

A CASE STUDY

IMPLEMENTING A DESIGN PROCESS AMONG NON-DESIGNERS

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Abstract

This paper discusses the phenomenon of non-designers using design methods and processes from the perspectives of design theories (Arnheim 1969, Norman, Mattelmäki et al 2006, Muller 2001), organizational sense-making (Weick 1995, 1998; Dervin 2002, Mitleton-Kelly 2003, Aaltonen 2007) and playfulness (Vygotsky 1962, Huizinga 1944, 1984, Hänninen 2003).

The objectives of our study are three-fold. First, our conceptual objective is to introduce a design method for non-designers called “Haptic Conceptualizing”¹. Our empirical objective is to describe how three multi-discipline teams used the method to create three digital-media visions for a municipality in Finland. Digital media was chosen for the context of the future vision and for the design task of the experiment. On a theoretical level, our task is to discuss Haptic Conceptualizing from the point of view of playing and sense-making.

We have applied Haptic Conceptualization in a Community Vision Project jointly with three multi-discipline teams as a part of the Creative Leadership Education Program at the Pori University Consortium in Finland.

We used an exploratory case-study method, collected the data during a workshop in which a Finnish community was used as the context for designing new digital media concepts. Our empirical material consisted of still images, observation notes, video clips from the artifacts e.g. crafted models and expert comments concerning the haptic innovation process.

All three teams used the method and met the objectives but there was variation regarding the balance between playfulness and sense-making in terms of time-span and context-dependence.

We foresee that social innovation methods and new design models will become important tools for the business communities as well as a contested terrain for the academic research in the coming years and decades.

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Key words: design methods, non-designers, playfulness, sense-making, multi-discipline team innovation.

1 Introduction

Globalization and demographic developments resulting in a decreasing population bring challenges to our societies. We need to nurture our innovation competence and workforce in the network economy. These are some of the factors motivating our Creative Leadership multi-discipline research group, later called the CL group. The CL group is engaged in a cooperation project between two Finnish Universities, Turku School of Economics and the University of Art and Design Helsinki. The CL group produces new innovation methods and investigates the impact of current Finnish national innovation strategy in the Western part of Finland and the Satakunta Region.

This paper discusses the phenomenon of non-designers using design methods and processes from the perspectives of design theories (Arnheim 1969, Norman, Mattelmäki et al 2006, Muller 2001), organizational sense-making (Weick 1995, Mitleton-Kelly 2003, Aaltonen 2007) and playfulness (Vygotsky 1962, Huizinga 1944, 1984, Hänninen 2003).

In our exploratory case study we describe how three non-designer multi-discipline teams applied a new design process in their effort to carry out visionary organizational tasks. For this purpose we developed a special co-design practice called Haptic Conceptualizing, which is a combination of user-centered design methods, namely probing and envisioning.

The objectives of our study are three-fold. First, our conceptual objective is to introduce the Haptic Conceptualizing design method for non-designers. Our empirical objective is to describe how three multi-discipline teams used the method to create three digital-media visions for a municipality in Finland. Digital media was chosen for the context of the future vision and the design task of the experiment. On the theoretical level, our task is to discuss Haptic Conceptualizing from the point of view of playing and sense-making.

The Finnish national innovation strategy and the related implementation policy have been widely acknowledged in the 2000's as being one of the most effective in the EU Region. Despite the good international rankings, however, the strategy is undergoing a substantial renewal process in 2008. The Ministry of Employment and the Economy (MEE) states:

“In Finland’s future strategy, expertise and innovations play an increasingly important role. The task of the national innovation strategy is to create preconditions for a broad-based innovation policy in the Finnish society, to ensure international competitiveness for our innovation environment, and to promote the creation and introduction of innovations.” (MEE, 2008)

The strategy process utilizes an open-source model:

“The preparation of the strategy is based to a significant extent on the views of citizens, enterprises and the actors in the innovation system. The views are gathered through consultation, which is open to everyone, and in targeted expert workshops.”
(MEE 2008)

Our ongoing national innovation-strategy process illustrates “The Finnish Way” of working together. Finland is regarded as a very homogeneous society measured by power distance and collectivism (Hofstede 2001, Bernardi 2006). This gives us the chance to co-create without having the disadvantages of a rank-and-file culture. It has been argued that Finland is one of the most likely countries in which new forms of collaborative networks could be established (Miles, Miles & Snow 2006).

In the following chapters, we describe the design methods for non-designers followed by a chapter dealing with the concepts of playfulness, sense-making and decision-making in multi-

discipline teams. Next, we describe our case and the results of our experiment with Haptic Conceptualization. In the last chapter, we discuss our findings and make some suggestions for future research.

2 Design methods for non-designers

2.1 The role of design in society, from product design to social agent

During the last few decades design practices have been applied in other domains of society for several reasons. The idea of the product has changed, for example. Products are not merely physical objects, but are also experiences, functions and services. The design can be addressed to the action, as is the case with intangible interactive products and services.

Secondly, new areas of design have emerged. Environmental design concerns models of thought and human systems. These systems are bodies of integrated knowledge and physical objects: living, playing, and working environments. (Mattelmäki 2006) Design problems are more complex than ever. Given the furious competition in the global marketplace, products need to be carefully targeted at specific user groups, and it is necessary to take a holistic approach to understanding the relationship between the user and the product. In addition, new evolving technologies make new products and services possible. Traditional user studies do not provide information about user behavior in the new circumstances, and new user-centered methods have therefore been developed. (Battarbee 2006)

Today's problems are far too complex for any individual to solve alone. Creativity is not an individual characteristic or an innate talent: it is an application of knowledge and skills in new ways to achieve a valued goal. It is the capacity to focus attention on the pursuit of a goal or a set of goals. (Mattelmäki 2006)

Numerous team-work methods based on knowledge sharing have been developed, but they are mainly focused on verbal communication. The multi-discipline teams do not necessarily have a common language, and may utilize different discourse modes and vocabulary. The different personalities and levels of social skills also have an impact on team competence.

The core of our method is the design task, but the ultimate goal may be something other than a product. The role of design in society has changed. It has an impact on different industrial levels: product design, concept design and strategic design. New areas of design expertise, concerning user experience and social and cultural expertise have emerged. Countries heading towards a knowledge economy, like Finland, have developed both a design policy and a design strategy in recent years. Design is thus considered an essential player in the knowledge economy (Valtonen 2007), and its role is gradually spreading into organizational practices. The object in that context changes from developing new products to developing and facilitating new services and processes. Design can be a valuable asset in dealing with social change. (Mattelmäki et al 2006)

2.2 Why develop design methods for non-designers – Haptic Conceptualizing

Visual thinking is not limited to designers and artists. Artists, architects and product designers think with their senses, and seeing and thinking are inextricably linked during the creation of their product. However, visual thinking is not a separate kind of thinking limited to practitioners of certain graphic professions: it also plays a role in important scientific discoveries. (Muller 2001)

Some theorists claim that all thinking is essentially sensory. Nevertheless, there is widespread unemployment of the senses in every field of academic study. This cripples the training of reasoning power. A visually thinking mind does not mechanically record images and regurgitate them repetitively. The perception is intelligent, and arts strengthen the perceptual component of thinking. (Arnheim 1969)

Haptic Conceptualizing is inspired by the development of recent design-research methods in which inspiration, joy, imagination, the senses, feelings, and play have an important role. The key word in user-centered design is empathy. Haptic Conceptualizing derives its inspiration from co-design and probe methods.

The design process and the personal study paths to becoming a designer or artist are rooted in affective elements, feelings, and ethical and aesthetic reflection. A designer interprets the world, acts, and acquires skills through the use of real-world materials and techniques. The designer builds mental tools, cognitive models to foster the conceptualization of different processes. This might become very complex, since the product to be designed may in itself be a process of activities - a computer program, a course of education, dramatic or other presentation on stage or on TV. Designedly knowing consists of the following levels: knowing by experience, knowing how to do, "know-how", and conceptual, theoretical knowing, and the designer moves freely among all these layers during the design process. (Routio 1995)

Donald Norman proposed a framework for analyzing products in a holistic way: their attractiveness, behavior, and the image they present to the user are all included. People identify the different aspects of the products on different levels of processing, the visceral, the behavioral, and the reflective translate into three different kinds of design. Visceral design refers primarily to the initial impact of the product, to its appearance, while behavioral design is about how it looks and feels –the total experience of using it. Finally, reflection is about one's thoughts afterwards, how it makes one feel, the image it projects, and the message it gives to others about the owner's taste. (Norman 2004)

We believe that design skills can be helpful in any problem solving when skill requirements are properly balanced among the team members. We have no intention of turning non-designers into skillful designers, but merely wish to support them in their own team roles.

Co-design refers to a process in which designers and users work together. In Haptic Conceptualizing we give the designer role to non-designers. The professional designer supports the team throughout the process and provides the briefing and the material kit. The design task

thus triggers creative thinking. Haptic Conceptualizing can be used to envision possible solutions, to gather user needs, and to define challenges. The motivation for developing such an activity is to encourage a multi-discipline team to work effectively and with enjoyment.

The role of the self is very important in teamwork. People perceive themselves in different ways, but some aspects seem to be universal, including the desire to be well thought of by others. This desire holds both in the most individualistic societies, which admire deviance, and in the most group-oriented societies, which admire conformance. (Norman 2004) Haptic Conceptualizing provides many equally effective approaches to work and to fulfilling this desire, thereby strengthening the team spirit.

The method was thus named because of the haptic materials that are important components of the process. These materials are designed to stimulate the senses, and the kit includes shapes, colors, and different raw materials including plastic, ceramics, and textiles. The method is based on the psychology of creativity and theories of art education, especially those that link the senses to thinking. Haptic Conceptualizing is an effort to develop means that allow experts other than designers to use their full competence as human beings.

Modern companies consider working a life-long learning process and they heavily support the further training of their personnel. Creativity is highly valued, and so is knowledge about the environments that encourage it. (Bentley and Seltzer 1999) Creativity, with individuals as well as in communities, has been the subject of scientific research since the 1950s, yet, very little progress has been made in terms of managing it. In any case, certain things clearly help in maintaining a creative atmosphere: trusting relationships among people, learning from failure, and a willingness to take risks. The creative application of knowledge also requires that people are able to make real choices over what they do, and how they do it. A certain amount of freedom of action is needed, and the right balance between skills and challenge is also necessary. This

balance is a precondition for experience to flow. Creativity emerges in a dynamic knowledge environment in which ideas, feedback and evaluation are constantly exchanged, and where the learners, the workers, can draw on diverse sources of information and expertise. Creative ability and motivation are reinforced by the experience of making an impact –achieving concrete real-world outcomes. (Bentley, Seltzer 1999)

3 Playfulness, sense-making and decision-making

Our theoretical objective is to discuss the relationship between playfulness and sense-making during the haptic team innovation process. Our working hypothesis is that co-design for non-

designers is a creative, effective process when both playfulness and sense-making co-exist, and if there is a balance between them.

We recognize creativity when we observe it. It is close to play. Children are considered creative. However, they are playful rather, since creativity requires usefulness, otherwise it is mere imagination. Human beings remain playful throughout their lives. Playfulness is necessary to keep the brain active. If our sensual activation is eliminated, we start hallucinating. The human brain makes sense and we cannot turn off our “meaning processor”. Affective elements are vital parts of the sense-making, and our rationalizing is based on these rather than on logic. Innovations do not happen in a logical analytical process - we need chaos or constraints as a trigger. Creative persons discover new problems and constantly push the boundaries of an activity or field. The progressive problem-solver recognizes the ongoing challenges that activities present, and welcomes them as learning opportunities.

It seems that playful elements, small toys, colorful materials, and the richness of materials help teams to dive into conceptualizing very effectively. Objects evoke memories. The object functions as a symbol, a source of association and memory. (Norman 2004)

Mika Aaltonen claims that in view of rapidly increasing global non-linear competitive developments, sense-making is becoming more critical to organizational success than decision-making (2007, xxiii).

There are different ontological and epistemological assumptions concerning playing, decision-making and sense-making. Traditionally, decision-making has been treated as a rational, linear problem-solving process in which the challenge is to choose the best alternative from many, whereas sense-making is mainly about how we extract evidence from the ongoing flow of events and how we attach these evidences to our mental model, schemata or frames of reference. (Weick

1995, Aaltonen 2007) In both, however, the role of action is vital. Decision-making takes place prior to action, ex ante, whereas sense-making takes place ex post facto.

Playfulness, on the other hand, is also related to action. A child plays with artifacts in order to take action. Through play, the child is able to separate objects and meanings, and hence to enter the world of abstract thinking. For children, the “stick as a horse” game is “the imaginary, illusory realization of unrealizable desires” (Vygotsky 1978). Hence, children`s play leads to imagination in action. For an adult, the imaginary process is reversed: one plays without (a need for) action. Now, playing is fiction and sense-making is “real”. In terms of design, the challenge is to combine playfulness and fiction, in this case, with sense-making.

We argue that under certain circumstances, sense-making and playfulness are vital components of the innovative process, or even determinants of a successful, non-linear innovation. These circumstances are characterized by spontaneity, bricolage and collective effort - improvisation, for example. Digital media is very complex as a phenomenon. During the design process designers reflect on their experience and perceptions of the world through improvisation. A complex and multi-layered iteration process helps in building up a conceptual, holistic understanding of the task at hand. The basic process consists of three layers: knowledge, process and outcomes: knowledge is generated and accumulated through action.

4 Case-description and the context

The aim of our case-study was to find out ways of dealing with complex problems in multi-discipline teams. Our joint theme was “*The digital domain and the new paradigm of citizenship,*

production and consumption". This was considered to be long and wide enough to make the future visions as futuristic as possible.

We wanted to test what could be achieved during the haptic team process when affective elements, the senses, an abundance of input information, and playful activities are combined.

In Pomarkku, where the workshop took place, is a community with an exceptionally beautiful cultural landscape. The participants observed the place during a short walk, met the local entrepreneurs, and received input from them and from the community leader. We intentionally wanted the participants to get emotionally involved with the place.

The abundance of information and the complex challenges of the learning task produced feelings of chaos. Four entrepreneurs from different fields provided the students with their challenges concerning the future of their own business as well as their home community of Pomarkku. Innovation is based on chaos. It can not be achieved by logic-analytic process. The consensus gives piece of mind but is not the booster for change or development. (Ståhle 1999)

4.1 Workshop participants

The workshop was part of a creative-leadership pilot course for professionals. Ten students belonging to the pilot group took part. All of them were adults, media & culture production professionals, and mainly project managers. Part of the course attendants consisted of local entrepreneurs.

The first person we needed to convince of the importance of our project was the Pomarkku community leader. We emphasized that the emphasis in the workshop is on developing channels of local influence. One of the strategic goals of the Pori University Consortium is to foster local

influence, therefore we are developing the means to achieve it. In the cooperation we aimed at a win-win-situation between the community, society, business and education. Students worked in groups of five or six, so that there were enough different competencies in each one. They already had the trust and their group identity, since they had met several times previously. The local entrepreneurs knew each other and were suggested by the community leader. We should mention that entrepreneurs running small and medium-sized companies are difficult to motivate to take part in this kind of academic experiment. We could not promise them anything very obviously relevant. On the other hand, universities are appreciated in Finland, and people are willing to help in general, which has something to do with the openness of the society. We as researchers tutored the process. Professor Slavko Milekic, a media researcher from Philadelphia, gave expert feedback to the students.

4.2 The group design task

The teams were firstly asked to make a scenario for a network of at least three members from Pomarkku, one of which was the community. The scenario could be in the form of a story-board or a mind map, or any other motivated and suitable form, preferably with some visual elements. They were then asked to make from the materials provided a model of a product or service innovation that would be functioning within 10 years. No text was allowed, but the concept had to be built from the materials. The digital domain - in the media, the community, and the technology - had to be a vital part of the design in terms of both production and consumption/ participation. The teams were required to back up their ideas with strong arguments. They could assume that all the necessary technology was available, and it had to be motivated. The participants had to be open to technology, and their work role was the innovator. We also encouraged the teams to use the competences of all their members.

5 Methodology

Haptic Conceptualizing is inspired by co-design in general, and by the probe method in particular.

Probing was developed during the 90's in order to gather user data for novel product or service

development. The method has also been applied recently in change management. (Mattelmäki et al 2006) The purposes of probing closely resemble those of haptic design: to provide inspiration, to create the interaction within the users (team members), to build up and to support empathic discussion in the team, and to encourage ideating and dreaming.

The data was gathered during an intensive two-day workshop in which the Pomarkku community was used as the context for designing digital media concepts. It consists of still images, observation notes, video clips from the artifacts, e.g. crafted models, and expert comments concerning them. We also gathered feedback by means of a questionnaire. Later on we presented the results to the community in a group think-tank in which we progressed from triggers to visions in a playful process.

Still images and video clips were analyzed by using the conceptual framework created in the theoretical part. The main concepts were playfulness and sense-making which were, in turn, divided into time-span and context-dependence. The models and their interpretations made by the three team members were grouped in accordance with the classification rules created above. (Ghuri & Gronhaug 2002,137-145; Eskola & Suoranta 1998, 138-209; Mäkelä 1998, 48-59)

We compared the visual material with the group presentations and looked for pattern matching that emerged during the analysis. We compared our individual interpretations and summarized our findings to a joint interpretation. Our conceptual analysis frame assisted us in building-up a coherent picture of the material at hand. For us the analysis part was interesting and we did it without any reliance on any other source of data besides what we had in the documentation.

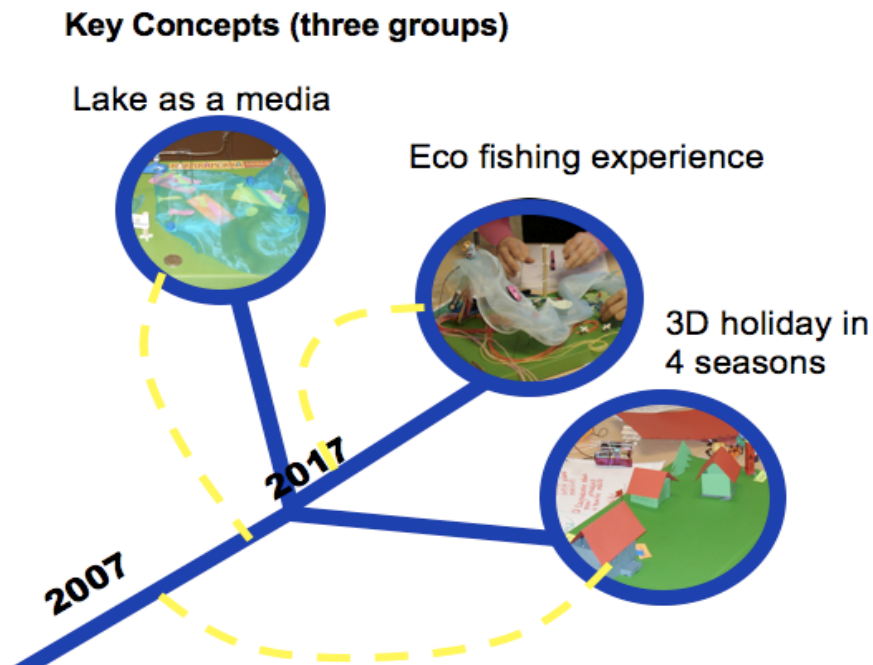
However, we have to be careful with the interpretation and, especially, with our synthesis and level of aggregate. This is an exploratory case-study and the limitations regarding the validity of results are obvious. This relatively modest empirical experiment calls for much thorough research

attention in the future.

6 Results

In general, we compared the results of the three teams on the following criteria: knowledge, process and results, and in particular: playfulness and sense-making which we in turn divided into two measurable concepts, namely time span and context-dependence.

Our main finding is that playfulness and improvisation during a (haptic) concept development process seems to diminish or fade away the problem of sense-making during a complex group decision-making process (Vygotsky 1962, Weick 1995, 1998, Aaltonen 2007). However, regarding the balance between playfulness and sense-making, the team results varied considerably.



Picture 1 Three Visions as Key Concepts

6.1 Some general observations

The iterative process among the team members went back and forth from level to level: knowledge, process and the outcome. No pattern could be identified. Different materials and artifacts triggered different people's thinking. Co-design and individual creative working co-existed. No one in the team took the leading role. The process seemed very democratic. This was a surprise, since people came from different levels of organizations; some were in the leading

positions. But they worked in distinct companies and were course mates. The participants chose and used the kit materials according to their own liking. The teams worked freely, intuitively and imaginatively.



Picture 2. Some raw materials

The difference between the professional designers and test team is, that the work went on both in the details and the overall idea simultaneously without any pre-planning. Also the team members felt free to enhance change and move the components somebody else had made and placed. The group effort overcame the traditional respect of individual's creative work. One group had difficulties to get started playing the raw materials. We tutors encouraged them to stop writing and start playing. Writing is logic analytic, requires interpretation and makes the process less intuitive. This group made the most conventional solutions, but it is too early to make any further statements about the potential reasons.

It is obvious, that Haptic Conceptualizing helped tremendously to get the team spirit up and the team members ideating. The concepts produced were wild, but they all had potential for further development. And they provided directions for the development of the community. In practice the

creative artifacts produced during the creative work session helped the participants to navigate through the design process. They helped thinking out of the box.

6.2 "Lake as media"

This concept was the most futuristic. It consists of ubiquitous computing, novel projection technologies like underwater screens, video goggles with fishing instructions on them, illuminated boats that measure the catch. Their experience was the main design driver. The team knew a lot about artificial lakes etc. The concept manifests control over the nature, although it had natural fishing with real eatable fish as well, even the cooking precepts. The concept turned a real lake into a game-like, unnatural environment. The team did not think of ecology or harsh weather conditions. The team took truly futuristic and techno-believing attitude. The output was a model of a spot, a lake, that is equipped with complex technical solutions, that allow learning how to fish on the spot. The solutions were challenging in Finland due to cold weather and darkness, but could offer the visitors or attendants some potential "shelter".

Lake as media group presented the most future-oriented and context-free model. It presented Pomarkku as a very advanced, internationally renowned Digital Media Centre that was to be a place for state-of-the-art research and development, e-tourism, virtual fishing and joint virtual safaris. The time span was extended way beyond 2020.



Picture 3 Lake as media

6.3 "Eco Fishing"

The team recognized one homogeneous user group and the potential of the nature, the river and the lake for them. The team was familiar with the near future technologies e.g. smart clothing and Fishing tourism. The concept was based on the international community of fishing tourists that want to Pomarkku to plan their trips and share their memories, perhaps take part in also on line fishing competitions. The knowledge sharing happened via so-called smart jacket that only functions on the actual spot and through internet services. The concept created affective bonds among the members of the fishing community.

Eco Fishing team worked on the material with enthusiasm and their model was placed next to the Lake as media team regarding time span and context. The vision was innovative and new but the practical solutions derived from the model were more close to the present time.



Picture 4 Eco Fishing

6.4 3D Holiday in 4 Seasons

The concept was based on the needs of traditional holiday makers and the practical needs to extend the season and to attract new visitors. The concept was very straight forward and it applied the existing technologies. The wild nature was considered as a place for relaxation and entertainment, which is typical for the Finnish or the Scandinavian. The concept consisted of the traditional Finnish holiday activities, fishing, sauna, games and hiking. But these all were facilitated with very sophisticated information system with special services to families with children. The entire holiday resort existed as 3D model that the users or visitors could modify in the internet. Also, the model followed four seasons as the nature does. The innovation technology was easy to be maintained by the hostess. The system was a database that knew and remembered the regular holiday makers and their habits.

3 D Holiday in 4 Seasons team was most down-to-earth and context-dependent of the three teams. Some of the suggestions were so practical that one could implement them the very next day, especially the virtual home page and “visitors’ foot steps.



Picture 5 3D in 4 Seasons

7 Conclusions: Implications for theory development and practice

We call our method “Haptic Conceptualizing” because the use of different materials - paper, metal, fabric, plastic, and ceramics - is essential. The materials for the bricolage were provided to the participants as in the probe method, too, but instead of concentrating on the user’s feelings and life or usage situation, they dealt with the challenges faced by the Pomarkku community, and digital media in particular.

We aimed at thinking out of the box, which means extending views towards multi-modality, using all of the senses, developing a sense of place and time, and fostering awareness of the affective and intuitive elements of the design process. We also looked for forms of communication that allow design insights to be transported from one domain to another. The ideas were developed in a “quick and dirty way ” as a group assignment. This meant that nobody was the “owner of the idea” - or rather everybody owned it.

We provided the participants with an abundance of information and a very demanding challenge to be solved in a very short period of time. The input consisted of a lecture on media production practices, focusing especially on the concept design and media communities, and giving examples from the social media, also, input from the community leader and local entrepreneurs and reading material about techno-trends. Furthermore, the simplicity of the design helped all the participants to contribute to the process regardless of the level of their design skills.

Consensus provides a balance and peace of mind, but it does not help innovation. Creativity requires chaos, and innovation is based on an abundance of information. Abundance and heterogeneity of information, in turn, can be purposefully used to enhance chaos, which expands

in line with the difficulties in the definitions and the fuzziness of the process: these cannot be anticipated. Conflicts are “chaotic powers” if dealt with openness. (Csikszentmihalyi 2005)

The team members had very different levels of knowledge and experience in this context. By introducing bricolage, process was made democratic, e.g. the materials only required basic hobby-type craft skills, and no special design skills. In order to create some distance from the real problems, the time line was stretched to 10 years in the future. This helped the participants to free themselves of the current problems. We gave them the roles of techno-believers and dig media consultants, and provided some techno-trend reading material. The briefing concerning the actual artifacts was quite free: it could be 2-D or 3-D, and of any form and size.

Playfulness and improvisation seem to reduce the impact of sense-making as a driving force for innovation during complex group decision-making process. The three groups used different combinations of playfulness and sense making, which could be observed in the final outcome in terms of time span and contemporary versus futurism.

One of the more powerful ways of inducing a positive sense of self is by fostering a personal sense of accomplishment. This is one aspect of having a hobby: people can create things that are uniquely theirs, and through hobby clubs and groups share their achievements. (Normann 2004)

When we evaluated the video material it seemed obvious that the haptic method created a positive atmosphere and provided a lot of opportunities for developing a sense of personal accomplishment. Haptic Concepting seemed to allow the participants intuitively and simultaneously to apply all the levels of processing to enhance their task. For example some of the ready-made objects triggered visceral thinking, which is instinctive and unreasoning rather than

intellectual. Small, brightly colored toys seemed to trigger playfulness and to encourage unconventional solutions (ref. Lake as a medium & the fairy-tale castle).

Csikszentmihályi's concept of flow provides a good example of "psychic energy". In the flow state you become so engrossed and captured by the activity being performed that it is as if you and the activity were one. It is a motivating, captivating, addictive state. (Norman 2004) Having analyzed the results of our workshop and related them to the time spent, we can claim that Haptic Conceptualizing seems to facilitate the sense of flow. The feedback from some of the participants did strengthen this interpretation. However, we have to be conscious about the bias that we as developers do the analysis as well. But we have kept this in mind throughout the whole research process.

8 Suggestions for further research

Design methods for non-designers offer a wide range of research objectives and tasks. We think that it is possible to investigate affective processes, inner motivation and develop several different type material kits and apply this kind of segmentation approach to design.

In addition, there is plenty of room for different kind of leadership studies from the point of view of multi-discipline and multi-cultural teams. In the project organizations, there is also need for cross-cultural process models of innovation and fuzzy-front projects. In addition, it would be interesting to apply our results in the context of team-building.

We foresee that social innovation methods and new design models will become important tools for the business communities as well as contested terrain for the academic research in the coming years and decades.

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