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Design as a Cultural Venue for Interdisciplinary Collaboration.

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ABSTRACT

Sense Making has become the strategic fuel for meaningful Change Making in organizations today. ¹ When designers enter into and facilitate large interdisciplinary teams it changes the role of the designer from being characterised by aesthetic professionalism to thinking strategically and facilitating processes in a methodical and systematic manner. The user centred framing of designers, their imaginative capabilities and their expressive skills enable them to span complex boundaries within and across multidisciplinary teams.

The aim of the present paper is to outline that designer's methods and visual skills can be the link between mental models and languages that occur in interdisciplinary teams. The designer's methods such as visualization and prototyping as well as their Sensemaking methods² can strengthen a team's chance to imagine future scenarios and their implications. It provides a common ground for discussing and reflecting on choices made. The article describes two different cases in which the visual methods of designers made Sensemaking possible in the organisation.

The methods used are elements within the design process: visual sensemaking, user observations, interviews, sketching, idea generation, conceptualizing, prototyping, visual representation and evaluation.

KEYWORDS

Visual Sense making, Design, Interdisciplinary teams, Design methods, Intuitive strategies

¹ Van Patter, GK, (2009) Design 1.0, 2.0, 3.0, 4.0, The Rise of Visual SenseMaking. NextD Journal, ReReThinking Design

² Weick, K. E. (1995). Sensemaking in organizations., Thousand Oaks, CA: Sage. Karl Weick, suggests that the term means simply "the making of sense" (Weick, 1995, p. 4).

"He who holds the pencil holds the power"

- This is a quote by a renowned Danish architect made during a lecture, which he gave in 2005 at a Danish school of architecture, pertaining to a situation in which an outline proposal had to be negotiated between the architect and the developer³. The meaning of the architect's claim was that he who is in a position to visualize non-existing solutions - in this case the architect – has an advantage compared with someone who has no tools for doing so.

Perhaps he is right. In any case it seems quite clear that today design processes in teams are not carried out according to recipes by means of linear processes, but as in other social situations, as *negotiations* between different parties⁴, and across professional boundaries. Design processes are carried out as power struggles involving hierarchies, rules and intuitive strategies⁵.

The way the team is made up consequently influences the interaction that occurs; the social hierarchies which are created, broken down and re-created; the premises on which work is based; the ideas that are chosen; and, in the end, it also influences the final product⁶.

The complexity of tasks in a post-modern society would seem to include an ever-increasing number of professional groups and competences that have to work together on solving problems. Today it is also no longer exclusively disciplines, which are traditionally understood as being creative⁷ that work with creative processes. Industry and commerce, including pharmaceutical companies, banking and law firms, has focused their attention on creative thinking and to a greater extent attempt to implement, in different ways, creative thinking in product development, problem solving and in developing, changing and managing their enterprises.

In such situations, where people who are not used to generate ideas are forced to cooperate through creative processes - often in multidisciplinary contexts - the design discipline appears to be one discipline, which can offer methods, tools and facilitation for implementing large and complex tasks⁸.

Designers possess professional competencies in the facilitation of creative processes in the form of methods and tools; but they also have experience in navigating the unknown and seem to be socialized into a particular type of behavior that seems appropriate for being creative in a power struggle involving hierarchies, rules and intuitive strategies.

It would seem that designers are socialized into an

understanding of the fragility of creativity - albeit more or less unconsciously. Into an understanding of how little it takes to destroy a good, creative environment. Designers seem to have learned to navigate situations where phenomena continually change and in which what previously had one meaning, suddenly has a different meaning; and also to a certain extent to feel confident in such a world. This seems to be part of the internalized, methodical properties of designers. To think divergently and draw inspiration from anything that might contribute to thinking divergently and to creating ideas, and thus be open to the ideas of others, seems to be a part of design culture⁹.

Almost any problem with a certain complexity requires involvement from more than one professional discipline to be solved. But when professionals from different fields of expertise meet in a problem solving process, there is always a tendency for the process to become a struggle for “power” or social capital³ instead of problem solving. Design, defined as an approach to problem solving⁴, has no subject matter⁵ and is therefore beyond the struggle for power of the disciplines. The designer is therefore free to investigate any complex problem, open mindedly and without prejudice, and look for the real problem instead of jumping to conclusions. As the design process has evolved into Design 3.0 and Design 4.0⁶, Sensemaking⁷ has become a very central part of the design process. The process of creating shared awareness and understanding across different individuals' perspectives has become an important point in the design process.

Problem-solving design skills⁸ can be taught, not just in design education. But in design education, design skills are taught over an extensive period of time of 3 to 5 years. This gives the designer not only knowledge of problem-solving, but also of the “designerly” way of thinking that defines the culture of design. If non-design-educated people are introduced to design tools and methods, it doesn't make them designers. They will still be professionally grounded in the field of experience from where

³ Pierre Bourdieu (1986): *The Forms of Capital in Handbook of Theory and Research for the Sociology of Education*, London, Greenwood Press

⁴ Simon, Herbert (1969). *The Sciences of the Artificial*. Cambridge: MIT Press.)

⁵ Buchanan, Richard: *Wicked problems in Design Thinking*;

Design Issues: Vol. VIII, Number 2 Spring 1992.

⁶ G van Patter, Humantific

⁷ In organization studies, the concept of sensemaking was first used to focus attention on the largely cognitive activity of framing experienced situations as meaningful. (Weick K. 1988, -93,-98, -05)

⁸ Simon, Herbert (1969). *The Sciences of the Artificial*. Cambridge: MIT Press

they originate. It may however give them an understanding of the importance of openness and curiosity. But most of all, design tools can provide a common ground for collaboration across professional cultures. By providing a neutral (not biased by a special interest in any particular professional field) and visually oriented platform for collaboration, design becomes a mediator that keeps the process focused on the task at hand, thus preventing the process from being consumed by political and ideological power struggles.

Most organizations are divided into different departments with different tasks and functions. Each department develops a certain degree of specialization. When a group of professionals from the same field are working together, they naturally form a culture or a language that has a tendency to exclude other professionals from different professions. This creates vertical departments, which become a barrier for horizontal, cross-disciplinary collaboration and problem solving.

Case 1: Tulip Food Company



Tulip Food Company started two case studies in the spring of 2010. Their aim was to sharpen the organisation's focus on the need for easier opening packaging. Tulip Food Company, wanted to improve the user-friendliness of their products. The motivation for initiating the development process was the massive demand from consumers and various interest groups for easy packaging - especially from the elderly and people with arthritis. Design researchers from the research project "User-friendly Packaging"⁹ were a part of the development process in the company. The first step towards better packaging was to establish a consensus in the organization regarding the need for easier opening packaging. This process was started with a workshop with participation from all departments of the company in knowledge-sharing and practical activities.

Research

Before the workshop took place, design researchers conducted video ethnographic studies with people where Tulip's packaging was investigated and compared with similar package types.

⁹ *The research project "User-friendly Packaging" is based on how understanding consumer behaviour, perception and physical forces can be used to improve packaging. www.userfriendlypackaging.com*

Bannon (1991)¹⁰ points out that there is a need to see people as actors in situations, to seek new ways of understanding the relationship between people and products. In this research project we looked at the human factors such as strength and power needed to open the packaging. Additionally, we looked at users as actors, studied how and why they open the packaging as they do, in order to understand the context of the meaning that the users ascribe to the product or service and to focus on possible gaps between what is said and what is done. The design researchers used participant observations, semi-structured interviews and context observations (site tours) to study how various user groups perceive various types of packaging.¹¹ The ethnographic field research was presented to the interdisciplinary group to enable them to understand the everyday activities and values of the people who use and buy Tulip Food Company's products

Sensemaking

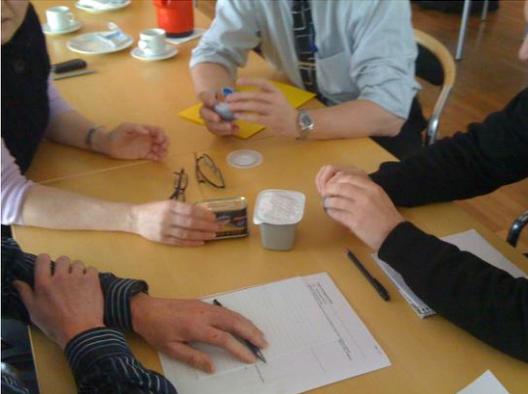
By way of starting the workshop the design researchers presented the participants with a practical assignment. The aim was to understand user groups by simulating reduced visual capability, manual dexterity and use of force.¹² The exercise helps to improve empathy with those who have reduced dexterity, and to understand how dexterity loss can affect the ability to interact with a product.

¹⁰ Bannon, L (1991) "From Human Factors to Human Actors" in Greenbaum, J. & Kyng, Design at work. Co-operative Design of Computer Systems. Hillsdale: Lawrence Erlbaum Associates, pp. 25-44.

¹¹ Guest, G et al_ (2013), Collecting Qualitative Data, A Field Manual for Applied Research, SAGE Publications, Inc

¹²

1. Glasses with the wrong strength (decreased vision). The exercise demonstrates that vision is not always perfect.
2. Tape on the hand and fingers (decreased movement) the exercise simulates how users with arthritis, Parkinson's disease or multiple sclerosis not only find it hard to freely move their hands but that the use of force can be painful to them.
3. Skin cream applied to fingers (decreased strength). This attempts to simulate how users with reduced strength in their fingers have difficulty gripping various packages.



Ideation and design

Normally the Tulip development team communicate verbally, but for this stage we used visual and physical representations. These methods were combined with design competences, such as sketching, visualization, scenarios and prototyping, in order to share knowledge and understand the user's needs. Low-fidelity prototyping served as a concept proposed for constructive review and feedback for iterative changes. Since the design process is strongly influenced by feedback and dialogue, the communicative function of sketches is also of great importance in daily design practice.¹³

Conclusion

One activity in particular, video observation, was very effective in establishing an understanding of the situation of disabled users. It is possible to transform ethnographic observations into insights for design that can be directly applied. Although team members were not evenly skilled at generating visual representations and at communicating through visual representations, visualisation and prototyping techniques had a significant impact in the process of understanding vast amounts of information, and in making decisions on which factors it would be relevant to focus further on. Visual representations and specific proposals in concept form can make data more comprehensible, and may thereby inform further discussions in the organization about the possibilities for change.

Being truly interdisciplinary is rarely easy, as it is all about fuzzy boundaries and being in between established categories¹⁴. Being able to create multidisciplinary groups that are able to work together results in different points of view, which help you obtain different solutions. We found that when everybody in the team is active and open during the process and use designer skills such as prototyping and visualization, it enhances innovation and a common understanding of a problem in the organization

¹³ Schütze, M., Sachse, P., Römer,(2003) A. Support Value of Sketching in the Design Process. *Research in Engineering Design*, 14, 89-97.

¹⁴ Nissani, M (1997) "Ten Cheers for Interdisciplinary: The case for Interdisciplinary Knowledge and Research". *Social Science Journal*, 34, 201-216

Case 2: TAP training

The TAP training project was aimed at giving the Technical and Administrative Personnel at the Aarhus School of Architecture a shared understanding of the organization as such, and a common ground for collaboration. The TAP group is a very versatile group. The different skills and jobs of the 25 employees were distributed between a variety of functions: accountants, IT personnel, secretaries, librarians, student counselors and workshop personnel.



To establish a common ground for the project, a “project-group” was formed, with representatives from almost all of the different fields of work. This group was given the first challenge, to find a common ground for the project, which could motivate every individual in this versatile group. It had to be something on a more general and maybe abstract level, not too specific. The uniting purpose which was chosen was: “To help educate the best possible new architects and designers”, despite the fact that many from the TAP group had nothing to do directly with the students. All agreed that that the purpose of the school was to educate architects and designers.

The overall goals for the project were manifold. It should be a learning process and it should provide the group with:

- Common goals
- Better knowledge of the organization
- New tools for collaborating on problem solving processes
- A forum for communicating
- Motivation for development



A strong and versatile platform was needed to facilitate the change needed in the group, and to fulfill the defined goals.

Service Design as a platform

In many ways an educational institution like the Aarhus School of Architecture can be compared to a service organization.

Therefore it was decided that Service Design would be the most appropriate theoretical and operational platform for this process.

This was also in line with the TAP group’s own understanding of their common purpose: to service the students of the school.

the Experience Map¹⁷. An Experience Map can be described as an advanced Customer Journey with a focus on *thinking, feeling* and *experiencing* the journey, not only *doing* the actual Touch Points.

Ideation and design

After having made the visual maps in the previous process and after the interviews with users, the group's were ready to identify relevant problems to work with. Brainstorming techniques were introduced and used later in the early stages of the design process when good solutions were to be found. The groups were also introduced to visual tools like storyboard and sketching techniques for illustrating ideas and concepts.



Conclusion

It was easy to see how communication and understanding between the different members of the groups improved during the process. There was a general openness from everyone to use their own skills and competences in the process and a fundamental respect for other fields of expertise.

This came from the fact that the different professionals were not deprived their professional culture or status, but the design process became a unifying language, through which they could combine the different skills and functions for finding a common solution to the given problem. Also the fact that the design-driven Sensemaking process resulted in a common understanding of the organization was a unifying factor that gave energy and openness to the project.

Overall conclusion

The methods of designers, such as visualization and prototyping, as well as their Sensemaking methods can improve a team's chances of imagining future scenarios and their implications. It provides a common ground for discussing and reflecting on choices made.

¹⁷ <http://www.adaptivepath.com/ideas/the-anatomy-of-an-experience-map/>

REFERENCES

Bannon, L (1991) "From Human Factors to Human Actors" in Greenbaum, J. & Kyng, Design at work. Co-operative Design of Computer Systems. Hillsdale: Lawrence Erlbaum Associates

Bourdieu, P. and L.J.D. Wacquant (1996/1992) Refleksiv sociologi – mål og midler København, Denmark, Hans Reitzels Forlag

Buchanan, Richard: Wicked Problems in Design Thinking; Design Issues: Vol. VIII, Number 2 spring 1992.

De Bono, (1987/1967) Lateral Thinking. Copenhagen Valby, Borgens Forlag

Esmark, A., C.B. Lausten og N. Å. Andersen m. fl (2005) Socialkonstruktivistiske analysestrategier, Gylling, Roskilde Universitetsforlag

Guest, G et al (2013), Collecting Qualitative Data, A Field Manual for Applied Research, SAGE Publications, Inc

Goffman (2004/ 1964) Social samhandling og mikrosociologi, Gylling, Hans Reitzels Forlag

Nissani, M (1997) "Ten Cheers for Interdisciplinary: The case for Interdisciplinary Knowledge and Research". Social Science Journal, 34

Schütze, M., Sachse, P., Römer, (2003) A. Support Value of Sketching in the Design Process. Research in Engineering Design, 14, 89-97.

Simon, Herbert (1969). The Sciences of the Artificial. Cambridge: MIT Press.

Thackara, J (2006), In the Bubble: Designing in a Complex World, The MIT Press

Van Patter, GK, (2009) Design 1.0, 2.0, 3.0, 4.0, The Rise of Visual SenseMaking. NextD Journal, Rethinking Design

Volf, M. (2011) Når nogen ler, Aarhus, Denmark, Arkitektskolen Aarhus

Volf, M., (2009) Design – proces og metode, Aarhus, Denmark, Systime A/S

Warfel, T, Z (2009) Prototyping: A practitioner's guide. Brooklyn,

N.Y: Rosenfeld Media

Weick, K. E. (1995). *Sensemaking in Organizations*. Thousand Oaks, CA: Sage.

<http://www.adaptivepath.com/ideas/the-anatomy-of-an-experience-map/>