

Metaphors, a shared language in design process

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Abstract: In design process metaphors can work as a shared design language creating a common ground for reference and participation. In this paper we explain through a case example how metaphors can be used throughout a user centered design process.

The study has been conducted as a part of a university merger project where design, business and engineering schools are joining to become a cross-disciplinary university. Our aim was to define what kind of study planning services students would need in the new more versatile academic environment.

We arranged a series of co-design workshops where metaphors were used to trigger visions for new concept ideas. Metaphorical approach included several beneficial aspects. First, metaphors created an *intuitive design language*. Second, they helped to *transfer ideas* between the workshops. Third, the metaphors helped the design team to *change the point of view*. Fourth, they enabled in creating an *inspiring atmosphere*.

Key words: *Metaphors, Co-design, Design language, User centered design.*

1. Background

We are living in a world, where people have changed more than the organizations and services which were originally made to help them [10]. This is creating a gulf between the users and the systems. Due to the constantly reformulating society many organizations today are facing remarkable changes in responding to various stakeholders' different points of views. In the middle of these processes are always the individual end-users, the employees and the customers of companies or public services, systems and products. To achieve successful, functional and satisfying results from the transformation, the organizations have to put the individual into the heart of the process [2]. Therefore the key of the future success of these organizational changes depends on how well the individuals' needs and expectations have been taken into account during the process.

It's impossible to introduce new service solutions without stakeholders' willingness to change. The transformation teams should be able to motivate all the stakeholders to see beyond their current ways of doing things. The atmosphere and attitude should be encouraging for everyone to step out of the existing work models

and adopt new perspectives rather than just building on the existing routines. It is not enough to innovate within the old institutions. Instead, to fix organizations' increasingly complex problems, the industries and institutions should completely reinvent themselves [11].

In Finland the laws of governing university activities are changing (the parliamentary process is ongoing while editing this document), and there will be a full merger of three nationally leading academic institutions combining three disciplines in a unique way. The Helsinki School of Economics, the University of Art and Design Helsinki and the Helsinki University of Technology will merge to become, a multidisciplinary and innovative institution for higher education, the Aalto University [13].

Matti Alahuhta, the head of the Aalto University board, has emphasized that it is important to understand the old, existing culture when implementing change. That is why it is so vital to listen to personnel and students and get their wishes, hopes, dreams and expectations to be heard. [15] Politicians and decision makers recognize this trend and try to find new ways to reconnect the individuals to the institutions, but according to many are simply too distant from the real people with real problems [2].

At the same time the role of design practice is in transformation and designers seek new ways to practice their discipline. As Elizabeth Sanders puts it, we are no longer simply designing products for users. We are designing for the future experiences of people, communities and cultures who now are connected and informed in ways that were unimaginable even ten years ago [9]. Design is not anymore just problem solving, design-brief driven discipline. It is the facilitator and the language that allows multidisciplinary teams to develop new solutions on how people interact with organizations and services. It uses the design process as a means to enable a wide range of disciplines and stakeholders to collaborate [2].

Collaboration in user driven and cross-disciplinary transformation processes require the development of new shared concepts and meanings. The existing vocabulary is limited to known connotations, and sometimes the designers' typical visual presentation tools are not enough to enable the interaction. Linking new ideas to existing meaning structures with metaphors becomes a feasible alternative.

1.1 Metaphors

Metaphors are the fundamental concepts, terms, and images by which and through which information is easily recognized, understood, and remembered [5]. Metaphors are everywhere. They structure our everyday experiences and build the foundation for our understanding of the world. When we make sense of our experiences we constantly understand one kind of thing in terms of another kind of thing. [7] Properly used, metaphor can be a powerful tool for designers, in both the process of designing and within the products themselves. Metaphors can help redefine and solve design problems and they can be used as a research tool to understand new subject areas or as a way to generate new ideas about familiar subjects. They can help to sell a product both to internal stakeholders and teammates as well as to consumers. Metaphors can also provide clues to users how to understand products: to orient and personify. [8] Designed inappropriately, however, metaphors can promote misunderstanding and alienation on the part of users and impede their performance [6].

In every process there is a way that the design is expressed in order to communicate and explore it. A language that enables stakeholders to express themselves and imagine a possible new upcoming situation as a result of the design process.[1] Metaphors help people to think and, in some ways, may constrain what they can think about, much like language in general [6]. Awareness of metaphors can assist researchers and developers in achieving more effective ways to communicate to more diverse user communities [5]. Because metaphors depend for their effect on insights based on shared background knowledge, their audience must first be capable to identify the connection being posited, and second to make the correct attribute linkages between the different domains.[3]

Metaphors have been used and studied in the context of user-interface design and interaction design. However metaphors are important to all kinds of design. The use of metaphors support the thinking of something that does not exist yet. [1] One of the challenges of design is the difficulty to work in unfamiliar subject areas. Almost any metaphor, even an arbitrary one, can trigger new ways of thinking about a product or new solutions to a design problem. Metaphors can also be used in a deliberate manner, as a tool for designers during a design process. Designers can consciously create arbitrary juxtapositions which can be a fruitful way of brainstorming and embrace the metaphor use. [8]

2. Research question

In this paper we discuss how metaphors can be used to design services. More specifically we discuss 1) how metaphors work as a language between the designer and the user in workshop situations and 2) what kind of effects they have on the design process.

We strive to answer this question by studying our case example in which metaphors were used in different co-design workshop tasks and in presenting the final concept idea for further developing. Our objective was to understand and further develop how university students would find and choose courses, link the courses with their personal study plans, enter into the courses and experience and evaluate the courses.

3. Method

Co-design is a family of approaches that enables designers and people not trained in design to work together in a development process. It gives tools for non-designers to express themselves creatively. It can be difficult for people to believe that they are creative and to behave accordingly [9]. It is essential to create the right kind of atmosphere for the creative session and make sure participating a workshop is motivating for all the stakeholders. For example, students must believe that their opinions and experiences matter and can have an impact in the development of new university services.

When using co-design approach, there has to be a shared language between all the stakeholders to think about the design as well as to present and discuss ideas. Co-design metaphors and scenarios are elements of a design language that meet these requirements. By using metaphors it is possible for the participants to express themselves and to visualize the forthcoming situations [1].

Co-design approach was chosen to this study because of the need to understand both the students' and the staff's experiences with the current course services and to map their expectations and visions of the new environment and services. Co-design approach enabled us to gather rich and focused material about the users in a short period of time.

4. Study planning service case

Our study was conducted as a part of a university merger project where three academic institutions in Finland are joining to become a one cross-disciplinary University. The merger of the Helsinki School of Economics, the University of Art and Design Helsinki and the Helsinki University of Technology is assumed to have a major impact on Finnish industry, economy and culture. Aalto University will start in January 2010 and aims at an internationally recognized leading position in terms of research and education in its focus areas by 2020 [14].

Aalto University is planned by the Transformation Organization with the support of the Aalto University Foundation Board. One of the planning targets is to convert the traditional, hierarchical, top-down university administration model into a service-centered approach. The head of university service development has emphasized that the team wants to turn the administrative attitude upside down and change it entirely to a people-centered service mind set. The goal is to create a student-centered culture that encourages people to learn and continuously broaden their perspectives [12]. In the traditional administration model there has not been much room for an individual's choice. The curricula have been rigid leaving students with little responsibility and freedom to plan their own studies. In designing a new student-centered service culture, it is important that there are ways to get the students' voice to be better heard. Their needs, wishes and expectations towards the new learning environment and culture are the key factors and main issues when developing the new University.

The aim of this study was linked to the work of University service development transformation team and focused on defining what kind of course-services students would need in the future. Our objective was to understand and further develop how students would find and choose courses, link the courses with their personal study plans, and enter, experience and evaluate the courses. The work was executed through a series of co-design workshops in all three Universities.

4.1 The Participants

The people who were invited to the workshops were mostly students who all ready had experience in studying in all three Universities. We recruited nine graduate students, four from Helsinki University of Technology, three from University of Art and Design Helsinki and two from Helsinki School of Economics to participate our workshops. Seven of them had experience in different multidisciplinary minor studies. Eric von Hippel describes lead users to be ahead of the majority and gaining especially high benefits for the novelties. The innovations that are made by the lead users have high potential of becoming an important market trend [4]. In our case, the participants already had experienced the kind of educational versatility that the majority of the future Aalto students are expected to face.

Co-design approach was chosen to include various stakeholders and their points of views. We mainly concentrated on the students' way of experiencing the services, but also wanted to hear the staffs' point of view to get a more objective perspective. Therefore four student counselors and amanuensis were included due to their experience on student services and working directly with students.

4.2 The process

We arranged three different co-design sessions, one in each University. In the workshops the participants completed three tasks; collage building task, mapping task and visioning task. In the first, *collage building*, task we gave the participants picture material and a readymade base which had two circles in it. To the inner circle the participants were asked to build a collage which illustrated their visions of a student in Aalto University. To the outer circle they build a collage of Aalto as a learning environment. They were asked to vision both dreams and nightmares. The second task was about *mapping the course path*. We wanted to see what kind of services the students used in different phases around, before, during and after a course. The staff members were asked to build the map as they thought the students' process went on. After that we asked the participants to point out problem areas from the path, and to identify critical moments that they thought needed improvements. In the third task the participants were asked to *vision the future* of the course services and in general to think how the course path could be improved.

The main goal of our workshops was to generate ideas that could help us design a future course service concept for Aalto University. After the first workshop we noticed how difficult it was for the participants to vision real, concrete improvements to the current circumstances. They rather tended to talk about the present situation. Simple brainstorming wasn't clearly enough to trigger new ideas.

The idea of using metaphors as the main theme of the whole project appeared when we identified the need for a shared design language after the first workshops. In the collage building task all the participants had worked with the pictures fluently and used them as metaphors to explain their dreams, nightmares and general images of the Aalto University. For example, they used a Swiss army-knife to illustrate how the future Aalto student has to be multitasking, or a picture of oil mixed into water to demonstrate the new learning environment. The message was that all students are alike and all disciplines work together, but they don't blend with each other. Because of using collage technique, the data got strong metaphorical tone. Most of the ideas that came up in the first workshop were quite general, and we wanted to get deeper and work further with those ideas we saw potential in. As we analyzed the data we soon noticed that the metaphors gave us a lot of delightful and playful inspiration and how it was easy to pick up interesting design drivers for further ideation and development. This also encouraged us to use metaphorical approach in visioning the future course services.

First we used metaphors in the visioning task as verbal triggers to inspire the brainstorming. Later on we created visual cards out of the same triggers. These trigger cards helped the participants in the last workshop to generate more comprehensive concepts and to breed new ideas from the previous ones. Some of the cards pictured for example interfaces from existing Internet services, such as on-line apartment purchase or movie rating net site. Other cards had more abstract pictures such as magical forest or a picture of eggs in the nest. These were all

metaphors that were discovered during the process. On one hand, giving the participants pictures on existing Internet services made it easy for them to focus on concrete ideas. On the other hand, the more abstract cards helped to keep the mind open for more innovative ways to explain the solutions. Some of the triggers were combinations of several metaphors the participants had brought up during the process. For instance, we used a picture of well known TV-host to symbolize a warm, open and welcoming mother-figure, who gives the students face to face tutoring and counseling services.

Working with visual material stimulated the creation of a more colorful image of the participants' feelings of the Aalto University and the results became more constructive. In the third workshop the participants found interesting connections between different trigger cards and were able to create more realistic concept ideas. For example, a picture of eggs in a nest developed into resemble the idea, that when you study, it is like putting eggs in the nest. Later on we used the same metaphor as a trigger card and it developed to stand for the idea of skills that the student achieves during his/her studies. Ultimately a basket full of eggs- referring to the students' skills became one of the features we used in the final concept. The basket became a tool that the students could use to plan their studies and to follow their progress.

It was natural to continue developing the concepts working with the same metaphors. For the final concept phase the ideas were divided into virtual and physical services. To make sure that in the finalized presentation all the ideas would have equal value we wanted to combine all the virtual services under a unifying metaphorical theme, which in this case was the Magic forest. The Magic forest metaphor reflected our idea of an inspiring virtual surrounding, where the student could plan and modify his/her own studies in an unseen way. The Magic forest metaphor resembles a visually exciting, appealing and playful environment that invites to interact. Even the word magic alone gives a student services an image that wouldn't normally be connected to a University or any student service solutions. The forest metaphor represents green and fresh atmosphere, a vast but safe (in Finnish culture forest is considered a safe environment) place which welcomes to discover the parts that are not immediately visible.

The Magic Forest metaphor created a apparent coherence to the service offering. Our concept allocated the students more responsibility and control in designing their studies. The service idea was to provide the student with tools and freedom to create his/her own studies. This way all the students could have their own unique combination of skills which could lead to new more competitive and innovating education. We also hoped the Magic forest metaphor would make a memorable impression and inspire the transformation teams that continue working with the students services.

5. Conclusions

The benefits of adopting a metaphorical approach included facilitating collaboration and fostering creativity. We used metaphors mainly in three different ways during the process: as a language in the co-design workshops, when brainstorming between the co-design sessions and the final concept, and when presenting the finalized ideas. In the co-design workshops, the metaphorical approach worked as an intuitive language between the participants and the design team which decreased the need for a separate orientation phase to the topic. They also

helped to transfer ideas between the workshops for further development by the next teams of participants. With the support of the metaphors we could quickly get into managing the topics and use the time with the participants as effectively as possible. The playful nature of the metaphors helped in creating a relaxed and inspiring atmosphere, which decreased unnecessary pressure on the participating people. The metaphors also worked as a tool for the design team itself to change the point of view and perceive the complicated design objective from several alternative angles.

The metaphors were born spontaneously during the process in several different ways. When including visual material to co-design process, analogies between the material and the subject easily emerged. This worked as a fast way for the participants to study their relationships to the subject. Emerged metaphors also made it easy for them to communicate their thoughts and feelings behind the intangible subject, which for example happened in our workshops *collage building* task. In addition to the benefits for the participants, the initial visual metaphors gave the team inspirational and conversation building tools out of which more elaborated metaphors could be constructed and taken for further development.

It seems that the conversation in the workshops, when it was let to spring up freely, tended to stick in the present situation and its problems. The critical conversation can be turned into a more constructive and creative one with the visual metaphors. This enables the participants to create new approaches to the subject instead of only using their previous conceptual frameworks. In the best case completely new undiscovered associations emerged.

Another challenge we faced was the vagueness and elusiveness of the participants' ideas. Again metaphors proved useful. Asking people to make their ideas more concrete was obviously more of a turn-off than encouragement. Using already existing examples, e.g. working in internet services such as online apartment purchase service, does not necessarily, or even likely, bring any shocking new ideas, but it essentially gave a model of the desirable level of concreteness that the participant could grasp. The more concrete, subject related metaphors were also easier for the participants to include in the future idea generation. This bridged the gap to more abstract and ambiguous metaphors so that these would not appear too intimidating to the participants.

The metaphors appeared from participants' brainstorming and were selected, further developed and introduced to the next phases by the designers. We chose to work on a variety of different metaphors on different levels of abstraction without any comprehensive analyses. Some of the metaphors, used as trigger cards in later co-design sessions, worked as total turn-offs. Characteristic for these were the high level of abstraction. Even though the chosen metaphors were results of combining ideas from the previous workshops, it seemed that the idea did not always transmit to the following participants.

In design processes the use of metaphors is not a new phenomenon. When using creative design methods, metaphors usually emerge spontaneously. In our study, recognizing and conceptualizing the spontaneously generated metaphors was essentially important. Because different kinds of metaphors distinctly work in different ways, it would have been dramatically more efficient to understand the different forms and levels of them. It is important to the designer to conceptualize the metaphor so it can be better recognized, used and studied. During

our process we have noticed a need for a tool that can help categorizing and understanding different levels of metaphors. As mentioned above abstract metaphors can work in generating new ideas, but may alone work as turn-offs' for the participants.

6. Discussion

Through the case we can see that the metaphors have a significant role when intuitive language for bridging the angles of different stakeholders is needed. In our case all the participants had comparatively similar background. They were all familiar with the situation and were involved in the topic of the study. From our experience we can say that the metaphors worked as intuitive language when different stakeholders are brought together. Based on our case the results cannot be generalized to more heterogeneous groups.

In the future it would be interesting to see if design processes could benefit from tools based on the use of metaphors and if metaphors could offer profitable point of view for design processes. Also it would be interesting to research more the aspect of spontaneity in the context of conceptual design tools.

The results of this project were presented to Aalto University transformation organization teams. The feedback was promising regarding the results inspiring and thought awakening. They saw the benefits of co-design approach in organizational transformation process and how it was efficient and in mapping and designing services. In fact, they were convinced that this kind of work should be done more in Aalto preparations process.

Aalto University's mission is to become one of the world's leading institutions in research and education and to build an environment that supports individual-centered service culture. We sincerely hope our example did convince the organization to invest in co-design research projects in the future.

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