project called "Future Fac-

15. Before technical materials entered the scene the only way to achieve protection was to increase the weight or density of the fabric. Therefore stretch material would be a quite radical material in the work wear sector where heavy and stiff cotton has always dominated due to its strength, but at the cost of comfort.

13. Sketches of the "future worker"
stretch concept.
14. Prototype of the stretch concept
trousers.

tories" (2012) a project that included collaboration with Tranemo Workwear's customer SSAB, along with other companies. The group invited Åsa and her colleague Stina Johansson to come to Tranemo Workwear to present the project and discuss a potential collaboration. A good contact was made and it was decided that Åsa and Stina would investigate the possibility of conducting a workshop around the theme of the "Future Factory Worker" for the group at Tranemo Workwear together with employees of SSAB.

Later the same fall work slowed down again due to another hectic period. The economic crisis did not seem to affect Tranemo Workwear, quite the contrary. Charlotta noticed the drop in attention in the group members, especially in the experimental work that she felt should continue with materials and components in relation to the "future worker" theme. To spur this work she arranged a new "hands-on" workshop to which she brought a multitude of novel materials and components. Her ambition was that the group should *experience* the materials, something that she felt that they were not very good at.

At the beginning the group was again hesitant to explore the materials hands-on. Charlotta showed by doing it herself and by interacting directly with the individuals:

> Take this material, feel that, the weight of it? Combine this material with that button – does it seem to fit? Try that material with that other material – do they work together?

Slowly the group began to interact more freely with the alien materials. At the end of the workshop they promised that for the next workshop they would have developed a prototype of some kind.

Walking in the Shoes of the User

In the spring of 2010 Maria, Bitte, Charlotta, and I travelled to Luleå, in the far north of Sweden, for the SSAB and University of Luleå workshop. On the first day we were shown around the huge SSAB steel foundry. For the first time Maria and Bitte felt the heat of the furnace, with the chilling draft from building doors on their

15. SSAB worker standing in a rain of metal sparks dressed in work wear produced by Tranemo Workwear.

16. Lines of work wear at SSAB.
17. Discussing with one of the workers at SSAB.

147

18. Maria discussing the future worker theme at the University of Luleå workshop.
19. SSAB workers discussing future work wear at the University of Luleå workshop.

backs, and saw how cascades of sparks fly from the flowing metal onto garments that they had designed.

On the second day Åsa and Stina had arranged a workshop for the Tranemo Workwear visitors and three representatives of the SSAB workforce. Together, the group used different brainstorming techniques and discussions to explore the concept of the future factory worker from the perspectives of the involved SSAB workers. At this meeting, seeing Bitte and Maria interact with the workers, it became clear to me how much they had learned from their erratic journey. It was no longer Charlotta that lead the workshop; now it was Maria and Bitte's show. When they engaged in the discussions with the SSAB workers, they drew on their professional skills as work wear developers, but also on broadened horizons that included fashion perspectives, gender issues and other aspects of future work wear. This was something that was hard to imagine at the beginning of the project.

Just before summer 2010 it was Tranemo Workwear's turn to invite us to an exhibition of what they had been working on during the spring. They had merged the two future worker themes, the sci-fi theme with the future factory worker theme, and had created slightly futuristic, yet feasible, conceptual garments for women in industry made of a durable stretch material to ensure better fit and comfort without neglecting protection.[16] Charlotta proudly modelled the garments in the new work and showroom.

Later we learnt that Max had shown the garments at the Tranemo Workwear product council where the sales representatives of the different countries gather to discuss the products. He was a bit hesitant to do it, he told us, afraid that the concept would be too "far out". But even though some of the sales representatives were indeed a bit sur-

16. It is of course not unproblematic to make a distinctly female garments from a gender perspective, but on the other hand it can be seen as a way to open up possibilities for better fitting and more comfortable work wear also for men, by starting with the expressed needs of women and see them as potential early adopters, especially when introducing a feature like the stretch material which for men would be a radical deviation from traditional norms in clothing, while for women would be an easier step to take. In other products and contexts the reverse between men and women may be the case (e.g. Barletta, 2004; Johnson & Learned, 2004).

prised, the Dutch sales manager gave the garments "thumbs up" and expressed that she wanted them to go into immediate production.

EPILOGUE – DESIGN AS A NEW BUSINESS LOGIC

From the very start Marie and I felt that it would be very interesting to see if it was at all possible to develop a more design-oriented innovation process in a company as traditional as Tranemo Workwear. We felt that a basic prerequisite was management support, and when it was clear that Max was going to take over the role of CEO we gave the project a go ahead signal. But even with Max's support the journey was troublesome in many ways. For one thing the team was often quite overloaded with work, but most of all because Charlotta's approach fundamentally challenged the reactive way the team had worked hitherto, always responding to signals from the sales representatives, and never developing concepts on "their own volition". It took a lot of effort and a number of experiences that Charlotta subjected the team to for the team to take ownership and believe in the process.

Along the way they were also empowered to challenge a dominant tendency in the company culture to resist innovation beyond technical features driven by standardization requirements. The radical new stretch fabric concept demonstrated the potential in innovation and helped to legitimize the more design-oriented approach to the senior managers in the company, something which was also a relief to the young CEO Max, who at the first workshop had asked Charlotta:

"Where the hell do you find the ideas?"

Max now saw that they themselves, and especially his team, could actually define those ideas, or rather, those concepts.

Another result that certainly helped to legitimize the design-oriented approach was the fact that the more design-oriented work wear that combined functional features with an attractive and more youthful design, such as the First Grade collection and the new craftsmen collection, began to outsell the older garments. According to Max, during the last four years, sales of the older "basic garments" decreased by 50%. In the same time frame the more "design oriented" garments increased by 400%, and even though Tranemo

Workwear in 2011 still sold half as many design-oriented garments as basic garments, the marginal on the former was almost three times as high as on the latter. Suddenly the immaterial values that the company had never taken seriously had a value.

THE ALFA LAVAL
INTERVENTION

ALFA LAVAL – ALL ABOUT TECHNOLOGY

Just like many other companies that were established at the turn of the 19th and 20th centuries, Alfa Laval[1] was built around a single invention. In the case of Alfa Laval it was a version of the centrifugal milk and cream separator that Swedish engineer Gustaf de Laval patented in 1878. In comparison with similar devices in other countries, the de Laval's version was the only machine that could work continuously, which was a great advantage as it drastically increased production capacity. In the years following the invention, the company[2] that was built on de Laval's machine quickly captured substantial market share in many countries. This success can be attributed to the combined efforts of de Laval and his business colleague, Oscar Lamm. If de Laval was the engineer who created and developed a competitive product, Lamm was the trained and experienced businessman who travelled the

1. Today Alfa Laval is established in nearly 100 counties. The company has 28 major production units (15 in Europe, 8 in Asia, 4 in the US and 1 in Latin America). The company has some 11 000 employees of which the majority are located in Sweden, Denmark, India, China, the US and France. Source: http://www.answers.com/topic/alfa-laval-ab
2. Gustav de Laval and Oscar Lamm first established the trading company Oscar Lamm, Jr. of Stockholm in 1978. In 1883 they registered the limited company AB Separator. In 1936 the name is changed to Alfa-Laval Co and in 1993 to Alfa Laval.

globe to establish a strong distribution network by deploying an aggressive strategy to buy out local competitors. During the 20th century both food processing and other related industries developed rapidly. Alfa Laval was well positioned to take advantage of this development and began to offer other products such as industrial separators for other kinds of liquids (such as oils), heat exchangers, and systems for offshore petroleum handling.

That Alfa Laval is "all about technology" was obvious when we entered the main reception area of the headquarters in Lund, Sweden. The generic corporate environment was adorned with many examples of Alfa Laval's product range sitting on podiums and in glass exhibit boxes - for example a neat pump in an exploded version with chromed details and an immaculate paint job. The fruits of problem solving were found everywhere. The theme of innovation also reoccurs in Alfa Laval's communication material, for example in the financial report where it is states, "We see ourselves as an innovation company..." (2011, p. 9), or in the virtual showroom on the Alfa Laval web-site where it is possible to closely examine the technological equipment, both through facts and by spinning the equipment in a virtual 3D showroom, with the devices set on a pedestal in front of a beautiful park scenery (http://www.alfalaval.com/showroom/).

It is clear that "engineering culture" is deeply rooted in Alfa Laval. The majority of the people we meet when walking through the corridors towards the premises of the heat exchanger unit are male engineers. Along the walls examples of heat exchanger plates are mounted like metal works of art in a historical sequence, showing the development from the very first ones made in copper, to the latest titanium versions. Also the offices are generic to engineering, a maze of computers, cubicles, coffee machines, and little meeting rooms, think Dilbert, or Kunda (2006) if you are inclined to organization studies.

Our contact, Klas Bertilsson, is concept manager at the heat exchanger development unit. His office space was markedly different than the rest of the office. Some kind of model in progress was sitting in a corner. There were sketches on the white boards and hoards of post-its on flip charts. This is where concept devel-

opment is housed, the materialized first stage of the stage-gate development process of the heat exchanger unit. This stage is conceptual also in another sense. It is the heat exchanger unit that pioneered the work to include such a concept stage before the more linear product development process. This is where the more "fuzzy" stuff happens, if we should go by how the typical innovation management literature defines this stage. Klas explained that potential new technology and other areas of interest that the rest of the organization does not yet recognize as relevant to Alfa Laval are explored here. Klas' mission is to ensure that Alfa Laval stays ahead of the game and base strategies on a well-founded understanding about future development scenarios. This process involves a market-oriented effort to explore opportunities in collaboration with customers and potential technology partners. The unit has also developed a brainstorming and TRIZ-based[3] workshop methodology that is used to engage staff in directed problem-solving workshops. Klas also showed examples of early attempts to use sketch models and mock-ups to visualize possible alternative solutions to today's products.

Searching for an Approach

At the initial review Marie and I felt a little discouraged. It seemed that Klas and his team had all angles covered when it came to innovation and concept development. What else could design contribute? At the same time we felt that all this work, including brainstorming and mock-ups, still went on in a highly rational context surrounded by an objectivist rhetoric and vocabulary.

Only once did we catch a glimpse of a different perspective, when one of the engineers told us that at times the mathematical models that are used to predict the flow of different fluids through heat exchangers fail to account for what goes on in the tiniest little corners of the construction:

3. A problem-solving method developed by Russian inventor Genrich Altshuller in the 40's (1984).

20. Alfa Laval – All about technology.
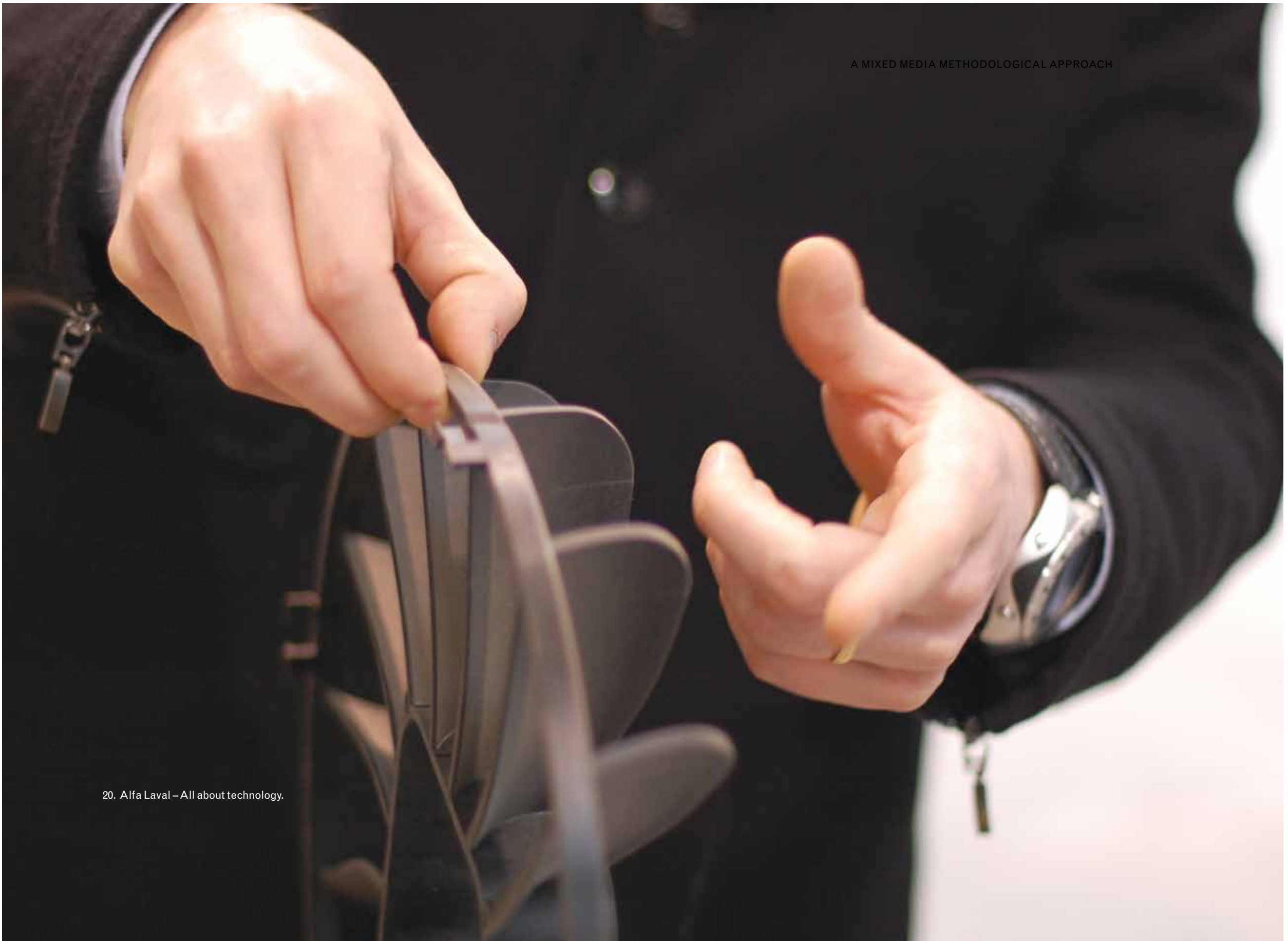
Then we have to revert to imagination. We have to become like the fluid and imagine what it would be like to flow through those little crevasses and past those corners, only then can we understand what is going on and develop new mathematical models that we test for accuracy, and surprisingly often they work.

Here was something interesting to latch onto. And what about the mock-ups? Yes they seemed to work well to visualize and communicate new possibilities. But what about the experience of making these models or sketches?

What about that exploration and learning or the brainstorming methodology? It seemed purposeful enough, but something still seemed to be missing, something indicated in how at the Ronneby unit[4] the brainstorming based workshop process had been adapted, as Klas' colleague Tony explained:

When we do the workshop in Ronneby we make these exercises as a two day event instead of during one day, then we get a night to sleep on it, and the next morning is when the really good stuff happen. Suddenly people have a very different understanding that spurs completely new ideas compared to the day before.

Could these experiences be seen as embryos and indicators of something that would resonate with design practice? This was our hunch and hope. What we lacked at that time was a vocabulary and concepts to express this more clearly to Klas and Alfa Laval. Klas also sensed that design could probably contribute, but he could not articulate how. He had previous experiences of hiring design consultants to conduct traditional design work on two items. The first one was a heat exchanger unit for home installation. Here the cover had been designed. A small symbolic slit had been incorporated in the cover, to communicate that the device was a money saver, a piggy bank. Perhaps this symbolic "touch" was not explicit enough, and Klas and his colleagues had not been impressed. The second was a tool for maintenance work. It had

4.   A production unit for small heat exchanger used in family houses.

proved superior to the current model both in terms of ergonomics and aesthetics, and it seemed that for Klas it was the user-perspective in design illustrated by this tool project that was the most interesting issue to investigate further.

With these observations in mind Marie and I saw two possible "journeys" ahead. The first one being the same as in the other cases, to explore and develop different concept areas and later innovation concepts through a workshop based project. The other involved stepping outside of Alfa Laval's technology-intense culture altogether and let a couple of Alfa Laval engineers experience design practice hands-on at a design company - a reversed artist-in-resident approach. Both journeys seemed problematic. The latter felt exciting as a novel approach but was too unrealistic in terms of time. The first one corresponded with the general approach of the study, but we feared that it would not be strong enough to hold its own against Alfa Laval's engineering culture.

Klas opted for the first approach and immediately offered a case that he felt would be suitable, a case that needed a user perspective. It was an innovative shower concept that involved heat recovery via small heat exchangers. This was a consumer-oriented product and thus beyond Alfa Laval's traditional product range, but as it could potentially be developed in partnership with a large producer. It was interesting for Alfa Laval to investigate, as it would build on their heat exchanger expertise. Marie and I were hesitant. To us this was jumping too fast onto a pre-defined concept. There would be too little exploration. At the same time we were eager to work with Alfa Laval and had little else to offer, and if their energy was in this project, why not roll with it?

Marie began to search for a suitable designer. As the shower concept would fit with a wider sustainability perspective the choice fell on designer Olof Kolte. Olof's background is first as a civil engineer MSc, and later as a designer MFA through practice and training at several schools, for example as Master of Art in interior and furniture design at RCA, the Royal College of Art in London. Olof's main interest is in design and sustainable development issues, something that he also teaches as a lecturer at Lund University of Technology and as a popular speaker at different

events, for example, in TED-talk seminars. With his dual background in engineering and design, and with his combined teaching and sustainability interest, we felt that Olof would be able to both guide the design process and also "shake up" Alfa Laval a little concerning sustainability.

THE FIRST PROCESS ATTEMPT

The first workshop was arranged in the fall of 2008. Klas had assembled a team of engineers who would investigate the shower concept. The general plan was that Olof would introduce himself and that Klas would then present Alfa Laval as well as the idea behind the concept. Then the workshop would focus on exploring the shower concept. To everyone's surprise, Olof opened with a photo presentation. During a visit to Japan he had taken numerous photographs of different kinds of flows of water. He talked about the photographs, telling how he as sustainability-minded designer "saw" these flows, how they inspired him to think differently about scarce resources as well as about well-being and beauty, a clear invitation to Alfa Laval, as a business dealing with different kinds of flows, to find inspiration outside of technology.

Compared with this poetic start of the workshop, the more problem solving-oriented session that followed seemed a bit mundane. However, the different groups that engaged in the shower concept from different perspectives came up with many potential technical solutions and Olof felt that the atmosphere was a good mix of creativity and critique.

At the end of the session, however, one of the senior engineers "pulled the rug" from under the concept with a calculation that showed how the efficiency needed to defend the project could never be achieved with the small water flow of a normal shower. The rest of group looked at his calculations and came to the same conclusion - that the project was not feasible and should be abandoned. To Olof this was also a good result, why spend further time and resources on an unrealistic project? But even though the result in this sense was positive we now needed either a new product concept to explore, or a different approach.

While Olof was encouraged by the session, Marie and I were now convinced that to start with a well-defined product concept meant too little "broad searching and exploring", at least in relation to the idea we had about the process. That the group had so easily engaged in technical problem solving was not all that positive in our opinion. To us it would have been more interesting to broaden the picture around showering from a user-perspective before opting for a specific technical concept.

Klas suggested that we could try a couple of other concepts that he also wanted to investigate. But these were even less user-oriented than the shower concept. In other words, the space to also explore the more emotional and aesthetic perspectives of design seemed even more restricted with these concepts. Considering this we suggested that it would be better to go back to the initial idea of a "journey" that would allow time to first explore broadly and then at a later stage develop a more well-defined innovation case. Further, as Klas had expressed that sustainability was an area that the unit wished to explore further, and as this was Olof's forte, we suggested that Olof would engage the team in a series of workshops on the sustainability theme in a broad sense and only later define a more specific and Alfa Laval oriented concept.

THE SECOND PROCESS ATTEMPT

Olof made a first proposal on a process that would use the upcoming COP 15 – United Nations Climate Change Conference in Copenhagen in December 2009 as a pivotal theme, with the idea that in the process Alfa Laval would develop interesting concepts to show at the conference exhibition. However, now the economic crisis was looming, and in the beginning of 2009 it hit hard. During the winter months, when the process should have begun, nothing happened. Alfa Laval and Klas had crisis control on their minds. But there was also another reason why the process stalled. Klas' attention was focused on another project about developing the innovation process, a project that we knew little about at the time. I will return to that project below.

It was not until spring that the situation stabilized and the first
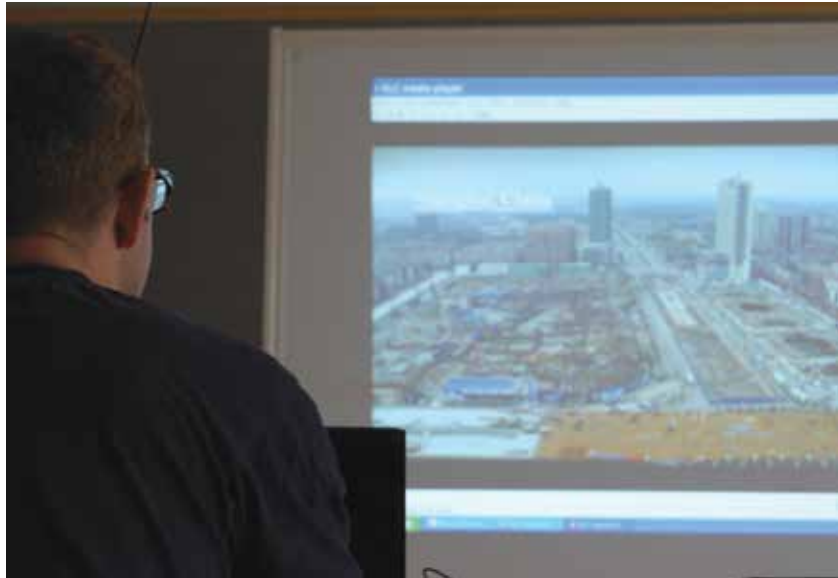
21. Olof presenting at the Alfa Laval
and Global Challenges workshop.
22. Marie, Klas and Klas' colleagues
listening to Olof's presentation.

workshop was scheduled to be held in early June, now on the theme of "Alfa Laval and global challenge: A vision for Alfa Laval in a sustainable society". To further snap the Alfa Laval representatives out of their comfort zone, Marie proposed that the workshop should be held in an inspirational environment *outside* Alfa Laval. Olof decided to hold the workshop at IKDC, the Ingvar Kamprad Design Center at Lund University. In preparation for the workshop Olof asked the Alfa Laval team (Klas and two other engineers) to read a text by Jared Diamond, listen to a talk by Al Gore, and watch two episodes of the TV series Planeten – a TV series on environmental destruction. It was evident at the workshop that they had done none of this.

Olof introduced the workshop with a captivating account of the current situation regarding resource scarcity, over-consumption, and so on. He started with a story of how he had been in London the previous week, and when flying out had noticed that there were swimming pools in gardens everywhere, pools that had not been there a couple of years earlier when he studied at the Royal College of Art. His presentation built on a historical account of how Western societies have grown increasingly reliant on scarce and non-renewable resources through political decisions, and the lock-in effects of infrastructure-development and over consumption. He also showed different global warming scenarios.

Throughout the presentation Olof used a number of fascinating images, storytelling, and other techniques to bring the message home. There was some discussion but mostly the little group, which also included of two of Olof's students, listened to Olof. After the presentation the group began to discuss different perspectives, but time was running out and a second workshop was scheduled a month later to continue the work.

INTERMISSION

Only Klas came to the second workshop. Olof had planned to continue the work from the first workshop, but instead the workshop turned into an impromptu meeting about the project. Klas asked if he could show a power point presentation about that other pro-

ject on innovation process development for which we had had little information. We learnt that in 2008 the senior management of Alfa Laval had initiated the development of a process for exploring concepts in very early phases of the innovation process. At first Alfa Laval had considered using external consultants for this development work and, among other firms, had asked for IDEO's bid and ideas on the project. Sensing that the different proposals did not match Alfa Laval's needs, it was instead decided to take advantage of the in-house experience and develop the process internally, only using one external consultant as a sounding board, a local innovation consultant who specialized in creativity methods.

In the winter of 2009 a first pilot run of the process that had been dubbed the COIN-process[5] was made. In the workshop senior managers had been involved in exploring sustainability issues and cleantech based on future scenario material that students at the Chaos Pilot programme at Malmö University had developed. Needless to say, this process was in many respects similar in its approach to the one that Olof tried to get under way. We took the fact that Klas told us about the success of this project at Olof's second workshop as a sign that he had already achieved what he had hoped for with the user oriented COIN-process.

In the coffee break, Marie and I discussed the new turn of events and decided that it was time to "come clean" with Klas. We could understand that Klas was not satisfied with the process. Olof's second approach, which had been encouraged by Marie and me, probably steered too far away from the familiar. Further, Marie and I had not been able to articulate the possible design contribution very well. But another reason why it didn't work, we felt, was Alfa Laval's detached interest in the project since the very first workshop. We were also concerned about what we experienced as secrecy surrounding that other project vis-à-vis our project. Why

5. COIN – Customer Oriented IdeatioN, defined as "The process of converting customer input, ideas & insight into investment decisions related to product, service, application & business model development across established departments within Alfa Laval". Source: Internal Alfa Laval presentation.

not involve us in the COIN-project? Further, judging by the presentation of the pilot run of the COIN-process, there was still room for improvement based on a design perspective, and we could now see more clearly what that could be about. For example, the process seemed too linear and also lacked a more developed user perspective.

When the meeting resumed, after we had released Olof as it was now a discussion between Klas and us, we told Klas about the potential in directing a design perspective on the COIN-process instead, and also about our "terms", that from now on communication would have to be much more open. To our surprise Klas responded positively. The first pilot run of the COIN process had been successful, but he also felt that the process needed at least another iteration to become more user oriented. The external consultant that he had used had not delivered what he had hoped for. He also told us that the senior management team he given Klas the task to make such a second iteration and that it would probably take place during the fall of 2009, probably in Italy. We agreed that Klas would provide more information while we would try to find a new designer more explicitly oriented towards design methods. Olof had made a tremendous effort and would have been perfect for working with the sustainability theme on a strategic level, but now the brief had changed.

THE FINAL PROCESS ATTEMPT

The choice of new designer fell on Patrik Westerlund of Shift Design & Strategy. Patrik is trained both as an industrial designer MFA as well as holds an MSc in business development and entrepreneurship. He has previous experience from working with industrial companies and as a coach in process development projects, and also had been involved in a prior research project with Chalmers University of Technology and the Swedish industrial research agency SWEREA with the aim of reducing lead times in innovation processes though design methods.

At the fifth management seminar where all the companies involved in the study met together, held at Floortech AB in Gothen-

burg in November 2009, Klas was introduced to Patrik's colleague Carl Hampf because Patrik was on a business trip. Klas also took the opportunity to visit the office of SHIFT Design and Strategy to see how they often worked with a process that started by defining intended user experiences in the long term, or "imprint" and from there worked backwards via the more direct user experience, or "impression" to the actual design of the product – its "expression". Klas took an immediate interest in this "reverse logic".

In the weeks to come Klas and Patrik communicated back and forth via e-mail and phone in the planning of the first of two workshops based on the COIN-process. This time the workshops would take place at Alfa Laval's unit Air Business Centre in Alonte in northern Italy. The idea was that at the first workshop Patrik would mainly observe the COIN-process in action from a designer perspective. But he would also contribute with a couple of minor methods. That way Klas would also get a feel for Patrik's possible contribution. Based on the experiences of the first workshop, he would then collaborate with Klas to review and possibly improve the COIN-process in preparation for the second workshop.

The First COIN-Workshop

The purpose of the first COIN-workshop in Italy was to assist the Air Business Centre in a broad search for possible new solutions for "dissipating excess air from coolers". Air Business Centre specializes in equipment for air cooling, producing devices that often sit on top of office buildings, industrial complexes and shopping centres, for example. Behind this broad objective, a more specific issue loomed, the fact that some competitors had begun using a novel technology for air coolers known as "micro-channels". Air Business Centre urgently needed to address this potential threat – or opportunity. One evident option was to begin using this technology themselves, another to stay with the current technology, at least for the time being. However, before investigating these options the idea was that the first workshop would take a broader perspective to see if there might be other alternatives as well as other needs to address, and where new technology might not be

the only answer; in other words, to use this situation to take a broad look at the offering of Air Business Centre. One challenge for Klas was therefore to steer the first workshop away from the engineer's specific interest in the micro channel technology, to get them to put problem-solving "on hold". The director of the Air Business Center, Jo Vanhoren, put it like this:

> What is the expectation of these two days? I can already tell you that after these two days it is *not* our expectation that you define a new product. We are engineers, we can't not think of solutions, but the risk is that if we do that we will create the same old condenser. We need to open up the value chain, what do the different people want? Probably we can do different things to the heat exchangers but also to other areas.

The workshop took place at a small conference centre outside of Verona. The building was a pastiche of the typical Italian "villa" built in 80's post-modern style with copious amounts of marble and "vintage" style stucco, a rather exclusive setting for a workshop. One reason for this choice of location outside of Alfa Laval's operations, and in such comfortable (if somewhat bizarre) settings, was that the meeting was also important in another respect. At the meeting staff from four different units had been invited to contribute with their expertise, or rather, with their "brains", as Klas put it humorously:

> You are here for your brains. If we wanted your knowledge we would have asked for a report.

They were "about fifteen "brains" all in all, all male. Three of these units had been acquired recently; the units in Finland, Holland and the UK and many of the participants would meet for the first time. Thus a secondary ambition with the workshop was to create a climate that would encourage bonding across these different company cultures.

Klas started the session by explaining the COIN-process, how it was set up according to a sequential logic of Where – What – How.

During this workshop focus would be on Where and What, also expressed as "Areas of need" and "Issues to be solved", only in a later workshop would the How-question (solutions) be explored.

After this introduction Patrik made his first contribution, a presentation exercise where every member of the group presented themselves with a sketch depicting an animal that they could relate to, and explained why. After this he asked the group to identify all the negative characteristics of a typical bad meeting-experience that they could come up with, a kind of negative brainstorming exercise. Patrik listed the results on the left side of a flip chart and then asked the group to translate the negative experiences to positive ones which he listed to the right, so that the new list made a form of contract about what was important to consider during the workshop to ensure a pleasant and productive experience, a contract that he also asked each member of the group to sign. After this two hectic workshop days ensued.

For the first day the group was divided into two smaller groups. Both groups would look broadly for different "areas of need" for which Air Business Centre could offer solutions. One group would investigate future society scenarios and macro trends bearing on cooling processes and backtrack from there to the present situation. As background material this group would use the same scenario material that the Chaos Pilot students had developed for the first pilot run of the COIN-process. The second group would map how heat transfer technology had developed historically to the present day, and then extrapolate this towards the future. The second group was also asked to use a comprehensive "User matrix tool" that basically maps the value chain on the x-axis and the different stakeholders on the y-axis, so that all potential interests would be considered. This would broaden the scope from a limited attention to product and production. The idea was that after this exercise the two groups would share their insights and look for possible overlapping areas of need that would indicate especially high relevance. At the end of the first day two new groups were formed around the identified areas of need, during the second day one group would further investigate areas of need in the "before purchase, and purchase" part of the value chain, and the

other group would investigate "after purchase, and decommission". Klas believed that forming these groups at the end of the day rather than at the beginning of the second day would give the groups time to reflect informally during dinner and also "sleep on it"; this wisdom was carried over from the workshops at the Ronneby unit.

The second day started on an up-beat note with Klas showing an animated photo-presentation that he had made the evening before based on photos that he and I had taken. The animation was set to the up-tempo song, "The Future's So Bright, I Gotta Wear Shades".[6]

After this the two new groups continued with their tasks, to investigate specific areas of need and begin looking for possible solutions. The task was also narrowed down to concern air condensers specifically. To again diverge, a new method was introduced, image-based idea generation, an idea generation method that Marie Loft had suggested to Klas. Each team was given a stack of images that Klas had downloaded from image sites on the Internet. Many were ambiguous or provocative, others more poetic. The groups used the images as associative "spring boards" to look for new ideas. One such example is when one group looked at an image of a huge Coke billboard mounted on the side of a skyscraper building, as one member of the group reflected out aloud:

What about placing the coolers on the side of the building instead of on the roof? Make them part of the architecture – hiding them in plain sight.

This metaphor opened up an aesthetic perspective that had not been there before.

In the middle of the process, Patrik intervened with an exercise to "recharge" the groups by playing with a response-time toy that he had brought. Each member held a metal handle with a

6. The up-beat song Klas had chosen, by Timbuk3, is from the 1986 and actually depicts a rather grim outlook on the future and possible nuclear holocaust - one of my favourite songs when I was 17.

trigger. At the sound of a signal the trigger should be activated as fast as possible. The slowest person got an electric shock in his hand. This certainly raised the spirits in the groups and there were laughs all around. Patrik had also brought a "goody bag" of different things and gadgets to bring some sensory experience and inspiration to the exercise, things that could also be used for association, or to just direct attention elsewhere.

At the end of the exercise each team was asked to prioritize their identified "issues to be solved" and select their top ten suggestions. These were then ranked in a "wisdom of the crowd" exercise, an exercise that instead of facts builds on intuition. It was interesting to note how Klas legitimized the exercise by telling the story of how the US Navy that had invented the method during the search for a missing submarine, and how it had proven more efficient to draw on the combined intuition in the group of Marine officers, than from the assembled facts about its possible location. In the process the different proposals were judged in several stages, where each stage built on discussions and making sense of the proposals from different angles, so that a common understanding was homed in on. The result of the workshop was six main themes that the Air Business Center could continue working with.

Patrik mostly participated as just another member of the team throughout the exercise. Or rather, his approach was to use his "alibi" as being an outsider to "ask stupid questions", instrumentally naïve questions that could help the team to think in new directions, including provocative questions like, "What if this or that happens, what does that mean for Alfa Laval?" He also frequently used the whiteboards and flip charts to illustrate thoughts and to bring the group together around a specific question, engaging the silent members of the group. The questions typically spurred storytelling to grasp a specific aspect or situation, like when a British after-market representative told his group how "in the field", "The guy at the site will call the service centre, and he will need answers the same day to be able to continue his job, we need a system that can provide that speed."

Klas "hovered" around the on-going discussions, alert to the progress in the groups and also to the mood and the atmosphere. From time to time he stepped in to add energy, often with a joke or story. He also pulled the groups from the discussions to the coffee room when he felt that the groups needed a "… refill of caffeine to recharge their brains."

It seemed that Klas and Patrik had complementary roles. Both worked to energize the sessions, but in slightly different roles. Klas had with the more overarching perspective and Patrik in a more immersed role. Klas and Patrik also discussed the process from time to time, drawing from their different "vistas", making small adjustments to the time schedule to keep the process fluid.

During the two days, I observed the engineers work hard to broaden perspectives by holding back the urge to come up with detailed solutions up front Patrik was also impressed by the creative effort of the group, just as Olof had been with a similar but smaller group. Many ideas and also solutions emerged throughout the process. I also noticed that the more ambiguous photo-based sessions seemed to work well, even though there was some initial apprehension.

Afterwards one engineer from Air Business Center said:

> We have never used methods like this before, using photos for inspiration. You know we are engineers, but this is something that we will use more in the future I'm sure.

Between Workshops

On the way back to the airport, still feeling the rush of the workshop, but also the fatigue of such an intense event, Patrik and I started to discuss what could be changed and improved from a design perspective. This discussion continued in a few sessions "back home" and Patrik developed a proposal for Klas for the second workshop based on our discussions.

First of all, we both felt that the process had been too linear and that this restricted the possibilities to "diverge" and explore. Patrik proposed that the process should be "broken up"

to allow for more "divergent thinking" and for giving space for investigating possible solutions in more convergent stages, but without drifting too far from the process. This also meant including the material that supported the workshop, such as the different charts in addition to how these had been placed in a linear manner in the facilities. To inspire and illustrate his thinking he used the analogy of the synaptic neural network of the brain – an analogy that would certainly not be lost on Klas with his frequent references to "brains". Patrik also visualized a possible "synaptic" workshop process as a small animation were the visuals looked like brain cells and neurons, as a contrast to the geometric standard flow chart boxes and straight arrows that Klas used in his slides. Patrik's ambition was to maximize exploration *within* this process so that the outcome would hold as many high quality solutions as possible. The character of the process could then be seen as more network-oriented than linear. However, this kind of process would also place an increased effort on those who facilitated the process to both allow and restrict divergence actively and continuously.

In connection with this he also felt that there had been too few provocations, or "sparks" as Patrik called it, in the first workshop. It was not enough that thought-provoking material was available, like the Chaos Pilot material, it had to be *activated* by questions and questioning, and the groups would need help with this. In line with the synaptic analogy he also proposed two methods that could further spur divergence and more associative exploration.

Patrik proposed that the first method should explore from "the opposite direction", that is, instead of departing from a functional and technological perspective, which the current COIN-process did, this approach should enhance the user-*experience* dimension without departing from a specific technology. His choice fell on Synectics, a problem-solving method dating back to the 50's. The method builds on the notion that active search for relevant analogies and metaphors in relation to a problem will help problem solving. The Synectics method is rather intense and requires a skilled facilitator to be successful, someone who can both help spur a group to draw from analogies, spontaneous thinking and

experiences, and also guide the group "safely" through a wieldy process, to make the group feel secure and energized when the process seems to travel far from the initial problem, as this is often when the most fruitful solutions are found. Patrik also proposed that Klas should "train" as a Synectics facilitator before the second workshop.

The purpose of the second proposed method was to help the groups explore a considered solution from as many perspectives as possible, and to stimulate building on each other's ideas based on visual representations. For this purpose Patrik suggested that a "resident sketcher" should be involved and be "activated" during problem solving sessions. Patrik also proposed that a little "prototyping corner" be set up at the workshop, with cardboard, glue guns, scissors and so on, so that simple sketch models could be built. He also suggested that Klas should drop the "Where – What – How" vocabulary. Patrik had observed, as a member of one of the groups, how this concept was ambiguous and difficult to relate to and led to unnecessary confusion about the process. The concept of "Areas of need" – "Issues to solve" – "Solutions" seemed more straightforward.

During the winter of 2010 Klas and Patrik continued planning the second workshop after the Air Business Centre had given the go-ahead signal. Among other things, Klas made a "trial run" as facilitator of the Synectics method at Business & Design Lab, where he worked with a group of master students in the Business & Design master program at HDK, the School of Design and Crafts. Two sessions were held, which I filmed. The films were analyzed by Patrik, Carl Hampf and Klas as a group, to review and discuss experiences for Klas' learning.

The Second COIN-Workshop

This time the facilities were not as fancy as the first time. The workshop took place on site at the Air Business Centre in Alonte, a typical production site with an adjacent office building, close to a main road. We had two quite large conference rooms to ourselves for three days – generic "bare", white walled rooms lit with fluo-

rescent tubes, dense with that typical air conditioning smell, with whiteboards all over and a multitude of very blue office chairs that were soon covered by a an equal multitude of very similar gray and black coats and jackets. Again all the participants were men, most of them the same as had attended the first workshop (one female engineer had been invited but she couldn't come).

This time, Klas and Patrik collaborated from the very start in setting up and facilitating the workshop. On the first morning they were busy making final adjustments to the process. At the start of the workshop Klas presented the new challenge, to explore the micro-channel technology from all possible angles, both related to the needs that had been developed in the first workshop and to investigate more specific needs in relation to micro-channel technology. Klas then stated what he expected of the group this time:

> You have been selected for a special reason. By the end of the workshop we would like to have found a solution to our problem, the right solution. We want to connect all our brains - that is how we come up with solutions. We need your backgrounds and your different experiences. We need that information to combine into the final solution. We also need your respect, and we need your teamwork – and this is why you have been selected.

The goal was that each team would present a rough but complete business case at the end of the workshop that would include everything from need to suggested concept as well as the business model. A new member of the facilitation team was also presented – Adam Henriksson, the "resident-sketcher" who would work for the groups on the second day.[7]

On the second day Klas and Patrik each facilitated a parallel Synectics exercise. The groups were asked to explore possible user experiences to aim for, and to articulate these as best they could.

7.   Adam was a design student at the University of Umeå doing his second year, and was at the time doing an internship at Shift Design & Strategy.

23. Klas and Patrik discussing final adjustments of the workshop process.
24. Final adjustments.

In the introduction Patrik explained:

We will now use a method called Synectics. If we use the analogy of a compass needle that swings back and forth until it finds the right direction, using Synectics is the same thing. Like the compass needle we will also have to explore wrongs before we find the right direction, and we must accept each other's weird ways of seeing things. The method is like a 'taking a trip'. It is about making the strange familiar and the familiar strange. We will use our imagination, think in new ways, and then we will come back again.

After some initial hesitation, where some participants wanted to define the stakeholders rather than engage in the "journey", the whiteboards of both groups soon filled up with thoughts and ideas. Metaphorical illustrations, like "harmony in use" the "users best friend", were conceived about the impressions that Alfa Laval could make, and out of those came technical ideas, like a convenient monitoring system, but also thoughts about differently shaped products that would blend in with architecture by being more "organic" or more "transparent" – "like that transparent bicycle airplane, you know."[8] It seemed that there was a process going on where the idea of differently shaped products was socially legitimized among the engineers.

Both Klas and Patrik worked hard to get the groups to associate freely. It was evident, in comparison to the exercise with the business and design students that this group found it more difficult to "let the mind wander". Later Klas said that one reason why the exercise still worked was that the principles behind the session had been well presented with a flowchart that Patrik had taken from a book. It seemed that the flowchart made the groups feel safe that this was actually a scientific process, as wieldy as it was, and that therefore it could be trusted. Another observation was that the more metaphorical and aesthetic results of the session had a hard time "holding their own" in later sessions that were

8.   I think they referred to the Gossamer Albatross bicycle airplane that crossed the English Channel in 1979 as the first human powered airplane.

25. Klas working hard during the Synectics session.
26. Alfa Laval engineers considering metaphors during the Synectics session.

more engineering oriented. It took quite an effort from Patrik and Klas, and some group members who were more inclined to appreciate the more experience-oriented aspects, to keep them "in the loop".

During these exercises Adam was warming up his sketching skills. He was also rather nervous about his contribution, feeling that he would have to sketch nice renderings really fast. After all, he was only in his second year of studies and was still not very proficient with all the techniques and tricks of the sketching trade – was he in for a surprise in believing that it was the quality of the renderings that would matter most. On the afternoon of the second day it was time for Adam to be activated. He was stationed at a separate table in the middle of the larger conference room. The different teams had their own spaces by the walls of the same room and were working intensely around the tables and on the walls behind them to develop their respective business cases step by step.

At first Adam sat there all alone, continuing his sketching exercises. No one seemed to take notice of him. Then one of the Dutch engineers, Geert, wandered over to Adam with a simple sketch that he had made of the principles of a new type of product. Could Adam perhaps make a nicer rendering of the sketch, he asked.

Adam made a first attempt but soon had to ask Geert about the sketch. "What do these arrows mean?" "How large is it supposed to be?" "What materials will you use?" and so on.

Geert started to explain.

Adam asked new questions, unfamiliar as he was with the terminology and technology.

Geert continued to explain patiently while watching the emerging rendering, then he suddenly stopped, seemed to think something over, excused himself, said that he had to go back to the group, bringing Adams half-finished rendering with him.

Geert now asked his group a question while making some scribbles on Adams rendering, "What if we make it modular, like this? That would save production cost and also be more convenient for the user, it could be tailor made you know." He showed the others and together they built further on Geert's idea.

27. Geert trying to explain a concept to Adam.
28. Adam being crowded.

29. One of the Alfa Laval engineers making additions to one of Adam's renderings.

30. Association images being used in a discussion about a new concept.
31. Looking for inspiration in association images.

181

Other groups took notice of the intense discussions in Geert's group.

Soon Adam was crowded. In similar ways he engaged with group after group, only trying to understand what the groups meant by asking questions, and by listening intensely while sketching, so that he could make a good illustration of their concepts. In this way new ideas were generated through his innocent questions.

Now there was a steady flow of engineers running back and forth between Adam and their groups. Sometimes the whole group came to Adam's table to discuss.

By the end of the session Adam was completely drained from attempting to make sense of all that he had been asked to illustrate, and from unknowingly asking so many "therapeutic questions", as Patrik put it.

The groups now had renderings where some parts were drawn by Adam, and other by the group. More important, the groups now had a number of new ideas.

Both the Synectics and the resident-sketcher sessions were successful in that they had helped open up a number of new perspectives, but the prototyping table was less used. Two groups used it to make illustrations, but these were more of the nature of "comic relief", illustrating, for example, the potential to save money due to efficiency improvements in the shape of a piggybank. Nevertheless, these were also posted on the wall among all the charts and facts. The pile of association images from the first workshop had not been used as a separate session this time, but they had still been used from time to time. Sometimes a group member would use the images to step out of the current discussion to search for inspiration elsewhere. Some of the images were also "kidnapped" by groups to illustrate their concept and especially the user-dimension, sometimes by strengthening a metaphor or, more often, with scribbles added onto the sketch. This was a new use for the images that had not been foreseen by Klas or Patrik.

In the last session each group presented the resulting rough business to the other groups. These presentations were conducted as fictitious presentations for a simulated management board.

One of the other teams acted as negative members of such a board with the task of critiquing the business case, while another group was asked to be positive and highlight all the advantages. In the presentations Adam's renderings were frequently used, and even though the concepts were still rather technically oriented (of course), user-related properties and concepts that resulted from the Synectics workshop were also important in all of the business cases.

After the workshop Klas said that both workshops had been successful, and that contrary to his belief in the summer of 2009, the COIN-process had a larger potential for improvement than he had expected. The biggest surprise was that the design approach would lead to a process in which, as Klas decribed it, "…we would fundamentally challenge the very problem that we attempt to solve."

EPILOGUE – CONTINUED COOPERATION AND DEVELOPMENT

Even though the research part of the project ended with the observations of the workshop, the collaboration between Klas and Patrik continued. Patrik has helped further development of the process as well as assisted in facilitating more workshops, including some in other countries. One ambition for further improvement has been to involve a more diverse team in the workshops, for example, one that also includes women and users. Patrik has also illustrated the process graphically based on the Synaptic metaphor illustrations, to make the process easier to grasp. This is something that according to Klas has also helped "sell-in" or legitimize of the process within Alfa Laval. The process is not compulsory and it is only the success of the process-in-action that can guarantee its continued use, especially as the workshops are quite resource demanding in terms of man-hours. The cost of a typical two or three day workshop is in the region of 20 to 30 thousand Euros.

When Klas reasons about the economic effects of introducing a design oriented perspective on innovation he says that is not easy

to know exactly how much the design dimension will contributes with in terms of numbers. However, the better the quality of the process, the effect of a successful workshop where important new perspective and concepts are achieved may be in the area of tens of millions of Euros in revenue. A secondary effect of the design perspective also seems to be a newly awakened interest in considering the aesthetic and architectural dimension of Alfa Laval's technological products in the involved unit, and how such dimensions can be intertwined with technology development.

THE KITCHENTECH AB
INTERVENTION

KITCHENTECH AB – STAINLESS STEEL AT THE CORE

The Kitchentech AB[1] facility crouches alongside other small indus-
tries beneath the towering chimneys of a giant power plant. On our
first visit, Marie and I park in a fenced-in yard. The Kitchentech AB
offices are behind a nondescript door in one of the industrial build-
ings that surround the yard. Behind the front door are a couple of
small office rooms, a worn leather sofa and coffee table, and a coffee
machine in the kitchenette. Over to the left there is a more open
space, what seems to be an abandoned show room, crowded with
discarded pieces of machinery, shelves and examples of the com-
pany's professional kitchen equipment and interiors. It is on this
floor and the floor above that the "white collar" staff works, about
10 people all in all. Straight ahead and just a few steps away is a sec-
ond door, a heavy fire door. Behind it is the heart of Kitchentech AB,
the workshop for making stainless steel kitchen equipment such as
sinks, cooking tables, counters and refrigerators. The manufactur-
ing process entails typical processes for shaping objects out of sheet
steel and steel profiles, such as metal cutting, bending and welding.
Most of the work is manual and depends on the skills of some 40
workers, even though in the last few years, robots have been intro-

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1. This case has been anonymized. Kitchentech AB is a fictive name, as are the
    names of the involved people from Kitchentech AB. This is also the reason
    why there are no photos.

187

duced to handle more repetitive welding jobs.

The mother company of Kitchentech AB dates back to 1929. Over the years a small group of companies have been developed around steel products, of which Kitchentech AB is the newest. It was bought in 2001 from a major Swedish white goods producer. The reason why the white goods producer sold the company, which was one of its sites for producing professional kitchen interiors, were strategic as well as efficiency related. It was one of several drastic actions taken in the late 90's when, due to financial problems, the company was restructured around its core products of white goods appliances for households.

When Kitchentech AB was bought Johan Svensson was hired as CEO. Johan came from the old owners and his first challenge was to deliver a more efficient production. His immediate action was to drastically reduce the production work force. The falling sales figures during the economic recession of 2001 added to the burden, beyond the general need to cut back. Another challenge was to establish both a new sales network and in-house product development capabilities, as these did not come with the purchase. What did come with the purchase were the rights to continue to produce the existing products, and in the first years the sales catalogue was more or less a copy of the catalogue of the old owners.

I first came to Kitchentech AB with Marie Loft in 2008 to discuss their possible participation in the study. At that time product development was more or less restricted to one person redesigning existing products to improve quality and to shorten production lead times and costs – Karl. Such projects were initiated either by the sales staff or by production planning.

One reason why Kitchentech AB was interested in participating in the study was their positive experience of the previous SVID-project Employees and Companies in Good Shape. In that project, one of the organizations involved was Posten, the national Swedish mail service, and a designer working with Posten employees developed an improved cart that for mail sorting. The idea was to design a cart that restricted the need to stoop down to pick up letters, to spare the back. The new cart used the same function as carts for plates used in professional kitchens, where the stack is placed on a spring loaded shelf that rises automatically with a decreasing number of plates so that the top of the stack is always level with the waist. Kitchentech AB was involved in the project to develop and build a first prototype of the cart because they knew how to make carts for plates. The prototype cart was designed in cooperation between Karl and the external designer involved in the SVID-project, and even though the cart never went into production, Kitchentech AB's experience of working alongside the designer left an imprint in the company. The process had led to several novel ideas that were relevant also to Kitchentech AB's own products and Kitchentech AB wanted to know more about the design process that they had experienced. Just as important, Marie had been the project manager of the Employees and Companies in Good Shape project, and had already established a good relationship with Johan and Karl.

THE INITIAL REVIEW

In the initial review report we focused on two design-related areas for possible improvement. The first area was the development process as such, or rather, the complete lack of a new product development process beyond redesign of existing products. The second area was the possibility of improving the external communication efforts of Kitchentech AB. For example, the offices might be refurbished to better reflect their status as the head office of Kitchentech AB, rather than their former status as the administrative offices of a production site. Similarly, the homepage felt dated, as did the sales catalogue. To be honest, Marie's and my fingers itched to let a designer do a general "make over" of Kitchentech AB's identity.

I believe that this dual perspective in the initial review report blurred or made the possible design contribution to Kitchentech AB's product development difficult to grasp. At the meeting where we discussed the initial review report with Johan and his project group much time was devoted to communication issues, particularly because the marketing person also felt that this was an area in need of urgent work. Only later did we discuss product development and innovation. Johan confirmed that product development was handled by one person. After a while we came to the conclusion that

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product development would be the focal area of the project because this was both something that Kitchentech AB needed to develop and because it was the main topic of the study. The atmosphere of the meeting was inspirational and full of anticipation. However, participants aired some concerns that such work would take resources and time, of which they felt that they didn't have enough. Johan immediately retorted, "If we are not challenged we may just as well go to lunch right now."

He made it clear that the group would have to devote time to the project, and that he was responsible for this priority. With this Marie and I left the meeting with high hopes.

Marie now started to look for a designer. Her choice fell on Cecilia Nilsson, a designer with a dual background in engineering studies and engineering work at Ericsson, and later, design training and design practice. Cecilia's design interests were in interior design as well as strategic design management, and she had previously worked with the interior design of professional kitchens. Her combined experiences seemed perfect for a company like Kitchentech AB that worked with products for professional kitchen interiors, and in need of a strengthened development process.

THE WORKSHOP PROCESS

The First Workshop

Both Marie and I sensed that it would probably be a good idea to hold at least the first workshop "off-site", away from phones, production problems, and all other things that would otherwise steal away attention. Marie chose to locate the workshop at MINC, an incubator for small creative industry start-up companies situated in the former shipyard area of Malmö. MINC had a "tailor made" "lab" for creative workshops with lots of "fun and games" props. It was also a large and well-lit room that would be a suitable place for a workshop even without these "props", which, it turned out, were hardly used.

For the first workshop Marie and Cecilia collaborated to find an approach that would hopefully snap the group out of their current

focus on work-related day-to-day matters, and cause them to begin to reflect on the company as such. Cecilia, with her expertise in design management, felt strongly that a design and innovation process needed to be based on a well formulated and coherent combination of a corporate identity and a business plan - basically a collective and reflected understanding of what the company was about and for whom. Her idea was that during the first workshop the group would be introduced to the concept of corporate identity by applying it to a number of fictitious companies, so that in the next workshop they would be ready to work with Kitchentech AB's own corporate identity and product range. In this introduction she also wished to show how, according to key design management corporate principles, the organizational identity and business plan should be tied to innovation work, for example, that the visual appearance of a product should reflect the visual identity of the company, that identity depends on intended target groups, and that the needs of these target groups should influence innovation work.

In the meantime, Johan created a small group that consisted of himself, Frederik, the production planner, Karl, the product developer, and Sebastian, the marketing manager. When Johan and his colleagues arrived at MINC they greeted Marie heartily. It was spring and the group seemed happy to be away from the office, maybe with mixed feelings for not sitting productively by the phone or working in production. It was difficult at first to gauge how they felt about the workshop, but I noticed that Cecilia, whom they met for the first time, was treated more reservedly – no hearty greetings there.

Marie and Cecilia had decided that they would collaborate during this first workshop. I had decided to stay in the background to observe. In the introduction Cecilia told the group about her past experience, for example of her product development experience from Ericsson and her work with IKEA. She then quickly proceeded to introduce the first exercise. In the exercise the group was divided into pairs and each was asked to develop the visual identity of two fictitious companies, Service Ltd., and Product Ltd. Each pair would draw a mug to represent the visual identity of the respective company and also make a so-called image board by cutting images from magazines that fit with the intended identity and combining

these in a collage on a board. Through this process they would formulate a number of core values representing the company.

The pairs started to work somewhat hesitantly. Within minutes, both Marie and Cecilia had to repeat the intent of the exercise to each pair, trying to articulate the reason for the exercise in different ways. But confusion persisted. There was silence when magazines were leafed through, only interrupted by questions like, "Look, it says here that we should think about if the company is male or female. We have more men than women at Kitchentech AB. I guess male then, or is this about "Kitchentech AB"?

Jokes were made about their drawing abilities. "Johan, do you dare use colour?" Cecilia intervened again to explain how to use the magazines:

"Look, you can find images in the magazines. For example this one (showing a picture of a technological device) it communicates technology, quick, young. You can make associations like that," Cecilia said.

Beneath the joking around and the questioning to try to grasp the exercise, the groups seemed anxious. By the end of the exercise each group had produced only one sketch of a cup and one or two pictures per fictive company.

Marie asked the groups to present their results.

Johan began to present the work he had done with Frederik, but didn't seem very convinced about the "correctness" of their work:

"We thought like this, but I'm, not sure…"

He hesitantly described the identities that they had developed for Product Ltd. and Service Ltd.

Marie asked questions to help Johan clarify and describe their results. She proposed possible core values and wrote them on the whiteboard whenever Johan agreed with Marie's interpretations.

After a while it was Sebastian's turn to present the work of the second pair. This presentation was much livelier. Sebastian seemed to revel in the opportunity to present their concept.

"Look here at this cheetah. Service Ltd. is like that. It climbs, it goes for anything, full speed ahead. And here, the crocodile, it snaps at anything. You know, when I was in Florida, I saw how the crocodiles goes for prey. He takes a bite of anything to see if it is good to

eat. It's just like creative chaos where you go for anything but also have to discern, like the crocodile. The crocodile won't eat everything you know."

Johan, the CEO, immediately reacted to the crocodile metaphor:

What the hell! You can't have a company like that. Remember the companies of the dot-com bubble, they were like that, full of creative chaos. They were hope-companies with no substance."

Members of the group tensed.

Marie intervened to try to nuance a bit, perhaps sensing that Johan had a concern that could stand in the way of the process, maybe even of the project:

"But Sebastian also said that a company like that has to be able to discern… It is important that Kitchentech AB is not about creative chaos. This was just a fictive example, right Sebastian?"

Marie continued to discuss with the group, or rather tried to engage the group in discussion. Cecilia was almost completely silent at this point and there was also little discussion among members of the group.

After a rather long discussion about "creative chaos", Marie wrote the core values that came up on the whiteboard. Sebastian then presented their Product Ltd. It represented core values like "stable", "old", "traditional", and "solid".

"This is what you like Johan!" Marie joked.

After further discussions (all-in-all the presentation took some forty minutes) Cecilia ended the exercise:

"Good. Did this feel OK, or?"

I sensed an awkward silence in the room.

"It felt a bit contrived," Johan said.

Marie again described the purpose of the exercise.

Cecilia continued:

"OK – you have now found core values by also exploring colour and shape. It is possible to go straight to core values, but since a company often expresses these visually it is a good idea to go via shape and form. Do you see? Compare the cups you have drawn with the images - smooth shapes, curves, soft patterns. Do you see the similarities?"

The group nodded dutifully but did not seem convinced.

It was now time for the second exercise. Cecilia continued cheerfully:

"We will use your Product Ltd. as a case and brainstorm around the cup. How could the cup be developed with innovative new ideas? Think of that cup as representing the company identity and then brainstorm about how it could be developed in terms of new markets, new target groups, new materials, and new functions. Just brainstorm so that you get ten to fifteen ideas, and then we will choose the three most exciting ones!"

The group was silent again.

Marie interjected:

"You have all this [referring to the images and the cup sketches on the whiteboard]. Use it to discuss and develop three new products that are based on your cups. The cups are now your products of Service Ltd."

"The new cup should represent everything," Cecilia added:

"You should be able to see the identity, the core values expressed also in the cup. But now it should also have some new features that depend on which target group you select and what need it has."

But silence ensued.

After a little while Marie responded to the continued silence:

"You have worked with identity, now it is time to work outwards, towards the market."

Silence persisted.

"Is everything clear?" Cecilia asked.

"Weeell, maybe," Karl replied after a silent pause.

"Does it feel difficult?" Cecilia wondered. But without giving time to answer, she continued:

"You do know that when doing a brainstorm all kinds of crazy ideas should be let out. Here are some images to look at, and here are post-its to write on. OK, start working!"

The room went silent again, except for the sounds of pages that were turned when magazines were leafed through. After a couple of minutes someone said to a colleague, "Humm hum, I can't come up with anything, can you?"

After about five minutes Marie signaled, "OK, let's stop there. This was brainstorming. Do you have any ideas that you would like

to present?"

Marie sounded a bit tired now.

Frederik began to report his results.

"Well on target group it just says target group. Then on materials I wrote stainless steel, plastics, and ceramics. Should I put that on the whiteboard? Then on market I wrote national … That's what I came up with."

Then Marie invited Johan to speak.

"I have cup that can be eaten, and a personal cup," Johan said.

"Good, very good," Marie replied.

A few other ideas joined these on the whiteboard. In other words nothing much came out of the exercise, and I could still feel the air of awkwardness in the room.

Marie summarized the exercise and discussed how the cup ideas could be further developed through idea generation exercises. She ended the summary by describing the product development process:

"It's like an amoeba-like movement in the group where the group assembles to deal with questions that can seem contrived to work with at first. But these questions are developed and narrowed down into more concrete ideas. Then the scope is widened again to bring in yet new thoughts about functions, markets, materials and different issues. And then you narrow down again. This is the general movement when working with product development. But it can be done in many different ways. This was just a very quick and banal version about a cup. Do you follow me?"

After a short pause she continued:

"Cecilia and I think that it would be very good if you could work with a few questions as homework before next time. You need to spend some time together in this group, for example have two quick meetings. Start with what you have now, which seems a bit chaotic in the head. Begin to talk about the Kitchentech AB business idea, the Kitchentech AB vision, the Kitchentech AB target groups, and the Kitchentech AB core values. And think like this - we are here now and we want to be there in five years time. You already know your strengths, core values, and so on. Focus attention on the future."

"And make a mood board for the Kitchentech AB's business idea, for functions of products and for core values," Cecilia interjected.

I felt that silence again, and now I couldn't hold back any longer. I broke the silence:

"May I ask a question? I'm curious, after these exercises. How does it feel?"

Marie quickly responded by also asking the group, "Headache?"

"It's kind of interesting. It's nothing like my daily work, but interesting," Frederik replied.

Sebastian added, "This is how we should really work when we try to find a new product. Today we sit in our cubicles, and try to come up with something on our own, instead of having a more holistic approach. Is it possible to do something more radical? Maybe start with a completely new idea. Maybe take an old product and run it through the document destroyer and start from scratch. That is what we have tried to do with this cup. Then you sort of need to think… We need to take time to think. Then perhaps stupid exercises like these, if I'm allowed to express myself like that, are actually purposeful. They are necessary to come to insight and to approach things from many different directions."

"I agree with Sebastian. It is better to work in a group than to sit alone," Karl said.

"It will rarely be more difficult than today. It is always easier to work with something concrete and company related, if that can be a comfort," I replied.

I then turned to Johan who still sat silently:

"Johan, what do you think?"

"I think that this constant consensus building may become a curse. Things never get finished. Sometimes you need someone who can just make things happen," Johan said.

Karl quickly replied, "But sometimes one doesn't know what is right."

"Yes. But often you do," Johan responded.

"But this is not about when we do redesign, when do cost saving and such. This is about how to work with new products. Then this is the way to work," Karl replied.

At the very end of the workshop, Johan asked, "Could you please

tell us again, what is the idea with this project, for us?"

Marie explained patiently, "To strengthen your innovation work. To give you tools so that you can work with innovation development in a structured way. In this process there are some things for which we want to prepare you, like giving you these tools, to let you get a feel of them, experience them. You will say, 'This is damned awkward, damned messy - better to work as we always have.' But something new will come out of this if you give it a chance, a chance to test new tools, to be in new situations. After one or two more workshops like this one we will bring in a designer to work hands-on with you on specific products."

After a short pause she continued.

"And you will ask us again and again Johan, because you are a disbeliever. We have known each other for some time now. You will continue to have doubts that what we do is efficient and for the benefit of the company."

Johan hum-ed, nodded, but did not seem convinced.

The workshop ended after a long discussion about finding a possible date for the next workshop, a discussion that began with Marie's proposal to not wait longer than two weeks, and ended with a workshop being scheduled a month later.

Intermission

Between the workshops Marie and Cecilia had several conversations. Cecilia had been taken aback by what she felt was a negative attitude in the group, and especially in Johan. She felt that she had been led to believe that Kitchentech AB was "ready for it". But Marie and I also were surprised about the attitude at the workshop. It did not resonate with how we had experienced the company before, even though Marie had had a hunch that it would not be so easy, and also about Johan possible hesitation. It seemed that the abstract exercises that challenged individual members of the group to be spontaneously creative in front of each other, also revealed a rift between Johan and the rest of the group. Marie and Cecilia tried to deal with the situation. Marie talked to Johan. Marie and Cecilia also discussed the up-coming workshop, how probably it would be

a good thing to be as concrete as possible and move to discussions about the Kitchentech AB products as soon as possible. The homework was adjusted to be about the products more specifically, and the group was asked to make an inventory of their product range and identify the three best selling products and the three least selling products, and bring material about them to the workshop.

The Second Workshop

The second workshop more or less followed the pattern of the first, with the difference that now the group seemed subdued from the start. It was also smaller: Frederik, the production planner, was missing. Why he was missing was not explained to us, but later we learnt that Frederik simply resisted being part of the project as he thought it was a waste of time to.

Marie started by recapitulating the last workshop and then asked, "Have you thought about this process since last time?"

Silence at first. Then Johan answered:

"I guess the problem is that we talk too little in our company. But yesterday we had a forty-five minute meeting and several good ideas came out of that. The problem is that we are too operative, and I think that we become a little numb when we are asked to be creative for four hours. We should be able to do this on our own, as a natural part of the day-to-day job."

This was a clear signal that Johan felt that they could to these things by themselves, and much more efficiently. Johan and Marie discussed the need for discussions and project work in groups. The rest of the group was silent.

"Maybe we should meet sometimes after work to discuss these things," Johan said.

The others didn't seem too keen on this proposal to develop ideas in overtime.

The discussion continued for a while but did not seem to lead anywhere and Cecilia felt that it was high time to introduce the first exercise:

"Today we will first discuss Kitchentech AB's identity. This is what we will first discuss and attempt to structure. Then after that we will talk about the current product line and possible new areas of development. This time we will do it together, not in groups or as pairs. Have you done the homework - an image board about the Kitchentech AB identity? No? Very well."

Cecilia started to discuss Kitchentech AB core values with the group. Some ideas were posted on the whiteboard. Some eight or nine core values came up after a quite lively one-and-a-half-hour-long discussion about the Kitchentech AB products as well as identity.

Cecilia insisted that about three core values were enough, "Otherwise it will be difficult to communicate them."

Sebastian suggested that the ones that suited Kitchentech AB the most were, "Flexibility, experience and quality."

The others agreed. By then it was time for a break. It was a warm day and the room was getting stuffy.

After the break Cecilia asked if the group has brought the six products (as images), the three products with the worst and the three with the best turn-around respectively, as a starting point for the discussion about products and possible areas of improvement and development.

Marie asked if there were other important trends and tendencies, for example resource efficiency and environmental issues. Marie tried to pull the group into a more explorative frame of mind, but it was again hard work.

"It is more interesting to think about possible new markets," Johan said after a while.

He gave a couple of examples, for example to think about the consumer market, about laboratories, and the fishing industry.

He then introduced a concrete example of a possible collaboration with a company that works with sterile environments and equipment in the care sector. He said that in a recent meeting with the company he had immediately come up with four possible new products. It was a great example but the discussion seemed to go nowhere new. Instead it seemed that Johan's initiative put a lid on the discussions.

Marie again asked if there could also see be other possible areas of interest. Again it was Johan who answered, giving a couple of more

examples, while the others were mostly silent.

After a while Marie said, "OK, if we want to work with any of these areas, then we need to take in new knowledge, to get an understanding of where the knowledge is, for example on the net, at trade fairs. You need to look for information, in a circular way, to 'home in' on the area of interest. We suggest that you identify a couple of new areas of interest."

Cecilia added to Marie's description, "Try to also find inspiration from other places, to trigger new ideas, go to a high tech company to discuss materials, go to the Milan Furniture Fair to look at kitchen trends. Often the best inspiration is found in places where you don't expect to find solutions. Go to places you are not used to going."

After some further discussions in the hot room Marie proposed that the members of the group explore one area of interest each, and bring a brief report about the explorations to the next workshop. She urged the group to use pictures, anecdotes, and so on.

"And don't forget that song on the radio that inspired you to come up with a new idea," she said.

Johan confirmed Marie's request, sort of, "Yes do this, but I don't want to have to check that you do this, it will be your responsibility to make this happen. You will find the time."

EPILOGUE – TOO ABSTRACT TO GO ON

A couple of weeks after the second workshop Johan contacted Marie to let her know that Kitchentech AB would withdraw from the project. At the debriefing meeting between Johan, Marie and me, Johan first assured us that the decision to abort the project had absolutely nothing to do with us, or with the approach of the project. Instead he said that a main problem was that the group was already up to their eyeballs with work, that there simply wasn't any time to work with these things as well. He said that the group was too small in relation to the volume that they need to produce and that he just couldn't pressure them to do even more.

But underlying this we also sensed another conflict. Johan expressed that he felt that that the staff was not entrepreneurial enough, that they were too much like typical factory workers. That

it would have been nice with more entrepreneurial individuals, with people who wouldn't whine about working a little overtime. He explained that the staff came from a large company (the white goods company that formerly owned the unit), but that they perhaps did not fit the reality of the smaller company: that they were too passive. He referred to a successful side business in heat exchangers in which Kitchentech AB had also invested, in which an older entrepreneurial engineer and a younger engineer worked intensely side by side to develop the business. This was the kind of driver that he seemed to want among his staff. After a while Johan said:

> I also believe that we lack the experience to work like this, that this is the first time they have talked about these things. It doesn't feel comfortable. You know, to draw and stuff. And I felt that to a production guy like Frederik this was too difficult, too provocative.

To us, it felt that he used Frederik to also express his own feelings. A little later Johan said that after the first workshop Frederik had asked if he could be excused from this work, that he felt that it was not productive at all, hence his absence in the second workshop.

We continued to discuss the process. We expressed our opinion that we had felt that the discussion at the initial review meeting had been good and productive, but how it seemed that something happened when we met for the first workshop. Johan said:

> Yes, it didn't feel concrete. I have to admit that. What can she [Cecilia] contribute? We jumped on this opportunity based on our good experience from the post-cart project. In that project everything worked well. We worked with a concrete product. It was fun. But this felt too abstract, and then people felt stressed and were thinking to themselves, 'I have a lot to do, customers to answer, and here I sit and should be creative - just like that'.

Now it was obvious that the abstract character of the first workshop led to too much tension between this approach and the day-to-day reality of the offices and the culture of the company. It was also a shock in comparison with the hands-on character of the post-cart project.

Another tension that Cecilia brought up, when I later discussed the experiences with her, was that she had felt that she had been brought into a situation about which she knew very little. She had to rely on the written report and the positive accounts of Kitchentech AB that Marie and I had given her. Judging by these, Kitchentech AB would be ready for a discussion about more abstract perspectives on design and innovation. But then, when she met a group of people who were both stressed for not being at their workstations, and not ready to discuss more general perspectives, it all had to crash. She also expressed that from the very start she had sensed, if not hostility, at least a reserved attitude towards her. Who was she? She was not the hands-on oriented designer that they had worked with earlier in the concrete post-cart project. And she was not Marie whom they respected from before. Further, she had felt that when Marie had stepped in to help out, that this had further undermined her position even thought it was not intentional. It seemed inevitable that between all these different conflicts and feelings the project would fail.

My instrumental heart said, "Perhaps if we would have started with the products instead…" Yet, at the same time the researcher in me couldn't help feeling that this failure was extremely interesting.

THE MACRO INTERNATIONAL AB INTERVENTION

MACRO INTERNATIONAL AB – SHOWERS FOR MRS. SVENSSON

It was designer Cecilia Nilsson who found Macro International AB (from now on called Macro) after the Kitchentech AB case had been terminated in the fall of 2008. In the winter of 2009 Cecilia attended a seminar for companies where the CEO of SVID, Robin Edman, talked about the virtues of strategic design. In the networking session Cecilia met her former tennis coach, Magnus Andersson, whom she had not seen for many years. These days Magnus was the sales manager of Macro, and had come with Mikael Lunneryd, the CEO, to listen to Robin Edman's presentation. Both Mikael and Magnus were inspired by the presentation and it almost seemed too good to be true to learn that Cecilia worked with just such issues nowadays, and moreover, that she was involved in a research project that was looking for a suitable case company.

A few weeks later Cecilia met Mikael and Magnus together with Marie. That the designer was part of this first formal discussion was different in comparison to the original set-up. When Cecilia contacted Marie to inquire if Macro could be a suitable company for the project, she had one condition, that this time she would participate from the beginning so as to obtain first-hand information and, most important, a "feel" for the company that she had missed in the Kitchentech AB case. With the experiences of the Kitchentech AB case fresh in our mind, Marie and I felt that this was a reasonable

deviation from the original project framework. The meeting went well. It was clear that Macro was committed to developing a strategic design capability.

Macro was at the time of the project[1] the daughter company of the Norwegian Tema Group AS (from now on called Tema). Tema was established in 1984 by two colleagues, Terje Uri and Magnar Stöylen, first as a trading company in bathroom furniture, and in 1989 added its own production capability.[2] In 2002, Tema acquired Macro from its founder, entrepreneur Sven Cliff, who had established Macro in 1985 to produce showers for the Swedish market. A strategic reason for Tema to aquire Macro was an ambition to reach the Swedish market with Tema's bathroom furniture collection via Macro's sales network, and, correspondingly, to offer a more complete range in other markets, especially Tema's home market, Norway.

When Sven Cliff set up his small-scale operations in 1985 he had detected a gap in the Swedish market for shower cubicles and decided to develop a shower system constructed with an aluminium frame. The company was located to the little village of Genevad, a collection of houses and a small school in the rolling farmlands of south-western Sweden. To reach the head office of Macro[3] by car you first have to turn off the highway at the city of Halmstad and then drive another fifteen minutes on a B-road. Then you have to turn off that B-road onto a winding farm road. Two minutes later you enter Genevad and soon it is time to turn off the farm road by the little school onto an even smaller road. After passing the school and a couple of houses you see the little Macro office building sitting by the edge of the fields. The office building is tidy but it seems to have been built as the extension of an older farm workshop; perhaps this was once the location of the village blacksmith.

The Genevad office was not the complete Macro facilities any longer.[4] In the mid 90's Macro had set up larger premises to accommodate

1. At the time of writing Macro has been bought by the Swedish Ballingslöv group.
2. Source: Tema Group information brochure.
3. This was the situation at the start of the project. A couple of months after the project ended the head office moved to the production site in Laholm.
4. After the study the Genevad office was closed and moved to the Laholm site.

increasing production volumes. The second site was located on the outskirts of Laholm, a quaint, small town fifteen minutes drive from Genevad. The Laholm site was as large as the Genevad site is small. At first it looked just like any other 10 000 square metre production site, but as soon as you stepped over the threshold of one of the warehouse doors at the back of the building (there was no "proper" entrance)[5] something felt awkward, as if you wanted to stoop, despite a ceiling height of perhaps three or four meters - a kind of "Inside John Malkowitch" feeling of walking around on a "half floor". In order to save money Sven Cliff decided to build a sheet steel industrial warehouse rather than a more solid building for industrial production. To save even more money he also asked the contactors to keep the roof of the building low, so low in fact that the lower part of the steel frames that support the roof are just above head height. The forklift operators have to be especially careful, because they risk penetrating the sheet steel roof if they use more than half of the possible lift height capacity. Another consequence of Sven Cliff's economical thinking is that the working environment is hot in summers, cold in winters and always noisy. But it is very tidy and orderly.

When I first visited the site it felt almost exotic to observe the workforce of some fifty people and assorted robots assemble and package Macro's showers, a sight not so common in the Western World these days when most production has moved to the Far East. In point of fact, Macro tried to outsource by producing a cheaper shower in China, but the product turned out to be a failure in terms of quality. This strained Macro's otherwise good reputation, and providing disappointed customers with spare parts cost more than was saved on producing the shower abroad. However, providing spare parts had not been an attempt merely to appease these specific customers; it has always been a Macro standard to keep spares readily available for all models, a commitment that is appreciated by handymen as well as more old-fashioned customers who would rather repair than throw away. Magnus talked about "Mrs Svensson"[6] as the typical private

5. Or rather was. When the head office was relocated to the Laholm site a proper entrance was also built, including a show room and a reception area.
6. Mrs. Svensson is the Swedish equivalent of Mrs. Smith.

32. An image from the tidy and orderly Macro production facility.

33. Image from the Macro warehouse.
34. Touring the Macro production facility.

customer who wanted a no-frills, good quality shower. However, most sales go through building contractors rather than directly to individual buyers and the Macro brand is almost unknown in the retail sector. Despite this Macro produce almost twice as many showers as its largest Swedish competitor. Mikael reasoned that one way to efficiently raise profitability would be to strengthen the brand. This was probably why he had been inspired by Robin Edman's message of a strategic design perspective that transforms the identity of a company into a coherent and strong concept. Mikael also recognized how, in the last few years, competitors had ramped up their brands by doing just that.

THE WORKSHOP PROCESS

The choice of designer was easy. Magnus and Mikael were eager to work with Cecilia, and it was Cecilia who identified the company in the first place. Magnus was appointed project manager, while Mikael would not be actively involved. Magnus and Mikael wanted a group that would reflect the entire company in terms of knowledge and roles. They also wanted a group that would include representatives from both the Genevad and the Laholm sites in an ambition to counter a rift in the company culture that was a consequence of the split locations. The members of the group that were from the Laholm site were Joachim and Daniel, both product development engineers, and Linda who worked with quality matters in the production process. From the Genevad the members were Lena, a sales representative, Magnus R., responsible for market communication, and Magnus, the sales manager of Macro.

The initial review was conducted by Cecilia and me and included the typical site visit and interviews, but instead of my writing a report to be presented at a management meeting according to the original project set-up, Cecilia compiled the findings as a presentation for a meeting with Mikael and the project group. Throughout the project I kept a rather low profile, even though at times I participated in the discussions and exercises like any other member of the group. Marie attended a couple of the workshops with a similar role.

The First Workshop

The first workshop in Macro had a completely different direction in comparison with the first Kitchentech AB workshop. Cecilia came "armed to the teeth". The initial review had given her a multitude of insights with which to work. She also came into a situation where she was already respected, and even one that anticipated great things from her. She had sensed this in the first contacts with Macro through Magnus and Mikael. Later things would become much more complicated, but at this first workshop there seemed to be no barriers to possibilities.

The whole group squeezed into the very small meeting room at the Genevad site. Mikael also joined the workshop for the first hour to hear about the results of the initial review. The atmosphere was very informal. Jokes were exchanged in rapid succession, including some between Magnus and Cecilia, typical of the Macro culture, it seemed. It almost felt like the first day of school after summer vacation, happy anticipation mixed with some nervousness about what was to come.

Cecilia had created a dense program for the half-day session. In the first part of the session she would report the findings of the initial review. After this the first workshop exercises would begin. A difference between the Kitchentech AB and the Macro approaches was that this time there would be no abstract exercises about "Product Ltd." and "Service Ltd." or similar. Everything would be about Macro from day one. Nor would here would any sensitive sketching exercises in the first workshop. Cecilia also opted for a more intense session, and there would certainly be no time to sit back and relax once Cecilia got started.

"You can regard me as a kind of travel guide. We have a kind of thinking that we will make Macro's way of thinking. I will present the results of the initial review and I will pinpoint some sensitive issues. I hope that is ok?" Cecilia said.

"Bring it on, be merciless," Magnus responded.

Cecilia first presented the positive findings from the initial review. She acknowledged that Macro had a good reputation, high quality products and outstanding customer service.

She then moved on to the weaknesses, for example that Macro's product development was "nuts and bolts" oriented, in other words,

that there was no strategic development work, that the understanding of the user was limited, and that no market explorations were made.

She also discussed how there seemed to be no company vision, that the brand was unknown and that the corporate identity was not unified. Tied to this she argued that the sales catalogue was seriously out-dated with its pictures of scantily clad women and boring product images.

"It's more like a fact sheet than about inspiration," she said.

She compared the catalogue with the more lifestyle-oriented catalogues of a couple of competitors.

"These days catalogues are more about inspiration and experience than about the individual showers."

She also pointed to the rift between the white-collar Genevad office and the blue-collar Laholm production site. Her rather gloomy description ended on a more positive note though.

"But I also see that you wish to change and that you know that you have to change, this is very positive," she acknowledged.

Mikael and the rest of the group agreed that Cecilia's analysis was correct and they even filled in gaps to strengthen some points. In the discussions that followed it seemed that Macro had been in a vacuum ever since the former owner left the company, taking his interpretation and understanding of what Macro was, or had been, about.

Cecilia felt that here was a company lacking in fundamental strategic knowledge and direction. Further, it was a company being squeezed between two trends, the trend in more life-style oriented interior design that was growing strong in Sweden, while driving the market for more upper-end bathroom equipment and interiors, and the trend in the DIY sector, with increasingly large retail chains dominating the market and in the long run driving price down by purchasing from large international suppliers rather than local producers.

Magnus R. agreed with the external communication material:

"To be honest, that [referring to the catalogue] is a complete disaster, and it was from the day it was introduced."

He said that the catalogue had been designed by Tema – "the Norwegians".

Cecilia continued, "If your material communicates low quality it

doesn't matter how good the products are. You need to decide what you stand for and sell on that."

The group was rather agitated by now. It seemed that there was an unspoken conflict between Macro and the owners Tema. Cecilia poked around by asking questions. She listened intently and tried to make sense of the complex situation that emerged little by little. Magnus was angry because he felt that he couldn't make communications material that was relevant for the Swedish market:

"It doesn't help here that the model was Miss Norway. Yes, she is a national saint there, but it just doesn't work in Sweden," he said.

Similarly Joachim and Daniel expressed that their hands were tied behind their backs concerning new product development. They explained that they had no real say in deciding what products to develop: that was decided by Tema.

"There are no investigations made. They tell us we need to have what the competitor has, copy, paste. That's the Macro process," Joachim said.

Cecilia tuned to Magnus:

"Why do you giggle Magnus?"

"I just wonder how you will present all this to our owners," Magnus said.

That the Sweden-Norway rift was a sensitive area was slowly becoming clearer, but at this point Cecilia was happily unaware of exactly how dramatic things would become a couple of weeks later.

Cecilia then showed a graphic image of the generic innovation funnel and explained the principles of innovation: that you have to bring ideas and inspiration from the outside world into the funnel, and that the funnel is about finding the ideas that are relevant to the company.

Cecilia said that she had heard the production personnel say that their ideas were not taken seriously.

Linda acknowledged this:

"Yes the little idea box has become a standing joke. It all started in the wrong way out there."

"Yes, we need to involve production in this," Mikael asserted.

"I think it would be great if you as an outsider help us with this.

"Then the people [on the shop floor] will feel that this is taken

seriously," Linda replied.

After further discussions that seemed to nail most of the problematic areas in Macro, Mikael had to leave the session. But before he left he said to Cecilia:

"I want your results. I think this is super exciting."

Turning also to the rest of the group, "What you do here is the most important work we do this year."

After a break Cecilia introduced the first exercise:

"I have brought some ´sin and seduction´. Well, its only interior design magazines, but what I want you to do is to discuss a possible vision for Macro with a horizon of 5-10 years. Use these magazines for inspiration. OK, chop chop, get started!"

After about twenty minutes the group assembled with some ideas. But Cecilia was not satisfied and pushed on:

"We need to start discussing the user. You have to start with the user's perspectives and needs. You have to be more specific."

Cecilia exemplified different users, that there may be users with special needs, for example, handicapped users:

"I also want you to discuss who decides. Who makes the buying decision?"

"The wife decides," Lena said quickly.

"OK, but based on what?" Cecilia asked.

"She goes by her first impression, the looks, then maybe function," Lena said.

Joachim joined in.

"Well, what if it is a family? Then I'm sure that function is important, for example that it is easy to clean."

"Yes then the men always intervene," Lena said.

Cecilia turned to Magnus who had been quiet for some time:

"Who decides about the car in your family, Magnus?"

"I do, and I always go by function." Magnus said.

"But doesn't image matter?" Cecilia asked.

"No I drive a Skoda... no image," Magnus said jokingly.

"But other things matter, like image and status aspirations, don't you think?" Cecilia insisted.

Now Joachim joined the discussion.

"I only go by function and facts. When I buy a motorbike, for example, I only read facts, facts, facts. Read tests. Which is the best? Which scores are highest? That's the one I buy. I don't give a damned about its looks."

"But doesn't it matter what your friends think?" Cecilia asked.

"No, but that's just me. Maybe if I had bought a Cruiser, like a Harley, then maybe I would have bought the one that is coolest, even if it is not the best one, maybe," Joachim replied.

"That is exactly what I want to get at, the need of those who actually use the product. And from need we can define the target groups in terms of style. I want you to think about that until next time," Cecilia said, apparently relieved.

The second exercise revolved around Macro's business model. Cecilia wanted half of the group to discuss if there were differences between the Nordic countries that might have consequences for the business model. The other half was asked to discuss relevant trends and societal developments, for example, recycling, climate change, and so on,

"You need to find out about trends and tendencies. Trends are about style. For example this year it is supposed to be black in bathrooms. Tendencies can be about how the idea of the bathroom is widened, that it can be part of the living room, influences from other cultures, like Japanese spa culture, for example. These are also things that you need to investigate," Cecilia explained.

A little later, after Cecilia had talked about how users can be characterized according to style preferences, Magnus asked, "But what do you mean when you say styles?"

"Well, it is really about expressions. If your product has a certain style or look, for example, you use certain environments in your communication material. A style can be tied to your graphic profile, and it can be in tune with the times in terms of colour, patterns and so on," Cecilia said.

Magnus, "OK, then it's crystal clear."

Joachim now asked, "But does a company have to have a specific style?"

"No, a company can have different lines, different product languages, but it's important to be recognized and that the message

is consistent between products, brochures, and that it's consistent with the target groups and customer needs," Cecilia answered.

The discussions continued in high spirits. At the very end of the workshop Cecilia surprised everyone by showing the draft of a possible Macro vision that she had prepared before the workshop:

"We are the market leaders in Scandinavia thanks to our innovations, our quick deliveries and our advanced knowledge. We care for our customers and offer quick service. Our continuous monitoring of the outside world has resulted in great demand of our products. We produce locally. Our suppliers are close at hand and we have therefore minimized transportation. As a customer you never have to ask if our products have been produced according to Fair Trade principles – they always have!"

"I just wanted to summarize what I find positive in the company," she said.

"I think it is spot on. Just slam it onto the homepage right away!" Joachim said.

Cecilia wrapped up the meeting by handing out the homework for next time. Magnus's assignment was to buy seven or eight magazines in interior design, product design, and advanced materials. She also asked the group to meet together at least once to discuss trends and tendencies in interior design and to define styles, and to use mood-boards to illustrate different target groups with images from the magazines and key words.

At the very end Cecilia asked, "How do you feel about this?"

"Great fun. I would like to work with this full time," Joachim said.

Linda, who had been afraid that she would be asked to design showers when she had been invited to join the project, added, "At first you don't think that you have that much to offer, but now it feels much better…"

The Second Workshop

Between the first and second workshops the group actually worked on the different exercises. When the group met for the second time Magnus commented that at first the homework had been a bit complicated, but after a while it was fun:

"Yes, we came into this frenzy of creating new ideas, inspired by the images. It was real fun."

This time Cecilia began by talking about the project. She said that as part of the process she wanted to have an innovation workshop with the "blue collar" employees at the Laholm site, "To get their ideas to put into the funnel."

She also inquired if the tempo was too fast, "I want to keep the tempo up so that you will feel that we arrive at something concrete."

The group agreed that the tempo was perfect.

Cecilia then showed the project plan.

Mikael, who sat in at the beginning of this workshop, responded, "The methodology is brilliant, if we can get this far…"

"And we have already come much further than Macro has ever been," Magnus added.

Mikael also raised the question of how to involve the Norwegian owners in the work, so that they would also feel part of the process:

"The more insights they get the easier it will be to implement the necessary changes both here and in Norway."

It was decided that Cecilia would present the process and the work done so far at a meeting with the CEO of the Tema Group within a couple of weeks.

After this introductory planning discussion, the mood boards were mounted on the whiteboard and the different trends indentified by the groups discussed. New ideas had been developed, for example, the possibility of making showers and bathtubs for outdoor use.

Joachim then told the group how he had seen a fascinating TV-show where a house had been restored, how the floor had been cast in concrete with large square depressions where wall-to-wall type carpets had been inserted, how it was such a great technical idea and how cool it looked.

After further discussions about styles, Cecilia turned to the issue about target groups, asking if they had identified any.

The group now seemed more hesitant.

"Our traditional target group has always been Mrs. Svensson," Magnus R. said.

"But is that where you want to be?" Cecilia asked.

"The products are there, but of course the 'box' is a bit more modern so to speak," Magnus R. said.

After a lively half hour the discussions began to stall. Cecilia prodded, "I want to define style, the different needs that you want to address – are you with me?"

The group was silent now, and seemed puzzled.

Cecilia continued, "And I can't do this on my own. For example, if we have a family with children, high income, then that means that they have specific requirements for style. Or are different styles tied to different incomes, or to different occupations?"

Despite these attempts to start identifying the needs of the target group, the discussion slipped back into a general conversation about trends and styles.

After a little while Cecilia thought out aloud, "You buy a lifestyle... Hmm...." Then she stopped; she seemed to be struggling. After a while she drew a matrix on the whiteboard with a number of names in the top row: Milano, Memphis, Marrakech, Hampshire, Stockholm - names that defined different styles in interior design trends. But the group was still hesitant and Cecilia admitted that she was lost.

"Listen, I know that I'm grasping at straws here. We need to find the categories, how can we do that?" Cecilia said.

To find her bearings Cecilia introduced a case that she had heard about, how a design consultancy had come up with the idea of a novel type of refrigerator for living rooms by investigating the living habits of users and identifying how people more and more integrated the kitchen and the living room.

Magnus R. responded to the story:

"I would like to know the habits of Mrs. Svensson in the other countries."

Joachim joined in, saying that there were differences between the countries in terms of complaints - that they were of different character between the countries.

But instead of probing Joachim's experiences Cecilia returned to the style categories in the matrix, saying:

"How can we investigate which style is relevant in Norway?"

Cecilia's conclusion was that Macro needed to do a market analysis about the relevant styles in the different Nordic countries.

After the break Joachim was critical when Cecilia asked, "How can we do this? Does it feel right?"

"I think it is still very obscure. I think that Terje will want it all, but that costs. We cannot afford to use resources on the wrong things," Joachim said.

Daniel joined in.

"We can't spend money on a Marrakech shower. A competitor has made a couple of attempts with showers in gold-look material. Some designer did…"

"But this is not about that, this is about adapting to different target groups," Cecilia said.

Magnus now saw the opportunity to add another story to the discussion.

"We do have ideas in this company. Last year we were in touch with Ulrica Hydman-Vallien,[7] thinking that she could do something interesting with the glass panes. She came up with a couple of suggestions but we weren't really prepared and Terje kicked back immediately when he saw the sketches."

"*That's* the kind of thing that would put Macro in the magazines, today no one knows what Macro is about," Joachim said.

"But if you do a thing like that you have to be very clear about the market plan, so that you get into the right magazines," Cecilia replied.

Joachim was still focusing on the idea.

"A thing like that could also be exposed at the retailers."

"You are far ahead in the future now, Joachim," Cecilia said, a bit impatiently.

Joachim, a little sullenly: "No…, we are one year *back* in time."

Magnus R. tried to nuance a bit.

"I feel like this. We are up front in our thinking, but then it gets stopped, and then we are right back in our old ways doing what we have always been doing."

Cecilia replied, "But you have to remember that what we try to do

7.   Ulrica Hydman-Vallien is a well-known Swedish glass artist and designer.

here is to establish a foundation for the whole company. If you want to do a thing like that [refering to the Hydman-Vallien story], then you also have to be consistent with the vision. That is why I talk about a design strategy. The expectations that you create in the customer… the company has to be able back those up. Imagine if the Hydman-Vallien shower gets into the magazines, then the journalists come here, and then what if you cannot match that as a company. What if they see that this was only that little thing that you did while the rest doesn't reflect it? Then – BAM! [Clapping her hands together], it will all come crashing down. What we do here is to create a foundation for these innovations, so that we can find those cool things to throw into the top of the funnel… So, how do we go from here? The vision is absolutely crucial. Without it we have no idea about target groups, whether we should produce bus shelters or what. It is a hugely important job. We need to ask Mikael to get those guys in the management group to get a move on."

After further discussions it was time to end the workshop. Cecilia asked the group to summarize what had been done so far for the next workshop. She also wanted the group to consider what analyses needed to be done, and with what frequency:

"It has to be structured and integrated into Macro. How do we get the right information and how do we get it into Macro? But also, how do we get inspired, you know, how to get interested. Like, ok we have this material, but what other materials are out there like this? It's like a dance moving forward where the analysis material supports you while you come up with ideas."

Magnus R., had been silent for some time. Listening to Cecilia he had drawn the sketch of a process in his notebook.

After a while he said, "Look, I feel that it is about a kind of thinking, both outwardly and inwardly [showing the sketch]. Today we only think in here [pointing to the core of the spiral]. There is no thinking either inwardly or outwardly. We need to be better at thinking both inwardly and outwardly."

The Third Workshop

Time had come for Cecilia to present the work to Tema's CEO Terje Uri, and his two colleagues. Lars-Erik, the production manager also joined the meeting. During the first minutes of the meeting the atmosphere in the little meeting room seemed positive and informal. There were jokes and laughs when chairs were chosen around table in the cramped room. Then Magnus introduced Cecilia by saying:

"Cecilia coaches us in this project. We have had a couple of meetings already, in-between those we have done different homework, and she really chases us with a blow torch."

Then Cecilia "entered the scene". She asked the group of men to choose between assorted coffee cups of different sizes and styles.

"Choose spontaneously a cup that you like."

After the clatter of porcelain had died down, she asked, "Lars-Erik, why did you choose that cup?"

"The coffee cools down faster in this cup. I don't like hot coffee," Lars-Erik replied.

"But what about the colour, did that matter?" Cecilia asked.

"Well, it kind of reminds me of grandma and grandpa," Lars-Erik answered.

Cecilia now turned to Terje.

"Terje, why did you choose that cup?"

"I liked the design of it, that's it," Terje said, a bit bluntly.

Terje did not seem to want to discuss his choice and Cecilia instead turned to the rest of the group, asking one by one about their preferences.

After some more small talk about the coffee cups Cecilia choose a moment to move on.

"OK, let me tell you about the project. Look at Magnus. He chose this cup, the same as last time. Magnus is about 45 years old, lives in a house in a small town, has a family, and a Swedish car. His wife makes all the buying decisions …[laughs]. Magnus chose a practical cup. Now look at Marcus' cup. His is more expressive, artsy. Marcus is a designer. He lives in a big town. He drives a French car. What we do in this project is to find Macro's target groups. If we would like to develop these cups we need to know more about Magnus and Marcus. We also need to look at what goes on in the world around

the company. Right now we work on Macro's vision to try to express what it means to be a leader in Scandinavia. Maybe it comes down to actually avoiding certain cups, to focus for example on Magnus and Marcus as two different target groups out of many possible, so that we can create market communication to suit the respective groups that Magnus and Marcus represent. The goal is to come up with product ideas but also to strengthen the Macro brand. That is what we do, and what I do as a designer – I strengthen the brand identity of companies."

Cecilia developed these thoughts a little more before she turned to the initial review. First she addressed Macro's strengths:

"Macro has a good reputation. The products are of high quality and the reputation is good."

But the strengths were a short list. She turned to the much longer list of weaknesses, discussing each point briefly, for example: "The vision is neither communicated nor updated. The brand is unknown, and there are no guidelines regarding style."

And a little later, "The products are not unique and there does not seem to be a unified platform for product development between Macro and Tema Bad."

I sat beside Terje and noticed how he looked increasingly tense while Cecilia talked on. He was drumming his pen against the table and I saw that the others in the room noticed this too. The storm was not far away.

Cecilia continued, "… and in Laholm the production staff doesn't know what the company wants and how it will be developed. There is no product development forum. No long-term strategic development. And yes, the homepage and the sales brochure - well they feel ten years old. I know that this is Miss Norway, I respect that, but the style, it's just not in tune with the times. And yes, there is no market plan. OK, now let's turn to the opportunities," but Cecilia didn't get far.

There was a sudden sound of a scraping chair. Terje stood up and in an angered voice said, "This is totally wrong, from my perspective! Have you seen this [showing a piece of paper]?"

Cecilia shook her head.

"Why not? I'm so provoked. This is madness from my perspective. Here it is only Macro, Macro, Macro. But there is only Tema.

I have to go outside to calm down," Terje said angrily.

Cecilia tried to respond.

"But the project is about Macro."

"But Macro is only a small part of the system. You need to know the full background", Terje said

Magnus now intervened and said, "But then you shouldn't attack her. Attack us instead."

But Terje had stopped listening. He spun around and stormed out of the room. Everyone was aghast. A couple of moments passed in silence, then some spurious comments. One of Terje's colleagues said, "You have to understand that all this criticism crashes down directly onto him."

Mikael responded by saying, "But our ambition was to share this, so that we can work together on this."

After a little while Terje's colleagues also left the room to go and talk to Terje who was now pacing in the parking lot. Everyone took a break to talk things over. For a moment Cecilia and I believed that this project was now over. But after about half an hour Terje came back. He apologized and said that he hoped that Cecilia would understand that this was not directed towards her.

"It's been a hell of a country fight, ever since we bought the company. Now we have a new fight it seems. That is why I react. We should have been part of this from the beginning. And you should have had the full picture," Terje said, addressing Cecilia.

Responding to Terje, Cecilia now turned the situation around 180 degrees. Feeling that there would be no use going on with the SWOT-analysis she instead began telling the group about her experience working at Ericsson, how she had worked as a development engineer there for seven years with responsibility for new technology development at Ericsson Datacom, how that was before she went back to university to study design. She described how Ericsson had been good at developing new versions of existing products, but there had been no process for gaining new perspectives, for bringing in new knowledge and developing that into new ideas:

"That was when I decided to work as a designer. But it took a couple of years for me to understand that what was missing at Ericsson was a process for bringing in new influences *in front of* the

well-established product development process. And I think a lot of companies work like that. You are used to the products that you work with, and with the production that you have. But to bring in completely new ideas is a process in its own right, a process that happens before the ideas enter the funnel, what I called the analysis of the information that we gather from the outside world."

This seemed "to do the trick".

Terje reflected, "The process of generating those ideas is fundamental. But a problem is that we sit here, ten men, and have ideas. But dammit, it's not ten men that are supposed to buy the showers."

Magnus now seized the opportunity to show Terje the work with the mood-boards.

"Here you see our attempts to map the preferences of other target groups. Maybe it looks like something out of kindergarten to you but… You know, we were a bit hesitant at first, but after fifteen minutes it was fun and we have learnt a lot," Magnus said.

Magnus went on passionately to show the different milieus, styles and so on that they had investigated. After a while he also dared to insert a joke about a fancy houses in one of the pictures.

"Well, maybe not everyone can afford a big house like that, but maybe you can, Knut-Anton."

The group, including Terje, laughed again.

Cecilia continued to build on Magnus' theme.

"After this work we will continue mapping where we will establish key target groups, for example women between thirty and forty. The idea is then that we use the images to define the target groups and to illustrate the preferences of each target group, for example what Mrs. Svensson likes and needs."

"But mind you, a new target group needs to be profitable," Terje commented.

"Quite right!" Cecilia responded.

The meeting ended on a positive note and it was decided that from now on Inge, the Norwegian head of product development would also join the group, "Not to spy, but to learn", Terje said. Further, Cecilia was invited to come to the board meeting in Norway to present the project again, and to be part of the discussion about the Tema vision.

Work in Progress

After the turning point at the management meeting Cecilia proceeded by supporting the Tema management group in developing the vision in parallel with the workshop process. Inge from Norway joined the group for the last workshop before the summer of 2009. Cecilia told the group that despite some practical setbacks with the market analysis the analysis phase was now in full swing. Joachim and Daniel reported that they had found some interesting new materials with good environmental properties.

Cecilia wanted the group to think in terms of design issues in the next exercise, "We have discussed 'marketing issues' quite a lot. Now I want you to think about 'design issues'. I want you to think about Macro through the lens of another company. What if Macro was IKEA, or why not Porsche? What would be Macro's style, message, price and technology? I want you to think fast and intuitively."

The group was divided into two smaller groups and each group was given two A3-sized pieces of paper on which to assemble a collage using images cut from magazines. Cecilia also assigned each group a company to relate to Macro.

After the exercise, Mikael, who sat in for a while, said, "I have learnt a lot here, how to to define a target group before defining the business."

Joachim added, "I thought it was great. Now I get it! It was damned fuzzy before but now I get it."

After the summer holiday it was time for the workshop where Cecilia wanted to involve the production personnel at the Laholm site, "To listen to their ideas and feed them into the funnel." This was done during a half-day workshop divided into three sessions with a third of the production force (about 45 persons in total) attending each session. The sessions were held in the lunchroom at the Laholm site. Each session began with Magnus describing the project to the new group. He described how he had at first thought that they would design a new more "fashionable" shower, but how he had learnt, "that there is so much more to design and innovation".

Cecilia then described how she understood an innovation process, how it is important to have "… a structure for how solutions

35. Macro workers discussing during the production facility workshop.
36. One of the Macro workers showing a sketch of improved stickers.

are found." Cecilia showed the generic innovation funnel image to illustrate how information from a broad analysis of the "surrounding world" is brought into the wide end of the funnel and how the good ideas come out at the other end.

"We take all these ideas, and in the funnel we compare the ideas that match Macro's visions, objectives, and so on. And then a number of ideas come out at the other end, perhaps four or five," she said.

After the introduction and spurious questions had been answered, Cecilia moved to the exercise by saying:

"You are all part of this process, in developing these ideas. What I want you to do is to do a brainstorming exercise. You write down all the ideas you can come up with during five minutes."

At first there were some jokes, things like, "… isn't it better to go out and do some proper work." But soon there were intense discussion going on in all corners of the lunchroom. It was like opening a floodgate. There were discussions about everything, from Macro's unknown brand, to low salaries and the absence of a room for the union office.

After the first brainstorm Cecilia asked each group to summarize their best ideas and present them to the other groups. A number of ideas and other issues were brought up, for example that Macro needed a real showroom and that customers should be invited there to learn about the products. Some were more emotional, like when someone said, "Get the Norwegian owners to say 'hello' the next time they come. When they walk around here in the production they don't say hello. You feel like a damned monkey in cage."

Some were more practical about the showers, for example that some models were difficult to keep clean, that Macro should have a "freshening up kit" like some of the competitors. Another issue concerned stickers that were designed the wrong way and had to be placed upside-down on the cardboard boxes. One group that worked with packaging showers said that they felt embarrassed to pack one of the high-end showers that retailed at around 4 500 Euros in a cheap cardboard box, stating, "The box should be much nicer for a shower like that."

At the end of the workshop Cecilia was overwhelmed with the commitment shown by the personnel. She urged Magnus to get back to them soon with action plans clearly posted so that everyone

37. Joachim studying a recyclable
Aeron chair at the Louisiana Museum
of Modern Art.

38. Linda pondering an installation
of biodegradable material at the
Louisiana Museum of Modern Art.

would be able to see that what ideas had been taken further, and especially to avoid people feeling they had been used.

After the session at the factory the workshop process with the group resumed. The group also took several excursions. One was to the Louisiana Museum of Modern Art in Denmark that featured an exhibition on future sustainable architecture, as the group had discussed sustainability issues quite extensively, especially Joachim and Daniel. The exhibition showed architectural visions as well as concepts for more sustainable interiors and interior products. It was exciting for me to observe the group interact with the exhibition, for example, when Joachim studied the 94% recyclable Aeron chair in detail, or when Linda and Lena pondered a rather strange installation in a biodegradable material.

In a workshop in mid-September the group reflected on the process so far. Daniel commented that, "The biggest difference in thinking for me is that now I see environmental issues everywhere."

Joachim agreed with Daniel's experience, but also expressed concern that by now they should have had a shower concept, something concrete. He referred to the exercise in the previous workshop, how it wasn't difficult to think about a "Porsche shower", "But when I try to think about a 'Macro shower' I still go blank."

Cecilia said that she understood that he felt disappointed and restless. Joachim answered that maybe he shouldn't be involved in this anymore as it was difficult to find the time:

"The day before a workshop, that is when we scramble to get some work done for the workshop. But we really don't have the time to do this properly and consistently."

Linda expressed similar feelings:

"I know that we have just started, and I'm only eager for more. But after the production workshop the production staff expects a new shower right away. How can I tell production what is going on? They think we sit around and play around with Play-Doh, you know."

Magnus responded to Joachim's and Linda's concerns:

"To me it all started in Halmstad [at the seminar with Robin Edman]. When they spoke there it all felt perfect for us. The design and innovation project sounded a bit fuzzy though at first, but then when you came here and stuck a knife right though us [addressing Cecilia], then it felt perfect again. We didn't have a strategy or anything. I also expected products to come out of this. Didn't expect the strategic level work; that this would be about the complete company. But since then I've learnt so much. I didn't have a clue what style was before. Now I look in magazines all the time. Is that how they do it? If they do it like that we could to it like this. I think in a different way about Macro now. Right now we talk a lot about the homepage, and the catalogue. But it takes time, be patient."

A little later in the discussion Daniel said, to nuance a bit:

"I have studied mechanical engineering. But this is a different way of thinking. It is is easy to slip back into the old thinking, so we need to be coached continuously to not fall back into… I mean there is nothing stopping us from being just as successful as our main competitor."

Magnus seemed to muse over something, then suddenly said:

"I must tell you. A funny thing happened when were at Tranemo Workwear [referring to the management seminar that Tranemo Workwear hosted in April 2009]. This was when we were still new in the project and the other companies had worked for while. The Tranemo Workwear company was a little bit like Macro was in the old days, you know, family owned and managed with an iron fist. The staff did what they should do but had no authority to go to fairs and things like that. Lena and I sat there and when they started telling us what they had done they got happier and happier. It was almost religious, almost like Hallelujah. And we thought, what the heck is this? What is going on here? And now we have the same journey. Now I understand what they meant. They had not designed before. Everything had been about function and construction. And now they even had their own room for development. They had done opera clothes and God knows what, and they were so charged."

After some more discussions Cecilia showed the process plan again, and said:

"Now it is soon time to become creative, and the results will then pop out over here, in this last phase, products, homepage, environments, catalogue and so on. But let me tell you about some work that Magnus and I have done."

Since the last workshop Cecilia and Magnus had mapped the most important competitors regarding different criteria, and had also drawn a number of diagrams positioning Macro in relation to them.

"It was supposed to take only the morning, but it took all day, till late in the evening. But it was a good day," Magnus said

Cecilia continued:

"We tried to make an educated guess about where Macro was in relation to the competitors – not the truth mind you, just an educated guess."

Cecilia showed the diagrams one by one. It was obvious that Macro's position was weak in relation to the major competitors in terms of most things except quality. Cecilia then discussed how there was a good opportunity to become a leader, for example, by improving on environmental issues where most companies were weak.

Intermission

Despite making good process, soon after the workshop on positioning Macro the process was put on hold. Cecilia instead became involved in the urgent project of developing a completely new sales catalogue. Terje had dropped the agency that had developed the previous catalogues and gave Cecilia and Magnus R. the responsibility to define the appearance of the catalogue. From my sporadic contacts with Cecilia during this period I understood that the work was quite intense. Unfortunately I couldn't follow it directly because it was considered to be a side-project that was not directly related to our process. However, as will soon become clear, the catalogue would have a greater impact on the process than I had expected. I understood from Cecilia that the work on the new vision continued and influenced the direction of the catalogue. She also said that a market council had been set up to complement the "nuts-and-bolts" oriented product council, that the Genevad office was finally moved to the Laholm production site, and that the group had attended different fairs, for example, a fair on bathroom interiors in Paris – something they had never done before. After Christmas much sadder news also reached us. Inge, the product development manager from Tema, who had done so much to try to close the rift between Norway and Sweden, had passed away.

The Final Stretch

It was not until late April 2010 that the workshop process recommenced. The atmosphere in the room was more cheerful than ever, despite sales dropping recently because of the financial crisis. The reason for the cheerfulness was that the new sales catalogue was considered a success. Marie, who had also joined the workshop, asked the group what the catalogue meant to them. The group started to speak in rapid succession.

"Lots and lots of work, many late nights," Magnus R. said.

"It's a new, a new beginning," Lena said.

"Just to feel this catalogue is completely different," Linda added.

"I immediately reacted to the images of the showers. It looked as if they were alight. The showers in the old catalogue look dead in comparison," Joachim said.

"To me there is warmth in the catalogue now. You actually feel 'wellbeing' [which was the theme of the catalogue with its new, experience-oriented tag line 'Your Moment']"[8]," Magnus R. said.

The catalogue was discussed at length. Magnus also spoke about the new campaign at the retailers, with posters of images from the catalogue; in particular one artistic image in black and white of the face of a beautiful woman with drops of water on the skin of her face – more up-to-date and less nude than the Miss Norway images. Suddenly people saw Macro everywhere. One retailer had according to Magnus said, "So this is the new Macro – Good Lord what a difference."

When the conversation finally died down, Cecilia asked the group if anything else has happened since the last workshop way back in September.

Daniel said, "We think much more about environmental aspects and features now. For example, we try to source materials from local manufacturers, and try to know more about the materials we use. We also look for new types of materials."

It seemed that Daniel and Joachim had a good process going. For example, while the catalogue was being developed they bought and dismantled a competitor shower that had been environmentally

8.   In Swedish "din stund".

certified, so as to better understand how it had been constructed.

Then Linda spoke up:

"The production staff thinks the catalogue is a step in the right direction. But how does it help if there are no new products? They feel helpless. They see new products coming from the competitors, for example black blenders. Why doesn't Macro have things like that?"

Magnus responded that there were new products in the pipeline, but then Joachim reacted:

"Yes there are things in the pipeline, but we showed the U-shower concept last fall and nothing has happened yet. No one has anything like it and we could start producing it right away. We can be first with it. But nothing has happened. That's frustrating."

It seemed that Linda had touched on a sensitive issue.

"What we need to do is to find out what the market wants... We have often released something that we think is so damned cool and clever, but we have not explored if there is a market for it or what the customer looks like," Magnus R. said.

Joachim responded, "We could have been first with the Skagen shower [an older model]. But someone had the opinion that that type of shower would leak. Then it took four years until we started production, and before we even started to ship the first showers we had four hundred orders!"

Magnus R. replied, "But now we are back to not checking what the market wants."

Joachim responded, "But Hans [the former product developer] knew exactly what the market wanted. He was right wasn't he?"

Lena and a couple of others nodded.

Cecilia joined in:

"But how can you know that the product is good, that there is a need? It doesn't help to be first if no one wants it.

Joachim answered, "I trusted in Hans' intuition and now I trust Jörgen's [one of the sales persons]. He has sold a huge number of showers. And we need to take some chances."

"But how can you know [emphasizing "know"] that it will be a hit?" Cecilia asked.

"I don't," Joachim answered.

"But you need [emphasizing "need"] to know. We must have an understanding of the market, know what is right, know that there is a need, that it is timed right, that all signals confirm that it is right," Cecilia said.

"The black faucets illustrate this. I don't think that they will sell much. But if we had those, and we had been first, then immediately people would have said, 'Aha, Macro is different'," Joachim replied.

"The problem with the fine line between being a klutz and an innovator is that it is so very thin, a thin line between having what the market wants and not," Magnus R., said.

Joachim continued to argue:

"I just felt that it could be a good idea to have something new to show, to be first with something... You know, you see certain pictures, and react. And then you have created a connection, a contact. Darn it, so that is what they do, they do something new. But we won't have full [emphasizing "full"] control, will not know completely [emphasizing "completely"] that it will be a success."

Everone at the same time: "Nooo, you can never have that."

A little later Cecilia turned to Magnus:

"What do you think, Magnus?"

"Well, we have learnt a lot about how to work. I believe that a lot of people at Macro think in a different way now. The products that we intend to launch have been discussed to see if they really fit Macro and we do market surveys, we go to fairs, the sales people ask the retailers, the in-house sales staff ask the customers more actively, we read interior design magazines, we try to get information from all kinds of sources. Yes, we have pretty good ideas now. We could always do more, but to go from doing nothing to do what we do today is a really big step," Magnus said.

I had recently noticed that one of Macro's competitors had launched a Hydman-Vallien designed shower with more or less the same snake pattern printed on the glass panes that she had offered to Macro when they had asked her for some proposals a year earlier. I just had to ask how they felt about that, considering the above discussion.

Joachim laughed a little bitterly and said, "Yeah – that's spot on..."

Magnus explained, "We were not prepared for what she proposed. We got the sketches, but... well, that was not Macro at all. It was

snakes and things, not Macro at all. But maybe if it had been today it might have been something for us."

"But that is exactly what I tried to say before. If the customers react when they see those snakes, then there is immediate attention, a connection. It's just like the catalogue. I would never have though that it could be Macro before. It's a hell of a difference. Now I get it. Macro becomes what we make it and we have really changed the Macro identity. Compare with the old catalogue - it is only about facts. There's nothing wrong with facts, but they don't create a desire to buy the product", Joachim said energetically.

I was fascinated that this came from Joachim who, in a workshop almost a year earlier had dismissed anything but facts in buying decisions.

Cecilia said, "We built the new business idea on the principle that Macro will offer well-being. The catalogue materializes that. To me, to depart from wellbeing, means to think about behaviour differently, different functions come into focus. You start to think differently about the showers."

After continued discussions about the new vision that, among other things, expressed that, "Macro will develop products that provide wellbeing and sporty designs based on an international style with Scandinavian undertones and a minimized ecological footprint.

Cecilia then declared, "Time has finally come to build. Do you remember the little sketch models I showed at the last session?"

She took the models from her bag, and said, "I want you to start sketching with the materials that I have brought [board, cloth, pipe cleaners, felt, coloured paper, etc.]. It is time to let go of the old Macro and start to express wellbeing."

Turning to Joachim and Daniel she said, jokingly, "Please do not think glass and aluminium now. I want you to create freely."

The group started to work individually with the material.

But after a little while Joachim said, "I'm totally blank at the moment."

"Me to." Linda responded.

The exercise drifted into new conversations instead of resulting in "materialized wellbeing".

Magnus mentioned how the group had discussed new ideas at the Paris fair. How sportiness could be expressed with rubber, black, chrome. Cecilia, who was not invited to come with Macro to Paris, was sceptical.

"This is not about a new Stadium [referring to the sporting goods chain Stadium]."

Magnus joked about high jumping in the office.

While the others joked around, Magnus R. drew in his notebook and, after a while, said playfully, "I have a concept! It's an atomic shower. Look, if we charge the body negatively and the water positively the water will only hit the body. No wasted water!"

The session ended in a good mood, but Cecilia seemed concerned that the exercise had not worked very well. There were no new concepts, at least not any realistic ones, and she felt that the group wasn't serious enough about it.

After the workshop Cecilia was frustrated. It seemed impossible to get the group to be more creatively hands-on. She felt that the group was too insecure and reacted by joking around when it was time to sketch with materials. Marie and I had seen how she had made one attempt at the last workshop in the fall to move into a more making-oriented mode. At that time she showed little sketch models that she had made herself and had then asked the group to do something similar. But, just as in the most recent workshop, the group had immediately gotten stuck and had reacted with silly behaviour. But it seemed that the problem was not only with the group. Cecilia's "let's be creative" approach also seemed to repel action. We had seen a similar reaction in Kitchentech AB when Cecilia asked the group to sketch cups and to brainstorm more or less on the spur of the moment. However, in Kitchentech AB things had turned sour instead of silly. Marie and I strongly felt that the group was ready for more action. They had learnt a lot from the many discussions and excursions, and the catalogue had manifested a new meaning that they seemed eager to explore. Earlier, Marie and I had discussed with Cecilia how action came late in her rather sequential process in comparison to the other cases where action and analysis was more interwoven. Paradoxically,

when Cecilia's own hands-on design practice had been "let loose" in the catalogue project there had been no such clear division between analysis and action.

After a few weeks Cecilia came back with a suggestion. She had just listened to another consultant who specialized in helping groups of people go from "understanding to action." Would it be possible to invite the consultant to do a workshop that would hopefully inspire the Macro group "to get cracking"? Even though Marie and I were at first a bit hesitant we gave it our blessing, and eventually, so did Macro.

Time to Get Cracking

It was now summer with beautiful yellow raps fields all around Genevad. Cecilia invited the consultant Marika Kajo to the workshop. Marika has a dual background, she is has an MSc in computer technology and also has experience with experimental and improvisational theatre. Before the workshop started, we looked at prototypes of bathroom furniture that a design student from the Linnaues University had made for Macro as part of her bachelor thesis. Joachim and Daniel had involved the design student during the winter. The round, soft furniture prototypes were quite different from Tema Bad's more square models. The student had worked actively with the "Your moment" concept and had felt that more organic shapes related better to the feelings that the concept evoked. It was quite a contrast to current, strict neo-modernist, sharp edgeded furniture that dominated the market place.

Marika Kajo immediately made her presence known. When we stepped into the little meeeting room it was completely transformed: tango music on a small stereo, no table, and the chairs now in a circle.

Magnus commented jokingly, but with a trace of worry in his voice, "Is this going to be religious?"

Cecilia made a short introduction where she said that there were only two more workshops left.

"In this one it will be all about 'getting cracking' – to go from the 'what' to the 'how', and in the very last workshop there will be more

serious experimentations, " she said.

After she had presented herself, Marika introduced a metaphorical model on the whiteboard, the "U-model". She explained that one upright of the U represented the need to observe, listen, and see. The bottom of the U represented 'to hear' and 'to understand'.

Your heart has to be open to what you experience and find. Otherwise there will be no product. Then you can start climbing the other side of the U, with an open will, so that you can act. The bottom of the U is where we reflect so that we can act… In this workshop we will use storytelling and inspiration. But we will not play theatre… And no, Magnus, it will not be religious," she joked.

Then she continued:

"Storytelling is really about communication. We tell stories to understand and to be understood."

She now introduced the tree as an illustration or metaphor of how the stories of an organization are arranged. She explained how:

"The root system is made up of the personal stories of each member of the organization, our backgrounds, memories, experiences and so on – the 'me-stories'. The common stories are the 'we-storie's, it's the tree trunk – stories expressing our values and common understandings. Then we have the 'future-stories', those that we build together - those are the branches that stretch towards the sky."

Marika then asked, "What is the most important foundation for telling stories?" "Clarity," someone answered. "A reason," someone else said.

"Well yes, but most of all it's listening," Marika said.

To get the group to experience this she introduced an exercise where the group worked in pairs. One person told the other a deeply personal story, but the other person was to make it clear that he or she was not listening. After the exercise those telling the stories expressed how it was very disturbing to not be listened to. Marika continued to discuss conversation, how new ideas and innovations arise out of listening and responding.

After further discussions, including about the important ability to improvise, it was time for a second exercise. Marika asked the group to think of an experience when they had felt well-being connected to

water, and to write this down and then tell it to the group. The group came up with a number of stories from holidays, childhood, and so on, all about the sensation and experiences of water.

After a break Marika asked the group to build models of concepts that correlated with these experiences that were of course tied to the concept of "Your moment". Cecilia had brought the same materials as the last time. The group now worked in three smaller groups. Suddenly the creativity that had been locked in was released and all three groups developed new concepts based on the experiences that the stories expressed. For example, one concept illustrated the sensation of bathing in the sea, with sand and seawater. It seemed that everything was smooth sailing now.

But then Joachim said, "Sure, it was fun to build and all, no doubt about it. But then on Monday morning it will be all gone - swish."

A heated discussion ensued. Marika argued that the company needed more structure. "You have to integrate this into your day-to-day work, this is not a game, you have to create space for this, and you have to learn to defend this way of working," she said.

"Why do you not have regular meetings, for example every second week?" Cecilia asked.

"But we do have the market council and the product councils now. But it's not easy when Norway takes our list of suggestions and turns it around. We came up with ideas in Paris but Terje did not believe in them," Magnus responded.

A little later, Cecilia said, "What Macro needs is a design process, design work. Now it's like, I know that Magnus was joking, but you act as if you are afraid to show these sketch models to the production staff."

"Of course I could, but people would really start wondering about what we are doing," Magnus replied.

"Yes, but you know what. I am a designer, just like Daniel is an engineer, just like Lena is a salesperson. What I still miss in Macro is the process of bringing in ideas that can become innovations. Just what Marika has been speaking about, to observe, to gather, and … that is what I'm missing in Macro," Cecilia said.

The discussion turned into one about how to structure the innovation process. Cecilia looked rather dejected. Magnus sounded tired

and under pressure. The only one who was still full of energy was Joachim.

"Come on, let's do a workshop with customers. It will be great fun. We are not designers [referring to himself and Daniel], but there are things we do well. I can solve things. Give me that piece of furniture [referring to the student's design concept], or a new shower concept, then I will solve it."

Before the workshop ended Marie turned to Magnus and said, "Maybe it is time for you to make an action plan, to prepare for when Cecilia is not here anymore, time to cut the umbilical cord…"

Although the workshop had ended in confusion, Cecilia still felt that it had partly been a success. The discussion about the need to get Norway involved and to structure the process should not overshadow the fact that the group had indeed produced a couple of concepts. They had broken through the barrier to creativity as Cecilia had hoped for. Cecilia now felt that she could safely guide the the final stretch, through a workshop in which they would take these concepts to the next level – to expand them and make full size sketch models. She felt that Magnus was perhaps still not entirely confident with the process. She had been disturbed by how he had said that he didn't dare show the resulting models to the production staff as he had felt that they were too childish, that had insulted her as a designer, but she was certain that the others were not as "afraid".

EPILOGUE - CONTINUED DESIGN INSPIRATION

In the final workshop Cecilia and the group went far beyond the sketch models of the previous workshop. In a couple of hours they devised three full scale models. In the beginning Joachim and Daniel felt that it was a little uncomfortable to make something full-sized out of flimsy materials. It had been challenging to leave exactness and functionality behind and instead concentrate on the experience of the concepts. The concepts themselves had not been difficult to come up with. Some ideas were inspired by the visits to the different fairs and other excursions. Others were their own, and some were even the result of serendipity during the workshop, for example the

idea to mount the levers just above the floor, to be foot operated, was an idea that was the result of bad duct tape that wouldn't keep the levers attached at the normal height. The group had been surprised about how much they had learnt when they saw the result. As Daniel put it:

> To begin with it felt a bit weird. You can't just tape together a shower, that won't yield anything. But when you stood there and saw beyond the flimsy materials, then you got a lot of answers anyway.

At the end of the day they invited a group from the production staff to come to Genevad to the "vernissage" of the shower concepts and to drink some "bubbly". Magnus was still not sure that "they got it" but seemed quite relaxed anyway.

It had been a long and arduous journey, and also a tragic one. Inge had not been forgotten. But most of all it had been a journey with many insights between all the laughs. Other things also happened during this eventful year. The Laholm site had been rebuilt, and after the summer the white-collar office would be moved to the Laholm site so that at least one of the rifts in the company could be closed. A real showroom had been built at the Laholm site, just inside the main reception area: no more bringing in visitors through a warehouse door. A couple of months later Marie and I learnt that Macro had hired a full-time designer to keep the momentum up (Cecilia had been asked but she had other plans), and at the time of writing Macro has been bought by Ballingslöv, one of Sweden's largest producers of kitchen and bathroom interiors and storage solutions.

242

39. Magnus R. standing in one of the full-scale sketch model showers.

THE FLOORTECH AB INTERVENTION

FLOORTECH AB – INNOVATIVE FLOORING

The Floortech AB[1] case was not part of the initial project plan. It replaced another case that was never initiated because between the time of the research grant application and the project start, the company in question was sold and began a major relocation. As a result, Marie and I began to look for a suitable replacement, and in a discussion with colleagues at HDK, lecturer Thomas Laurien proposed that Floortech AB might be an interesting organization. A while back Thomas had arranged a workshop there with bachelor students in design. During the workshop the students explored the aesthetic possibilities of an innovative flooring concept that had been developed by Floortech AB - a concept where plastic granules were spread out over a large surface and then heated and pressed together to form a carpet, much like how children's Hama beads work, only thinner, bigger, and with smaller "beads". The students experimented with making patterns of differently coloured granules, something that the project manager, Sten Bengtsson, had invited them to do. But they had also "on their own volition" added more alien materials to the mix to see what would happen and to explore the resulting aesthetic possibilities. This was something that had

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1. This case has been anonymized. Floortech AB is a fictive name, as are the names of the involved people from Floortech AB. This is also the reason why there are no photos.

surprised and interested Sten. Following up on Thomas' lead, I arranged a meeting with Sten.

I first went to the Floortech AB head office in the spring of 2008. The office was situated alongside the production plant in what used to be one of the industrial outskirts of Gothenburg, but which in recent years had been redeveloped into a retail district for outlets selling furniture, cars, electronics, and other consumer goods. The medium-sized production site, with its chimneys and factory silhouette, had increasingly become an anomaly in this district now "adorned" with parking lots, commercial billboards, and outlet style buildings. The office building was as humble as the factory building was imposing. Had it not been for the direct vicinity of the giveaway production building, the office could equally well have been a day-care centre or a retirement home. Inside was a generic office landscape with tell-tale corporate paraphernalia: Floortech AB brochures, Floortech AB posters, Floortech AB product samples, and so on, and also the generic Dilbert strips, personal coffee mugs, and "Your mother doesn't work here" type of notes above the sinks.

After I had picked up a cup of tea at one of the coffee machines I was lead into a smallish conference room adorned with Floortech AB Policy posters depicting strong animals accompanied by vision statements and slogans. Sten noticed my "interest" and commented, "Yes, they are pretty daft, but you know how management wants stuff like that on the walls."

I later noticed that there were no such posters or messages on the walls of Sten's office. Instead they were filled with art prints and personal photographs.

We began discussing the project, starting with Floortech AB's needs. Sten told me how the unit had recently developed the innovative flooring concept mentioned above. He described how the work had involved intense problem solving efforts for several years to make it possible to produce the new system. It was during this process that Sten had involved the design students to explore other possibilities with the concept. Sten said that he had recognized something in the way that the students had worked when exploring the granule concept that had made him think about a different

situation: how the leader of the choir to which he belonged explored tonality and other aspects of a new piece with the singers when he started to interpret it. But the incident had also reminded Sten of a more creative way of working in the organization that had been lost. Sten explained that Floortech AB had come under increased internal competition from other sites in the international Flooring Group, and he felt that one clue to staying competitive, and hopefully indispensable, was to build a culture of innovation that the Flooring Group could not afford to lose by a simple decision based on the current "management by Excel" paradigm that had been prevalent in the Flooring Group for the previous couple of years.

"We can never have the cheapest production. But we can become good at doing things that are difficult for others to emulate," Sten said. Little did we know at that time how imminent the "management by Excel threat" really would be.

Sten also described by-gone days when Floortech AB had been a more independent and complete organization, a time when "innovation and creativity had been an honoured and integrated living part of the culture of the organization." This was a time before the major reorganization, when the unit had been complete with R&D, product development, production, marketing, and so on.

Then, in the early 2000s, the group had started to expand globally through a rapid acquisition of production facilities. In this process the group had been reorganized into business areas and production had been separated from strategic product development as well as marketing and sales. The unit had also "lost" a valued colleague, the "in-house" designer Karin, to the marketing unit that had been organized under the Nordic region market area. Before this move Karin had been responsible for both the R&D materials lab and design at the unit, and had worked in close collaboration with production to develop new concepts that were both "de rigueur" in terms of styling, as well as innovative in terms of material technology.

Sten described, not without a hint of nostalgia in his voice, that this was a time when R&D had been a more complete effort and work was more fun, a time when they had had a real lunch room where people met informally and where innovations, like the granule con-

cept, couldn't avoid emerging from of a living, breathing, innovation culture. This was before the kitchen staff, and with it perhaps much of the innovation culture, had been rationalized away and replaced by dispensing machines and ready to "microwave according to instruction" type of food. Sten said that he was more interested in future possibilities than nostalgia, and also that he understood the market-related reasons behind the restructuring program. But at the same time it was clear that his reasons for being interested in the project ran deeper than "mere" ambitions to strengthen the innovation process. I believe that Sten wished to resurrect the former innovative culture of the organization, and to do that by starting with the last remnant of the culture that still existed in and around the prototype facility where the students had had been involved.

When I discussed the potential case with Marie we both felt that even though the situation was sensitive, on the border of being desperate, and the company only a small part of a significantly larger organization, it would be interesting to go ahead because of these very circumstances that were typical of so many industrial organizations.

The initial review Marie and I conducted confirmed the problematic situation that Sten described, but also a strong will among those we interviewed to "give it a shot", including the unit manager. So at least the commitment was there. This was not the least important requirement because, at least initially, the project would have to be conducted "under the corporate radar" as Sten did not have a budget allocated for the project and did not wish to alarm his superiors at the international headquarters who, according to him, held the opinion that all initiatives concerning innovation should come from the central organization. The discussion about which designer to involve was brief. It was clear that Sten wished to continue working with Thomas Laurien. This was an easy choice because Thomas also fitted the picture as an experienced designer with a track record that included tutoring as well as conceptual and explorative projects.

Considerations Before the Workshop Process

When Thomas engaged in the work he certainly sensed the drama of the situation – a drama that had escalated even further. Between the initial review and the planning for the first workshop the Flooring Group's headquarters had reacted to the 2008 financial crisis with a number of actions. One of these was a program to cut back staff and among those affected was Karin who now would only work until the summer. Thomas had intended to include Karin in the process even though she only worked occasionally for Floortech AB after being transferred to the market area organization. He felt that her thirty years of experience in Floortech AB was invaluable to the project, and also he didn't want to encroach on her expertise and role as Floortech AB's designer. But now with the new situation he wanted to discuss everything he intended to do with Karin. He also wanted to hear her reactions to the initial review report.

In the meeting Karin confirmed that when the company was reorganized she felt that it had been "a big mistake to drive a wedge between design and technology as these different competencies need each other."

Thomas and Karin decided that Karin would help Sten set up the group of "clever personnel from different parts of the organization, not only 'office rats'." Karin would also participate in the first workshop. With her "blessing" Thomas felt better about engaging in the sensitive project in the middle of a situation where people were being stressed by the changes the organization.

Thomas was also intent on understanding the brief. He, Marie, and I discussed the project a couple of times. In these discussions Thomas was sensitive to the metaphors that Marie and I used; how we described the project as a "journey" and as a "meeting between practices", and how we talked about a "fluid state" before the innovation case would "crystallize".[2] It was obvious

2. It seems quite possible that the more innovation oriented "lingo" that we used to sell in the project at Tranemo Workwear and Alfa Laval had been replaced by more metaphorical language by the time that we approached Floortech AB.

throughout these preparations that Thomas wanted to understand both how we had conceived the project and what the situation was like in the company.

THE WORKSHOP PROCESS

The First Workshop

We assembled in the same conference room where we had discussed the initial review a couple of months earlier. Before the workshop Thomas sent out invitations via Sten, a pdf with a postcard-like image of the Egyptian pyramids. The assembled group consisted of Karin, Sten, and Tom, responsible for production planning; Sandra, responsible for marketing; Jonas, from the market organization and, later, Ceasar from the prototype workshop. Thomas seemed surprised that the group was not bigger: there had been talks about a group of about ten people. Sten said in defence that Tom had not come yet, and that considering the hectic situation this was as many that he had been able to muster. Moreover, this was the core of the creative culture of the organization that went way back, except Jonas who represented the younger generation in the company.

With a few clicks on the light switches and the computer, Thomas transformed the room. Suddenly the room was dark, lit only by an image on the screen - a scene from nature of a clearing or glade in a forest.

Thomas then said, "We will meet two times to begin with, then we will see what happens. Today, I will first talk. And after that we will do a very, absolutely, not a brainstorming exercise, but rather what I call an inventory, a very calm and peaceful exercise. But first I would like to ask you what kind of room you just entered?"

The group tried to describe the room. First someone said, "a conference room", which did not satisfy Thomas. The group seemed to have difficulties articulating the new character of the room, but then Tom expressed the feeling he had when he entered room.

"I immediately reacted to the image. I saw a glade. I'm a scout and I felt right at home. It will be cosy."

"I'm glad that you noticed the image. Yes it is a glade and it has not been chosen at random. A glade is a kind of room, a place. It's a kind of disturbance in nature. Something happened here that created an opening where different forms of life can meet. For us, in this situation, it is also an abstraction, a way to make things something simpler. We will use the abstraction of the glade to take a step to the side, from what is, to what could be," Thomas said.

Thomas spoke calmly about the glade as metaphor for the situation that the group entered. He also used the glade to discuss the background of the project, saying how Marie and I could be seen on the fringe of the glade image, as persons with binoculars. He told the group about the other "non-designerly" companies in the project and how Floortech AB did not fit the "non-designerly" criteria with its many years of design as an integrated function in the organization.

Thomas went on to discuss design, how these days design is so much more than only about artifacts, how, for example, the preparations for the workshop could also be seen as a design process. Following this, he presented his own design practice, how he had worked with conceptual design projects that, for example, could be about designing the interior of a museum shop, about how thatcould be seen as about finding the "being" of that shop. He mentioned that he has also written quite a lot: reviews, catalogue texts, articles, and similar, and that he taught and tutored at HDK.

Thomas continued by describing the project with the bachelor students, and how that had led to this project. He said that, at first he thought that it would be about surfaces, something that had interested Thomas for at least twenty years, and he showed some first sketches that he had made before he had understood that this project would not be a more traditional design commission. He told the group that to him, nevertheless, it was interesting to think about how we humans have organized our surfaces visually for thousands of years, since the very beginnings of the human race. Throughout his presentation Thomas showed different images on the screen and the group seemed quite captivated.

From the images of surfaces Thomas moved to the image of a

small island in the middle of the ocean with telltale coconut palm trees hanging over a narrow sand beach. On the beach was a group of apparently indigenous people. Thomas then began to tell the story of the Andaman islands:

"Did anyone see the program on TV about the Andaman islands a couple of weeks ago? East of India there is this chain of islands. Imagine how man migrated from Africa thousands of years ago, some moving east towards Australia. A group of people broke out and settled on these islands, and since then they have been the most isolated people on the globe. There have been some contacts with those living on the southern islands but the people living on the northern islands are very hostile and show clearly that they don't want any contact. We know very little about these people, but a little more about a people who are related to the Andaman people, the Jarawa people. They have used the same kind of zigzag type pattern for at least 2000 years, and it is the only pattern they use."

Thomas described how the Jarawa people seemed very at peace with their pattern and said:

"We don't know if the pattern means anything to them. What you see, Sten, is probably what they see, a zigzag pattern. Here is a zigzag pattern that I made before I knew about the Jarawa people. I speculate that, although we can't talk to each other, we could look at each other's zigzag patterns and share something anyway."

Thomas continued to discuss patterns, how they are constructed, what it means to be a designer of patterns, how he did not consider himself a "pure" textile designer but how there is a textile attitude or perspective that he felt akin to, that is "… about starting with the littlest unit, the knot, the fibre, and how it can be symbolic, and with small changes can create an expression."

He then showed different examples, both of textiles that he had designed, and a current artistic research project about glass sur-

faces[3] that was exhibited at the Röhsska museum for design, fashion and decorative arts. He also showed examples of projects "on the fringe" in which he had been involved, and described how he often supported the design processes of others through conversations and tutoring.

"What is exciting about being a designer is that you can temporarily enter so many other practices. One of the typical approaches of the artist is to make familiar things become strange and through this make us see things in a different perspective, but this is an approach that the designer, the engineer, or anyone can have in relation to a task. Another approach is to be a 'journalist' and ask lots of questions with the purpose of understanding one's project. Or you can be the 'politician'. Some things that Marcus has done as a designer are political, with the ambition to try to change reality, for example, by using artefacts to point to gender issues. In this project I've slipped into the role of the 'anthropologist'. In the encounter with you I have understood some things about this company - perhaps I see a tribe."

Tom responded immediately, "Yes, at least the people at the head office see us as a tribe, like the people on the islands, but up here in the north."

Thomas continued, "You have a strong unity. You are threatened and you have even had to discard members of the tribe to survive [referring to Karin's notice]. Perhaps it is inevitable. You are a group, a group in a larger group. It can be a strength, but you may also be vulnerable. Two statements have really made an impression on me. This person, Jeff (the CEO of Floortech AB), your leader, in tribe terms, what is he?"

"The chief!" someone almost shouted.

"Yes the chief. He said this, that I think is incredibly brave, almost existential, 'Why should we do this?' [Referring to producing vinyl floors]. When the chief says that, then it is quite brave. And the other statement point back in time, it's a story of a bygone

3.   The material results were shown at the Röhsska Museum of Design, Fashion and Decorative Arts in Gothenburg, and has been published as a book (Fridh & Laurien, 2009).

time, that some of you 'members of the tribe' have experienced, but not you, Jonas, you are too young. It was about a time when it was not special people who were supposed to come up with ideas, but a time when anyone could, and was allowed to figure out new ideas. A time when ideas were discussed, in the lunch break for example, and when the organization took these ideas seriously." These statements were then discussed back and forth a bit. Jonas felt that this was perhaps an overly romantic construction of the past. Thomas enhanced the existential dimension of Jeff's statement.

Then Thomas added a third statement that he had picked up from Sten and said: "Sten told me that there are 'ideas put away in the drawers'. But that is not where we should be now. To start with those would be a too solid a state. Instead we will embark on a journey, enter a more fluid state, and the next metaphor will be the 'suitcase'."

Thomas then began to discuss his perspective on visions, how he felt that the typical organizational change project starts with the definition of a vision, that is, with defining the goal of the journey, and how this approach typically leads to most companies defining a similar goal, a similar destination, "... and how unique is that? A problem with visions is that we get caught by them, they stand in the way of reflection."

Jonas listened but was not convinced about Thomas critique of visions, and he and Thomas discussed back and forth. Jonas felt that from a market perspective uniqueness was not the primary goal, that was financial success, but perhaps what Thomas expressed "... was the attitude of the artistic designer?" Jonas wondered.

Thomas replied, "... how easy is it to earn money with similar products from a financial perspective, when the market is saturated?"

The discussion moved back and forth. Jonas seemed sincerely interested in understanding Thomas' perspective, and Thomas likewise listened carefully to Jonas's arguments.

In the end Thomas asked Jonas, "But as an abstraction, can you accept that the vision is about defining a goal? What I then would

like to try is the perspective of the artist, that is, to reverse it all and start with what we have instead of where we want to be."

Karin now joined in, "In my design process things have to take time. You start with an empty page, and you build and build, and you have all this material laying around, so that you and others can see it develop, and react to it. And I build based on these reactions. It has to mature. But I don't know exactly where it is going."

Tom also joined in, "Yes, that's like when I work with developing the machines. Management immediately wants a cost and time. But it is only when I start sketching it, only then is when I start to understand what it will about. But you're not allowed to do these pre-studies, you're supposed to know immediately. It's a Catch 22."

Jonas responded to Karin's and Tom's thoughts and asked, "That is interesting, so it's like a specific job to understand where you want to go, instead of departing from where everyone else departs from?"

After further discussions Thomas made an attempt to refocus the group.

"Anyway, let's forget the company for a while, now we're talking about you as a group, as a tribe, as the "chosen ones". A little glade has been created, a little gap, where you can be for a while, and pack a suitcase with competencies, abilities, personal traits, and qualities, not in a general sense but based on how you know each other. I would like you to work in pairs. It's a pity the group is so small... Would you like to participate Karin?"

"I'd rather stay outside of this," Karin replied.

Thomas then continued, "After the exercise we'll take a coffee break and after that we'll switch groups and then we'll compile the results.

In the break Ceasar joined the group. Thomas summarized what had been discussed in the first part of the session, and Ceasar then joined one of the small groups after he told Thomas, "There was a time when we could discuss ideas, in the coffee breaks, at lunch. I miss that so much."

When it was time Thomas called the groups back to the confer-

ence room. Together they looked at what the groups had produced in terms of descriptions of each member of the group.

Thomas said, "You're quite fantastic it seems, that is obvious… OK, I will compile this material for next time. I guess it is time for you to go back to your work. Any questions or reflections?"

The group seemed a little shocked that the session was over "just like that".

Tom began to reflect, in a thoughtful voice, "What is exciting with an exercise like this is that you see the value of cooperation, and how we complement each other to get things done… It's just like when you take group out on a hike. If they are all elite people they will not have much fun. You also need the joker, the one who always gets hurts and that some think should not be part of the group because he is clumsy, because he might actually be the one who keeps the group together so that the target can be reached."

This reflection spurred a long discussion in which everyone was involved.

Later Thomas asked how the group felt about the metaphors.

"The tribe was fun," Sten said.

"And I liked the journey," Karin replied.

The group discussed how the day-to-day work situation was so intense, that there was never time to reflect together, "like to-day".

"So it has been good to listen to you, to wind down for a while, to enter this different room," Jonas said.

It seemed that almost everyone had liked the session and would gladly have continued for a full day. Ceasar was silent though. With that Thomas ended the workshop: lunch was long overdue.

INTERMISSION

Between the first and second workshops Thomas and I met to discuss the process. Thomas described how he had compiled the material from the exercises, how he had hoped for more concrete things on the lists. Now the points were quite general and further, it seemed that everyone had been considered "very creative" by the others indicating a level of creativity that Thomas didn't see

in the group. Thomas also expressed that he felt that the intention to develop a creative ability in the group in a couple of workshops was impossible and that perhaps the use of the metaphors had become a too abstract and also too persuasive an approach. It seemed that he would rather have gone with the more direct product oriented approach that he had sketched before we discussed the intended approach in detail in preparation for the first workshop, when Marie and had "planted" the different metaphors. This would have been an approach that more resembled the hands-on workshop of the students, about exploring patterns and materials more directly.

When Thomas expressed such doubts I reacted by changing the subject. I said that I felt that the open approach would work, that I hoped that group would not define specific interests too soon and that I was afraid that there would be too little exploration if they went prematurely with the ideas that Sten claimed that he had "hidden in the drawers". I described how in the Alfa Laval case the immediate product focus had initially stood in the way of a wider perspective, and as a contrast I described how in the Tranemo Workwear intervention the more hands-on work had begun after only a couple of workshops. But these case-related reasons were only part of the picture. I also held a hope that Thomas' open approach would expand the study in a more enhanced artistic perspective, but perhaps that hope was based on an unrealistic understanding of what that would be about. Further, and in combination with this, at the time I did not see how a more hands-on approach could have been artistic and explorative instead of immediately problem-solving oriented like the Alfa Laval experience. This was probably a mistake. In other words, I should have thought more about how Thomas had worked with the granule workshop and less about Alfa Laval.

Another thing that I did not see at the time, and which was perhaps the reason why Thomas and I wished to enhance different approaches, was that there had been a misunderstanding between Thomas and Marie. Thomas had gained the impression that there would only be funding for two workshops, while it seemed that Marie had meant that after the first two workshops there would

be a chance to assess the situation. It seemed that the misunderstanding, in combination with my metaphor-laden description of the overall intention of the project, had made Thomas collapse these two messages into two workshops, that were not hands-on, while we saw it as a much more extended "journey".

The Second Workshop

In a way the session started when Jonas guided us through the office, through the noisy and hot production facility, up a couple of clattering steel stairs, into different, much smaller offices, and finally into a small meeting room. Thomas had sent out assignments in advance and had asked everyone to contribute to create an "atmospheric collage". It had been Jonas's assignment to find a "creative environment" for the group to meet. Thomas had brought a big roll of electric cable, a folding screen, and other gadgets to make a meeting possible almost anywhere on the premises. It was obvious that he was disappointed to find that Jonas's imagination didn't stretch further than to a different meeting room, not least because it was full summer outside. But Thomas was in for a surprise.

Once the group had assembled, including Ceasar already from the start this time, but without Karin who had now left Floortech AB, Thomas began by describing the assignments that he had given everyone. He then asked the group to tell what they associated with the theme of "atmospheric collage". There was a long silence.

After more silence Thomas spoke again:

"Last time we tried to change that room with some images. You remember the image of the glade. This time the idea was to create a new room together, and I gave Jonas the assignment to find a space to be in, but that failed miserably," he said, tongue-in-cheek.

There were slightly embarrassed laughs before Jonas replied:

"At first I thought about the lunch room, but then I thought that people would probably disturb us there. Then I thought of the factory, but I'm not very familiar with that place and don't know

all the nooks and crannies there. Then I thought about this room. The difference between this room and the other room is that the other room is associated with management meetings and all these hard decision while this room is associated with the production unit and a much more creative atmosphere."

The others agreed and now it was Thomas turn to be a bit embarrassed. But he composed himself quickly and said:

"OK, so that was the space. All assignments had to do with the senses in one way or the other. I asked Tom to make a bouquet of flowers that would express creativity. I wrote that I would not ask you to explain as sometimes explanations and talk destroys the experience, so it is voluntary if you want to describe what you have done. Tom? It's up to you if you want to describe the beautiful bouquet of flowers on the table, Tom."

Tom described how he hand-picked the flowers that morning, how he had picked jasmine because it was in full bloom, and the lilies as they were opening up, and then some leaves of bracken so that the bouquet would not be too ordinary.

He then concluded by saying, "I also picked a rose but I chose to place that on the breakfast tray for the wife, for her to find when she wakes up."

Thomas responded to Tom's ending by mentioning, "Just by coincidence, I read a beautiful poem this weekend, from the 8th century, about love and how love is like an orange lily standing alone in a meadow."

Thomas then turned to Sandra who had been assigned to provide refreshment.

Sandra explained, "I brought water, with some salvia (sage) because it adds such a fresh taste, and I made rhubarb juice."

Tom, "Salvia gives such a soft taste."

Then Thomas turned to Ceasar and said, "And then I asked Ceasar to bring something to nibble on."

"Well I guess I was a bit inhibited, or not in the mood. I just felt that it was all too fuzzy, so crazy, and I got really worked up and irritated about that the last time. So therefore there will be nothing nibble on today," Ceasar replied.

There was not much to add. Thomas, turned away from Ceasar

and instead began to talk about the atmospheric collage, how the wording was made up of the Greek words "atmos" and "sphaira", meaning vapour or air and sphere or space – a space in which we all breathe together, and from the French "collage", meaning to glue together.

Thomas concluded, "This was a little test. The idea is that if you are going to become a creative group together then you will have to be 'glued together'. I will get back to that point at the end of the session. But now let's return to the suitcase."

Thomas handed out the lists of different abilities and competencies. He told the group how he had tried to structure the marial they hade made last time, and then showed a poster where all the words that had been used were shown in different sizes depending on how frequently they had been written. The largest word by far was "creativity". He also asked the group to note that there was a frame around the words with an empty space outside it, empty for the time being: "What is inside the frame, all these words, are what is in the suitcase right now"

Discussing the poster he said, "There is a risk that the words are too cliché-like. They certainly would be if you had not been serious about this work."

He discussed how the individuals in the group seemed to complement each other, for example, how some were characterized as "initiators" while others were "finishers". He also noted that there were many positive traits like "considerate", "helpful", and "cooperative". There also seemed to be a good tension in the group, between "impatient" and "confident", and between "holistic" and "detail oriented".

Then he said, "But now I would like us to discuss what we actively put *outside* of the suitcase, traits that we don't want on our journey or in a group when working with a project."

This provocative question spurred a lot of discussion. Someone said, "You don't want people that wait until the last moment."

Someone else added, "You don't want too much impatience or negativity."

During the discussions it seemed that Thomas was balancing on a razor's edge between conducting a "fuzzy" exercise and doing

something very interesting; the group's attention supported the latter. Thomas was very attentive to what was said and how it was expressed. He spurred the discussion on by intermingling serious and sometimes slightly provocative questions with humoristic comments of a dry but entertaining kind.

After a while Ceasar said the word creativity, mostly to himself. It seemed like he tested the word by sounding it. Thomas turned to him, and in an inquiring voice asked, "Why did you just say creativity?"

"I was thinking about our new production manager. If I say that we work with creativity to him… he will … Look, don't we need some kind of goal here, some kind of definition?" Ceasar replied.

"Do you mean here in this group?" Thomas asked.

"Well, yes," Ceasar said.

"It's shame that you came late last time. Because then we discussed that this time we start with the journey rather than with the goal or vision. From that perspective it is no wonder that you have to ask, 'where is the goal?' It's great that you ask that. But the goal is what we will find together. And we start with establishing the group. But you also asked about definitions, about how to define creativity. There are a lot of studies about creativity, and much of it is quite inaccessible, and there seems to be no single definition. But as you all wrote creativity, I've had to read up on the subject," Thomas said.

Thomas then went on to discuss 'creative' from the perspective of the book *Kreativitetens Filosofi*[4] by Swedish philosopher Nils-Eric Sahlin, for example how creativity is a deeply human ability, how there is a difference between problem solving and creativity, and so on. After a while he said, "I have also brought a film that we will watch together, after the coffee break. But first it is time for Sten's contribution to the collage."

"My assignment was to recite a poem or a song that would contribute to the discussions… I've chosen the text from a song that I have on a record. But maybe it is a song about what restricts creativity. Let's see if you can recognize it," Sten said.

4.   *The Philosophy of Creativity*, my translation from Swedish.

Sten then read the text out aloud. It contained the following lines:

"Check to the left. Look to the right. Do it one more time. Is it going up, or down, or to the front, or to the back? It is always time to choose, every second and every minute. The day that you stop doubting, that's the day when freedom dies."[5]

After he had read the text he said, "I like that ending 'the day that you stop doubting, that's the day when freedom dies'".

Thomas replied, "That song efficiently describes traits that should be outside of the frame, 'complacency', 'certainty', and 'self assuredness'."

Thomas then continued to discuss creativity inspired by Sahlin's book, for example how, when he separates problem-solving and creativity Sahlin does not construct a hierarchy between them. "Problem solving uses tried and tested methods and approaches, while creativity demands novel methods and untried approaches."

Thomas also described how Sahlin differentiates between "false creativity" and "true creativity"; how, for example, Freud, Wittgenstein, and Popper were not really creative as they only mixed together what others had already been thinking, according to Sahlin.

He then told a story from the book, of a man who lived in an isolated are on the Russian steppes who invented the bicycle and how he had ridden to town on it, only to be ridiculed by the people there for his clumpsy contraption. He hadn't known that the bicycle had already been invented and the townsfolk though him a fool. But to Sahlin the man had been just as creative as the real inventor of the bicycle.

The group listened intently to Thomas when he told the story. Thomas also expressed how Sahlin enhanced the importance of trust and the possibility of taking risks for creativity, and that the notion of suffering as important for creativity was an illusion, how

5.   The song was written by the Swedish blues and reggae artist Peps Persson in 1975. Peps is well-known in Sweden as a legendary singer in the leftist progressive music movement of the 70's.

instead it is a deep *interest* that is important. This spurred a long discussion where, for example, Jonas raised the question about the creativity of artists, how they seemed to affirm and draw on emotions by going deep into something of interest, within the self.

Sandra reflected on the need to find the right feeling for being creative, but how that takes time, but how these days, in the company, there is never time to even find that feeling because all time was planned, "There should be planned unplanned time!"

Everyone laughed at this.

After a coffee break Thomas prepared for viewing a shortened version of the documentary film, *Dog Town and Z-boys*. It was a film that I had suggested that Thomas could use to initiate reflections on what it takes for a group to be innovative.

Water was poured from Sandra's pitcher while Thomas introduced the film:

"The feeling in the film is very summery. For some there may also be a feeling of nostalgia in it. It is about a group of kids who reinvented skateboarding in California in the 70's. One could say that it is about a great big innovation project. We can analyse what happened afterwards, but be prepared to compare the group's traits to those on our poster. And think about why these 11 year-olds could see opportunities that the grown-ups couldn't." After this introduction the group watched the film.

Afterwards the group expressed how difficult it was to understand how revolutionary this was at the time, in the 70's. These days this style of skateboarding is the standard, but at the time their wave surfing-inspired, low-down riding style was a "shock to the system" that was used to a more upright riding style. The group had also noticed how the kids seemed to observe the "concrete jungle" in a different way, how they carried over their surfing experience and started looking for "waves" where there were not supposed to be any, and how they had found all these empty swimming pools where the sides were like "standing waves" that could be ridden.

Jonas then told the group how he had skateboarded in '79 and how it was a social thing:

"It was interesting to see how they urged each other on, like friendly critique. I recognize that, and how they had no other goal than riding."

Ceasar replied, "But they had a great goal, to have fun. They were likeminded and were intent on having fun together, and they were very focused on that."

"Yes, they had this agreement, but it wasn't articulated. They had freedom within boundaries, and out of that the new arose, but they never knew what that would be," Jonas said.

Tom joined in the discussion:

"And there was power in resistance. The group resisted the grown-ups, they came from dysfunctional families, and they were strong and creative together in that resistance. Maybe it wouldn't have been so strong if the municipally had built a skate board ramp."

Tom described how when he was a kid they built stuff in the forest, how they had brought material there, even though it was not allowed, and how they had created an environment together:

"These days all these environments are ready-made for the kids. That's an efficient way to kill creativity."

Thomas, then directed attention to another issue and said:

"One thing that came up again and again in the film that we haven't discussed was the importance of role models, like the legendary surfer Larry Birtleman. Who are your role models? Whom do you measure yourself against?"

The question was followed by silence before Jonas reflected:

"I think that that is difficult. If it had been about my hobbies, then I would be able to answer, but not in my work; that's a bit sad isn't it?"

"But I'm thinking about others that make flooring. Like 'I wish we could make floors like that'," Thomas said.

The silence was prominent.

"Well who would that be?" someone asked after a while."

Thomas waited for them to answer. The group started to talk about what it meant to come up with something new, but soon seemed to lose track.

Then I asked, "But what happened when you managed to come

up with this radical new flooring system based on the granules?"

"That had a lot to do with the environment. We used what we had; it was waste material. Just like the kids used the swimming pools to achieve what they wanted. The granules were too big to begin with, but we had to work with them anyway. Then we saw the possibility to make patterns, they were like pixels. If they had been smaller, like we wanted at first, then maybe we wouldn't have seen that possibility."

Thomas acknowledged this:

"There you go. You were attentive to the granules and their possibilities."

But by now the group was getting exhausted. After some further spurious talk Tomas decided that it was time to wrap up by reflecting on the two sessions:

"We started with the metaphor of the suitcase, and now we have discussed creativity and innovation. And if there is no continuation of this I would like to say thank you." The group was silent, as if they didn't know how to, or wanted to let go of the feeling that had been created through the discussions and reflections.

Finally Tom spoke:

"What I think has been the absolutely most positive experience is to understand that it is not only about changing one thing, but that it is about changing the complete space, in all kinds of details, and that when you do that, turn it around like that, then you start to approach things in a different way, start to think differently about things. You don't see what you can change until you start to approach it from a different angle. I feel that there are many more dimensions to this than what I'm used to thinking about, not least the importance of cooperation, but also how you do not necessarily know where things will lead."

"Yes it's been two workshops to make creativity conscious and illustrate what it can be about. Do you agree with Tom that there are more dimensions to this than you previously thought?" Thomas replied.

"We always used to gather around the collections, people from technology, marketing, design, but these days we never have the

time or interest to do that, because we're all in such different phases in the development process," Sandra said.

Jonas joined in:

"What I feel is reinforced by your presentations is the importance of the climate around the group. Those kids were not exceptional, but the climate was, and the climate is the first thing that goes out the window when the screws are tightened. At the same time they [management] seem to believe that things will stay the same. It's strange how they can think that."

At the very end the group agreed that they wanted to continue the process and that Thomas and Sten would discuss the process ahead.

EPILOGUE – AN ABRUPT ENDING

Sten, Thomas, and I had an impromptu discussion right after the workshop. Sten expressed how he, "… hadn't been sure where you want to go with this, Thomas, but at the same time I have liked this floating condition and I've been thinking that it will sort itself out. For me, the most important thing is the creative climate in this little group."

Thomas wondered if the group could perhaps also be expanded. He also suggested that perhaps it was time to open those "idea-drawers". But Sten was not so convinced about this.

"I think that we need to force ourselves out of the current idea space. Instead, I believe that we need to explore some new areas with Thomas' help. We need to challenge our perspectives. What if we say that a floor can only weigh one kilo instead of three kilos, then we would really have to challenge our established understandings, and would have to open the suitcase rather than the drawers"

We also discussed that it might be a good idea to set up a specific room for these explorations – like a "war room".
Then Thomas asked if this guerrilla image was a good thing, to work "under the radar". Sten pondered this. On the one hand it seemed to be the only way at the moment, "… but if, on the other hand, we could get someone in management on board, then it

would be easier. We would have to align the project a bit with their ambitions to focus on methods, checklists and such. But maybe it could be done."

The meeting ended with Sten promising to come back with an action plan within a couple of weeks.

A few weeks later I met with Sten, Sandra and Tom. They said that they had finally got acceptance to go ahead with the project, and even a small budget. They had also started to furnish the war room. Everything seemed to be smooth sailing now.

But then, about two weeks later, the day before Floortech AB would host that autumn's management seminar in the research project, Sten called with sad news. They had just heard from "head-office" that Floortech AB would be shut down. In the internal competition it seemed that they had lost the contest to an eastern European plant that had machinery that was better adapted to the coming products. It had not mattered that Floortech AB was still profitable, and even less so that the unit had a track record of being innovative. I asked Sten if he wanted to cancel the company meeting the next day, but no, they wanted to end with heads held high. At the meeting Sten, Tom, and Ceasar told the gathered representatives from Alfa Laval, Tranemo Workwear and Macro about the innovative granule project with pride mixed with considerable sadness.

A HERMENEUTIC PERSPECTIVE ON THE INTERVENTIONS

The story in the Interlude, of how Lillit and Axel together came up with a bracelet made by a toilet roll and matchsticks, encapsulates the essence of this study. In the interventions I observed the unfolding of processes similar to the one where Lillit and Axel engaged in hands-on making entwined with verbal meaning-making: social processes modelled on design practice that resonate both with Schön's notion of a conversation with the situation and with Coyne and Snoddgrass' perspective on design as a hermeneutic practice. It could be argued that *all* processes between people are essentially processes of meaning-making, and that meaning-making, or "sense-making" to use Weick's concept (1995), is intensified when something new or unforeseen occurs, as in the interventions when new actors (the designers) intervened in existing social situations. But the fundamental reason why I discuss the interventions in terms of meaning-making is that it was not only a secondary or retrospective effects of the designer's interventions, it was the primary character of the work in which the designers, through different means, engaged the groups.

I described the interventions longitudinally in the previous chapter to allow the reader to experience the processes as they unfolded. In this chapter I will continue with these longitudinal representations to some extent, as the emergent character of the processes is an important finding in itself. For this reason I have structured the chapter according to: *Before*, *During*, and *After* the Interven-

tions. Further, *During the Interventions* has been split into two intertwined parts: *Meaning-Making through Conversation* and *Meaning-Making through Making.* In the first part, I describe how verbal meaning-making through different means, such as questions and metaphorical deliberation, and prompted by different events, such as visits to museums and users, was crucial to the emergence of new meaning-spaces for innovation. In the second part I describe how hands-on visual and material work made it possible to develop new understandings and also gestalt new tentative concepts. Even though for analytical reasons I have divided the activities in the interventions, they were in reality quite entwined and overlapping, with some differences in emphasis that will also be discussed.

Throughout I draw from the first set of themes developed in the analysis of the empirical material, as described in the chapter *The Design of the Experimental Study.*

BEFORE THE INTERVENTIONS

As discussed in the chapter *Design as a Hermeneutic Practice,* Gadamer held that understanding is always *situated,* that there is no possibility of immediately stepping *outside* of one´s situatedness in history, culture, body, language, and so on (1960/1996). A similar perspective is found in social constructivism where institutions in a broad sense are seen as more or less firm solidifications of different values, norms, and behaviours, that is, of certain dominant understandings that are shared and continuously reproduced (Berger & Luckmann, 1966). In this section I investigate the prevalent product-related understandings in the companies before the interventions, as a foundation for discussing what went on in the interventions in the next part.

Un-Reflected Product and User Understandings

At the outset the individuals in the companies expressed quite spe-

cific understandings of their products, or *pre-understandings,*[1] as Gadamer referred to such perceptions to enhance the process character of interpretation. To a large extent these pre-understandings were also shared across the company. Moreover, in almost all of the companies, the dominant product understanding was for the most part functionally oriented: "a shower is for showering in", "protective clothing is for protection", and so on. It was only in Floortech AB that the product was consistently described as being a more complex combination of both functional and aesthetic dimensions.

Also typical of the involved companies was that when a user was considered it was a generic user of technical functions, for example a standard-sized male worker in Tranemo Workwear[2] - not his female colleague or his individualist young apprentice; Mrs. Svensson[3] in Macro - not her kids or her old father; the typical professional kitchen chef in Kitchentech AB - not his colleague with a bad back; or as in Alfa Laval - a more or less invisible maintenance person. Further, technological, material and production oriented knowledge supported these functional understandings as dominant modes of knowledge in the development units. For example, in Macro showers were to a large extent about extruded aluminium profiles,

1. Also related to as prejudice, see the chapter *Design as a Hermeneutic Practice.* I will use the term pre-understanding to avoid the inevitably negative connotation of the term prejudice when I am not specifically meaning prejudice as an obstacle or restriction.
2. An interesting case with a similar one-dimensional perspective, and with dire consequences, is how the typical automotive crash test doll has until recently been exclusively modelled on the standard size and gender of an average air force pilot, that is, that of an above average tall and muscular male person. This tendency dates back to the 50's when the first crash test dolls used in the car industry came from the U.S. Air Force. A consequence has been that female drivers and front seat passengers are subjected to a hundred per cent higher risk of whiplash injuries du to the resulting car seat designs (Carlsson, 2012). Interestingly, the fact that the generic crash test doll can be understood as a male air force pilot has gone unnoticed as the prevailing understanding has been to regard it as gender neutral – as simply a functional crash test doll.
3. "Mrs. Svensson" can be seen as a Swedish equivalent of the British persona "Mrs. Smith", the notion of the average housewife.

in Kitchentech AB professional kitchens were about stainless steel, in Tranemo Workwear work wear was about heavy cotton. In addition to this, associated work processes and procedures revolved predominantly around specifications, standards, dimensions, durability, and other quantitative types of knowledge.

These functionally oriented pre-understandings had certainly helped Tranemo Workwear to establish itself as a leading producer of protective work wear, Macro to make competitive and reliable showers, Alfa Laval to produce world class heat exchangers, and so on. In other words, pre-understanding had helped the companies focus and do what they did well, and within the space of these understandings innovation had been made possible. However, as will be shown, a potential downside of this was that these pre-understandings were rarely reflected on. They had been institutionalized in language, procedures, knowledge, and so on to the point that they were for the most part taken for granted, another typical aspect of how the socially constructed tends to be regarded as "the truth" (Berger & Luckmann, 1966).

Uncertain Openings to Aesthetic Perspectives

However, there were signs that, although more or less hardwired into the companies, these pre-understandings were, little by little, being opened up. For example, at the outset Tranemo Workwear had just launched a youth-oriented casual wear collection where identity was at the fore: a first for the company. Macro had recently developed the "stylish" Box-shower, which departed considerably from their established and more generic product form, and the Alfa Laval heat exchanger unit had developed an ergonomic hand-held tool concept, where user ergonomics had been addressed. These new concepts in one way or another stood out in relation to the existing products as embodying a wider range of dimensions, for example, identity, ergonomics, and aesthetics, and thus to some extent also challenged the dominant pre-understanding of what the products of the respective company were about.

These and similar concepts that challenged the established pre-understanding were also different in that they had been all been

developed in close cooperation with external designers, and further, had all met considerable resistance in the organization. For example, in Macro there had been strong management resistance to the glass décor concept that had been suggested by glass artist Ulrica Hydman-Vallien, to the "snakes and things" as it had been described derogatorily by management. In Tranemo Workwear the former CEO had rejected the continuation of the female work wear project on the grounds that the needs of women could just as well be fulfilled with the existing (male sized and modelled) garments; the "demanding SSAB women" were seen as anomalies rather than representatives of a potential market. Even in Alfa Laval the ergonomic hand-tool project was discontinued as hand-tools were considered a non-Alfa Laval area, despite being specifically designed for the maintenance of Alfa Laval heat exchangers to replace less adapted tools that often did costly damage to the expensive equipment in addition to being ergonomically inferior.

The common denominator is that all these concepts, in one way or another, introduced a more multifaceted user perspective. Further, it seems that the more aesthetically and emotionally oriented the suggested concept was, the more it was resisted in the companies, often on grounds that it was not necessary, proper, or serious. This may have been based on sound business sense, but may also reveal that when challenging established pre-understandings or meanings, the raison d'être of the organization, its established power and knowledge structures were disrupted, hence the reactions for keeping things according to the current order, and for keeping the current understanding intact - "reality management", as Berger and Luckman named the typical reaction for defending the "… massive and taken-for-granted reality *in actu…*" when an organization is threatened by other and potentially disruptive perspectives (1966, p. 167).

When Gadamer discussed pre-understanding he also used the concept of *prejudice* to emphasise an inability to understand "the other", but also saw prejudice as inevitable and as something to build on. In the cases, "the other", both before and in the interventions, can be seen as the entwined meaning-, aesthetic- and experience-oriented dimensions of the products that the designers intro-

duced. In other words, a consequence of the dominant functional understandings in the companies was a general prejudice, or at least resistance to different dimensions of aesthetic knowledge. However, this was not a solid resistance. There were also individuals with a specific interest in aesthetically oriented knowledge, especially significant among those individuals that "opened the gate" to the designers. But even with these gate-keepers, who had a specific interest and some prior experience of aesthetic knowledge at work, it was rarely well developed.

The new CEO Max at Tranemo Workwear, who had recently completed engineering training, was not used to considering user-identity and product expression as an area of knowledge in its own right. This was evident when he over and over asked designer Charlotta questions like: "How do you know what is right?" and "Where do the ideas [for new expressions] come from?" Similarly, in Macro there was no discussion about Hydman Wallien's "snakes and things" beyond considering them "provocative", no deliberation of other symbolic and aesthetic possibilities, about what a more "Macroish" expressions could be. Klas at Alfa Laval also seemed to struggle with how to deal with the aesthetic dimension when he discussed the cover of the heat exchanger unit for home installation that had been designed by an external designer, with a symbolic piggy bank slit to indicate the money saved thanks to the efficiency of the device. Beyond considering this a strange feature there was no discussion about the symbolic meaning, how it could possibly be achieved in other ways or what was really wrong with the design, for example that the slit was probably semantically lost on most users as it did not necessarily connote a piggy bank; nothing else in the shape of the square heat exchanger box signalled piggy bank and the slit instead resembled an inspection slit or scale. And in Kitchentech AB it seemed that the existing functionally oriented perspective stood in the way of imagining the type of equipment that Kitchentech AB produced in settings other than the professional kitchen, even though recent trends in the restaurant sector pointed to several such opportunities. In a discussion about the recent interest in so called salad bars that were placed right in the middle of restaurants, the discussion did not stretch beyond thinking about the proper ex-

pression as Scandinavian "functionalist", that is, more of the same expression as the current Kitchentech AB products. That Italian competitors had recently launched salad bars was shrugged off by considering them "too lavish and decorated". It might have been a correct assessment of the market but it also hinted at a rather defensive understanding that reinforced the current norm as "correct".

From a slightly different perspective the above can be seen as signs that there were quite specific aesthetic preferences at play – functionalist aesthetics. But as such these were tacit and un-reflected, quite typical of engineering organizations according to innovation theorist Helge Godoe (2011). It seems that the organizations stood on a threshold where they knew that something was missing from a business perspective, but could not express exactly what it was. All in all, it seems that most companies lacked knowledge and perspectives belonging to the realm of the symbolic and aesthetic, as well as more multifaceted user perspectives. This limited the way they understood their products as purely functional. Further, the reigning functionalist oriented knowledge also seemed to lock the companies into a situation where their current understanding was consistently reinforced as "the truth" in how it was institutionalized. This also overshadowed the already existing aesthetic and symbolic knowledge and its relevance, and also made the adoption of such knowledge from the outside difficult. Indeed, all companies realized that aspects other than purely functional ones were increasingly becoming important in the market place, for example, gender values and life style issues, but they did not know how to connect such issues to innovation work.

It seems that a key reason for several of the companies' interest in design was related to investigating how design could improve the aesthetic aspects of their products and business as external appearance. This was often expressed in instrumental terms, such as, "How can we make our communication material up to date?" or, "How can we make more attractive showers?" That the assimilation of design-related knowledge would entail much more than merely bringing in a designer or artist to propose an "aesthetic solution" will be discussed in the coming section.

DURING THE INTERVENTIONS: MEANING-MAKING THROUGH CONVERSATION

Throughout the interventions, "talk" was fundamental to the process, and not just any talk but on-going discussions about the products as such – dialectic processes of verbal meaning-making that little by little resulted in expanded understandings of the products. To me, the amount of talk was at first surprising. I had perhaps expected "a little less conversation, [and] a little more action" to paraphrase Elvis - or "a little more method, a little less reflection".[4] What will be shown is that talk, or conversation, was also *action* (Gronn, 1983), and fundamental action when the groups attempted to not only make sense of its current situation and products, but also tried to develop new understandings that could lead to new meaning-spaces for innovation.

Teasing out Pre-Understandings

When the designers entered the companies they paid specific attention to already existing product understandings. Based on how they interpreted these they developed different tactics, or processes for engaging the groups in different conversations. One way to do this was by *provocation.* Cecilia, for example, did this in several ways. When she delivered the results of the initial review to the whole group it was a kind of provocation or critique that exposed different perspectives, for example, the already existing critical attitude of Magnus R. about the catalogue Tema designed with its perceived sexist photographs, or Joachim's affirmative reaction to Cecilia's comment that the showers were functional but rather boring, and how he considered that to be Tema's fault. In other words, beneath the articulated reactions there were also other understandings that emerged in the discussions, of which some were critical.

Charlotta chose a less confrontational tactic as her initial approach and sought to interest the group by using visual material

4. Or rather, Mac Davis and Billy Strange who wrote the song *A little less conversation* for Elvis Presley in 1968. Source: http://en.wikipedia.org/wiki/A_Little_Less_Conversation

from the many magazines that she brought to the first workshop, by *inspiring* the group. With this material at hand she could gauge interest by discussing trends, styles, and themes. This made it possible for her to pay attention to the personal interests and pre-understandings of the group related to work wear, for example to find that Marie A., who worked with textile construction, to everyone's surprise was very interested in youth cultures. Similarly, Thomas used his different metaphorical stories to strike up discussions in the Floortech AB group, discussions that revealed different pre-understandings that he could then act on.

Thus, in these initial processes different pre-understandings, of both individual and collective character emerged and were sometimes transformed from tacit or even silenced to being articulated. As described in the previous section, some of these were quite prominent and shared by many, especially functionally oriented pre-understandings, for example the shared understanding in Macro that the typical individual buyer of a Macro shower was "Mrs. Svensson" and that the Macro shower was a functional shower. In Tranemo Workwear the group held a joint understanding that work wear was about safety functions, period. And to the engineers in Alfa Laval the products were more or less "all about technology". That is, that there was, in all companies, except Floortech AB, an overwhelming focus on the functional dimensions while other meaning-dimensions that had been hardly explored at all.

But there were also individual exceptions to these understandings and specific individual interests that would become important, such as Joachim's motorcycling experience when related to the shower, or the recently hired designer, Maria's, more fashion-oriented understanding in Tranemo Workwear. Gradually the designers got to know the established pre-understandings of the groups better.

Experiencing the "Surrounding World" and Expanding the Horizon of Understanding

As discussed in the previous chapter, Gadamer (1960/1996) held that all attempts to understand someone else has to depart from one's current understanding, one's current *horizon of understand-*

ing, or pre-understanding, and further, will only evolve if the individual has a genuine desire to understand and is willing to engage in a process in which he or she is prepared to release from existing understanding and begin to relate to the perspectives of "the other": a process Gadamer discussed metaphorically as a process of *expanding the horizon of understanding* towards the potential *fusing of horizons.* Also, relating to "the surrounding world", or socio-cultural realm can be seen as an ambition to understand, even though the hope of achieving a unified or stable understanding of "the world" can never be achieved. Even the idea of understanding the other can be seen as an ideal and an aspiration in Gadamer's thought rather than as a potential realization. The main point in the context of this study is the notion that through an earnest ambition to understand, one's own horizon of understanding may expand, and also that of an organization when meaning-making is engaged in collectively.

At the outset, in their work to engage the groups in conversations about the products of the companies, the designers all found their respective companies as more or less restricted in how they related to the surrounding world. For example, Charlotta was stunned that in Tranemo Workwear the development personnel almost never "left the building", never went to trade fairs, had no magazine subscriptions and almost never talked to the users. Similarly, Cecilia said that she was shocked to see that Macro seemed to completely lack insight into interior design trends, and wondered how they could go on producing showers and related communication material that was behind the times in relation to its competitors. It must be remembered that we had matched the designers with companies slightly outside of their normal clientele to achieve a stronger contribution. Charlotta was used to working with more fashion-oriented clothing companies and Cecilia with more brand and styling-conscious companies such as IKEA. Nevertheless, the competitors of Tranemo Workwear, Macro, and Kitchentech AB were also becoming increasingly conscious of such dimensions and thus the implications of the designer's concerns were important.

Among the first efforts of the designers was to initiate a process of exploring the surrounding world. They all, in different ways, began

to introduce new influences to the groups. For example, Charlotta introduced life-style magazines in her first workshop and urged the groups to compose different mood-boards based on the images in the magazines to explicate different trends that could be important to Tranemo Workwear. She also urged Tranemo Workwear to start subscribing to fashion magazines, to buy trend analysis material, and to start searching actively for inspiration on the Internet, for example information on interesting material and technological developments.

Similarly, Cecilia also used images extensively and insisted that group members leave their offices and go to trade fairs, museums, and other events outside their normal business context. When Olof wanted to introduce Alfa Laval to a broader sustainability perspective he used a range of sources like films, books, and magazines that he wanted the group to interact with to "broaden their horizon". Patrik's task was more methods-oriented, but Klas had already gathered many insights from different sources, for example, the material on future trends and tendencies that the Chaos Pilot students had assembled for him. In the Floortech AB intervention, Thomas drew from a multitude of different materials such as stories, images, films, and texts to inspire the group. In a discussion at the end of the first workshop the group members reflected on how rewarding Thomas' use of such material had been. Thomas was surprised at this reaction towards the material as such:

> They seem hungry for images and stories. I'm sure they use images and stories in their private lives, but it's just like when people come to the work place they hang their complete competence as a human being on a coat hanger and enter some kind of professional role where stories and images are not used. And then at the end of the working day they put on their normal personality again and start to use metaphors and stories just like we all do as humans.

Inspiration vs. Information

Interestingly, the unified emphasis on the need to get connected with the surrounding world was often discussed as the need to

gather information. But considering the multitude of different types of material, the concept of information seems rather blunt and partially misleading, and considering how the material was used, for example, in mood-boards and sketch models, much of the material better fit with the concept of *inspiration*.[5]

To illustrate the function of inspiration Charlotta told the Tranemo Workwear group in the first workshop how a specific perfume packaging had inspired her in a project: how she had gone back to it again and again, not to get specific information, but to open up chains of association and to connect to a sense-oriented experience that she wanted to achieve in her clothing via the appearance of this packaging. It seems that Charlotta used the example of the perfume bottle to articulate the explicit quality of inspiration type material.

A direct extension of this ambition to get the groups to explore and get connected was Charlotta's idea of a "library", as a place where the company could store inspiration and information type material in a way that would be easily accessible and presented - a place where it would be possible to search the web, read magazines and reflect in an environment away from the hustle and bustle of the production environment, with its ringing telephones and constant interruptions. Also, Thomas suggested that Floortech AB should set up a similar environment, which was also decided just before the project was cancelled.

One important aspect was the sheer *quantity* of material that was brought in. Charlotta talked about the need to *immerse*[6] in the material, until one feels a sensation of "being full" before it is possible or worthwhile to really engage in the design process as such. Cecilia described how it was important to gather material that would represent "the entirety":

5. Sanders suggests that information-type material is better suited to traditional research methods that promote "… the tenets of good research: reliability, analysis and rigour", while inspiration-type material better suits imagination-driven processes with tenets like "… generativity and evocativeness." (2005).
6. Cross explicitly uses the term "immerse", just as Cecilia did, to describe how "designers immerse in material culture" (2006).

To me design is about entirety, about creating complete wholes. That is, you don't do an isolated investigation of a method or an area. You attempt to understand and create an entirety, at least in my world.

Another aspect tied to this type of material, and associated activities, is that its *usefulness,* or relevance, was difficult to see immediately. When Maria reflected on the "crazy" opera workshop, to which Charlotta had brought a multitude of "alien" materials with which to interact, she said:

> Well, you absorb it all, and it is stored somewhere inside you. And even though the result may look crazy, there might be this little detail, this type of button hole or that kind of hank that will give you that idea which much later, in a completely different project, will be just what you needed.

In other words, Maria's sentiment seems to indicate an understanding that you can never know what you need to know beforehand: that it is only afterwards that you can back-track your journey and see how it ties together with what you have learnt and understood. Throughout these processes the designers emphasized *curiosity* rather than knowing or finding out. They gave a carte blanche to the groups to wander about in the flow of information rather than asking for a correct answer or a specific piece of information. Instead, in these processes, multitude was more important than correctness, as was activity and immersion. The designers urged the groups to search actively and to let the findings lead on to the next step. But these processes sometimes felt awkward. When, for example, Linda in Macro, during an exercise to look for inspiration on the Internet for visionary shower concepts, asked, "What are we supposed to look for?" Cecilia answered, "You will know when you find it." Similarly the engineers in Alfa Laval were hesitant about the Synectics exercise, implying, "What will this lead to?" but soon started to work effectively and with energy.

> That became so different in comparison to how we normally work.

To be allowed to fantasize. I don't think they realized what they were supposed to do, but after a while they let go and then had to write so fast that it almost came smoke from the darn pen.

The Relevance of Personal Interest

Tied to the carte blanche to be curious, the designers emphasized the necessity of *interest.* Charlotta, Cecilia and Thomas all tried to find out about personal interests among the members of their group, and how that interest could be related in one way or another to the companies' products, and even Patrik who only had a few days with his group in Italy, brought in an exercise about personal interest. When Charlotta saw that Marie A. was interested in youth culture, she urged her to explore youth culture related styles and trends. Similarly, when Cecilia saw that Joachim and Daniel had a strong interest in sustainability issues she recommended that that should be their focus when looking for material. This was also a reason for arranging the visit to the exhibition on future sustainable architecture at Louisiana Museum of Modern Art.

This focus on interest can be seen as a strategy to ensure ownership of the work, but it seems that it ran deeper than that. For the designers the emphasis on interest meant to acknowledge the validity of the existing interests and understandings of the individuals, that is, to acknowledge that what they found interesting mattered as a necessary starting point in the process of exploration. Interest can be related to Gadamer's notion of *closeness:* the need to come close to that which one wishes to understand as necessary for engaging in a process of interpretation. The emphasis on interest also ties in with the notion of *inspiration* as something that has an effect on the individual, and the important awareness of the designers that the same type of material does not necessarily inspire everyone, hence their focus on both the group and the individual.

Friction between Subjectively and Objectively Oriented Knowledge

Even though during the interventions, the groups worked with inspirational material that would also help them in the continued process of interpreting and challenging their existing product understandings, it was not all that easy for the companies to come to terms with this perspective on knowledge, which moved away from strong connection between information and knowledge to the looser connection between inspiration and understanding that also treated subjectively oriented knowledge as equally important.

Despite the ambition to establish practices tied to inspirational material, there seemed to be a tension between the information and inspiration dimensions in several situations. In the exchange between Max and Charlotta in the first Tranemo Workwear workshop it was clear that they "spoke without hearing each other". Charlotta described how she gathered a multitude of inspiration-type material and how, after she had become "full", could start interpreting that material back and forth so that the concept could evolve in a spiral manner. As if not having listened, Max asked, "But how do I know what to go for? Where the hell do you find the ideas? You know the idea, the fundamental idea – where is it?" as if Charlotta had omitted to tell something crucial in her description of the design process: about the "silver bullet" to innovation, about how a company can *find* ideas. Similarly, a little later in the project Max asked, "How a can company *know* what is right?" to which Charlotta said, which was not very comforting to Max at that time, that you can't know, but you can feel what is right, that is judge what is right based on experience.

Yes, Max was worried and anxious. That stuck with me, how he asked, when we started talking about new products - how can I know if this is right, if it will sell? But that is what you have to develop as a designer, you have to have to be able to sense it correctly, understand it correctly and you just have to have done enough research to get it right. But then you can never *know*. It's always risk-taking. But that is why you have to be thorough, so that you can feel, right in your heart, that it is right. So it's not like shooting from the hip, it's all

about this process of labour, and then, yes, the whole delivery too, that matters.

Interestingly, in the Macro case there was a situation where the roles were reversed, when Cecilia, mid-way into the process was caught between the hope of knowing and the experience of feeling or departing from intuition. When discussing if the "U-shower", a new shower concept, would be right for the marketplace it was actually Joachim, the construction engineer who had been all about facts at the outset, who challenged Cecilia with the statement that having a *feeling* of the market place and to rely on *intuition* matters, and that you can never completely *know*. This seemed to disturb Cecilia's intention to get some order in the company, an interesting tension that developed between Cecilia's design management oriented perspective and ambitions,[7] and the practice experience of the engineer Joachim.

Later on in the processes Max, and the other managers, relaxed when they could see how it mattered with all this more subjective material, even though there was not a one-to-one relationship between information and knowing. It seems that they learnt to trust the competence of the designer as an interpreter and also in their own ability to relate to the material when they began to see how the material, assembled in different ways, as mood-boards, for example, started to make sense to them. Several group members also testified how they had acquired concepts and knowledge that made it possible to start to see and discern new things, and to see relationships between different things, Magnus R said:

> As I remember it the first understanding came when we discussed style, that there are different styles and that our competitors have different styles. Before when I leafed through interior magazines I

7.   As described in the Macro case, Cecilia had a background in engineering, design, and design management, and it seems that she frequently relied on her design management oriented understanding when engaging with Macro, especially up to the time of the work with the new product catalogue, after which she engaged in more direct hands-on design work, and when it seems that her more design practice oriented understanding was "activated".

never knew afterwards what I had looked at. But now I see and analyse and sort of look in a completely different way when I read those magazines.

Other such issues concerned how to relate to environmental issues in the case of Macro, to gender issues in the case of Tranemo Workwear, and to user-experience in Alfa Laval. The designers showed the groups how to gather such material, and reassured the groups that it would be relevant but in different and more inspirational ways than they were used to. They argued that relevant material is often found *outside* of the immediate context, and that the material has to be ordered and arranged to make sense, and that ordering and arranging is to a large extent an aesthetic skill. Gradually the companies took ownership of the process and also seemed to shift their perspectives on knowledge to also accommodate the relevance of more subjectively oriented knowledge.

A Dialectic Process of Questions and Answers

Questions were commonly used throughout the interventions to probe different issues. To Gadamer, who was inspired by "Socratic method" the question was the most important tool for initiating a dialectic process of understanding based on questions and answers, similar to how Schön discussed designing as a "reflective conversation with the situation" (1983). In the interventions questions and different events that spurred questioning, moved the interpretative process forward. Even the first workshop with the fashion students at Tranemo Workwear can be seen as kind of question: "Is it possible to crossbreed workwear with fashion?" When discussing design practice in the designer seminars, Patrik said how:

> When we use questions, we ask them, not because there is something we don't know, but because we want to challenge someone - to get someone to reflect on something. And by that you both get answers about things you don't know and a deepened understanding of some issue.

Thus, as hinted by Patrik's reflection, to pose the right question can be seen an art in itself, as Gadamer argued. A good question reveals new possibilities and understandings. Such questions hold a combination of openness and directedness. Further, in the interventions the designers used or spurred *a range* of different questions, from naïve to phenomenological questions.

NAÏVE QUESTIONS

The Alfa Laval session, when Adam the "resident sketcher" engaged in the social sketching situation with the engineers, epitomizes the dynamic of the innocent or naïve question. When trying to interpret and draw the concepts that the groups had conjured up, he had to pose a number of naïve type questions as he simply did not know anything about the technology involved. Among these there were questions that were inadvertently challenging when they touched on fundamentally problematic aspects of the concept. Further, the combined attention of the engineer on the emerging concept and on Adam's naïve questions, questions that the engineer could not readily pose himself due to his own biases, not only revealed problematic aspects, but also opened up new possibilities in a rapid and iterative process that also involved the engineer's interaction with his group and their responses, or as described by Klas:

> That meant a lot to the workshop, when he interpreted the simple sketches that our people had drawn. Sometimes he interpreted them exactly and sometimes he interpreted them differently and then that lead to discussions and a development of the general idea. And then they walked back and forth between him and the group, because when he added something they suddenly saw something new that triggered them.

In other words, even though Adam was ignorant concerning the technology in the workshop, or maybe just *because of this*, he could pose the type of questions that were so unusual in the context that they demanded that the engineer had to *explain*, and in doing this he caught sight of issues that would otherwise be hidden by different taken-for-granted assumptions, that is, by pre-understanding.

IRONIC QUESTIONS

In most sessions the ironic question (c.f. U. Johansson & Woodilla, 2005) was a more common type of question than the naïve one, that is the type of question that Socrates often used, questions that at first seemed naïve, but were sharp as they directed attention to otherwise invisible positions and assumptions - cunning questions. As described above, Patrik told how he often used questions of this type in his design practice instrumentally, that is, how as the designer he often played at being the outsider by saying something like, "With all due respect, I don't know about these thing, but ... [and so on]." For example, in a session in the first workshop outside of Florence the exchange went:

> Patrik – "Does Alfa Laval offer products to the third world?"
> Engineer – "No, not really."
> Patrik – "Could that be an area? Yesterday we talked about the cooking bowls and of energy conservation. Perhaps special products for these markets?"

Even though the idea was perhaps a bit far out, it did open up a possible new avenue of thinking, and no one could be intimidated by a question that may have held an implied sharpness, for example, "Why don't you sell to the third world, with all your talk about sustainability?" or something similar.

CRITICAL QUESTIONS

Questions directly aimed at sensitive issues may also lay bare problematic issues and even conflicts. Such questions are more clearly distanced than naïve and ironic questions. This critical questioning is of the distanced and analytic kind that Gadamer rejected, but which Paul Ricoeur saw as necessary for a dialectic "at the heart of hermeneutics" (Kristensson Uggla, 2002, p. 339), or that between distanc-

ing and closeness.[8] The power of the critical question was something that Cecilia experienced when she presented the findings from the initial review and analysis of the company and questioned the entire Tema group, for example, when she posed critique of Macro's product catalogue that implied the critical, "Why do you still do sexist photographs when your competitors do lifestyle photos?" - a question that could easily be converted to, "Terje, are you sexist?"

The critical questions Cecilia posed were well founded, which was also why they struck a nerve. After "the storm", when Terje the CEO walked out of the meeting, she posed the questions in a new way, now from a user-perspective, and more ironically oriented, and through this was able to turn the situation around, by giving Terje a possible exit, by redirecting focus on the objective rather than the problem, and by implying closeness. This sequence of provocation and redirection can be seen as a rhetorical *questioning* that occurred in several situations involving the designers, and throughout the conversation in the groups.

PHENOMENOLOGICAL QUESTIONS

A different and less common type of question was posed by Jeff, the CEO of Floortech AB, when in the initial review he asked, "Why should we do this?" referring to vinyl flooring. Thomas worked this question into his programme as a fundamental component, or raison d'être for the journey metaphor, to find out about the group and about flooring from an *existential* perspective. Unfortunately the group never had time to explore the implied question, "What is flooring all about?" before the notice to shut down operations. But they at least had an opportunity to explore, "What is this group all about?"

8.   As discussed in chapter *Design as a Hermeneutic Practice*, Ricoeur argued, inspired by Habermas' critique of Gadamer's historical hermeneutics, that to "allow" critique inside hermeneutics, meant that it would be possible to see issues that are otherwise shaded by dominant perspectives, that is, to acknowledge the power dimension to interpretation. This critical distancing can also be seen as embodied in how the designers automatically represented an "outsider perspective" that opened up a dialectic between their outsider perspective and the insider perspective of the group.

Exploring new Meanings through Metaphor

Gadamer's interest was in how to make relevant interpretations of historical texts, given situatedness. As discussed in the chapter *Design as a Hermeneutic Practice*, Ricoeur deviated slightly from Gadamer's insistence on both closeness and tradition. He was more interested in discovering how new meaning occurs, for example how to understand the act of writing rather than the resulting text (1991). One of Ricoeur's contributions to hermeneutics was to suggest that to achieve new meaning *poetic* devices such as metaphor, analogy, and narration must be integrated in interpretative practice.

In the interventions metaphors sometimes helped the groups to make leaps away from established pre-understanding and explore new meanings and possibilities. However, it was mostly the designers who insisted on using metaphorical language. At the beginning the groups seemed nonplussed when the topic of metaphor was raised, as if metaphor was either a completely alien concept or too frivolous to engage in during work. When Patrik introduced the Synectics method, which explicitly required the group to use analogical and metaphorical language to imagine new possibilities, he had to explain the notion of metaphor by referring to book titles: "Metaphors, like in typical book titles you know, like *Hard Rain* or something like that."

Despite initial hesitation the Synectics exercise led to several metaphors that described the relationship with the user, for example "user's best friend" and "Harmony in use". Such metaphorical concepts helped the groups to come back to the user experience when they began problem-solving to define a technical concept: the metaphors solidified otherwise intangible concepts. In the exercises questions were asked of the type: "How can we ensure that the device is the user's best friend?" With this metaphor new types of solutions were developed, for example, the idea of monitoring equipment connected to a mobile network, so that maintenance personnel wouldn't have to climb onto the roof to check the status of the equipment, or clever solutions for easier installation of the device. In the sketching workshop with Adam, when one group pondered the renderings he had made, another metaphor was devised, that of constructing the equipment as a "suitcase" so that it would

be collapsible and easy to transport and also easy to "open up" and mount as a self supporting unit on the roof with a minimum of assembly work on site.

In Macro, the "your moment" metaphor for understanding the shower from a user perspective that was developed when defining the new product catalogue concept not only helped Cecilia and Magnus R. to design the catalogue, but later also served as a guiding metaphor for continued development work. In the sketching workshops at the end of the workshop process, the "your moment" metaphor helped the groups to snap out of the existing notion of Macro showers as purely functional and designed according to certain principles, for example, based on extruded aluminium profiles, and to instead start with the user experience and then let the concept follow the intended experience. Before the metaphor had been devised Joachim said that he found it difficult to imagine a Macro shower beyond the existing types of showers. To imagine a form-related shower based on a well-known brand and style like Porsche's was easy enough, but what was typical of Macro? With the metaphor at hand that was no longer an issue. The metaphor helped Joachim and the others see that from the metaphor perspective there were a multitude of possibilities, and as Joachim said right at the end, "Macro becomes whatever we make it into".

Thomas was the designer who used metaphors the most. Already when he planned the first workshop he paid attention to the metaphors that Marie and I frequently used when describing the project, such as the notion of the "journey" and the notion of an "open situation" and a "fluid condition". To this he added the metaphor of the "suitcase" that would be packed with the skills of the group, and the metaphor of "the glade" to describe the open situation that he wished the group to enter, a metaphor that was also used as a projected image. Another metaphor that became important was that of seeing the group as "a tribe". This was an unintentional metaphor the group picked up from Thomas' story of the Jarawah people that he told mainly to discuss patterns, but which in the Floortech AB situation immediately took on another meaning, that of describing the group's difficult relationship with the international head quarters.

In the Tranemo Workwear process I could not make out specific metaphors that guided the development work. One reason for this could be that my own attention to metaphors came late in the research process, after most of the process in Tranemo Workwear had already been conducted. Another reason could of course be that the Tranemo Workwear group was less "metaphor-inclined" even though Charlotta herself used metaphors frequently. For example, in the first workshop she used the metaphor of "the spiral process" to aptly describe her design process.

The power of metaphor can be illustrated by the situation when Sebastian in Kitchentech AB used the metaphor of entrepreneurial companies as crocodiles. His own enthusiasm for the metaphor, that he conceived when reflecting on different types of companies in relation to the crocodiles he had seen gulping down food at a wildlife park in Florida, disturbed Sten, the CEO, who had a very different idea about such companies as irresponsible "hope-companies". The provocation in Sebastian's metaphor sparked a conflict between Sebastian and Sten. Conflict, however, was not a common consequence of using metaphors in the groups. Mostly metaphors were useful as they opened up new spaces for conversation and making.

DURING THE INTERVENTIONS: MEANING-MAKING THROUGH MAKING

Throughout the different journeys, verbal meaning-making through conversation was intertwined with hands-on making of different sorts. The degree varied between the cases, and also with the phases of the process. Typically, more material work took place in later phases of the processes while image and visually oriented work started almost at once. In this section I will give examples of different types of hands-on making, and also discuss some key issues, not least the initial resistance to engaging in the "play-experience" associated with hands-on visual and material work.

Meaning-Making through Visual Making

Visual work took place in all interventions and images were also used in other ways to express and explore meanings as well as tech-

nical concepts. Both Cecilia and Charlotta worked actively with images right from the start. Both asked the groups to explore lifestyles and trends by cutting images out of lifestyle and fashion magazines and by doing image searches on Internet. To work with images from magazines involved practical hands-on work like cutting out images with an X-Acto knife and mounting images on board using spray glue. It also took aesthetic judgment when leafing through magazines: choosing, comparing, discussing, sorting and composing images into mood-boards.

The first attempts were rather hesitant. It was clear that the groups were not used to working actively with images, and also hesitant concerning what to look for, how to relate to and evaluate images, and how to create complete concepts based on different images expressing different things. Typically the groups at first tried to find one or two images that would represent everything, that would "say it all", like in the first Kitchentech AB workshop where two images were used on one mood-board to express the character of a typical service company: Service Ltd. But if the Kitchentech AB group never got beyond this stage, the groups in Macro and Tranemo Workwear became more used to working with a greater variety of images that could represent different aspects of a concept, such as materials, texture, styles, and so on, and they also became more used to composing the images on boards in collage format, even though a proficient designer would have considered the resulting mood-boards amateur-like.

Getting used to working this way also involved quite a lot of practical tutoring by the designers, and it was interesting to note how the groups gradually became more confident in their abilities. At the company seminars, later on in the processes, Max from Tranemo Workwear, and Magnus from Macro, proudly exhibited mood-boards that the groups had composed. This was quite a transformation from the initial hesitation where, for example, Magnus had said that working with images didn't feel like "serious work", also expressing fears that others in the company would probably not understand what they were doing. However, after this hesitation the work with images in Tranemo Workwear and Macro turned into more joyful experiences.

To sum up, images were vital to the group's ability to expand how they understood their products beyond the common starting point of an inherently functional understanding, when a "shower was a shower" as Joachim expressed it, and when a strict product image or a drawing would have been enough. The images that were used in the workshops involved a wider spectrum of motives, including humans, situations, environments, and other contextual content that helped the groups to start thinking more diversely about the product from a meaning perspective: for example, to think about the shower as possibly also about wellbeing or work wear as possibly being about personal expression.

Images Disrupting Functionalist Understandings

The work with images sometimes disrupted established gender norms in Tranemo Workwear and Macro. When the products were visualized in other contexts, dominant functionalist product pre-understandings were challenged, and thus a barrier that stood in the way of a more diverse understanding from a gender perspective was at least partially dismantled. For example, when the groups engaged in interpreting and deliberating meaning in images they also opened up to more female-oriented norms and experiences. It became legitimate, for example, to think and talk about issues of style and identity that also included non-functional aspects such as décor, feeling, and identity: to become aware of the "softer values" as Mikael the CEO of Macro expressed it.

In Macro this did not mean that the group immediately started to think about "showers for women" but rather saw these aspects as part of a wider life-style orientation that included emotional needs of both men and women. Joachim said that after having examined the styles and expression of the showers of competitors, he suddenly saw that one of the competitors offered showers that resonated with the fashion-oriented style preferences of his colleague Lena. In a workshop where images were deliberated, Lena for the first time had the opportunity to express her preferences as a contrast to Macro's dominating engineering-oriented preferences. With the additional support provided by Cecilia, who confirmed that these

were important perspectives, the knowledge and perspectives that Lena represented became more articulate and legitimate. The story of the missed opportunity to use the decor proposed by glass artist Ulrica Hydman-Vallien also played a part in making the group more aware of the value of the visual and ornamental. Lena's preferences also affected, or at least resonated, with the expression of the updated product catalogue that mixed female and masculine presentations without falling into the trap of an overly dichotomous expression. Much of this work was to be attributed to Cecilia, of course, but it also visually represented the aggregated understanding that had developed in the group about the shower as being about "your moment", about the experience rather than the technical artefact.

Tranemo Workwear is active in an industry where a functionalist understanding of the garments is immediately tied to macho-oriented norms and imagery, and where the target audience is almost solely male, even though there are also many women workers in heavy industry. During the process the group gradually began to explicitly discuss the neglected needs of women workers. Here Charlotta more or less subverted the current understanding by introducing the women-oriented imagery of fashion magazines, something that helped the group to snap out of the prevalent idea of the active man and the passive or even non-existing woman in heavy industry. In parallel with this discussion, the imagery also opened up the perspective to fashion beyond stereotypical, and often unreflected, male oriented preferences. In the first phase of the process Max had a problem understanding how stylistic meaning was developed, but in the later phases he also began regarding a fashion-oriented perspective as an important dimension across the board for both men and women, and later on he also endorsed the group's development of the stretch concept for female workers, knowing that to some subsidiaries this would be a quote radical proposal.

Many Images, Little Sketching

Throughout the processes images mattered in different ways. There were the *poetic images* such as the images of flows of water that Olof used to inspire the group in Alfa Laval to think differently about flows of fluids, or the image of the glade that Thomas used to transform the meeting room and set the scene and atmosphere for the first Floortech AB workshop. There were the *evocative images* like the ones that Marie suggested that Klas would use in the Alfa Laval Air workshop to inspire divergent thinking about air condenser technology, such as the image of a Coca Cola billboard on the façade of a building that made one group think of new placements of the devices and the concept "hide in plain sight". There were the *provocative images* such as Olof's image of all the recently built swimming pools in gardens all around London taken from a plane. Even Macro's own catalogue images of the scantily clad Miss Norway model had this critical effect, in a self-critical way. There were the *inspirational images* like the hi-tech oriented Star Wars images used to discuss and shape the "future worker" theme at Tranemo Workwear. And there were even the "soothing" or *legitimizing images* such as Patrik's "scientific" process chart that described the inherently wieldy Synectics process in a systematic way, thus helping to legitimize it among the engineers, or Cecilia's process images including the "innovation funnel" that made the group comfortable that there was a "plan behind it all".

But if the groups frequently used pre-existing images there was much less production of new images or sketching going on. The sketches that were produced were more explanation than exploration oriented, such as the sketches that Magnus R. produced to explain a thought or a concept. When the groups were asked to sketch there was a clear resistance. In Macro this resistance exhibited itself as "joking around". In Kitchentech AB the response was more paralysis-oriented and towards the end the experience seems to have contributed to the collapse of the process.

One exception to the rule was the workshop with "Adam the resident sketcher" in Alfa Laval. In this process the first illustrative sketches by the engineers were juxtaposed and replaced with the renderings of Adam. These were in turn developed further by the engineers when they changed or added things to Adams renderings, inspired by his naïve questions. In the situation, the experience of the engineers in making drawings to illustrate technical principles were combined with Adams proficiency in making more life-like

renderings in a fluid cooperation between Adam and the engineers through a series of rapid iterations. Here the engineers showed no apparent anxiety to having to sketch. Perhaps it was mostly Adam who felt the most pressure to make nice-looking renderings. At the same time, Adam's interest and commitment probably helped making sketching comfortable for the Alfa Laval engineers.

Meaning-Making through Material Making

Just as working visually was initially difficult, so was working materially. But there was an interesting reverse relationship between visual and material work. If visual work was mostly conducted with pre-existing images as a form of bricolage-like process, with little sketching from scratch going on, in material work emphasis was on sketching type work with few references to already existing objects. However, the visual representations, for example, in the form of mood-boards, often paved the way for deliberating materially, and it seems that images were needed to articulate the emotional content of a concept that could then be transformed into material sketches or rough prototypes of products.

For example, in Macro it was not until the catalogue had been produced, with its emphasis on "your moment", that the group found it possible to begin with material sketching. But to reach this point it also took consultant Kajo's workshop that bridged the "your moment" theme with personal memories and stories of the members of the group about the emotional experiencing of water, before the group could plunge into a sketching type experience. The resulting sketch prototypes of conceptual showers were nothing like the images in the revised product catalogue, where, based on the "your moment" metaphor, existing showers had been placed in more expressive environments. Instead they all embodied completely new concepts and ideas directly related to the experiencing of showering.

In Tranemo Workwear Charlotta devised the opera workshop to explicitly address this difficulty, to attempt to snap the group out of their current understandings of materials that she felt stood in the way of a more experimental and open attitude to the material:

Samples, yes indeed, and accessories and all kinds of stuff were placed on the big cutting table, and the sketches that they had made. But then it stopped there. And that was when I started to grab the rolls of cloth and asked: Is this the cloth we should use in comparison to that cloth? What is this surface like, how does it feel? And what is the function of this cloth? How are these different cloths together? I did this to get them in gear.

In both cases it took quite a lot of tutoring from the designers to get the groups to engage in material sketching. In the Alfa Laval workshops the group never reached this stage. An "experimental corner" had been set up with materials, knives, glue guns, and so on. But this was only used on a few occasions to illustrate a concept, never to engage in prototype-oriented sketching. Perhaps the approach lacked more active tutoring.

Challenging Practices through Material Sketching

In hands-on work, existing knowledge and practice were challenged in different ways. In Macro it seems that a notion of exactness held by the engineers was challenged when they started to interact with "flimsy" sketch materials. Joachim described the initial feeling: "At first you think that you can't tape together a shower, that's crazy." But then the experience seems to have evolved, as described by Joachim:

> I'm used to that it takes months to produce a prototype, but in this process we had a full-scale prototype ready in three hours. That is something I will probably use to see the shape and the experience of standing in the shower. And to see how large it becomes, how easy it will be to place. You get to know quite a lot from a simple dusty model.

In Tranemo Workwear it was the prevailing emphasis on certain types of materials, such as heavy cotton, that had to be challenged, according to Charlotta, by engaging hands-on with more exclusive, fragile and flamboyant material in the opera workshop.

Other experiences were also important in the material sketching situations, such as openness to serendipity and the importance of mistakes and surprises. Just as Adam's mistakes and naïve questions were important to how the concepts evolved in the sketching workshop at Alfa Laval, there were important mistakes and questions in the material workshops as well. For example, when in the final Macro workshop it was impossible to tape the levers for adjusting the heat and water flow at the correct height, and they kept falling to the floor, this triggered the idea of foot-operated levers.

All in all, material sketching came late in the processes, and was difficult to do. However, it was not until the groups in Tranemo Workwear and Macro engaged in material sketching that the final innovative concepts came together. In this work the meanings that had been explored verbally and visually were intertwined with attempts at manifesting new possibilities in innovative product concepts. Thus it seems that in material deliberation the more elusive and the more concrete became intertwined. The resulting concepts embodied an amalgamation of different perspectives so that aesthetics could not be separated from practical function and technical solutions. In other words, the meanings that had been explored were not only about semantics and signs, but also about the complete concept as such.

Experiences of Stress and Friction

During the interventions the groups experienced provocative as well as inspiring situations that required that they engage in reflections and conversations that were sometimes uncomfortable. And as if this was not enough, in parallel with these situation-specific feelings they often experienced stress for sacrificing their job in favour of the workshop, for example, for not answering customers on the phone or dealing with urgent problems in the production process. This tension between the often challenging workshops and the ordinary job was further enhanced in the workshops that emphasized making, such as deliberating images, drawing, or sketching with materials. In these workshops established knowledge and the ability to express oneself verbally, to rely on talk, did not suffice. The groups had to learn new skills and some individuals also had to

overcome feelings about creating as not being serious work, that it felt "day-care like" and awkward, as Magnus A. said:

> Well it started on a really low level and it felt a bit "day-care-like". At first we all sat there a bit hushed, wondering what this was going to be all about, this cutting and pasting. But then it didn't take long until we were all caught up in it and enjoyed it, and that day passed very quickly. Then we had this exhibition for the rest of the company and I'm sure they wondered if we had been sober when we did those models. They had not been part of the work and didn't understand what the purpose was with what we had done.

In other words, there were obvious tensions between enjoying the situations and feeling uncomfortable in them for different reasons. In such situations, that were confusing and ambiguous, it was easy as an individual or a group to drop out of the experience because it was just too demanding. In the descriptions of the interventions I highlighted a number of such instances, for example when after a couple of hours the Floortech AB group developed a joint understanding based on the glade-experience that Ceasar did not share because he arrived late, and how he therefore only had negative feelings about the experience. Similarly, Terje reacted strongly to Cecilia's presentation of the initial review results, perhaps not because they were negative, but maybe more because he had not been part of the process from the start. And perhaps the playfulness of the coffee-cup exercise that could be seen as being non-serious in part prompted the reaction that led to him abruptly leave the room.

Another type of breakdown, or at least a close call, was that in all the interventions there were situations where the groups felt that the process didn't lead anywhere. Marie A., in Tranemo Workwear, asked in the opera workshop: "What is this supposed to be good for?" when she did not see any direction in the process. Similarly, mid-way into the Macro process, Joachim said: "We should have a shower by now." This was not only related to the stress of being torn between tasks, but an indication of a more fundamental stress. The anxiety of "being in the open" as Danish philosopher

Finn Thorbjörn Hansen suggest as typical of being "thrown into" situations of interpretation, where action is demanded while understanding is still not in sight, and where it is difficult to see the relevance of what has so far been achieved (Hansen, 2008). The designers typically said that in this situation: "… you have to rely on the process", but that was easy for them to say to groups that did not share the designer's experience of such open processes.

It was often in such situations that the designers felt a need to become more concrete, or to give the process some more apparent order, perhaps most of all to sooth the groups and to coax them to continue, as for example Charlotta did when she devised the three stage development process and corresponding division of labour. Similarly, after the second Floortech AB workshop, and the group's experience of really "being in the open" with all the creativity-oriented tasks and discussions, Tomas and I discussed how a next step would probably have to entail more concrete hands-on work. In the Macro case a surprising turn of events was that Cecilia suddenly became involved in the catalogue project instead of continuing the process in a more hands-on oriented direction with the group as she had planned and initiated. This could have spelled disaster for the continuity of the group process, but instead turned out to be an involuntary stroke of genius. In that process Cecilia got in touch with her own hands-on design process, and could show the emergent meaning of "your moment" in the new catalogue, which in turn inspired the group to finally "get in gear", with a little push from the consultant Kajo that both Cecilia and the group needed. Maybe the group members sensed the gradual expansion of understanding. In one of the Tranemo Workwear workshops mid-way into the process Britt-Marie explained how she felt:

> Well, it is a bit difficult to think, as we don't know what the end-goal is. I think that is a bit difficult. But on the other hand, the end-goal also depends on what we think that we want to do, so I guess that is what we have to do.

AFTER THE INTERVENTIONS

My observations focused on the workshop situations and ended with the last workshop in each company. Final interviews were made with everyone involved within a couple of months after the last workshop. This section will thus account for *potentially* lasting effects that were possible to observe during the interventions and that were mentioned in the final interviews. There seems to be a spectrum of such effects that taken together indicate that it was not only certain skills or methods that were adopted, but rather that the interventions in the three companies that completed the journey affected many aspects of the organization.

Effects Across the Board and Tentative Design-Oriented Practices

When the designers entered the companies they brought their individual practices with them, practices with many similarities as well as idiosyncrasies. These practices were introduced to the companies in an adapted format through the framework of the workshop series. Thus one cannot say that it was complete design work that the groups experienced, or that they worked as fully fledged designers. However, many of the events, as well as the character of the processes, had a clear design connotation and it seems that several of the companies also adopted tentative practices inspired by the interventions.

TRANEMO WORKWEAR

In the Tranemo Workwear intervention Charlotta helped the group to establish a product development process in three stages based on her fashion design process, and also to divide the work in the group between the group members according to those stages in an overlapping manner, so that everyone would be involved in each stage in one way or the other. This process has since been formalized, resonating with CEO Max Larsson's ambition to structure and organize the development process of the company. In addition to this structuring, Charlotta also argued the importance of leaving the of-

fice to search for inspiration and information outside the company and its familiar territory. In the second year of the intervention the group made several such excursions on their own volition and they also materialized Charlotta's suggestion of having a specific space for exploration and inspiration-oriented work in the company in the form of the completely refurbished top floor, with its entire collection of Tranemo Workwear on display, a well as the library, multimedia equipment, and the big cutting-table work space. When the process ended, refurbishment had also commenced in the construction workplace by getting rid of old storage shelves and other things that cluttered that room.

ALFA LAVAL

In Alfa Laval the main focus was the development of the COIN-process. In this work Patrik contributed to a structure-shift with more emphasis on divergence, and also on methods that would enhance metaphorical and analogical thinking. He also began to emphasize the user-perspective with the Synectics approach and the sketching dynamic with the resident sketcher approach. Since the intervention these contributions have been formalized in the COIN-process and the collaboration between Klas and Patrik has continued with further developments of the process when deploying it in other Alfa Laval units across Europe. In these developments the user-dimension has been strengthened through direct involvement of users in the process. Involving a wider spectrum of Alfa Laval representatives, particularly women, has also enhanced the multidisciplinary dimension.

MACRO INTERNATIONAL AB

In Macro the intervention led to a number of changes, both strategically and practically. After the workshop when the CEO Terje Uri walked out, Cecilia was involved in formulating the new vision for the company, a vision that also included aesthetic dimensions. In the phase when Cecilia helped the group analyse Macro's position vis-à-vis the surrounding world and competitors, an awareness of the identity of Macro was deepened in a number of ways, for exam-

ple, through positioning charts and exercises about Macro's product expressions. This type of strategic work, that had not been done before was formalized during the second half of the interventions as the responsibility of the new "market board" that would complement the nuts-and-bolts oriented "product board". A couple of months after the intervention ended Macro hired a full time industrial designer to keep up the momentum and process that had been initiated.

In addition to the above more formal developments it seems that the experiences of the interventions have also led to developed skills and perspectives. For example "cutting and pasting", or building sketch models are no longer alien practices, and several group members from Tranemo Workwear and Macro said that they would probably continue to use such approaches from time to time. In connection with this it seems that a deepened aesthetic sensibility has taken hold in several of the group members, and that this has helped them and the companies to "read" what goes on in the socio-cultural realm in a more advanced way, and also that meaning-oriented dimensions that can be attributed to aesthetics, such as décor, are no longer alien as possible product properties to develop. Even in technologically oriented Alfa Laval the aesthetic dimension developed during the interventions, even though of course this was in limited corners of the large organization. Another indication that aesthetic dimensions have caught hold is that in Alfa Laval, Macro, and Tranemo Workwear the collaborations with designers up front in the product development process has continued. Considering the initial resistance to aesthetic dimensions it has been surprising how much of the designer's contribution in this aspect has been appropriated.

Changing Roles and Relationships

The multi-disciplinary approach of the project meant that in several of the companies groups were set up across formalized boundaries in the organizations. This was true of Kitchentech AB, Floortech AB, and Macro where sales, marketing, production, and product

development personnel more or less for the first time began working together as a team. In Tranemo Workwear CEO Max wished to establish a strong development team around the existing group of construction personnel and to build their capabilities first and foremost. He was afraid that involving sales and marketing would be too much too soon and also that their dominant position at the outset would hamper development of confidence and independence in the group. In Alfa Laval the process involved a small team of engineers in the first attempt with designer Olof. In the second attempt, when the COIN process was focused, the teams would be unique for each COIN deployment. In the study it was a temporary team of about twenty engineers from product development and after-market from across several European units that were assembled for this occasion. In other words, a geographically heterogeneous group, but still homogenous concerning profession and gender.

It was only in Macro that the multidisciplinary approach was fulfilled in the sense that it had effects on the continued organization of innovation work. Here the project was successfully in at least two respects. First, the rift that existed between the sales and marketing-oriented unit in Genevad and the product development and production-oriented unit in Laholm seems to have been mended in the process. The collaborative exercises and other events in which conflicting views and understandings could be ventilated and developed into shared understandings were probably important for the mending process. Second, the group, with some minor modifications, was also formalized as the market board that would drive the initiation of new products. In this process former "weak voices", for example, the voice of production that was represented by Linda in the group, were strengthened, as was evident in the last sessions when she articulated strong production perspectives in the discussions. Equally, the sales organization represented by Lena also gained a strengthened voice in development work though the market board. Similar effects were possible to notice in Tranemo Workwear where the formerly weak, if not to say non-existing, voice of product development in relation to sales was considerably strengthened by the end of the process, as Max explained:

Design has always been questioned, what are they doing? They only have to make a construction pattern and then everything will be ok, right? But of course there is so much more to design, with this input it will be much easier to argue for design in the board, argue that we really need to back the design department.

Expanded Product Understandings and New Meaning-Spaces for Innovation

Perhaps the most important effect was that across the interventions, in Macro, Tranemo Workwear, and Alfa Laval, the functionally oriented pre-understandings at the outset expanded to involve a number of new aspects. Further, these expanded understandings have also come to define a wider meaning-space for innovation where the borders between aesthetics and functionality have been blurred.

That aesthetic dimensions have been explored and integrated has already been discussed. This also tied in with developing a deepened user-perspective. At the outset the user was a quite generic and stereotypical figure in the different companies, more or less reflecting the function of the product in its most generic sense. During the interventions the understanding of the user became more complex. In Tranemo Workwear the traditional middle-aged male user now shares company with female users in heavy industry and more individualist young users coming from different subcultures. In the Alfa Laval Air Business Centre unit the user is now not only the contractor who buys the equipment but also the ones that install it as well as those that monitor the equipment. In Macro the "Mrs Svensson" user has expanded to involve a slightly broader range of users of showers, albeit still based on standard middle class families. When it comes to *experiencing* the user situation first hand, Tranemo Workwear came furthest with their visit to the SSAB steel works and the Future Factory workshop with representatives of the users there.

But even though user perspectives have been deepened, the companies have still only scraped the surface of this dimension. Further, it is one thing to expand understandings during a project, quite an-

other to keep the momentum up as an on-going innovation practice of constantly challenging established understandings. Otherwise there is always a risk that these soon get cemented as the new "truths". Whether the companies will be able to keep the momentum up following the interventions remains to be seen.

EXPLORING A HERMENEUTIC PERSPECTIVE IN RELATION TO THEORY IN THE INTERSECTION OF DESIGN AND INNOVATION

In the previous chapter I described a hermeneutic perspective on the interventions in relation to a set of themes derived from hermeneutic philosophy. In this chapter I will explore the hermeneutic perspective on the interventions in relation to relevant theoretical concepts and knowledge in the intersection of design and innovation. I will do so through a second set of hermeneutically inspired themes that emerged as relevant through a reflexive process of interpreting the interventions in relation to theory, philosophy, and my own practice experience.

THE EXPANSION CHARACTERISTIC OF THE INTERVENTIONS

As described in the previous chapter, when the designers entered the companies they paid specific attention to the established pre-understandings of products and associated knowledge in the organizations, that is, to the situatedness of the companies and the individuals from a meaning perspective. This emphasis on pre-understanding as a key issue to address to achieve strengthened innovativeness seem to resonate with the insight in innovation theory that to achieve radical or disruptive innovation it is often necessary to challenge and overcome established "mind-sets", or "mental models", both organization-wide and individual, that may otherwise constitute "main barriers" or "inhibitors" to innovation (Assink, 2006). But are such concepts, that emphasize the mind and

the individual, sufficient? And what about "overcoming", is this possible?

It is typically argued that mind-sets may as "prejudice stand in the way of a correct interpretation of for example the market place or new technologies" (Assink, 2006, p. 221) and that mind-sets may be cemented in the way companies are often organized based on the architecture of its products so that power and knowledge in the organization is interwoven with its existing technology (Christensen, 1997). Further, established mind-sets are often derived from previous business success that makes it difficult to challenge the business logic of an organization (Baker & Sinkula, 2002). In all of the five companies in the study such factors were relevant to how established pre-understandings were cemented in different ways, and thus provided inertia to change, as several of the gate keepers had experienced in earlier design-oriented projects where new perspectives were explored.

A challenge is thus to achieve new or changed mind-sets in established organizations. This is, however, something that has been little studied in innovation theory (Elmquist, 2007). Innovation consultants often talk of "thinking outside of the box" as a creative approach to innovation, following the logic that if current thinking or mind-set is restricting, then thinking from another perspective is needed. This may be relevant for achieving "lateral thinking" on the spur of the moment when challenged by a specific problem or task, or when "wild ideas" are welcomed in a restricted context, but it is hardly feasible for achieving more fundamental change in organizations given that mind-sets, or from a social constructivist perspectives, deeply held beliefs as "world-views", are fundamentally ingrained in organizations.

In the interventions, the designers not so much engaged the groups in thinking outside of the box as in processes of gradual challenging and longitudinal expansion of established pre-understandings, of *expanding* the horizon of understanding, including working *with*, rather than against, associated prejudice. In other words, they engaged the groups in processes of *expanding the box*, the meaning-space, so to speak. Further, in these processes embodied knowledge, aesthetic sensitivity and personal experiences were also integrated

in the processes of meaning-making, thus also challenging the innovation concepts of mental models and mind-sets as too restricted, at least in the context of innovation when meaning is an integrated dimension in the process.

C-K theory (e.g. Hatchuel, 2001) is one concept in innovation literature that models such a more gradual process that both fits with the experiences of the interventions as a process of on-going meaning-making, and as an expansion of pre-understanding. As described in the *Introduction*, innovation theorist Armand Hatchuel and colleagues pose a critique of Herbert Simon's design theory as too restricted because it is founded on decision-making and analytic problem-solving. Hatchuel et al. argue that Simon's theory therefore lacks concepts that can account for the creativity necessary to come up with novel concepts. Hatchuel et al. acknowledge that Simon discusses *imagination*, but argues that he introduces imagination as an "exogenous entry" (Ibid.) to account for how a first list of alternatives is formulated and how the rest of the process is then characterized by decision-making among these alternatives. To Hatchuel and colleagues, what Simon terms imagination needs to be an integral part of the process to make sense: "Design theory is not only problem-forming or –solving, it has to capture the process of conceptual expansions." (2001, p. 266), that is, the "expandable rationality" found in creative processes.

Hatchuel and colleagues further argue that the social dimension is crucial to understanding expandable rationality, and that a necessary aspect for understanding what goes on in processes that lead to innovative concepts is "learning-devices". Learning-devices help direct attention to "unpredictable areas" that may be interesting, but where knowledge is lacking. According to Hatchuel et al. learning-devices may, for example, be drawings, mock-ups, and prototypes. A key notion is the that the use of such learning-devices is not to be understood as means to test a solution, but ways as ways to open up new "learning-paths". In these learning-paths, as described in the *Introduction*, the "concept space" (C) and the "knowledge space" (K) develop in an iterative sequence that is described in detail by Hatchel et al. based on formal logics.

What resonate with the findings of the study is both how Hatchuel

and colleagues argue that innovation can be understood as a process of gradual expansion, and how the social process around learning-devices is key to this expansion. However, while Hatchuel et al. concentrate on modelling the results of such expandable processes in the form of concepts and knowledge to show the expandable nature of innovation work in social contexts, I would argue that a hermeneutic perspective generates knowledge about what goes on in the process *before* expansions are made, before the process "branches out" into new concepts and related knowledge. The study at hand provides examples of the meaning-making that goes on in the social processes around learning-devices, and even *before* such learning-devices are introduced, as will be further discussed below in the section *The Emerging Something in the Interventions.*

I would thus argue that C-K theory and a hermeneutic perspective on innovation could be seen as complementary. Both gives a design theory framework for an expandable rationality that better describes the consequences of what goes on in social innovation processes than Simon's decision-making oriented design theory. Hermeneutics also foregrounds how interpretation and meaning-making characterize such expandable rationality, and taken together the notions of expandable rationality and expanding understanding chart a passage between decision-making and mind-set oriented out-of-the-box thinking that has so far been little explored in innovation theory.

THE NECESSARY MESSINESS OF THE INTERVENTIONS

The processes in the interventions were rather messy, that is, there were conflicts, arguments and disruptions throughout. This "messiness" has little resemblance with ideal processes, such as Polya's problem-solving processes (1945), or Cooper's stage-gate development process (1988) discussed in the chapter *A Reflection on the Pervasive Concept of Problem-Solving.* Not even currently favoured representations of the design process, for example the dou-

ble diamond process[1], exhibit this messiness. Because of this discrepancy between the interventions and theory in this section I will explore this messiness further to arrive at an understanding that treats messiness as a necessary dimension to be embraced.

Design management scholar Birgit Jevnaker discusses how messiness is typical of design processes. Based on empirical studies of advanced collaborations between designers and client companies, often with innovative results, Jevnaker argues that "in the real world" design processes are inherently "messy":

> I find it of particular interest that designing in the mess seems to become a highly activity-based life - *vita activa* - between people and situated things, which may evoke emotion, but also tensions and mixed-motive interests. (Jevnaker, 2005, p. 26)

Such an understanding resonates with the findings of this study and deserves further exploration. When discussing how the collaborative processes are messy, Jevnaker compares the character of the design processes that she has studied with the notion of Van de Ven et al. that innovation can be regarded as a "dynamic journey" (1999). When Van de Ven and colleagues studied the actual processes behind a large number of products, processes and administrative innovations they found that these were filled with surprises, disappointments, failures, and uncertainties, that is, a series of unforeseen circumstances on a "journey" into an "unknown future" that was not accounted for in idealized and linear representations of innovation processes. Based on these experiences, and as a reaction to the idealized representations, Van de Ven and colleagues constructed a model to represent a more realistic understanding. This model depicts a series of back and forth motions and directions that move through twelve different situations or "stumbling blocks" that are typical of any innovation process.

I am certain that it would be possible to use the model of Van de Ven et al. to longitudinally describe the journeys in the interven-

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1.   The Double Diamond design process model developed by the British Design Council: (www.designcouncil.org.uk/designprocess).

tions. Such a representation would focus on the internal and external circumstances in relation to the organization, for example, the sudden notice to shut down Floortech AB, or the internal resistance at the outset to the project in Tranemo Workwear, and it would be shown that innovation work is typically fraught with difficulties. A complementary understanding of messiness, and the notion of a journey, can be found in Jevnaker´s use of Hannah Arendt's concept of *vita activa* – active life (2005).

As Jevnaker holds, the messiness is more or less the thrust of the process, its inherent and necessary character, or its life. This is the kind of messiness that Cecilia in the Macro intervention related to when she described how she tried to gauge if the process was working by paying attention to the sound level of the group. When the sound level in the group increased, when people started talking and even arguing she knew that good things were potentially happening. When the group was silent she knew that nothing was happening. If this messiness then involves the meaning-making that was observed in the interventions, and this meaning-making is exactly that which is missing in theoretical innovation concepts and representations, then it is no wonder that management research faced a "relevance crisis", as discussed in the *Introduction.* In other words, models may not only be poor, but impossible renditions of what happens in design and innovation work.

When Marie and I used the metaphor of the journey when discussing the project with the companies at the outset, it was first and foremost this understanding that we tried to capture and convey. This also involved the journey as an experience of not necessarily knowing the goal of the journey, of "being in the open", as described in the previous chapter. We also, just like Van de Ven and colleagues wished to emphasize that there would be unforeseen circumstances, but also planned disturbances, such as the opera workshop or the visit to the Louisiana Museum of Modern Art that propelled the interpretative process forward and in new directions. The concept of a dynamic journey, of Van de Ven et al., goes a long way to describe the reality of innovation processes but still lacks the dimension that also develops the messy character of the journey as a positive force, that which Jevnaker describes using the concept of *vita activa*, and

which can be seen both as inevitable circumstances, but also as the life of social processes that can be initiated, supported and managed.

THE INTERVENTIONS AS ON-GOING CONVERSATIONS

In the chapter *Design as a Hermeneutic Practice* I mentioned that both Schön and Gadamer used the metaphor of "conversation" to describe the character of reflective practice and hermeneutic meaning-making. But, as described in the previous chapter, in the interventions conversation was more than a metaphorical concept; it was what went on in the different social contexts, what was activated in the interventions. Thus when Cecilia, as described in the section above, gauged the sound level of the group's conversation, she was explicitly referring to the quality of the process of meaning-making. But how does such an understanding of the relevance of conversation resonate with theory in the intersection of design and innovation? This will now be further explored, leading to a deepened understanding of the character of conversation in innovation.

Considering the findings of this study, and how important conversation is as a fundamental notion in design theory since Schön, it is interesting that few scholars in design management have so far studied actual conversations between designers and other practitioners up-close, with some exceptions (e.g. Jevnaker, 2012; Johansson & Svengren-Holm, 2008; Tomes, Oates & Armstrong, 1998). One reason may be the more functionalist than interpretative perspectives that have underpinned design management research (Johansson & Woodilla, 2011). Similarly, within design theory few scholars have explored this social and multidisciplinary dimension, despite often relating to Schön's notion of a "conversation with the situation at hand". A reason is probably that the primary object of study has been design as a process and practice (e.g. Cross, 2006; Lawson, 2006). Thus a gap has opened up between design management research and design theory regarding design in multidisciplinary social contexts. One of few links to the importance of conversation in social contexts can be found when design theorist Bryan Lawson in a passing note reflects on conversation in group contexts and emphasizes conversation as a shared experience:

We must also remember however that design is very often a team activity… It seems that teams gain social strength through shared experience and that such events and the conversation that surround them offer ways of establishing strong ties and bonds. (Lawson, 2006, p. 277)

When Lawson see group conversation as shared experience he touches on an important aspect of meaning-making that I wish to further explored. Interestingly, the discussion about the role of design-inspired conversation in innovation work seems to have come further in the innovation discourse. Innovation scholars Lester and Piore (2004) explicitly introduce hermeneutics and interpretation[2] to innovation theory and use design as a key source of inspiration. Based on an extensive study of innovation work in textile, telecom, automotive and medical sectors, they conclude that "interpretation is a missing dimension in innovation" (1998), and not only in innovation theory, but in innovation practices in companies in general.

Lester and Piore's main conclusion is that successful innovation needs to build on two "fundamental processes" in companies in parallel: *analysis* (or rational decision making to solve problems) and *interpretation* (or meaning-making). Further, they argue that on the one hand these processes are complementary but on the other hand, from a knowledge perspective they are in opposition to each other. In their studies Lester and Piore observed that when there were interpretation-oriented processes in place in the companies, these were given "an analytical cast that obscured the importance and undermined its role" (2004) by most managers, that is, companies lacked both the vocabulary and concepts for identifying, discussing, let alone improving interpretative processes when analysis-oriented processes were pervasive as dominant and institutionalized logics.

2.   Even though in the book where they popularize their findings Lester and Piore only refer in a passing note to hermeneutics, they acknowledge that the analysis of their empirical cases is based on collaboration with Kamal Malek who studied product development processes in the automobile sector by explicitly drawing on Heidegger, Gadamer and Lakoff & Johnson (2001).

In the *Introduction* I mentioned that studies of attempts at integrating design in already established product development processes often result in "friction". This was typically attributed to clashes between different schools of thought underpinning engineering and design practices. Johansson and Svengren-Holm also show that design is often seen as subordinate to engineering from a knowledge perspective (2008). In the discussion above, Lester and Piore highlight the same hierarchical relationship between analysis and interpretation, where interpretation is subordinate in relation to analysis (2004, p. 11).

Lester and Piore use the metaphor of "conversation" to introduce a concept for foregrounding and discussing interpretative processes. Drawing on theories of language and "language communities", they argue that language evolves from "clarity to ambiguity". In the companies that Lester and Piore studied this meant that when groups engaged in successful interpretative processes the development towards ambiguity through the establishment of a common language in the groups meant the creation of "interpretative space" that in turn could lead to new insights and potential innovation.

Interpretation is an open-ended process, on-going in time, perhaps with a beginning but with no natural end. Unlike people engaged in problem solving, the participants in a conversation often have no idea where their discussion is going when it starts, and even if they do, the actual direction may turn out to be quite different. Indeed, in retrospect they may not be able to say exactly how the conversation evolved as it did. (Lester & Piore, 2004)

According to Lester and Piore, the challenge for managers is to "keep conversation going" beyond the initial confusion that must occur when language communities develop between members of inter-disciplinary groups, so that interpretation develops towards a situation where "ambiguity is seen for what it is"; a possible space and "critical resource" from which new ideas can emerge (Ibid.). To manage such interpretative processes requires managers who can facilitate organizational conversations without directing them, managers who can endure ambiguity, and can resist the tendency

of groups unfamiliar with more interpretative processes to slip into problem-solving mode prematurely (Lester & Piore 2004).

The study at hand, of experimentally bringing designers into non-designerly companies to share design practice with multi-disciplinary groups, directly resonates with Lester and Piore's findings. From their perspective the interventions can be seen as attempts to instrumentally engage groups in interpretative conversations to strengthen innovation in the companies. However, in the interventions it was not so much the managers as the designers who had to deal with the challenges of engaging groups unfamiliar with mean-ing-making through conversation-type processes, as will be further discussed in the section *The Sociable Expertise of the Designers in the Interventions.*

Another interesting finding in relation to interpretation concerns the character of conversation. While Lester and Piore concentrate on verbal conversation as meaning-making, even though explicitly pointing out that conversation can be seen as a metaphor for a num-ber of interactions that may happen in interpretative processes, in the current interventions verbal conversation was entwined with visual and material work as multimodal ways of engaging (Selander & Kress, 2010). The study thus supports Lester and Piore's find-ings, and also provides a deepened knowledge about the multimodal character of the contribution of design practice to innovation that will be further discussed in the chapter *The Aesthetic Dimension of the Interventions* below.

An objection may be made at this point. Couldn't it be argued that design embodies both an analytic problem-solving orientation and an interpretation orientation? Johanson and Svengren-Holm, for example, discuss how design can be seen as a complex and para-doxical practice that straddles both the modern and the pre-modern (2008), and as Dorst proposes, design can be seen as a dual-mode practice that employs both rational problem-solving and subjective interpretation in varying degrees, depending on the type of activity and situation the designer faces (1997). According to Dorst, when the designer is faced with an ill-structured task, he or she will rely more on subjective interpretation, a statement that resonates with how Lester and Piore argue that "… the way in which problems

come to be identified and clarified to the point where a solution can be developed is through a process of conversation among people and organizations with different background and perspectives." (2004, p. 49). The only real difference is that while Dorst, and most design theorists, focus on the designer, Lester and Piore focus on social situations and the organizational level. Thus it is not surprising that it was the more interpretative dimension of design practice that was activated in the interventions. Since analytic problem-solving is al-ready a pervasive process in industry it could be argued, as Dorst does, that the most important contribution to innovation from de-sign as a specific practice is the ability to create new "frames", that is new understandings (2011). This also resonates with Norman and Verganti's argument that the ability to re-interpret the meaning of products is fundamental to potentially radical innovation (Norman & Verganti, 2012).

In the study it was shown how in the interventions space for inter-pretative processes of meaning-making was created in the middle of the organizational hustle and bustle, both space in terms of physical space, and also as space in the sense of acceptance, encouragement, and resources from managers. But, as Lester and Piore argue, in-terpretative processes should not be seen as projects, but rather as on-going processes in the organizations (2004). Here the study pro-vides little knowledge about how to keep up the momentum, or how to keep the space for interpretation open after the ending of inter-ventions, even though in Macro, Alfa Laval and Tranemo Workwear the companies themselves felt a need not to lose momentum and have therefore continued to work actively with designers up-front in their innovation work.

THE EMERGING SOMETHING IN THE INTERVENTIONS

In the previous chapter I showed that the interventions had effects in the organizations beyond direct product-related innovation work, including challenging the organization's fundamental understand-ing of its product. At the same time the thing - the product - played a pivotal role, even when it was only a potential *something.* In this section I explore the relevance of paying attention to this ephemeral

something as fundamental to understanding the contribution of design practice to innovation.

In a study of design interventions in the United States Postal Service, the Australian Taxation Office, and the United States Internal Revenue Service, design management scholar Sabine Junginger makes similar observations about the relevance of the thing or product: that when designers were involved to develop new product or service concepts together with the organizations, through human-centred design processes, the raison d´être of organization as such was challenged (2006). By drawing on American Pragmatist philosopher John Dewey's "Theory of Inquiry"[3] Junginger argues that product development thus becomes "…an inquiry into the organization." (2008, p. 31). In such processes the emerging product as a prototype may, as Junginger suggests, "… trigger a discussion that encourages fundamental assumptions to surface. … Once these assumptions are articulated, they can be openly discussed and, in the process, re-evaluated." (2008, p. 34). Junginger's findings about the role of prototypes in such processes resonates with Star and Griesemer's concept of *boundary objects* (1989). To Star and Griesemer, boundary objects are objects or concepts that:

> … are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. These objects may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds. (Star & Griesemer, 1989, p. 393)

3. Defined by Dewey as "… the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole." (John Dewey, Logic: The Theory of Inquiry (New York: Henry Holt and Company, 1938, Chapter VI, "The Pattern of Inquiry."), p. 104, also cited in Junginger's article fn22.

Carlisle exemplifies how in the car industry design sketches and clay models can be seen as typical boundary objects that bring together different types of practitioners around a shared object (2004) and the notion of Hatchuel et al. of learning devices, mentioned above, hold similar functions (2002). However, and as I have discussed in the previous chapter, in the interventions emerging understanding and gradually more materialized concepts occurred in a process where conversation was entwined with making long before there were any prototypes or other objects to talk about or experience, just like in the story of "the emerging something" in the *Interlude*, when Lillit began to engage with the materials at hand long before there was any "braceletness" to the toilet roll and match-sticks. Lillit's half-finished object only took on a specific meaning when Axel and Lillit interpreted Lillit's bricolage as a bracelet. In one sense the bracelet was already there in the first interactions with the materials, but only as one possibility out of many immanent in the situation. In another sense the beginning was wide open, and this is an important dimension of the interpretative process that is not fully captured by the notion of boundary objects or prototypes.

Evenstein and Whyte (2009) suggest that Knorr Cetina's concept of epistemic object (1997) may be a better concept for understanding what goes on in very early stages of design as this concept is based on a *becoming* ontology rather than the notion of fixed *being* character. Relating to Knorr Cetina's notion of an unfolding ontology and to Schön's notion of a conversation with the situation Evenstein and Whyte argue that:

> The lack, uncertainty or indeterminacy of epistemic objects generates questions which turn into avenues for further exploration. Pursuing theses avenues causes the epistemic object to evolve, satisfying some questions while opening up new ones. Lack precipitates unfolding. The object of knowledge as such is never actualized, never fully accomplished, but characterized instead by an 'unfolding ontology'. It is defined by what it is not (or not yet) as much as by what it is. (Evenstein & Whyte, 2009, p. 12)

This understanding fits well with the processes in the interventions. It places the emerging "something", as discussed in the Interlude, as fundamental to the process, even when the outlines of this something is inherently blurry or fuzzy – when it is more or less only *potentiality* (Pirsig, 1981).

What then emerges is a possibility to understand the emerging something as the central *place* for meaning-making. Drawing on a discussion by science and technology studies scholar Bruno Latour (2004), participatory design scholars Binder and colleagues suggest that Heidegger's understanding of the concept of *Thing* is apt when discussing what goes on between different stakeholders in participatory design processes (2011).

Heidegger discussed how the etymological roots of the word "thing", "ding" in German, "dinc" in old High German or "ting" in Swedish, goes back to the governing assembly in ancient Germanic cultures, where free men had the possibility to contribute to important decisions by having their say. Such assemblies are still called "ting" in Swedish, just as "ting" also denotes artefact. Thing thus becomes an open place, a space or an assembly where contested matters can be deliberated. Recall Thomas' use of the metaphor "glade" to describe the special space for the Floortech AB group, as "an opening where different forms of life can meet". Often it was in just such glades that the old Nordic tings were typically held in ancient times.

To exemplify this understanding of the thing Heidegger used the common jug to illustrate how a jug as a thing is the sum total of everything that can be associated with it, including its intended use, its physical composition, and the meanings tied to it.[4] To Heidegger a cup retains "thingness" as a complete object crafted as a whole, while a scientific object, for example the atomic bomb, has been deprived of the "thingness of things" as it has been constructed via

4. Considering Heidegger's cup example it is interesting that Cecilia used the common coffee cup to discuss style and aesthetics, and how the cup exercise in Macro seemed to contribute to the provocation that made the CEO storm out of the room.

reductionism. In other words, according to Heidegger, when a thing is reductively broken down into its smallest component parts, as discussed in the chapter *A Reflection on the Pervasive Concept of Problem-Solving*, the ethical and spiritual essence of the thing, its meaning, is lost. What remains is its function as a mere "object".

Latour does not accept Heidegger's dichotomy between science and everything else, or his insistence on essential meanings, but acknowledges that the "thingness character" that Heidegger develops is an important perspective when discussing "matters of concern" in society that also include processes in science where both factual, or scientific, as well as other human concerns are entwined, but where the latter, the meanings of science, are rarely articulated and discussed publicly. Latour's ambition to unite the factual with the more meaning- and experience-oriented fits with how the emerging "something" in the interventions was both the emerging material *artefact* (or object) and the emerging meaning-space, or understanding, that made it possible for it to emerge. It also fits as it calls attention to the "gathering" as a meeting place: the "thingness" of the workshop *situations* where different views and understandings, between the factual, such as choices about materials and dimension, to the aesthetic and experience oriented, could be deliberated, assembled and also contested. Moreover, judging by the three successful interventions, it was the intimate relationship *between* the thing as an emerging object, and the thing as a place or gathering, that made the processes possible. Or in other words, the process built on the openness of the group situations, or "gatherings", that the managers allowed, and the designers enabled, in *combination* with the closeness to the things that emerged between the members of the groups. Considering this emphasis on the social dimension of both places and objects, perhaps we should discuss "design *thinging*" rather than design *thinking*, as participatory design scholar Pelle Ehn propose (2008).

THE AESTHETIC DIMENSION OF THE INTERVENTIONS

In the chapter *Design as a Hermeneutic Practice* I described aesthetic deliberation as experiential, sensory oriented, visual and ma-

terial. Continuing with the theme of emergent meaning, from the start such aesthetic deliberation was central to all interventions as an integrated dimension of meaning-making through conversation and material making that eventually led to potentially innovative concepts in three of the companies. In order to better understand the contribution of design practice in the context of innovation in this section I will develop a more nuanced understanding of the relevance of aesthetics.

To the groups in the interventions the aesthetic dimension that was the most difficult for the companies to handle and for the groups to engage in, for two important reasons. First, from a knowledge perspective several members of the groups expressed that initially aesthetic work with images and materials felt "day-care like", or not serious enough. This related both to the hands-on "cutting and pasting" practice, as well as to the knowledge that felt more subjectively oriented than the groups were used to, including the deliberation of styles, tastes, expressions and forms. The same hegemonic relationship that Lester and Piore observed, regarding interpretation as being subordinate to analytic problem-solving, thus also applied to aesthetic practices and knowledge in relation to more analytic concepts and presumed objective knowledge (e.g. Ahl & Olsson, 2002; Johansson & Svengren-Holm, 2008; Sparke, 1995). Second, when, for example, Cecilia challenged Macro for not taking Hydman-Vallien's ornament seriously, or when Charlotta wondered why Tranemo Workwear had not investigated the needs of the female SSAB workers further, they inevitably challenge deeply held, and to a large extent functionalist and male oriented beliefs and norms in the organizations.

With these two reasons for difficulties in mind, it is not only interesting, but also worrying, to notice, as design scholar Cameron Tonkinwise does, that the current design thinking literature is for the most part devoid of references to aesthetics and style (2011). Tonkinwise argues that the repression of style and aesthetics from design thinking can be seen as a way to cleanse design from such subjective, political and power related dimensions as aesthetics and style:

Aesthetics are also thought to be too subjective. The managerialism that is interested in "design thinking" claims to be shifting to less algorithmic modes of operation, but it could be that the stylistic aspects of design remain too incalculable. It could also be that in a related way, aesthetics is too political… Aesthetics, as inherently subjective and/or cultural foreground interpersonal politics. (Tonkinwise, 2011, p. 536)

This tendency to reduce aesthetics from design resembles how art in the context of European policy-making is often described as creativity or a problem-solving approach to be "harnessed", where its subversive, rebellious and questioning dimensions are neutralized, as for example argued by von Osten (2007). Tokinwise also notes that when, on the rare occasion aesthetics *is* discussed, the aesthetic perspective almost without exception conforms to the modernist dictum of form-follows-function, or in other words, to the same aesthetic ideals that were taken for granted dimensions of the male-oriented functionalist pre-understandings that ruled in the companies at the outset, and which are common to many companies in industry (Danilda & Granat Thorslund, 2011). Tonkinwise' discussion thus pinpoints the very same power and knowledge-related issues that became problematic in the interventions, when aesthetic deliberation meant "disturbing" the status quo. Tonkinwise also argues that the reduction of aesthetics from design in the design thinking discourse means to disregard an important contribution from design practice to innovation, one that was also seen in the interventions. By drawing on Bourdieu's sociology that shows how "taste regimes" connect groups of people and create social capital, and how such taste regimes are also social practices, Tonkinwise comes to the conclusion that to deliberate style in design means to reach through to people's practices, as style in a broader sense is what unites different practices that at the first glance may seem different:

The hypothesis that emerges then is that designers, as expert innovators, operate within discernments of style and their variability. This is what risks being ignored when design thinking avoids the primacy of aesthetics in design. (Tonkinwise, 2011, p. 539)

I argue that this is what the designers in the Macro and Tranemo Workwear processes, and to some extent in Alfa Laval, did when they engaged the groups in exploring issues of style and aesthetics, not only as an attempt to find appropriate expressions, but more fundamentally to attempt to deepen the understanding of user-experiences and practices as a foundation for expanded and potentially new meaning-spaces for innovation, and to do this beyond the more demographic categorizations often employed in market surveys and similar. This also ties in with Verganti's notion of designers and architects as interpreters of the socio-cultural realm. In Verganti's research such interpreters aim to understand existing products and product use *differently,* and in ways that users are not be able to express themselves, to help companies come up with innovative products based on new understandings (Verganti, 2008). Hence user-orientation does not only have to rely on direct user contact, as is otherwise the dominant understanding in co-design and open innovation, for example.

But there is also another connection between aesthetic practice and innovation that is important to explore with regards to the empirical findings, and to understand the contribution of design practice to innovation. Innovation scholar Helge Godoe argues that aesthetics is a crucial, but often tacit and even illegitimate dimension in *all* innovation work, including engineer-driven innovation (2011). Godoe also notes how the role of aesthetics in innovation work is under-researched, or even a more or less absent concept, something that he argues is paradoxical considering how:

> … Underneath a façade of no-nonsense technological rationality in appearances and communication, the engineer work in accordance with aesthetic codes, often with an approach that bears similarities with what is often associated with the working style of artists. They enjoy the shape, smell, touch, and sound of technology at work, often with an intense, sensuous absorption that can only be observed when artist work in front of a canvas or a slab of stone. (Godoe, 2011, p. 12)

This understanding of how aesthetics is an integral dimension in all kinds of innovation work also fits with how in scientific work, delib-

eration through poetic devices such as metaphor (Hesse, 1980) and images and visualizations (Idhe, 1999) are fundamental to the ability to generate radically new scientific concepts. I would argue that when the designers involved the groups in aesthetic work they also tapped into this otherwise tacit, and almost illegitimate experience of the engineers, marketers, and others in the groups. As Thomas said, there seemed to be a "hunger for images and stories". In other words, it seems that the designers explicitly amplified an aesthetic sensibility that was already there to support innovation in the organizations.

In addition to these dimensions of aesthetic deliberation there is also an important social dimension. As discussed in the *Introduction*, several studies have shown that there is often friction when attempts are made at integrating design in product development contexts. Such friction also occurred in the interventions in this study. Moreover, this friction was often directly tied to the initial experience of aesthetic work. But, instead of the friction leading to processes that would grind to a halt, except in the Kitchentech AB intervention where the process came to a rather dramatic full stop, in the other four processes initial friction was overcome. Here it seems that managerial action was crucial for avoiding crisis by showing trust in the process and support of the work of the designer, even if the manager was more or less just as confused as the group. Via this managerial trust the processes could then move into a second phase where aesthetic work continued on another level, even through a problematic and insecure phase of "being in the open", of being in a situation where action is demanded while understanding is still not in sight (Hansen, 2008).

Now, instead of leading to friction, aesthetic deliberation began to work as a kind of lubricant that helped the groups to transcend differences. It was not that differences were erased, but aesthetic deliberation became a shared practice where differences were productively brought together, and where also former weak voices were strengthened. Further, it seems that aesthetic deliberation began to take hold when individuals began to draw from and contribute with very personal experiences, of gardening, motorcycle riding or choir singing, and when they began to rely on the legitimacy of also ex-

pressing the non-verbal and non-quantitative, for example in sketch modelling. This was also when work started to be fun and playful, dimensions that should not be underestimated. Thus aesthetic deliberation was an essential dimension of the "thingness character" of the group situations discussed above.

My conclusion is that when aesthetics and style are rationalized away, as often in the design thinking discourse and in European policy work, a most paradoxical and counter-productive blunder is made. When attempting to fit design into discourses and contexts that are constructed as analytical and rational, the child is indeed thrown out with the bath water, as Johansson and Woodilla suggests may be a risk with the design thinking discourse (2010). I would argue that what is thrown out are the very aspects that give the process of meaning-making its momentum, or in the words Godoe, those "... aesthetic factors that fuel the dynamics of innovation." (2011, p. 2).

On a more encouraging note, judging by the findings of this study the aesthetic dimensions of design practice is a crucial contribution to innovation, just as Svengren argued in the early 90's (1995) and not only to innovation, but almost as a kind of "organizational healing" that could lead to the more general acceptance also of such "soft, irrational, and subjective notions" as feelings, experiences, sensations and styles in more functionalist oriented organizations, such as the ones in this study. It could then be a fundamental contribution of design thinking to support this, if the *design* part can be embraced as an aesthetic practice, and the *thinking* part can be expanded to include the meaning-making of human beings in social contexts.

THE INTERVENTIONS AS PROCESSES OF ORGANIZATIONAL BILDUNG

Considering how Bildung is such a central concept in Gadamer's hermeneutics I find it worthwhile to explore the potential usefulness of Bildung for understanding the contribution of design practice to innovation, especially since it is a more or less absent concept in the innovation management and design management discourses,

indeed in most discourses these days.

In the interventions a common experience of the designers, who were all sensitive to the socio-cultural dimensions of products, was that they found the companies noticeably "introvert". Not only did the companies lack a broad understanding of the "surrounding world", they also lacked processes and space for on-going engagement with the surrounding world, or socio-cultural realm. As a response, the designers engaged the companies in exploring magazines, visiting museums, seeing films, and other outward-directed activities. They also urged the companies to arrange a specific space for innovation work that, for example, would include a library, a selection of inspirational material, and an area for sketching and building.

These actions can be seen as ways to bring "the studio" and the studio-experience to the companies. By drawing on Coyne and Snoddgrass' proposal that the design studio can be seen as a "site of Bildung" (2006:245), the engagement of the companies in studio-oriented practices can then be seen as ways of engaging them in processes of "Bildung". The implication of this is what I now wish to explore further, beginning with Coyne and Snoddgrass' concern that:

 ... *Bildung* as the formation of being, is rapidly disappearing in the humanities as elsewhere. Education as a growth of understanding, the learning of ´culture´ in its fullest meaning, has to operate against a utilitarian ethos of learning skills aimed solely at satisfying a narrowly vocational indigence. There is, however, at least one place where *Bildung* still persists in a schematic form, even if unrecognized by those who foster it. If the movement of excursion and return constitutes Bildung, then the design studio is essentially a site for learning in this form of education. (Coyne & Snoddgrass, 2006, p. 245)

The Enlightenment era concept of Bildung was mentioned in the chapter *Design as a Hermeneutic Practice*. It implies a process of "becoming" as an individual by immersing in and reflecting on knowledge from a wide range of fields. Through Bildung the individ-

ual can relate critically to tradition and reflect on how tradition is at play in contemporary society, and, according to Gadamer, Bildung is thus fundamental to the ability to make relevant interpretations. Bildung requires an ambition to *understand*, that is, to be open to the "the other", including a willingness to develop one's own pre-understanding and overcome prejudice in the process.

In the interventions the designers engaged the groups in exploring inspirational and more subjective types of information than they were used to. This resonates with how Bildung also implies *immersion* in, and *bricolage* with knowledge that may not seem immediately useful and which may even seem quite useless, as Bertrand Russell put it in his defence of "useless knowledge" and "curious learning":[5]

> Curious learning not only makes unpleasant things less unpleasant. I have enjoyed peaches and apricots more since I have known that they were first cultivated in China in the early days of the Han dynasty; that Chinese hostages held by the great King Kaniska introduced them to India, whence they spread to Persia, reaching the Roman Empire in the first century of our era; that the word 'apricot' is derived from the same Latin source as the word 'precious', because the apricot ripens early; and that the A at the beginning was added by mistake, owing to false etymology. All this makes the fruit taste much sweeter. (Russel, 1935/1985, p. 35)

To think about Bildung in a company context may seem similar to notions about organizational learning and ambidextrous organizations (Tushman & O´Reilly, 1996), that is, the ability of organizations to iterate between exploration and exploitation (March, 1991). But, as important as such concepts are, they do not seem to

capture the full meaning of Bildung and the significance of the design studio to innovation. To further tease out the relevance of Bildung I will describe a contrast, similar to the one between Bildung and organizational learning and ambidexterity, but in a different context.

The notions of learning and ambidextrousness can be compared to how in society, and especially in EU policy, the concept of "lifelong learning"[6] has gained importance. To Hans Kristensson Uggla (2012) and Richard Sennet (1999), the concept of lifelong learning is instrumentally tied to ideals about productive individuals that in the new era of globalization are *adaptable* and *employable* from an economic perspective, that is lifelong learning can be seen as a new take on Fordism[7] in the knowledge society. In a company context this also compares to the recent notion of "agile organizations" (e.g. Dyer & Ericksen, 2009) that are flexible and quick to adapt to changes in the business environment.

According to Kristensson Uggla, very little in the current narrative about lifelong learning has anything to do with the self-cultivation ideals of Bildung, and Sennet sees the emergence of a flexible but rootless, and thus morally lost individual in the knowledge society. Further, Kristensson Uggla suggests that inscribed in the narrative of lifelong learning is a problematic duality, a tension between the ideal of adaptability and the equally heralded ideal of the innovative entrepreneur. This tension, he argues, if unresolved, will actually hamper the objective of achieving innovation in society and business. The reason is that the fundamental notions of flexibility and adaptability that underpin the rhetoric about lifelong learning are counter-productive to innovation, as they do not tie to meaning.

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5.   The distinction between useless and useful, and between information and inspiration may also be collapsed. For example, to Charlotta the perfume bottle packaging held useful information, but of a non-quantifiable sort, hence to her the term information makes sense. And to Russell the knowledge he described was not useless as he got pleasure out of it. It all depends on one's perspective, and the duality I bring up is a construction tied to the tension between modernity and pre-modernity.

6.   A concept driven mainly by the OECD, the UN, and European Union and seen as a fundamental solution to the challenges facing the European Union, both in terms of a changing demography with proportionally less productive citizens due to longer life-spans, and also to the necessity to compete with for example China and India.

7.   Piore and Sable (1984) labels the combined management philosophy that includes "Taylorism", that is, the use of linear assembly lines and breaking the work into small deskilled tasks, and standardization to achieve higher productivity "Fordism", after its well known proponent Henry Ford (1863-1947).

Kristensson Uggla suggests that a necessary *reflexive* perspective needs to be brought back to the concept of lifelong learning, so that individuals, and also organizations, are equipped with the ability to make sense of the fluid situation of globalization. In other words, reflexivity is needed more than ever to be able to innovate.

This resonates with Karl Weick's understanding of organizations as inherently engaged in on-going sensemaking (1969) and Tsoukas' and Chia's notion, inspired by Weick and Bergson, that organizations are in a constant state of *becoming* (2002), that is, individuals in organizations, and thus organizations, are constantly trying to understand themselves in relation to new events and the surrounding world. However, as Lester and Piore note, such interpretative dimensions of the life of organizations are for the most part tacit, especially in contexts of innovation where more analytical concepts influence how organizations are managed, for example the pervasive metaphor of problem-solving. When the designers in the interventions insisted that the companies should engage with the socio-cultural realm, and that they should establish design studio-type environments, including necessary time and other resources, they emphasized the need for action and space that would support reflexivity – or processes of on-going "corporate Bildung", including the radical act of exploring useless knowledge as a prerequisite for innovation, a potential contribution of design practice that has so far been little discussed in these terms in the design management discourse.

THE SOCIABLE EXPERTISE OF THE DESIGNERS IN THE INTERVENTIONS

Since its initiation in 2006, this study has been something of an anomaly in that it explores the potential contribution of design *practice* to innovation in companies, rather than the contribution of certain methods or processes, as is typical of the design thinking approach, for example. The study can thus be seen as an investigation of a potential designer role that is currently little discussed, the role of a designer who intervenes in companies and organizations to share design practice with non-designers to contribute to inno-

vation. To better understand the contribution of design practice in this section I will explore this role in more detail.

Paradoxically, it seems the role of the designers in this study is more similar to emerging roles for artists in the intersection between art and organizations than with roles in design thinking approaches. In the former it is the explicit experience of artistic practice that is fundamental to the claimed contribution to organizations (Styhre & Eriksson, 2007; Berthoin Antal, 2013).

Also the interventionist approach of this study bears more resemblance to artistic interventions in organizations than to emerging design thinking services. Where the latter is often directed to specific products, the former are often more longitudinal and explicitly engage with social dimensions in organizations.

At the outset Marie and I often spoke of the designers as coaches, implying that the designers were not responsible for the results in a formal way, but that they would also support and stimulate a learning process. However, when looking at the diverse work in which the designers engaged the groups, and the social effects of the interventions, this definition seems too limited. It can of course be argued that to design always means to interact in already existing social situations, as discussed by Weick when arguing that designers enter situations that are typically:

> … characterized by limited options, unreflective submission, continuous acting, occasional interruption, unquestioned answers, ready-made categories for expression and interpretation, and disjunction between understanding and explanations. (Weick, 2004, p. 77)

That such normal design work action may also disturb client organizations has also been shown, as discussed in the *Introduction*. However, typically the hierarchical relationship between the designer and the client organization, where the designer is subordinate both in terms of often representing an alien knowledge tradition as well as being an outsider to the organization (Johansson & Svengren-Holm, 2008) remains unchallenged in traditional design work. In the processes in this study, however, more or less everything was challenged, including hierarchies and power relations.

With the emerging processes Marie and I have increasingly talked about *interventions* to describe the work of the designers. Instead of coaching, intervening captures how several of the designers engaged the groups in processes that challenged the raison d'être of the organization. But intervening feels too limited or blunt for describing the role of the designers. They also had to find ways to convey otherwise tacit dimensions of design practice, that is, find ways to turn tacit knowing-in-action into explicit knowledge for action in the action-present as described by Schön (1985). The designers had to find ways to let the groups *experience* design hands-on, and they had to engage the groups in a longitudinal process that would face practical problems such as interruptions, lack of resources, and a turbulent economic situation. These were challenges that in different ways made it necessary for the designers to develop new expertise.

A related issue that was discussed by the designers in the designer-seminars, was how the processes meant a different sense of *responsibility* in relation to traditional design work. Cecilia said how the hopes and trust that the group held made her feel like a balloon that was blown up, close to exploding point, and how it would just take one little pin-prick for everything to collapse; how all those fears, hopes, and ambitions that were tied to the project, and ultimately to her, came from people who really depended on a successful outcome of the project. Part of this responsibility was to create the conditions for a potentially productive situation. Thus, the designers had to put themselves at risk in a way that they were not used to. They had to show the way ahead by *immersing* in the social situation and offering his or her person to the situation, to the group.

In doing this the designers had to step into a role that was not entirely comfortable. They had to continuously make sense of that new role while at the same time build trust, keep the groups in motion, deliver results, and most of all, ensure that there would be on-going conversation. But conversation did not always come easily. Some members of the groups were quieter while others took up a lot of space. In some cases arguments were heated, and in others the whole group lost energy. The designers had to continuously deliberate this inherently dynamic situation. Magnus A. in Macro used

the metaphor of *chairman* to describe Cecilia's work and role, how she worked as a chairman to keep the conversation going. Interestingly Weick draws from Winograd and Flores (1987) to describe the "throwness" inherent in design practice by the example of the situation that a chairperson faces:

> The chairperson is thrown into the midst of a garbage can organizing process of ongoing agendas seeking support and animosities looking for an airing, without much control or sense of history and with little opportunity for detached contemplation or assurance that detachment would help anyway. (Weick, 2004, p. 75)

While this dramatic description holds important insights there is also a more positive metaphor close at hand, one that perhaps better describes a more benevolent and longitudinal process than a heated boardroom situation where power issues are foremost. When Lester and Piore discuss how interpretation is the missing dimension in innovation they use the metaphor of the *hostess at a cocktail party* to describe how managers need to pay heed to and manage for processes of interpretation through conversation alongside more well established processes for problem-solving (2004). To them, the hostess is someone who introduces people to each other, who ensures that the conversation is on-going, and from time to time refreshes the conversation by "displacing its centre of gravity", for example, by introducing new topics into the discussion. According to Lester and Piore, successfully hosted conversations may develop in three distinct processes:

> One, like the development of a new language, moves systematically toward ambiguity from a starting point of clear, very simple communication. The second, analogous to the drawing of new members into an existing language, also moves toward ambiguity, but from a starting point of total confusion. In both processes there is a stage at which people cannot be sure whether the communication problems they are experiencing are caused by confusion and misunderstanding or by genuine differences of interpretation. A complete breakdown of conversation can easily happen at this stage... But if the participants

keep talking, they will eventually begin to participate in the third kind of process, a conversation among members of an established language community in which ambiguity can be clearly recognized for what it is, and for the richness that it brings to the exchange of ideas. (Lester & Piore, 2004, p. 72)

Even though not all interventions reached the conversation of the third kind, I would argue that the "designers as hostesses" (or hosts) attempted to move in that direction with the groups, and that several of the groups started to sense how the "ambiguity quality" was important to innovation work. And as was hinted in the quote, breakdowns were very real possibilities in the interventions.

In the sense that the designers shared their own practice experience through a series of events the metaphor of teacher or tutor is also helpful. Just as teachers are often the experts in the classroom that share experiences and knowledge the designers shared their practice knowledge and experience to the groups, to their different "classes". Just like teachers they also had to sometimes inspire and sometimes issue clear directions, but always with the idea that they would leave the classroom at the end of the process and that by then the groups would have learned something, and to be able to continue on their own. The teacher metaphor thus helps to bring the learning process into the light. An associated metaphor was that of a mentor. This was how Klas, The innovation manager at Alfa Laval, described Patrik's role in their work to develop the COIN-process. It seems that in their close collaboration Klas felt that Patrik not only helped to integrate a design perspective in the process but also shared important experiences and expertise that Klas could act on and integrate in his practice as an in-house innovation expert.

These are all valuable metaphors. However to understand the contribution of design practice I need a metaphor that can capture the intimate relationship between hands-on design practice and the role of designers in social situations such as those occurring in the interventions.

In a recent discussion about new roles for designers in an age "… of open design, ever-evolving collaborative partnerships between creative microbusinesses, social design, user-centredness,

knowledge transfer, empowerment and inclusivity." (2012) design management scholar Mike Press argues that the traditional corporate-oriented design management literature is not sufficient for understanding design in these new situations. For one thing it is corporate oriented, it is also dominated by a more or less exclusive focus on a specific type of leader: "… a white male designer who works for a large corporation." Apart from noticing this discrepancy, Press suggests that to understand the new roles of designers in inherently social situations aimed at change it is worthwhile to consult Richard Sennet's sociological study of craftsmanship (2008).

In his study of the history of craftsmanship Sennet describes how expert craftsman and violin builder Antonio Stradivari established his Cremona workshop in the 17th century where his expert knowledge and constant presence had an influence on every detail in the production of the Stradivari violins. The upside of this was the ability to turn out excellent instruments. The downside was that production was entirely dependent on his expertise and intervention as he refused to share his knowledge in the fear that it would reach competitors. Despite attempts at analysing and understanding the Stradivari violins by his sons and master craftsmen after his death, the excellence of the Stradivari violin died with Antonio Stradivari. Sennet argues that Stradivari could be seen as the perfect example of an *antisocial expert* – as an expert who is not able to, or does not want to, convey tacit knowledge. Sennet contrasts this description with the notion of the *sociable expert* as someone who:

> … addresses other people in their unfolding prospects just as the artisan explores material change; one´s skill of repair is exercised as a mentor; one´s guiding standards are transparent, that is, comprehensible to nonexperts. (Sennet, 2008, p. 251)

I agree with Press that the notion of the sociable expert is apt. It captures important insights that direct attention to the social process that is both fundamental in social design and co-design, for example, as well as in interventions of the type in this study. Most of all, it captures the *dual* expertise that was needed in the interventions, that is the combined *practice expertise*, for example their aesthetic

knowledge and experience as interpreters, and the necessary *sociable expertise*, that they often had to strengthen to successfully engage the groups in a social process of entwined conversation and making. Further, as suggested in the quote by Sennet above, the practice expertise also seemed to resonate with the challenge to engage with the groups and their emerging, or unfolding, understanding, that is with the necessary sociable expertise. In other words, it mattered for the development and deployment of the sociable expertise of the designers that they were themselves, as designers, experienced in the challenges of meaning-making processes, for example were used to tolerating and drawing on ambiguity and were comfortable with "being in the open" that is so typical of processes of meaning-making. This may indicate an important reason why the experience of design practice matters beyond being adept at applying design methods.

CONCLUDING DISCUSSION

In one sense this study started over twenty years ago, that day when I heard the high-pitched sound of a revving Citroen 2CV behind a hedge and decided to investigate what went on in designer Morgan Ferm's garden. That's when I bumped into design as a practice in which challenging taken for granted assumptions seemed to be the norm. Later, when I entered the world of the design studio I came across a practice where innovation seemed to emerge in the *intersection* between the type of knowledge taught at my engineering school and the type of knowledge developed in my art class.

However, when I entered industry I found few traces of this combined knowledge in innovation contexts, but the traces I *did* find, I found in design-driven projects. This encouraged me to immerse myself in design as a student. And a student I became in the most humbling sense of the word when I had to completely revise how I engaged with the task of developing an artefact. Suddenly I had to actively *resist* the urge to define the task up front and instead throw myself into an open investigation of the task as such: a process that was more about the unknown than the known, and a process initially accompanied by a clear feeling of vertigo.

But despite feeling that through this learning experience I was a little closer to understanding design's contribution to innovation, it was still difficult to articulate this understanding through language. The concepts that were available in the popularized innovation discourse, such as "idea generation", and "thinking outside of

the box" did not seem to capture the elusive practice experience that made a difference, and neither did the popular notion of creativity.

This study thus rests on a phenomenological urge to explore and articulate an understanding of the contribution of design *practice* to innovation. To do this, when language and available concepts did not suffice, I chose an experimental approach involving professional designers and companies in the explicit context of innovation. By staging interventions in the real life of companies, in the "mess" of organizational life, different practices and knowledge traditions were brought into play when design was introduced hands-on. This approach provided a rich material for fulfilling the purpose of this study.

Along the way, between the emergence of the empirical material, reading literature on theory and philosophy, taking a critical distance to pervasive concepts, and actively reflecting on my own practice experiences, I have found that a hermeneutic perspective is relevant for understanding the contribution of design practice to innovation. In this chapter I summarize the findings of the study, discuss the implications and relevance of a hermeneutic perspective on design's contribution to innovation and propose areas for further studies.

THE FINDINGS OF THE EXPERIMENTAL STUDY

When Marie and I established the approach for the interventions our most important decision was to accord prerogative to the *practice* of design. In the interventions this meant insisting on processes based on the experience and knowledge of professional designers, and making certain that these processes would not get caught up in or be too influenced by the established processes and perspectives in the companies.

This approach, paired with the opportunity to study the emerging events up close and as they evolved, provided an opportunity to foreground important aspects of the contribution of design practice to innovation. To do this I have actively drawn on a hermeneutic perspective. In the previous two chapters I explored hermeneutics

and other theoretical implications based on my interpretation of the interventions. My aim was to find relevant concepts for articulating the contribution of design practice to innovation. I will now summarize the findings using these concepts as a foundation for the continued discussion in this chapter.

Summary of the Findings

When I began to follow the interventions, what struck me was that there were markedly few, if any, idea generation seminars or attempts at "thinking outside of the box". Instead, the designers in different ways engaged (or attempted to engage, as in the case of Cecilia Nilsson's two workshops with Kitchentech AB and Olof Kolte's first attempts in Alfa Laval) the multi-disciplinary groups in *conversations* about the company and its products. In fact, as soon as they encountered the company the designers started to actively interpret it by paying attention to how established pre-understandings were expressed in interiors, products and communication material, and so on. And soon they also actively involved the group in this process.

When doing this the designers strove to establish situations that would make conversation and reflection possible by building trust, openness, and interest in the groups. The designers immediately began to subject the groups to new perspectives by bringing in different material from the "surrounding world", such as magazines, material samples, and catalogues from competitors. In doing so they engaged the groups in processes of interpretation and deliberation of the possible meanings of this material in relation to the company and its existing products – they engaged the groups in active meaning-making and a process of gradual *expansion* of their horizons of understanding.

Further, from the start conversation was entwined with different types of visual and material hands-on work – with "making". Artefacts and images were observed, discussed, touched, experienced and interpreted in a multitude of ways. Through this work emerging understandings were turned into new images and artefacts, for example, mood-boards, sketches and sketch-models to be further

interpreted in relation to expanding understanding. Here devices such as different sorts of questions, narrative and metaphor were used to enable "poetic redescription" to open up *new* meaning.

In the work, the designers insisted that the groups draw from material that had an open-ended, evocative and ambiguous character, and even though the designers often discussed the material in terms of "information", inspiration is a better concept for understanding the purpose and character of this material. The designers also expressed the need to have a multitude of inspirational material at hand, and to *immerse* in it, preferably in a place away from the hustle and bustle of the production and office environments so as to be able to use the material to interpret the products of the companies in new ways. But dealing with this type of inspirational material was initially difficult for the individuals. The material did not answer any given questions or represent any clear facts. Instead the material opened up new questions and to more multi-facetted ways for the companies to understand themselves, their products and the users of the products. Only later in the process did the groups acknowledge how this type of inspirational material mattered in the process of expanding understanding.

Another difficulty was that when the groups engaged in active meaning-making, perspectives that were at odds with the taken for granted pre-understandings in the organizations were inevitably developed. Some of these were of a political or ideological character, for example, the development of gender perspective in one of the companies. But also the general interest in aesthetic and experiential dimensions that emerged in all groups was political as it challenged the pervasive functionalist orientations of the companies and disturbed the status quo, including hierarchies of power. In several situations this caused conflict and friction, and in one company contributed to the abortion of the project. However, in most cases such conflicts were overcome in the process of expanding how the products could be understood.

Meaning-making also challenged established practices in the groups. Both verbal meaning-making and hands-on work with images and materials were practices tied to aesthetic skills that the individuals did not possess, or rather, were unused to engaging. Some

felt the pressure to achieve beautiful results and others felt unused to the idea that one's own feelings and experiences mattered, or that "flimsy" material could be trusted. When such difficulties were overcome through the active support from the designers, it seems that aesthetic deliberation, both verbally and hands-on, began to constitute the very "life of the processes", working as a kind of lubricant that helped groups to engage in aesthetic deliberation as a shared practice where differences were productively brought together.

This "life of the process" happened in the "meeting place" where the emerging concept, or "thing" was "becoming" constituted (here I draw on Heidegger's discussion about the etymological roots of the word "thing", denoting the governing assemblies in ancient Germanic cultures, as described in the previous chapter). In this meeting-place all kinds of dimensions related to the emerging concept could be deliberated, contested and assembled by the individuals with their different practices, perspectives and knowledge. Judging from the three successful interventions it was the intimate relationship between the thing as an emerging concept and the thing as a meeting-place that made meaning-making possible because this combination meant that reductionism was resisted and "completeness" supported throughout the interventions.

For the groups perhaps the most challenging aspect of engaging in active meaning-making was that the process fundamentally challenged the sequential order of working that was institutionalized in different management processes and systems in the companies. Instead of building on early problem or task definitions and a step-wise process of solving the problem or executing the task, the process of meaning-making meant that understanding and the accompanying result emerged gradually. Thus it was only late in the process that the groups could see the result, and why and how their different actions had mattered. This was often frustrating to the groups that were used to delivering quick answers and solutions, and working from clearly defined tasks. Instead the process demanded trust in an unfamiliar process and the ability to endure a phase of "being in the open". It also demanded that managers kept their propensity to require up-front definitions at bay.

But, once the concepts materialized in the companies that completed the "journeys", it became clear to those involved that they had achieved quite radical results that could not have been developed within the "meaning-space" in the organizations *before* the interventions, and results that transcended what users could probably have expressed as needs. The meaning-spaces for possible innovation in the companies had been opened up and expanded through processes of meaning-making. In these processes, that were unique to each context, the concepts that were materialized emerged *between* the individuals when their different knowledge, perspectives and experiences were brought into play, including less objectively oriented personal knowledge and interest from realms outside the companies.

Contribution and Limitations

The main contribution of this study is to introduce hermeneutics as a concept for explicitly understanding what goes on when a designer involves a multifunctional team in innovation work based on design practice. This perspective resonates with established design theory and also with emerging innovation management theory that emphasize meaning-making in innovation work. Through the up-close study I have also provided in-depth narrative descriptions of different aspects of such work that can be further developed. Most importantly, I have shown that there is a very clear connection between deliberating product-related meaning and engaging in meaning-making about the organization. That is, because products represent the pre-understandings of the organization, if the meaning-space is expanded to enable innovation beyond those pre-understandings, the organization has to be fundamentally challenged. This is a far more complicated and gradual process than the concept of "thinking outside the box" implies, as I have shown.

The study also raises a number of new questions. From an instrumental perspective, after the interventions Marie and I asked ourselves questions such as: Could the processes have been more efficient, for example by using more explicit methods or designers more experienced in interventionist approaches? Could the processes have been more compressed, or should they have been even longer? What if the interventions had been more radical and provocative, or more artistic – then what would have happened? Since the study we have tried processes that work more directly with a specific concept, but just as in the first attempt in the Alfa Laval intervention (with the shower that could recover heat) this seems to restrict meaning-making. Instead, I suggest it is important to pursue investigations on how to make interventions approaches more long-term oriented, without loosing the "edge" of challenging deeply rooted pre-understandings.

A limitation of the study is that we do not know how far-reaching the effects really were in the organizations, what their "staying power" has been and if it has led to continued change and innovative products. What we do know is that the three companies that completed the journeys have continued collaborating with designers strategically, although in different ways. This indicates that the companies have not been able to adopt and continue with the processes on their own, but need on-going collaboration with designers, so they do not risk loosing the effects. This continued collaboration with designers in "non-designerly" firms is important to study further. More longitudinal studies could also follow emerging concepts to the market, to investigate the level of success and innovativeness of concepts derived from meaning-making oriented innovation work.

Another area of concern is that I have not drawn on a more detailed comparison between the different interventions, for example by considering the differences in size, sector and other such factors between the companies, and how this may matter. To do this may reveal interesting facts and nuances. On the other hand, I argue that it is interesting that there are so many similarities in the process between the different interventions, *despite* the many differences, including the fact that the designers all had quite different backgrounds (fashion design, industrial design and so on). These similarities all point to the relevance of foregrounding meaning-making as an important perspective for understanding the contribution of design practice to innovation, and perhaps also for better understanding innovation as such, as is argued by Verganti and Öberg

(2013) and in line with Lester and Piore's notion of interpretation as a missing dimension in innovation (2004).

While focusing on the work in the groups I have omitted a more detailed study of the managers' roles and Marie and my facilitator roles. This does not mean that these roles are not important, quite the contrary. It was the mix of responsibilities between these different roles that made the processes work, as I described in the chapter "The Interventions". The designers would not have had the space and license to engage the groups they way the did, had it not been for the managers legitimizing the work. Marie and I would not have been invited to do the interventions at all had there not been managers who had had a "first date" with design and wanted change. The relevance of this observation would be interesting to study further, including how such "first-dates" with design could potentially be achieved more instrumentally. Further, Marie's role in match-making between designers and companies was crucial for finding the right designer for each company. The study illustrates the importance and also the difficulties of this work, but there is much more to do to understand the expertise required. Most of all, the *symbiosis* between different roles that seems typical for artistic interventions deserves further inquiry to provide actionable knowledge for designers, design consultancies, companies and mediating organizations

IMPLICATIONS OF THE FINDINGS

The designers in the interventions activated meaning-making through hands-on design work. Among other things, this meant stimulating tacit knowledge and aesthetic sensibilities as well as critique and questioning. Had Marie and I known at the outset about the many challenges that this way of working would entailed, especially when taken for granted pre-understandings in the organizations were challenged, I believe that we would have felt that they were insurmountable. But the challenges *were* tackled in three (potentially four) out of the five interventions. Here I consider the reason for the success was in the combined emphasis of hands-on design work and facilitation by artistically trained designers, with

additional support from Marie and me in securing the prerogative of design practice, as discussed above. Also, the contribution of the managers mattered a great deal, even though for the most part they were not active in the processes. Success required their important support in legitimizing, defending and securing resources for processes that were foreign to the organizations.

But what is most interesting is that, beyond friction and difficulties, the individuals in four of the five groups engaged productively in innovation oriented processes that could be seen as artistic meaning-making, despite not having previous artistic experience, and further, that aesthetic deliberation gave the process of meaning-making its very momentum – providing the dynamics of innovation its necessary fuel, as discussed by Godoe (2011). The designers activated and legitimized necessary aesthetic and experiential knowledge in the participants that were dormant but not unfamiliar once engaged, and they also provided complete, situation specific processes for doing so. This brings me to the question of how to understand the contribution of design practice to innovation. But before drawing some final conclusions I will first reflect on the intersection between design and innovation to provide a context.

The Converging Intersection between Design and Innovation

During its short history as a specific practice design been intimately related to the emergence of modern industry. But as a practice it is a paradoxical "child of modernity" (Johansson & Svengren-Holm, 2008) that has defied the technological rationality of industry, and has protected the ability to draw actively on a more complex, or "pre-modern" span of knowledge, to use Latour's expression (1993), including embodied and aesthetic knowledge.. Or as discussed, by Edeholt and Ek (2008), design as a Trojan horse has applied art's more intuitive methods in the middle of technical and economical rationality.

But drawing on a pre-modern span of knowledge is perhaps not as unique as it may first seem, even in industry. As has been discussed by Fleck (1935/1979) and Kuhn (1962/1970) and has been demonstrated by Latour (e.g. 1993) and other researchers the field of

science and technology studies in sociology (e.g. Hesse, 1980; Idhe, 1999), even in the supposedly analytic practices of science and R&D, subjectively oriented knowledge, aesthetic ideals, verbal concepts and other expressions of situated meaning rather than purely objective knowledge, are not only significant dimensions of such practices, but are also fundamental to how new knowledge and innovation emerge. However, this is rarely admitted and instead such processes are afterwards "purified" to *seem* rational in the analytic sense (1993). In other words, just as in design, in these practices the social and the material, the subjective and objective, are intertwined in the *making* rather than *finding* of concepts that in science are called *facts* and in design *artefacts.*

If this was the situation in industrial innovation work and R&D today, everything might be well and good. That some dimensions of knowledge in innovation work were tacit or unreflected might not be a problem. In recent decades, however, with the on-going drive for efficiency and productivity in industry, the space for such knowledge and necessarily less controlled and analysis-oriented processes has shrunk when the organizational slack (March & Cyert, 1992/1963), where such knowledge could thrive, has been efficiently reduced and organized away (c.f. Sundgren & Styhre, 2003). In parallel with this development, design's sheltered space, the design studio, has increasingly lost its significance when, with the introduction of integrated product development approaches, design has increasingly been forced into analytically oriented processes that do not support, but rather contradict the centrality of meaning-making in design, as discussed by Coyne and Snoddgrass (2006), and by Ek and Edeholt (2009) in the context of design education

Paradoxically, in more or less the same period of time the character of innovation has increasingly expanded from the limited traditional notion of innovation as the application of technological invention (Godin, 2008), to include a notion that more resembles how novelty is understood in art, where it is the experienced *originality* of the *complete* work that counts, its complete material and socio-cultural relevance rather than certain solutions or specific details. From this perspective novelty could instead be understood as the successful *composition* and *materialization* of complex and

meaningful assemblages or *wholes*, where technological solutions and socio-cultural dimensions are intertwined. In other words, the type of knowledge that has been weeded out as a slack resource, and that has been lost when the sheltered design studio has been erased, has actually become *more* rather than less important: not only as tacit knowledge, but also as *explicit* knowledge when aesthetic and socio-cultural dimensions can no longer remain assumed or unreflected, but instead determine the success of innovation.

The Paradox behind the Design Thinking Paradox

The above, I believe, describes the backdrop to the current interest in design and other artistic practices in the context of innovation, and why their relevance has increased. In the context of design management this has led to the current interest in design thinking approaches. Here design is frequently abstracted into a set of principles accompanied by a set of tools and methods, as discussed in the *Introduction.* The similarity with other management fashions is striking: with the interesting difference that in design thinking, *less* rather than more algorithmic approaches are favoured (Tonkinwise, 2011). What is repeated, however, is the belief that a practice *can* be abstracted with the contribution intact. This follows the general positivist belief in the primacy of methods, epistemic knowledge and cognition, a belief that suits functionalist oriented organizations and the consultancies that provide the appropriate "expert solutions" to innovation.

In one of the few empirical studies on design thinking to date, Carlgren, Elmquist and Rauth (2013) considered the experiences of six large firms that have worked with design thinking for at least four years, and revealed an interesting paradox. Despite the promise in the design thinking rhetoric of *radical* innovation, most innovation through design thinking in these firms was incremental. The paradox was that the user-centeredness of design thinking meant that radical innovation was counteracted when insights and corresponding solutions created through user research was required to fit within the scope of expressed user needs. That is, the firms listened to users too much, which made radical innovation impossible, reso-

nating with Verganti's view (2008), as argued by the authors. This is a very interesting conclusion, but the study also holds another interesting finding that is *not* connected to the inability to achieve radical innovation:

> The results of this study show that there is indeed little focus on aesthetics and form; a few interviewees [of 51 interviews] talk about "elegant solutions" or how the product should have both functional, emotional and aesthetic value, however it was not specified how DT would be of help getting there. The visualization and form-giving expertise of designers is mostly held forward in terms of how it is used in project work for communication and in presentations to decision-makers. (Carlgren, Elmquist & Rauth, 2013, p. 12)

This lack of focus on aesthetics, the modernist notion of "elegant solutions", and the limited view on design as related to visualization resonates exactly with Tonkinwise's argument that design thinking can be seen as a "failure friendly, iterative prototyping in the context of immersive social research" (2011, p. 533), and Kimbell's notion that design thinking can be seen as "design minus the material practice" (2009). Furthermore, relating these findings to the paradox discussed by Carlgren and collaborators, could it be that the apparent lack of aesthetic practice may actually be a key reason why the understandings of the users, and perhaps even of the firms themselves, are not challenged or transcended?

Thus there may be a "paradox behind the paradox" – the paradox that when design is abstracted into a management oriented consultancy concept, design's most important contribution to innovation, the embodied and tacit aesthetic and material practice that supports active meaning-making is abstracted away, resulting in paradox-seeming consequences. It *may* of course be that beyond the application of user-oriented design thinking approaches, organizations that deploy design thinking *do* develop innovation practices that include dimensions like active meaning-making, aesthetics and making. But so far there have been no up-close studies on the actual practice of design thinking to say whether this is the case. On a more optimistic note, the fact that organizations take users seri-

ously is not a small step, and the integration of less rather than more algorithmic approaches through design thinking may also widen perspectives that in the long run may further development towards more aesthetic and practice oriented design approaches for the benefit of innovation.

Towards the Primacy of Practice

As a parallel development to the spread of design thinking, interest in artistic practices is increasing, for example in current EU policy discussions (Berthoin Antal, 2013). The basic assumption is that industry and society face challenges where incremental innovation will not be enough and that organizations need to be challenged more fundamentally to develop radical solutions. One problematic aspect of the rhetoric around artistic practices is the insistence on problem-solving. Another is how the creativity of artistic practices should be *harnessed*, as expressed in a recent EU document (The European Commission, 2012) – a recurring mantra that also emphasizes the individual and the spectacularly "arty". Nevertheless, despite a rhetoric that holds many problematic issues and assumptions, just as in the design thinking discourse, it supports an approach that does not immediately exclude, but instead emphasizes the relevance of artistic practice, and of practice as such.

This rhetoric, however, may pose a problem to design. When creativity is discussed, other artistic practices come first to mind. To realize the possible contribution of design it will be important to emphasize how design represents a practice where meaning-making is fundamental to the ability to develop something new, and that this is not about something inherently *special*, for example not a special way of thinking, or about special individual traits, but about the activation of something *universal* that anyone can participate in – namely, meaning-making. This is a proposition that can only be radical in the context of an industry and society still under the heavy influence of modernism and technological rationality. Following this, it will be important to emphasize design as a "paradoxical practice" and a "child of modernity", as discussed by Johansson and Svengren-Holm (2008), that has been developed within func-

tionalist oriented industry, and has thus developed an ability to act in precisely the type of contexts where innovation and change are most needed.

For designers to emphasize practice means to resist relying on the traditional consultancy format in industry, emphasizing tools, methods and pre-defined processes, and instead develop situation-specific interventionist approaches akin to other emerging artistic approaches. It also requires that designers develop an ability to draw on practice experience combined with an ability to engage non-designers in experiencing design hands-on, and to do this in the middle of functionalist oriented industrial innovation work. These are designers who have developed dual expertise as "sociable experts", as discussed in the previous chapter, and that resist the temptation to fit design within accepted management paradigms that repress crucial dimensions of design practice.

SUGGESTIONS FOR FURTHER RESEARCH

As described in the Introduction chapter, so far few studies have been made of the integration of design in product development. Fewer yet have explored interventionist approaches for design in innovation. I argue that this study, as one of those few, has foregrounded aspects of design's contribution to innovation that are so relevant that further inquiry is warranted.

In the field of organization studies, in recent years interest has grown in artistic interventions in organizations. Such research explores approaches that hold many similarities to the ones in this study, but since descriptions so far lack a clear practice perspective I have not actively built on this research. However, to discuss implications for future research I find it helpful to draw on the proposed research agenda that organization studies scholar Ariane Berthoin Antal (2013) has developed, as it includes a number of aspects that are also relevant for a continued study of the contribution of design practice to innovation, and perhaps even for establishing a joint field of studies.

352

Methodology Development

Concerning methodology, Berthoin Antal argues the need for more experimental approaches to complement more classical case studies and surveys (2013). My study could be seen as an example or embryo of such an experimental approach that can be developed in future studies. Berthoin Antal also argues that to understand what goes on in situations when art intervenes in organizations, organization researchers need to step out of their comfort zones and involve artists in their research. However, Berthoin Antal does not mention that artistic *researchers* could also be involved in this type of research. Here I propose the development of joint studies between management research and artistic design research in the fields of design and innovation management studies, to actively bridge different knowledge traditions.

In such studies, as Berthoin Antal argues, the relevance of embodied knowledge in organizational learning should be explicitly studied because the "… limited approach to knowing that is characteristic of the social sciences contrasts strongly with that of artists who take bodily experiences as a source of knowledge." (2013, p. 19). In the study at hand the embodied knowledge of both the designers and the employees was relevant to the outcomes. However, I only managed to scrape the surface of this dimension and much remains to be done, not least to better understand the relevance of embodied knowledge to innovation at a time when innovation is broadening to include the originality and meaning of the complete and materialized concept, including experiential dimensions.

Such studies would also need to develop new methodological approaches and new formats for disseminating results, both academically and to policymakers and professionals. Here it will be worthwhile to seek inspiration from how art and artistic research build practices for engaging with and representing the "in-between" for understanding what goes on between practices and individuals in the processes (Oosterling & Plonowska Ziarek, 2011). I have chosen a narrative format, but images, film, artefacts and other modes of representation offer exiting possibilities, both as tools for research, and for disseminating results to academia, practitioners and the general public that have so far been little explored.

353

The Roles of Different Actors

Concerning the different roles involved in the interventions, management research has tended to focus on the manager. However, and as Berthoin Antal argues, when it comes to artistic interventions in organizations the experiences of the employees and of the artist become equally or even more important to understand. Resonating with this, the focus of my study has been to explicity investigate what went on in the groups, between the designers and the employees. Nevertheless, it would have been possible to dig even deeper into these experiences, for example, by conducting reflection seminars that could have been inspired by the Dialogue Seminar method (Göranzon, 2006) and other similar approaches.

And of course, the role of managers *is* important to study. In the "messiness" of the interventions most of the managers approved of and actively supported less problem-oriented ways of working that challenged established understandings, knowledge perspectives and roles in the organizations, including their own. I found that the managers were to a large extent guided by experiences that were personal and tacit rather than fact-based, the relevance of which would be interesting to investigate more in-depth. This includes the relevance of their "first dates" with design.

Such studies could build on the management research by Verganti, Lester and Piore, and Jevnaker. Here Verganti's proposal of a research agenda for design-driven innovation (2008) is a good foundation that could also help strengthen the connection between design and innovation management. In addition to this, the roles of facilitators, such as Marie and myself, and intermediary organizations such as SVID and Business & Design Lab are also an area in need of further studies as these seem central to most types of artistic interventions in arguing and legitimizing the relevance of artistic practices, and in supporting the intervening artists and providing economically viable service models.

Policymaking and Measuring

Berthoin Antal also argues that a research agenda on artistic interventions must take into account the interest of policymakers,

such as the European Union, and their request for hard evidence, or quantifiable results. At the outset of the study I avoided the opportunity to measure the effects of the interventions before and after. My explicit reason was that I felt that such measurements were closely related to theoretical assumptions that I wished to actively challenge in the study. I agree that hard evidence is necessary, but also urge researchers to explore underlying assumptions, for example those of the taken for granted concept of creativity, similar to how Godin (2008) has explored the genealogy of innovation. A specific area of research could be to investigate the possibility of measuring or finding other types of indicators that can show the effects of activated process of meaning-making in innovation. An early example of this is the work under development by Manhaes et al. (2013) on indicators and the work by Acklin et al. on design integration in SMEs (2013).

Critical Perspectives

Johanson and Woodilla argue that design management has lacked a more critical discourse (2011). Similarly, as argued by Berthoin Antal, "Questions of power … are rarely raised in the literature on artistic interventions, although the exercise and distribution of power are inherent aspects of relations and processes in organizations." (2013, p. 15). Correspondingly, in my study it was clear that issues of power were central to the effects of the interventions. This could in itself be an explicit area for continued research, for example inspired by critical management studies, as proposed by Johansson and Woodilla (2011).

Such a critical perspective should also inquire into how the understandings, norms and values of intervening designers may be both beneficial and problematic. As design theorist Tony Fry argues (2009), designers, just like anyone else, are situated in politics and culture. The crux of the matter is that the effects of design (by designers and/or others) may be more lasting and dramatic when certain norms and values are materialized, either conserving or challenging the status quo. Most often designers do the former, when materializing and reproducing stereotypical gender norms or consumerist

living patterns, for example. One reason may be that the space to engage critically in the commercial realm is limited, as argued by Shove et al. (2007). Another, as has already been discussed at length in this thesis, is that such understandings are often unreflected and taken for granted. If designers increasingly engage organizations in processes of meaning-making, it will also be crucial for designers to develop an ideology-critical and politically informed attitude to the norms and values that they themselves bring to these processes, and for researchers to also study the role of design critically.

CONCLUDING THOUGHTS

Throughout this thesis I have actively drawn on hermeneutics to articulate and foreground important dimensions of practice in order to understand the contribution of design practice to innovation. I have "operated the hermeneutic apparatus at high volume", to borrow an expression from Snoddgrass and Coyne (2006). In so doing I have positioned the study in an intersection between different fields of research. I have drawn on a recent call for emphasising practice in *design management* studies, made by Kimbell and Tonkinwise. I have related the study to an emerging interpretative strand in *innovation management theory,* with Verganti's notion of innovation of meaning and Lester and Piore's notion that interpretation is a missing dimension in innovation as main sources of inspiration. And I have drawn on *design theory* where Krippendorff sees design as a practice of "making sense of things" and Coyne and Snoddgrass argue that design can be understood as a "hermeneutic practice".

My contribution is to show the relevance of introducing hermeneutics as an *explicit* concept for understanding design's contribution to innovation, something that ties directly to the above streams in design and innovation research. The contribution can then be seen as establishing a missing link between design theory and innovation management studies that has not been made before now, perhaps due to the lack of up-close empirical studies that draw explicitly on design practice. Thus, beyond articulating a perspective on design's contribution to innovation, this thesis also supports a meaning-making oriented understanding of innovation in general.

In the process of drawing on hermeneutics I have also made a theoretical contribution to design theory by introducing Ricoeur's critical hermeneutics (Jahnke, 2012) which is necessary to foreground important dimensions of design practice that are not discussed explicitly in Gadamer's historical hermeneutics. These include the relevance of critique and poetics - aspects that are crucial dimensions of the contribution of design practice to innovation, judging by the interventions. Ricoeur's perspective also means overcoming an unnecessary and un-productive dichotomy between interpretation and objectivity, if, as Ricouer suggests, the tension between these positions provides a necessary dialectic "at the heart of hermeneutics" (Kristensson Uggla, 1994, p. 175). That is, from a hermeneutic perspective analytic and reductionist devices are *inscribed in* meaning-making rather than being something *opposite* to it.

This study thus sheds further light on how the emergence of innovative concepts can be understood as processes of meaning-making. It shows how in design, material and verbal meaning-making are intimately entwined, and that the gradual expansion of established pre-understandings, rather than sudden "thinking outside of the box", provides new "meaning-spaces" for innovation in an organization.

Such a viewpoint also means that the traditional tendency to relate the concept of innovation to novel technological solutions and functional dimensions of a product is challenged as being too restricted. From the perspective of meaning-making the *completeness* of the experienced result, however emergent, is just as important, including its socio-cultural dimensions, as discussed by Verganti (e.g. 2008). Further, completeness has to be an active dimension throughout the process, something that points both to the necessity of involving a wide spectrum of knowledge from the outset, and to resisting tendencies towards one-sided reductionism, as prescribed by stage-gate-systems and similar analytically oriented approaches.

Most of all, the hermeneutic perspective foregrounds that professional designers, by sharing practice experience hands-on, may support the activation of future-oriented meaning-making of products in an organization. This also includes, but is not limited to, providing practical approaches and methods for such work. In so-

cial situations much more is set in play *between* practices that are tacit, experience based and embodied than can be captured by a method-oriented approach. *If* design is appreciated as a *practice* to learn from and be inspired by, it is in such social situations that the relevance of understanding design practice from a hermeneutic perspective finds its greatest relevance, as argued by Snoddgrass and Coyne (2006, p. 258). Design is, after all, a hands-on practice, just like hermeneutics is a practical philosophy.

AFTERWORDS

When I was a teenager with artistic ambitions to paint in acrylics I used to bicycle to the beach by Öresund, the narrow strait between Sweden and Denmark. I liked to go there in the evenings, especially in the autumn, to watch the sun set over the "sea", or rather, over Copenhagen. Somehow I found that by tilting my head the experience of the setting sun became more colourful and dramatic. Perhaps I had learnt it as a technique in art school, or just by watching the sunset in different ways, I don't remember now. Whatever the reason, it worked wonders to sharpen my senses; it made it possible for me to experience the situation differently and to catch a glimpse of colours that were difficult to make out with my head straight up, especially those narrow and fuzzy bands of greens between the yellows and blues. During these PhD years I have tried my hardest to continue standing with my head tilted, most recently when observing the unfolding events in the interventions. As when I watched the sunset I have tried to understand something almost out of my reach, something that goes on in the in-between, in this case between people, and I hope that my contribution has at least added a little more colour to research on design and innovation.

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