

Jørgen Rasmussen, Bo Schiønning Mortensen and Birgitte Geert Jensen

Preparing design students for strategic design

How visualisation and concept development can inform the process of change in organisations

Abstract

This paper deals with how the visual approach from a design process can help inform companies about future opportunities at a strategic level. The paper follows an innovation project where design students worked with five companies at a 1-day workshop and with one company through a 2-week project. In both processes the students worked visually with mapping and making sense of large amounts of data that may influence the company's strategy. They also synthesized these findings by creating conceptual suggestions for the company's future products. This paper discusses the lessons learned from the innovation project and reflects on which new knowledge, methods and techniques designers should be aware of when participating in multidisciplinary strategic processes and new educational initiatives. This paper shows how the design profession's traditional visual tools and methods for concept development can be used to facilitate discussions for companies facing strategic challenges. It also underlines the importance of rethinking design skills and communication when moving into strategic processes.

Keywords: Strategic design, visual mapping, concept development, user participation, design education

Introduction

In recent years there has been, in both design practice (Brown 2009) and design research (Buchanan 2001), a focus on how designers can move 'upstream' from a tactical level in the innovation chain, and have a greater impact on the strategic decisions a company makes. The strategic questions that a company faces in this 'fuzzy front end' of the innovation process are, according to Rhea (2003, p. 143): "what to make, who to make it for, why to make it, and the attributes of success". He continues by saying that executives with an education in management consider the process of the 'fuzzy front end' ill-defined, random and mysterious. Therefore, several researchers with a background in management, such as Martin (2009) and Boland & Collopy (2004), point out that the open approach to a process from the design profession, especially techniques for visual representation and sketching, should be combined with existing practices from management. These should be used by multidisciplinary teams to create an overview of the strategic options at the 'fuzzy front end'. However, some parts of the design community, like VanPatter & Jones (2009) and Bruns et al. (2006) are concerned that designers may fail in the multidisciplinary strategic field if they just bring their traditional methods and techniques, developed for far less complex problems, directly into the new context without adapting them. In other words, the exchange of knowledge needs to go both ways between the design profession and other disciplines such as management, if designers are to work successfully on this level. This paper contributes to the above discussion by reflecting on what happens when a group of design students work with companies on strategic issues through a visual design process that would normally be used in the students' work with furniture, product or interaction design.

There are different specific views on how the visual approach to a design process can contribute at a strategic level. Through their work in the design profession, VanPatter & Jones (2009), Osterwalder & Pigneur (2010) and Sibbit (2010) have shown how a visual approach can make sense of large amounts of data, and help groups see and create new opportunities

together. Design researchers like Junginger (2008) and Verganti (2009) have, from a theoretical perspective, focused on how designers can create conceptual suggestions about the future of a company that can inform decisions in the present, by basing the discussion on something specific rather than abstract. In this paper the design students come into contact with aspects that can be put into both these categories as they work with the companies.

We follow the design students through an innovation project where they work with five companies at a 1-day workshop and with one company through a 2-week project. In these processes the students work with a visual approach towards large amounts of data that could potentially influence the company's strategy. They make sense of the data through mapping techniques and create conceptual suggestions for the companies future products that synthesize these findings. These concepts then serve as a basis for discussing the companies internal and external strategic challenges. The paper shows that the traditional visual approach to a design process contains several elements that can be used to inform strategic decisions. Visual representations and specific proposals in concept form can make large amounts of data more comprehensible by using an iterative loop between analysis and synthesis as a way of framing the real problems at hand. However, the innovation project also shows that there are areas where the students' approach has weaknesses in relation to co-creation with other disciplines. Therefore the paper reflects on which new knowledge, methods and techniques designers should be aware of when participating in multidisciplinary strategic processes.

Firstly we describe the theoretical background behind the visually-oriented design process the students are trained to work with. Then we focus on relevant theories in relation to strategic design including design attitude versus management attitude and visual thinking. Then we review and discuss the design students' work in the innovation project in the form of the 1-day workshop and the subsequent 2-week project. Finally we conclude on how the visual approach to a design process works at a strategic level, and reflect on what could be done to improve this.

The students' approach to the design process

At the Aarhus School of Architecture (AAA), the students working in the fields of furniture, product and interaction design have traditionally been taught an approach to the design process based on 'creative problem solving' (CPS). CPS was originally developed by Alex Osborn, the man who also created the brainstorming technique, and according to Friis (2006, p. 76) the process can be described as: "step-by-step models in a variety of general structures, involving various sets of divergent/convergent steps". She further states that the process means that one can "cluster design elements according to intuitive relationships, such as similarity, dependence, proximity, which helps identify connections and reveal innovation opportunities". In a version presented by VanGundry (1981) CPS contains six different steps in the form of: mass retrieval, data retrieval, problem finding, idea finding, solution finding and acceptance finding. At AAA the elements of this process have been translated into the following phases, which the students are trained to follow in a design process:

Reconnaissance: The general theme of the design process.

Research: Gathering of the relevant data for understanding the theme.

Programming: Finding the patterns in the research material and framing focus points

Ideation: Developing a wide range of ideas that correspond to the focus points.

Concept: Developing the idea that fits the focus points the best.

Detailing: Optimizing the concept in relation to design, materials and production.

Visualisation: Deciding what form of representation should present the final product.

Presentation: Pitching of the final product on the basis of knowledge from all phases.

Due to the innovation project's compressed format the design students only went through some of these phases. In the 1-day workshop they went through programming, ideation, concept and presentation, while the 2-week project gave them time for a research phase in addition to the above phases.

Strategic design

The design field is presently undergoing a transformation that is expanding the boundaries of how design is considered. The problems to which design is applied are becoming more numerous. However, who is actually doing the designing is becoming less clear. The largest design firms are moving from focusing on the design of products, services and experiences to also working with transformation processes at a strategic level, where they tackle complex issues in companies, organisations and public institutions (Brown 2009). In his model 'the four orders of design' Buchanan (2001) speaks of this increased level of complexity. Here he describes the four subject matters on which designers focus as signs, objects, interactions and systems. He stresses that they are not individual disciplines but 'places of inventions' between which designers can freely and intuitively jump back and forth in a process. VanPatter & Jones (2009) developed a four stage model similar to Buchanan's ranging from Design 1.0, understood as traditional design, over to Design 2.0 which describes the recent decades' user-centred product and service design, to Design 3.0 and 4.0 describing transformation processes on an organisational and social level. It is characteristic of the model by VanPatter & Jones that designers, as they move up through the stages of the model, must be prepared to engage in processes with an increasing number of other professional disciplines, and thus must learn how to communicate their design competencies in a new multidisciplinary context. In other words, designers working at a strategic level should take a holistic and interdisciplinary approach to complex problems, and make sure that what is designed makes sense in relation to a wide range of parameters ranging from user experience to the environmental and societal impact. Esslinger (2009, p. 53) describes the designer of the future in this complex context as: "highly creative, strategic designers who are fluent in convergent technologies, social and ecological needs, and business".

Design attitude vs. Management attitude

A common suggestion for how designers can have real influence at the strategic level is to teach executives with management backgrounds, who are currently making such decisions, to think like designers. In recent years the design company IDEO have promoted the concept of 'design thinking' where executives must learn what designers do when they create a synthesis of different parameters by "integrating what is desirable from a human point of view with what is technologically feasible and economically viable" (Brown 2009, p. 69). Several researchers from management see a 'designerly' focus as a means to break with a worn-out paradigm in management that focuses on optimising the solutions of the past through repetitive analysis and efficiency. For such a 'designerly' mindset to work in organisations Martin (2009) states that executives should allow new suggestions to be proven to validity (focused on the future) rather than the traditional focus on reliability (focused on the past). Michlewski (2008, p. 387) points out that designers, when focusing on the future, work in an assertion-based way rather than an evidence-based way, and create novel, original forms that challenge the status quo instead of working with predetermined frameworks. According to Hamel (2002, p. 25) this focus makes executives with a focus on reliability see the process of innovation as "a rather dangerous diversion from the real work of wringing the last ounce of efficiency out of core business processes". Rhea (2003, p. 145) notes that this 'management attitude' makes the first part of an innovation process, often referred to as 'the fuzzy front end of innovation', seem ill-defined, random and mysterious because: "the impetus for new

products often comes from a wide array of sources, and the way these products gets manifested is not considered predictable". Martin (2009) sees user understanding and visualisation from the design profession as tools that can help executives get a better overview and make sense of the many parameters in this situation. Boland & Collopy (2004) say that leaders should adopt an outright 'design attitude' through which one aims at creating products, services and processes that are both profitable and humanly satisfying. They add that executives who want to learn 'managing as designing' should embrace the design process' open, visual and sketching approach.

Visual thinking

The design process' visual approach is highlighted by several as a means of making sense of situations, and collaborating across disciplines in strategic phases where it is difficult to grasp large amounts of data. As Wurman (2000) points out, data and information do not, as they are often perceived, mean the same thing, and therefore visual processing may contribute to taking material from the first stage to the next. Kumar (2004, p. 6) says that the design profession can offer visual tools to gather input from a broad range of disciplines and create a common understanding: "For better collaboration among innovation team members, 'overview' visualisations that show relations among the parts of the context at a high level are found to be very valuable". Bruns et al. says that designers can make the complex specific and open for discussion through visual thinking:

Designers make problems and ideas visible, creating frameworks to make visual sense of complex information, and quickly sketching ideas to share work-in-progress with others. Making even intangible concepts visual creates a common platform for discussion, avoids misinterpretation and helps build a shared vision. (Bruns et al. 2006, p. 18)

The practitioners who work with these kinds of visual co-creation processes highlight a number of strengths in the approach. Sibbit (2010) is one of the pioneers in the 'visual recording' of meetings, and says that groups are much smarter when they can think in a big-picture format and, through collaboration, create comparison, pattern-finding and idea mapping. Osterwalder & Pigneur (2010, p. 148) say about their work with visual business models: "visually depicting a business model, one turns its tacit assumptions into explicit information. This makes the model tangible and allows for clearer discussions and changes". VanPatter & Jones (2009) whose work creates 'sensemaking workshops' for organisations point out that the more complex and fuzzy problems the organisation are facing, the greater a degree of this kind of interdisciplinary visual sensemaking will be needed before it will be possible to begin a change process.

The visual approach of the design process can also be used for things other than making sense out of data relevant for the strategic decisions of the company. Junginger (2008) and Verganti (2009) both argue that specific radical proposals for changing a company's products in the future can create a better understanding of the situation the organisation is presently in. Junginger describes how visual proposals and prototypes for new products and services are not only something an organisation can use externally with users. Such representations can also play an internal role as so-called intermediate acts showing the current status of the organisation by making suggestions for something that can change it. By making these suggestions specific rather than abstract, the organisation gets a more precisely defined starting point for discussions and decision-making in a transformation process. Verganti talks about a similar approach where designers create 'cultural prototypes' that summarise the essence of their research through a radical suggestion for future products. Such prototypes plant 'memories of the future' in people's minds, and this process opens the organisation to see signs relevant to those developments if and when they occur.

The innovation project

Active User Topologies (AUTO) is an innovation project lead by The Technological Institute (TI), and serves as the framework for the process described in this article. The project aims to help small and medium sized enterprises to increasingly involve the knowledge of their most active users in connection with innovation and transformation processes. This knowledge can give companies an understanding of what value their users actually want, and thus help the company to undertake changes in their business model that thus enable them to provide this product, service or experience.

A permanent staff of anthropologists is affiliated to the AUTO project. At the start of the project they made a comprehensive study of data from about 3000 active users in the Technological Institute's database. This data, built up over a number of years, has led them to produce a topology based on the work by Von Hippel (2006) that describes four distinct active user types: the lead user, the passionate professional, the inventive user and the commentator. These user types have their own characteristics which make them relevant for inclusion at various stages during the innovation process.

The project has five companies linked to it as partners and they will test the topology. The companies work within several disciplines, ranging from manufacturing to service delivery. A common denominator is that all the companies are being forced to transform themselves in relation to external circumstances, such as changes in traffic-related infrastructure (ferry service) or the movement from physical to digital media (printing technology). Though these external factors have made the companies aware of the need to rethink their business models, they are confused about exactly how to proceed, and are trying to find the answers through the AUTO project. It is these five companies that participated in the first 1-day workshop and one of the five companies, inspired from the workshop, participated in the two week project.

The 1-day workshop

Before the 1-day workshop, the students from AAA were divided into groups of two to three, who were subsequently assigned to the individual companies. The following paragraph contains a short presentation of the companies and their challenges:

- *Advice Digital* is a web agency. They are in need of an understanding of where their services begin and end, since they often experience that a change in a company's communication affects the entire organisation.
- *Copenhagen Markets* is a cluster of 140 wholesalers of fruit, vegetables and flowers. They want to find ways whereby they can influence their members' approach to transformation initiatives, thus signalling that innovation is a necessity.
- *Kailow Graphic* is a printing company. They want to find ways to compete on parameters other than price and to adapt to customers' future needs for marketing in relation to the movement from print to web.
- *Scandlines* is a company providing a ferry service across the Øresund. They want to find answers to the question of how they get the passengers to use the ferry facilities during the relative short crossing.
- *The National Gallery of Denmark* is one of Denmark's largest providers of arts and culture. They want to know how to optimise the way they receive new user groups in the entrance hall and implement a clear strategy for the natural integration of digital tools in the museum space.



Figure 1. Students working with representatives from the companies at the workshop, using visual mapping and concept development to make sense of the vast amount of user data.

Programming – Ideation - Concept

The format chosen for the workshop was a condensed version of the traditional design process as taught at the Department for Design at AAA. As mentioned, this process usually consists of the following phases: reconnaissance, research, programming, ideation, concept, detailing, visualisation and presentation. Since the workshop only lasted one day, and the students couldn't do any research besides the user data provide by the AUTO project, emphasis was particularly put on the programming, ideation and concept phases. Therefore, the workshop was divided into three parts: ideation, concept development and final concept. The results of the workshop were to be presented in the format of a poster. The reason for using this format was in order to make the process visual in the manner of traditional design processes.

To make sure that the result from each of the three different phases was recognisable, a blank poster template for each of the phases was developed beforehand. The templates were deliberately made very open with the intention of giving the students and the company the opportunity to come up with different output. The idea was that the templates should serve as milestones and as a structure for each phase, not as a limitation. The open format gave the freedom to work with many different expressions, ranging from hand-drawn scenarios to mood boards with clippings from life-style magazines. This layout ensured the production of one or more posters from each of the phases. In this way the posters could be read and used individually, or as a coherent whole, illustrating the process as a development project.

Presentation

The final posters were quite varied in content and appearance, and the following paragraphs will focus on three of the companies to illustrate the differences. The set of posters for Copenhagen Markets elaborated on the concept of users and their different needs and suggested, in a diagrammatic way, concepts for further investigation into user needs. The company was given an eye-opener and a new perspective on their user groups; something that could open up entire new opportunities. In a questionnaire sent to the companies after the workshop the Copenhagen Markets representative wrote: "The students rethink the company's core values, and they really concentrate on the differentiation of products, product range, service, etc."

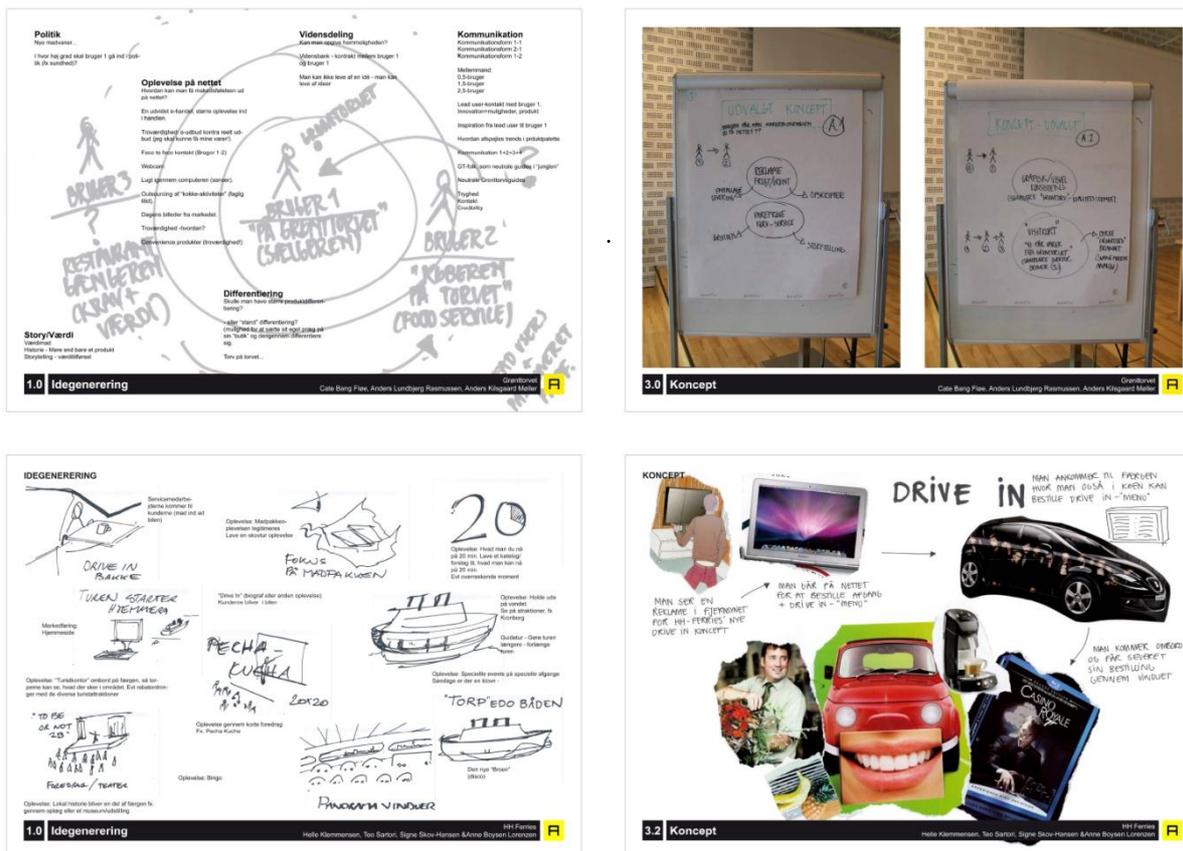


Figure 2. Examples of posters from the workshop. The two top posters show a mapping of the relations between different user groups at Copenhagen Markets as seen in the ideation and final concept phase. The bottom posters describe different concepts for how Scandlines Ferries might offer their users a special experience during the crossing of Øresund.

The Scandlines Ferries case had a set of posters containing the concept of converting the value proposition from “transport” to “experience”. Due to a less complicated dilemma, the posters contained direct suggestions for new experiences to implement on the ferry ride, set within a conceptual framework.

Kailow Graphics wanted the students to come up with practical solutions as quickly as possible during the workshop. Therefore their poster ended up mainly including incremental improvements to existing products, and included no suggestions for new services or user groups. The Kailow Graphics representative gave this feedback through the questionnaire:

We had hoped to get a new approach to the project or a new perspective on the matter, and therefore we were very open to what the students had to offer. However, after a while we had to lead them in the direction we wanted them to go, otherwise they would have spent too much time on unnecessary things (Kailow Graphics).

This feedback from Kailow underlines, in a very distinct and yet simple way, the dilemma Martin (2009) and Boland & Collopy (2004) point out between the “Decision Attitude” and the “Design Attitude”. With a “Decision Attitude” a lot of the design activities may look like “unnecessary things” and designers face the challenge of preparing decision makers for the “Design Attitude” when approaching strategic design processes.

Reflections on the 1-day workshop

In this process of innovating not just new products, but entire new models for the different

companies, we put the open design process and visual tools to the test in dealing with very complex problems. The experience and the results were quite different for the different companies. Most of the companies, such as Advice Digital, Copenhagen Markets, The National Gallery of Denmark & Scandlines accepted the open visual approach and accepted that they should not limit the process by looking for solutions. They embraced the openness in the process and looked for opportunities and had a very positive and rewarding experience, one that was inspiring and where the outcome contained the foundation of new opportunities for the company. Kailow Graphic, the company that looked for a particular solution to a specific problem and thus tried to control the process in this specific direction, expressed frustration and lack of understanding of why the students ‘spend too much time on unnecessary things’ to discover new opportunities. The process stayed in a closed, problem-solving mode and never rose to the level of open innovation, thus blocking the discovery of potential new findings.

The 1-day workshop showed that some of the students found it difficult to act as facilitators of a multidisciplinary process, where they make sense of data and create new solutions together with others. Because the data material was collected in advance by the AUTO project, the students had to use the companies’ representatives as a basis for interpreting it and understand what aspects on which it would be important to focus. This facilitation through dialogue made sense out of both the representative's verbal statements and the user data by making it specific through visual representations. However, it required that the students accepted that the company representative took an active part in this design work and helped ‘shape’ the specification. The students lacked techniques to fully conduct this kind of visual co-creation, especially the ability to speak a language that included the management-oriented company representative actively throughout the entire process, and thereby ensure that all partners felt an ownership towards the process’ conclusions. The experiences at the 1-day workshop correspond to what Bruns et al. say about the designer's potential new role at the strategic level: “The new designing is by its nature collaborative, so at odds with a celebrity-led culture in which people feel the need to assert ownership. The idea of the designer as auteur is under threat” (Bruns et al, 2006, p. 26).

The 2-week project

The 2-week project was a collaboration with The National Gallery of Denmark (SMK). A group of students were allowed to go into depth with the organisation over two weeks, and thus got a chance to go through a research phase as before working with programming, ideation and concept. The 2-week project focused on the same task the students had also been given at the workshop concerning SMK; namely how to optimise the way SMK receives new user groups in the entrance hall, with a clear strategy for the natural integration of digital tools in the museum space.

Research

The research phase was conducted as a study in which the students spent two days at SMK. It involved a threefold division of the study which would uncover different aspects of the current experience for both users and staff. The first part focused on the experience of first-time visitors at the museum; the second part was an observation of the actual behaviour in the entrance hall; and the third part consisted of interviews with users and staff. In the following paragraphs we will focus on the interviews with users and staff, because these contributed the most to the discussions in the later phases.

The interviews with the largest visitor group, women over forty-five, revealed that many didn’t think that new users should be informed in a special way. They found that you had to learn to navigate through, and understand, the museum over time. In contrast, the other three

groups were more critical towards the level of information, and felt that SMK actually alienated new users by lacking promotion of their more accessible facilities, such as the museum's large workshop section for children. Thus, working with the needs of the largest visitor group might lead to an incremental improvement, focusing on how to improve the experience for users who already have an appreciation of the museum and who feel a certain "ownership" of it. However, such an approach would be likely to contribute to the aforementioned alienation of new users, and place undue emphasis on the way that the museum experience is something you need to cultivate yourself to appreciate.

Interviews with employees revealed that internally the organisation disagreed about what kind of experience the entrance hall should provide. Thus, several projects influencing the entrance hall worked simultaneously without strong coordination, with regard to the graphic style, the digital navigation, and the restructuring of the exhibition. There weren't any overall concepts for how the entrance hall could be part of a holistic user experience covering the entire museum. In combination with the different projects fighting for user attention, this confused new visitors and left them with the impression that you needed both patience and experience to navigate through the museum.

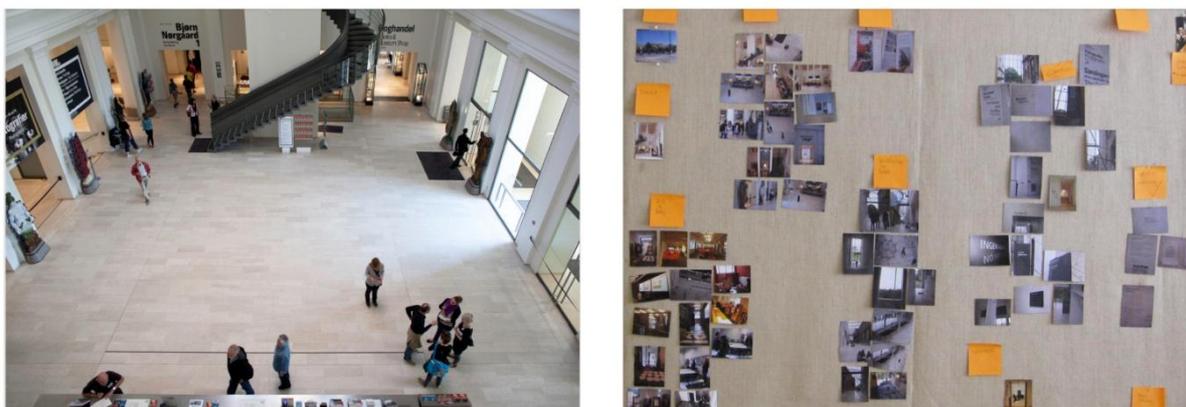


Figure 3. The first picture shows the students conducting the study in the entrance hall. The second picture is an example of the students' mapping of all their collected information divided into categories.

Programming – Ideation - Concept

After conducting the study at SMK the students had a large amount of both written and visual data in relation to the entrance hall. In order to make sense out of this they made a mapping of the data connecting all statements from visitors, staff and the students themselves with a visual representation of the entrance hall. The mapping was divided into three main categories in terms of spatiality, interaction and navigation. The three categories served as a foundation for the ideation and concept phases of the design process, and was the foundation for a catalogue of ideas the students produced as the deliverable for SMK. The catalogue of ideas consisted of a clear visual communication of the main conclusions from the mapping, and three elaborated concepts for change based on each of the selected categories.

In the catalogue, the students suggested that a change of the layout of the entrance hall and the creation of a dedicated information desk at the centre would alter the flow and make it easier for first-time visitors to navigate. The desk could function as a clear reference point for where to start, and would contain interactive screens providing simple information about the museum's exhibitions, rules and facilities. In addition, it was recommended that the museum used its square in front to demonstrate openness and invite people inside through installations highlighting its many offerings. These changes would give SMK a more open expression, and so minimise the impression of the museum being a place you needed to be qualified to get into. A third proposal dealt with a digital navigation system that allowed new visitors to plan

a route through the museum from their home computer or the interactive screens. That way they could get a better overview of what SMK actually had to offer, and simultaneously get expert recommendations from the employees, as well as other users who might be new to the museum experience themselves.

Presentation

The catalogue of ideas served as an introduction to a debate when presented to SMK. From throughout the organisation they invited those employees with the common interest that their field of work had an impact on the entrance hall. Many of the employees had been a part of the study, and thus felt that they had a share in the developed concepts. The presentation form, with a visual delivery of specific solutions, was new to the organisation. They had previously ordered a long series of analytic text-heavy reports from external consultants, which often ended up being shelved without having any impact on the organisation.

The analysis of the first-time visitor's experience of the entrance hall, presented in a form which combined both images and statements, led to both recognition and surprise among the employees. However, it was the specific concepts for change that really got the discussion started. Through the visual proposal the employees got a common reference point to discuss, and they could explore the concepts' impact on their own field of work. Thus, it was suddenly simpler to understand if some aspect of the current structure and organisation actually prevented such a possibility for change. A senior official from the organisation described the presentation as "convincing and thought-provoking" and gave the following evaluation of a visual delivery with specific concepts for change: "It means that the presentation is taken very seriously inside SMK, and has served as an impetus for meetings at the top-level and in other forums."

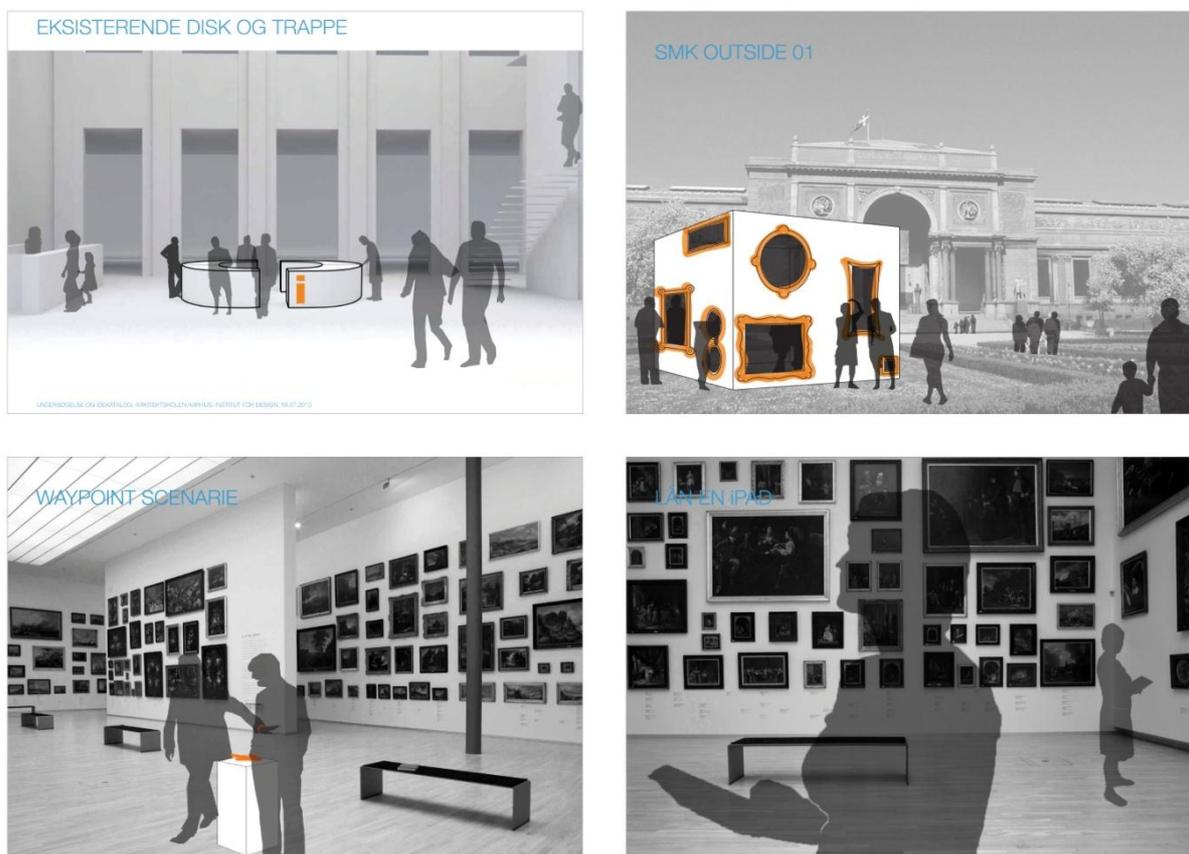


Figure 4. Examples of the students' conceptual proposals. The concepts created specific common references that the entire organisation of the museum could base their discussion upon.

Reflections on the innovation project

The students' concepts helped the organisation realise that they needed a completely new mindset if they really wanted to get in contact with new segments of users. It would be possible to use data from existing regular visitor groups to make an incremental improvement of the current entrance hall, and give these groups a more satisfying experience. However, if SMK really wanted to open a new market for users who were not used to visiting museums and didn't know the rules of the game in this context, more radical improvements were needed, as suggested through the concepts.

Another conclusion was that when the organisation was presented with specific concepts for change, it found it easier to discuss the possibilities and limitations of such transformative initiatives. The AUTO workshop gave each representative from the companies a quick overview of new possibilities through rapidly developed visual representations of data and concepts. However, in the process with SMK, the more thoroughly-developed analysis and visual concepts served as a common reference for a discussion among the entire organisation of the museum.

The students' visual mappings and conceptual suggestions gave SMK's organisation a good picture of their current situation from a user perspective. However, there were many aspects relevant to new strategic decisions the students did not include in their work. This included basic economic aspects and knowledge about how the museum's organisation actually functioned and conducted its work. In the following, Kumar describes the 'Ten Types of Innovations' model developed by Doblin Inc. that addresses some of the extra aspects a designer should be aware of when moving from a product focus to a strategic focus.

This model helps us move from a product innovation focus to a systemic combination of multiple innovation types– business models, networks and alliances, enabling processes, core processes, product performance, product system, service, brand, channel, and user experience. (Kumar, 2009 p. 93-94)

In other words, at the strategic level, a lot of new parameters will be as relevant for the design process as traditional 'favourites', such as a focus on the user and the materials. Further, it is important that designers learn more methods and techniques on how to effectively influence behaviour and thinking in an organisation, if their work at the strategic level is to have some real effect throughout the entire company. Bruns et al, (2006, p. 26) describe this transition towards design as a process of transformation: "Design, has historically focused on the 'giving of form' whether two or three dimensional. Transformation design demands a shaping of behavior – behavior of systems, interactive platforms and people's roles and responsibilities."

Discussion

In relation to the above projects where students were involved in strategic-oriented design processes, several questions are raised. In particular, three issues have been of importance for the subsequent reflections:

- Are there special conditions for 'users' of strategic design (compared to traditional users)?
- Which parts of the strategic processes does it make sense to work with at this student level (informing, designing, implementing)?
- Are there special skills the students (future designers) need to acquire when working with strategic processes?

The term 'user' has a particular complexity in strategic design processes compared to a traditional design process. The subjects for user studies, the entire organisation in form of

both management and employees, and the subject matter, strategy and the organisation itself, have a mutual relationship; a convergence that makes it difficult to separate the two elements. In addition to this, the complexity or the 'messes' that need to be understood (VanPatter, 2009) is much larger, given that it is not only the company's products or value propositions (Osterwalder, 2010) that have to be examined, but also the organisation itself. This means that when the purpose of a strategic design process is an organisational transformation process, you can not only look at the products as Verganti does when he talks about 'design-driven innovation (2009). The users, in this case the company's management and staff, are in this process both "informants" and "implementers". This means that they must inform the process and implement the results in the organisation. The outcome of the process, in the form of a strategy, can only be implemented in the company if there is established ownership in management (and eventually also employees). This ownership can only be achieved through the involvement of management in both the investigation process and in the synthesis. This makes the strategic design process more dependent on the users' (management and employees) input and commitment than is a traditional design process. As Adam Kahane (2007 pp. 83-84) quotes Bill Torbert of Boston College for saying; 'If you're not part of the problem, you can't be part of the solution.'

One of the things design students are particularly good at is working with visions and scenarios. They are especially good at thinking 'out of the box' and unconventionally. This is very useful in developing 'future scenarios', 'scenario planning' (van der Heijden, 1996) or anything that could resemble 'cultural prototypes' in Verganti's definition. In the short processes described in the above cases, there was only a limited amount of factual knowledge that could inform the process. In the SMK case, there was a very short research phase and no users were involved in the subsequent 'design proposal'. This can therefore be considered an external visual input to an internal debate on a strategy, within the organisation, about future relationships with customers. In the AUTO case the synthesis was developed in close dialogue with business managers and the design students were given the freedom to come up with proposals for future scenarios, which were beyond what the company itself could develop. In both cases, several elements of the suggested future scenarios could be developed further and become 'cultural prototypes' with a potential for radical innovation. One could say that both processes 'inform' future strategy development in a very visual way.

If current design education should prepare for educating strategic designers in the future, the traditional design skills must be extended with new skills from various other disciplines. Particularly in the field of strategy, there is a need for new tools, but also within process facilitation and communication the educational programs must be upgraded. The role of future strategic designers will be; to take responsibility for and facilitate change processes in organisations and ensure that they don't 'get stuck' as Adam Kahane (2010) calls it, and therefore never becomes implemented in the organisation. New tools for interdisciplinary participatory processes and for creating common ownership for a transformation process will be core competencies for future strategic designers.

Conclusion

This paper shows how the traditional visual approach to a design process contains several elements that can be used to inform strategic decisions in a company. Visual representations and specific proposals in conceptual form can make large amounts of data more comprehensible by using an iterative loop between analysis and synthesis as a way to frame the real problems at hand. However, designers participating in multidisciplinary strategic processes should be trained more specifically to facilitate creative process in collaboration with other disciplines, and create a common ownership over the process by letting these others do their part of the designing. Furthermore, designers should get a deeper understanding of the eco-

nomical, logistical and organisational aspects affecting strategic decisions; especially how the products the designer creates for the organisation can actually help transform it.

Acknowledgments

We would like to thank the Technological Institute for their involvement in this article, as well as the contributing companies: SMK, Copenhagen Markets, Scandlines, Kailow Graphic and Advice Digital.

Jørgen Rasmussen

Associate Professor
Aarhus School of Architecture, Department for Design
jorgen.rasmussen@aarch.dk

Bo Schiønning Mortensen

PhD Student
Aarhus School of Architecture, Department for Design
bo.schionning@me.com

Birgitte Geert Jensen

Associate Professor
Aarhus School of Architecture, Department for Design
birgitte.geert.jensen@aarch.dk

References

- Boland Jr., R & Collopy, F. (2004). *Managing as Designing*. Stanford: Stanford Business Books.
- Brown, T. (2009). *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*. New York: HarperCollins.
- Bruns, C. et al. (2006). Transformation Design. RED Paper 02, *Design Council*.
- Buchanan, R. (2001). Design research and the new learning. *Design Issues*, 17(4), p. 3-23.
- Esslinger, H. (2009). *A Fine Line: How Design Strategies Are Shaping the Future of Business*. San Francisco: Jossey-Bass.
- Friis, S. (2006). *Conscious Design Practice as a Strategic Tool*. PhD dissertation. Aarhus: Aarhus University.
- Hamel, G. (2002). *Leading the Revolution: How to Thrive in Turbulent Times by Making Innovation a Way of Life*. Moston, M.A: Harvard Business School Press.
- Junginger, S. (2008). Product Development as a Vehicle for Organizational Change, *Design Issues*, 24 (1), p. 26-35.
- Kahane, A. (2007). *Solving tough problems*. San Francisco: Berrett-Koehler Publishers Inc.
- Kahane, A. (2010). *Power and Love – A Theory and Practice of Social Change*. San Francisco: Berrett-Koehler Publishers Inc.
- Kumar, V. (2004). Innovation Planning Toolkit. In *Proceedings of the FutureGround Design Research Society International Conference*. Melbourne: Australia.
- Kumar, V. (2009). A process for practicing design innovation. *Journal of Business Strategy*, 30(2/3), p. 91-100.
- Martin, R. (2009). *The Design of Business: Why Design Thinking is the Next Competitive Advantage*. Boston: Harvard Business School Press.
- Michlewski, K. (2008). Uncovering Design Attitude: Inside the Culture of Designers, *Organization Studies*, 29(3), p. 373-392.
- Osterwalder, A. & Pigneur Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. Hoboken, New Jersey: JohnWiley & Sons.

- Rhea, D. (2005). Bringing Clarity to the “Fuzzy Front End”, A predictable Process for Innovation. In Laurel, B. (Eds.). *Design Research*. Cambridge: The MIT Press.
- Sibbit, D. (2010). *Visual Meetings: How Graphics, Sticky Notes and Idea Mapping Can Transform Group Productivity*. Hoboken, New Jersey: JohnWiley & Sons.
- Van der Heijden, K. (1996). *Scenarios: The Art of Strategic Conversation*: Chichester, England: John Wiley & Sons.
- VanPatter, GK. & Jones, P. (2009). Design 1.0, 2.0, 3.0, 4.0 - The Rise of Visual SenseMaking. *NextD Journal*. Special Issue March 2009.
- Verganti, R. (2009). *Design Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean*. Boston: Harvard Business Press.
- Wurman, R. S. (2000). *Information Anxiety 2*, Que