Inspiration Card Workshops

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ABSTRACT
In this paper we start from the position that sources of inspiration play an important role in the design process albeit in a frequently intangible way. We present the *Inspiration Card Workshop* as a collaborative method for combining findings from domain studies, represented in *Domain Cards*, with sources of inspiration from applications of technology, represented in *Technology Cards*, to create new concepts for design. We report our findings from three projects in which we have used the method and argue that the use of Inspiration Cards can successfully frame and guide workshops with disparate participants and bring various sources of inspiration into the design process. We furthermore compare the method to four related methods in the design process, namely Future Workshops, Metaphorical Design, Interaction Relabelling and Lateral Thinking.

Keywords
Design, workshop, inspiration, innovation.

ACM Classification Keywords
H5.2. Information interfaces and presentation (e.g., HCI): User-centered design.

INTRODUCTION
Ehn [12] identified the balance between tradition and transcendence as one of the most important dilemmas in design. On the one hand, when we design, we have to take current qualifications, work organization, and work activities as points of departure ; on the other hand we also want to design something which is innovative, and which can support new activities, or support current activities in new and better ways.

A variety of design techniques and approaches which address the *tradition-aspect* are at our disposal, including ethnographic field studies [3], interview [23], use of video [5], etc. Moreover, a vast collection of techniques address the transcendence-aspect, but are (as the term transcendence suggests) rooted in the existing tradition or work practices, including the use of scenarios [8], mock-ups [13] and prototyping [7]. Additionally, there are a number of design techniques that specifically support innovation, for example Future Workshops [18], use of metaphors [22], and interaction relabelling [10].

In this article we zero in on what we consider to be two of the important elements in innovative processes: 1) design materials, in our case, index cards; 2) sources of inspiration.

The paper is organized as follows. First, we briefly review related work, and use this as a platform for introducing the specific format that we are proposing: *The Inspiration Card Workshop*. In the following sections we introduce and analyze our use of the Inspiration Card Workshop in three design cases we recently conducted. In the next section we compare our approach to four other approaches to innovation in design.

BACKGROUND
According to Schön [27,28], design is a reflective interaction (or in his terminology "conversation") with materials, wherein the designer works with different media or materials, experimenting with various aspects of the design. In the case of information systems, a diverse set of design materials is being used, including video, paper documents, mock-ups, prototypes and posters. Moreover, small paper documents are commonly used as an integrated part of various design techniques. One category of small paper documents is the Post-it®, for instance used when making affinity diagrams [2].

A different kind of small paper documents are cards with pictures or text representing other kinds of design materials. In one instance of this category, Buur and Søndergaard [6] have been using what they call 'video cards', with still images of video segments, and space for annotations, to be used as part of collaborative video analysis. In their approach, Buur and Søndergaard found inspiration in the work of Tuder, Muller & Dayton [29], who have used cards to turn ideas into tangible objects. The video card game is a precursor for the use of cards in a similar way, as part of a design workshop where virtual video prototypes have been used [1].

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Brandt and Messerter [4] have been using various kinds of cards in four different types of workshops. In addition to using cards to make video clips tangible, they have made cards with single words (so called 'sign-cards'), which constitute a conceptual framework for the activities of the design process. In a technology game they have used LEGO-Duplo bricks with generic functions - such as 'transfer documents' - written on them, taking advantage of their tangibility, and the ease with which the bricks connect to one another. From the use of such tangible objects as components of design games, Brandt and Messerter [4] have made the observation that game pieces, including the various kinds of cards, 'support different stakeholders in making design moves on a conceptual level' [ibid p. 129], and that such design artifacts have become an intrinsic part of the dialogue, argumentation, and means of expressing design moves. Additionally, it seems evident that the objects at hand help focus the design activities .

Additionally, according to Schön [27], rather than looking for standard solutions, the designer sees the situation as something already present in his/her repertoire of paradigm cases or prototypes , despite which he/she manages to make something new by making experimental moves, which may result in something which goes beyond his/her initial expectations. One of the renowned examples from Schön's [26] work is the story of how a group of product developers invented a new kind of paint brush, by thinking of the paint brush as a pump. In the area of information systems design, Madsen [22] has explored how metaphors may shed new light on the way in which information technology might be used by seeing a domain of applications as something different, e.g. seeing a library as a meeting place. In a later study based on three cases in which digital artists and designers worked together, Lervig and Madsen [21] addressed the way in which design materials serve both as examples pinpointing specific attributes, and as sources of inspiration that serve as jumping-off points for work in a design project. Sanders [25] has argued that inspiration plays a prominent role in experience design and points out what she sees as a clash between an information oriented approach and an inspiration oriented approach.

One particular source of inspiration (in a meta sense) for the ideas presented in this article is the Tech Box, as reported by T. Kelley [19] in his book about innovation and creative processes at IDEO. The Tech Box [ibid. p. 144f] is a centrally located file cabinet filled with gadgets and materials, such as tiny switches, Aerogel, Kevlar, rubber balls that don't bounce, super heat conducting copper heat pipes, and the like. People look into the Tech Box for inspiration, then use it for launching new projects, and for selecting items to bring to design meetings to spark innovation, etc. Conversely, people contribute their objects, which become part of the Tech Box [ibid 144ff]. An essential concept relevant to successful innovation processes is the concept of cross-pollination which is, in essence, the idea of bringing together hitherto unrelated elements.

Consciously looking for inspiration is part of the innovation strategy discussed by Kelly [19 p 280]: "Take a trip to Akihabara, the blinking electronic hub of Tokyo" or "Looking for the future of athletics apparel? Head to the beach. Venice Beach, that is." J. Foster [15] is even more radical, suggesting, in his book on generating ideas, that you do things to which you are unaccustomed, for instance: "Study Latin", "Read a magazine that you've never heard of"[ibid. p 72], "Take up water-colour painting" [ibid. 72], etc. The point is not to do all these, but to do something different [ibid p. 73].

An essential point made by Foster [15 p69] is that if generating new ideas primarily consists of combining old elements, a thorough familiarity with old elements is essential.

CONCEPT: INSPIRATION CARDS

An Inspiration Card is a 2" by 3" cardboard card on which an image, a title, a description, and a reference is printed. The card also has an empty box for comments.

We work with two broad categories of inspiraration cards, *Technology Cards* and *Domain Cards*.

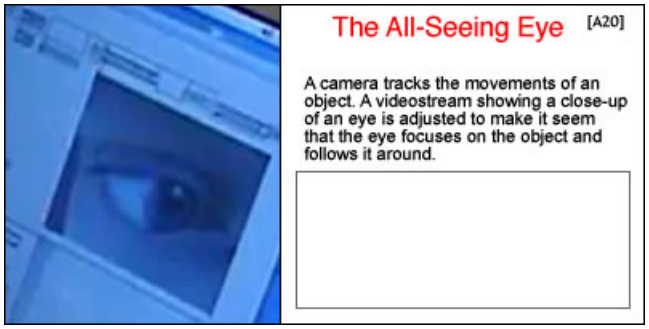

Figure 1: A Technology Card

A Technology Card represents either a specific technology (i.e. Motion Capture) or an application of one or more technologies (i.e. The I/O Brush [24]). For Inspiration Cards to be comprehensible, the content needs to succinctly exemplify one clear concept. As an example, the card in Figure 1 is a Technology Card representing a specific application of a technology (in this case, one of our experiments with camera tracking combined with a video stream). It has a title for easy reference ("The All-Seeing Eye") followed by a short description. It also contains a reference to further information on the technology described. Technology Cards are typically created by designers. They may be related to a specific design project, but they can often be reused in various other projects.

We use Technology Cards as a standard format for storing information on interesting technologies that we have encountered, whether they are of our own design, or that of other designers. We have thus created a repository of Technology Cards for ongoing use in our design projects. Technology Cards can often be reused in other projects and the ones we produced are created from a pool of resources available at http://www.digitalexperience.dk.

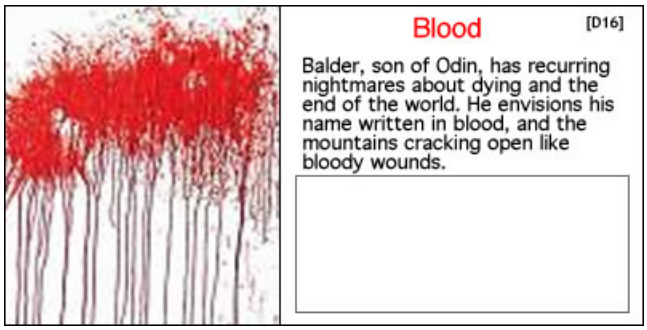

Figure 2: A Domain Card

Domain Cards represent information on the domains for which we design. This information may pertain to situations, people, settings, themes etc. from the domain. As is the case with Technology Cards, these work best if the concept represented is unequivocal. Figure 2 is an example of a Domain Card from a project on designing interactive exhibits related to Norse mythology. The card represents "Blood", a recurring trope in this domain.

The Domain Cards can be created both by designers, usually as a condensation of field studies and research, and by domain experts who participate in the design process. Domain Cards are typically only meaningful within the specific project for which they were created, and reuse is limited.

We work with just two categories of cards due to considerations of simplicity, since the Technology and Domain Cards represent the two main areas that converge in the design process. Designers seeking to appropriate this method may wish create further categories and subsets, eg. the domain cards could be divided into People Cards, Situation Cards etc.

The Inspiration Cards can be used in a number of ways: as a standard for collecting and consistently representing sources of inspiration, as a way to gain an overview of various concepts, as means of communication between designers and domain experts, etc. In the following section, we expand on a particular application of the cards, namely *the Inspiration Card Workshop*.

METHOD: INSPIRATION CARD WORKSHOPS

In an Inspiration Card Workshop, participants create design concepts by combining Technology and domain Cards. This design method is primarily used in the early stages of a design process, during which designers and their collaborators narrow down potential future designs. The method is loosely structured, informal, and has a simple set of rules.

Participants

The method is participatory, and usually involves designers as well as participants with knowledge of the design domain. The participants may be users or stakeholders from the domain, or have certain areas of expertise otherwise related to the domain. The method has proved most fruitful with 4-6 participants. In cases involving more participants, the preparation and presentation stages of the workshop can be conducted in common, with the participants splitting into groups for the combination and co-creation stages.

Preparation

The preparation for the workshop primarily lies in selecting and generating the Inspiration Cards. Technology Cards, primarily generated by the designers, represent technologies that may directly or indirectly be part of the design concepts. The Domain Cards may be generated by the designers based on studies of the domain, however it often makes for more involving workshops and rewarding outcomes if the participants take part in creating them. There should be multiple copies of each card, as well as a number of blank cards to be filled out at the discretion of participants. At a later point, we expand on a number of issues to consider when selecting Technology and Domain Cards.

Presentation of Inspiration Cards

The workshop commences with a presentation of the Technology and Domain Cards selected. Each card is presented in turn, often with the help of images or video clips, to ensure a shared understanding. In general, this takes 1-3 minutes per card. Designers usually present the Technology Cards and the domain participants the Domain Cards.

Combination and co-creation

The main phase of the workshop consists of the participants collaboratively combining the cards on posters, in order to capture design concepts. This phase is often initiated by a discussion in which the participants establish a shared understanding of the cards. There are no set rules for turn-taking, and cards may be combined in the way the participants deem productive. Participants can start by selecting themes or situations from the domain that they wish to support, or transform and then select Technology Cards as a means to this end. Although a rarer occurence, they may also take intriguing technologies as their starting points, then look for situations to which they may be applied.

Any number of cards may be combined to create a design concept. The cards are affixed to poster-sized pieces of cardboard. Participants are encouraged to write descriptions and brief scenarios on the posters, for further detail.

Figure 3: Combination and co-creation

The main point of the Inspiration Cards is to inspire this creative process, and as such, the cards may be used both directly (i.e. "This specific technology may alleviate that specific problem in the domain") and indirectly (i.e. "This application of technology embodies a style that we wish to reproduce in the domain"). To better support creativity, criticisms of design concepts are better left for later stages . Interruptions and complementary ideas are welcome in this phase, and the resulting concepts are seldom the work of a single creator, but rather a collective effort.

Presentation of posters and design concepts

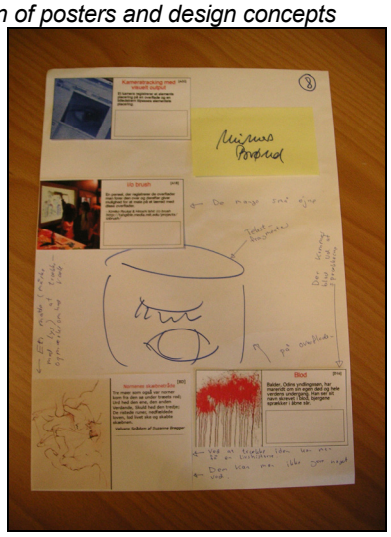

Figure 4: A poster with cards combined to generate and capture a design concept.

After the combination and co-creation phase, the participants take a short break to step back and reflect on the resulting design concepts. In the case of a single group of participants, each poster is discussed *in plenum*. In the case of several groups concurrently combining and creating posters, each group presents its design concepts. The object of this phase is to ensure a common understanding of the concepts, rather than to evaluate them in terms of whether they are appropriate or realistic.

Inspiration Cards in the design process

The main benefit of conducting Inspiration Card Workshops is the generation of new design concepts based on domain and technology studies. The workshop sessions described in this paper were carried out in the early stages of the design process after initial field studies, but prior to mock-up sessions, prototyping and development of final products. The over-all process for the three cases is illustrated in Figure 5:

The findings from the domain and related technology studies form the input for the Inspiration Cards in a condensed form. In turn, the outcome from the Inspiration Card Workshops provides concepts that are further explored in mock-ups sessions, virtual video prototypes [1] and prototypes, before some are eventually realized as final products.

In the cases we set out in this paper, two of the projects are currently in their final stages, and in both cases, design concepts that were the resultof the Inspiration Card Workshops are being developed as final products. Figure 5 contains images of the highlighted steps in the design process of the Gumlink case, from the initial domain and technology studies to the final product.

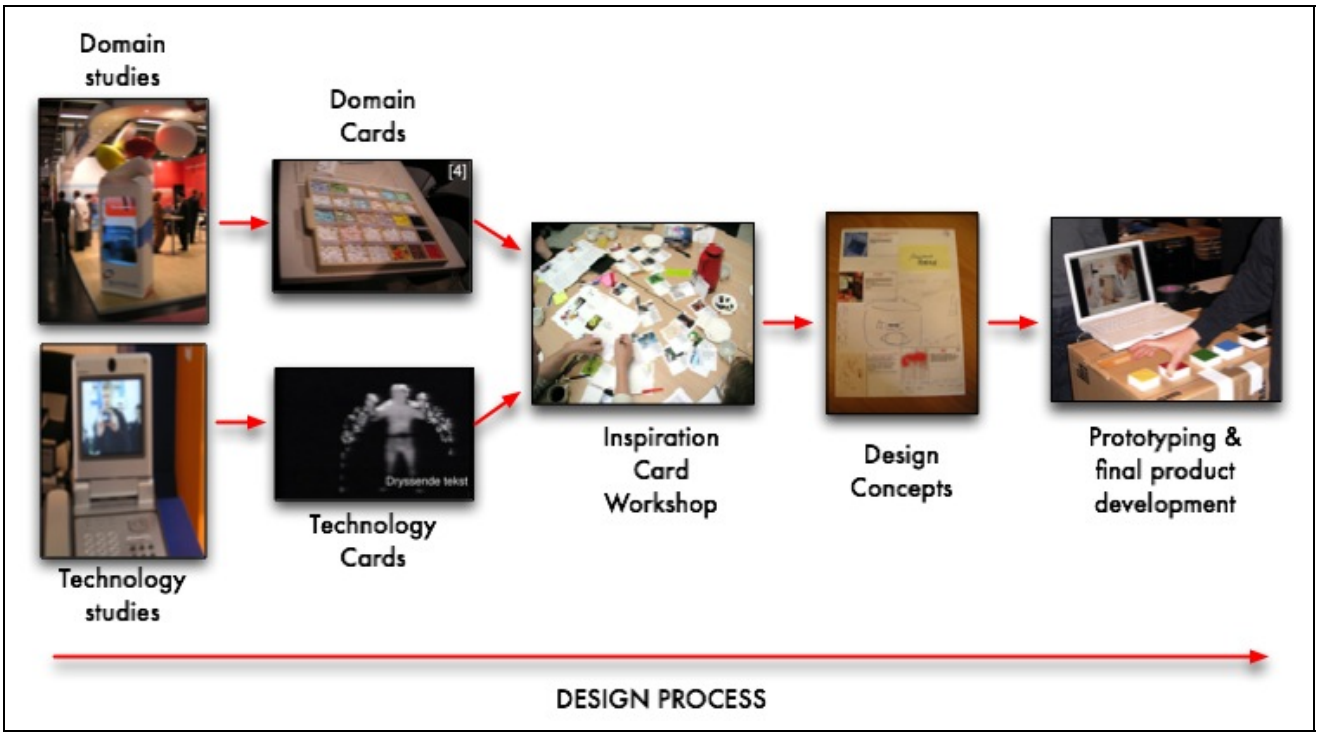

Figure 5: The Inspiration Card Workshop in the Design Process

USING THE INSPIRATION CARD WORKSHOP IN THREE DESIGN PROJECTS

We currently use Inspiration Cards in the ongoing research project, "Experience-Oriented Applications of Digital Technology in Knowledge Dissemination and Marketing". The project explores the use of digital technologies in settings ranging from museums to the retail sector. The Inspiration Cards are used in various ways in the project; in this paper we focus on Inspiration Card Workshops conducted with three of the collaborating partners in the project: 7th Heaven, The Danish Electricity Museum, and Gumlink. These partners and their objectives in the project are highly diverse, allowing for comparative analyses of the Inspiration Card Workshop in different design situations.

7th Heaven – a centre for children's literature

7th Heaven is a very small organization (two full-time employees and a number of free-lancers and subcontractors) that organizes exhibitions related to children's literature. They are currently building a centre for Scandinavian children's literature, and our function in this process is the development of interactive installations in which visitors experience settings and moods from this domain. 7th Heaven is a very democratic organization, in that the staff communicates on a daily basis and makes major decisions based on shared agreement. The staff is very accustomed to explorative and creative processes, and has a good understanding of the domain of experience centres, based on past work and research.

The Danish Electricity Museum

The Danish Electricity Museum is a well-established science and cultural heritage museum. It has many permanent exhibits centered about a fully functional water-power plant, and also organizes special exhibitions. Our work with the museum aims at engaging visitors by augmenting existing exhibits and developing prototypes for new interactive, collaborative installations for learning about energy production and consumption. The museum is a fairly small organization (10 staff members develop exhibitions and conduct tours and talks). The staff is heterogeneous in their various fields of expertise, however there is a high degree of communication and shared understanding. All of the staff members have a solid understanding of the museum domain, and are somewhat accustomed to creative processes with regard to exhibitions and installations

Gumlink – chewing gum research and production

Gumlink is a market leader in research and production of new types of chewing gum, and has 450 employees. We work with Gumlink to create interactive elements for their booth at the world's largest sweets convention. The organization is divided into a number of branches with specific areas of expertise, and the staff is thus very heterogeneous. The Gumlink staff has some understanding of the convention domain, as they participate in a few such events annually. The staff is generally not accustomed to design processes – it is a conventional organization with functionally distinct departments.

Conducting the workshops with the three partners

The three workshops were set up in a similar manner, as described in *Method: Inspiration Card Workshop*. The following is a short account of how the workshop sessions played out:

The 7th Heaven Workshop

The 7th Heaven workshop session had five participants, two from 7th heaven and three from the research group. 7th Heaven took part in the creation of the Domain Cards prior to the workshop by selecting the themes of most of the cards, and supplying many of the descriptions. The 7th Heaven staff made almost non-stop use of the Inspiration Cards. The cards were used primarily in the sense intended by us as designers, namely to combine sources of inspiration and generate new concepts. Much of the time, we could lean back, as the 7th Heaven participants picked out, commented on, altered, and combined the cards. The participants were quick to assemble the cards on posters to capture and freeze ideas. Posters were very rapidly completed and put aside to be finished later, in order to move on with alternate ideas. The 7th Heaven Workshop resulted in 7 concepts. The level of detail varied across these concepts; some were fully formed ideas, including comments on implementing them, others were sketches for further thought and exploration.

The Danish Electricity Museum workshop session

For this workshop, the participants split into two groups, each consisting of two participants from the museum and two participants from the research group. The first of the groups went through a process very similar to that of 7th Heaven. The participants in the second group, however, used the Inspiration Cards for two purposes. First, they lined up and categorized the cards. The categorization served as a starting point for a discussion of the ways in which they, as domain experts, perceived the museum, in contrast with the perceptions we had formed, as visitors and designers. As designers, we had created the Domain Cards based on a number of field studies at the museum, and the participants from the museum wanted to ensure that no important aspects were left out. The participants of the second groupd were thus eager to handle and reorganize the cards, and to create new ones from the blank cards, although in a different manner than intended. This discussion took up almost half of the time allotted to the combination and co-creation phase. The remaining time was spent combining the cards and creating new concepts, although due to time constraints, the second group produced fewer concepts than the first group. The workshop resulted in a number of new concepts, the majority of these originating from the first group. The concepts produced the second, analytically oriented group were generally at an earlier phase of completion than those of the first group. However, the process of the analytically oriented group yielded insight into the self-perception of the museum staff, and prompted discussion of the domain with

us as designers. This outcome, though not fruitful in terms of design concepts, established a valuable common ground for furthering the design process.

The Gumlink workshop session

As was the case with the Danish Electricity Museum workshop, the participants in the Gumlink workshop session carried out the combination and co-creation phases in two groups, consisting, in this case, of three Gumlink participants and two participants from the research group. The processes of the two groups were fairly similar. The participants from Gumlink made less use of the Inspiration Cards than the participants in the 7th Heaven and Danish Electricity Museum workshops. The research group, based on field studies and interviews with Gumlink staff, created the Domain Cards. Some Gumlink participants were very hesitant to use the cards, especially the Technology Cards, handling them only a few times during the workshop. The creation of posters with concepts was largely left to the research group. The participants came from different departments, and primarily used the cards to present and discuss differing views on the convention setting among themselves, or to communicate these views to us. They were less inclined to combine the cards in new ways, and instead evaluated the Technology Cards in terms of how the technologies could be applied in concrete ways. In relation to the 7th Heaven and Danish Electricity Museum workshops, the results of the Gumlink combination and co-creation phases were thus limited in terms of new design concepts. Prior to the workshop, the research group had presented three conceptual design proposals to Gumlink. These proposals were meant as input to discussion of new concepts. However, the design concepts that were produced in the combination and co-creation phases either were very similar to these previously presented proposals, or to the concepts presented on the Technology Cards.

FINDINGS FROM CONDUCTING THE WORKSHOPS

Disparate participants, disparate outcomes

Although the setups for the three workshops were almost identical, there were a number of differences in how they progressed, and how fruitful the outcome was with regard to the intended purpose of the workshop, i.e. the development of new design concepts. With the identical workshop setup in mind, the disparate processes and outcomes of the three sessions point towards the following factors for participants' influence on the success of Inspiration Card Workshops, in terms of producing rich and relevant design concepts:

Familiarity with fellow participants

The workshop establishes a forum for creative interchange between participants. When creating new concepts, participants put themselves on the line, and risk failure by presenting ideas that other participants may reject or deride. If participants are well acquainted and have collaborated in previous projects, they have established an understanding amongst themselves, and recognize that their behaviour in experimental, creative settings is not necessarily representative of how they would act in other fora. However, if they are only slightly acquainted, as was the case with the Gumlink staff, they may be less likely to venture into unknown terrain. The nature of the organization from which participants come exerts an influence on this, as participants from hierarchical or formal organizations may feel more constrained than participants from those that are less formal.

Familiarity with creative methods and processes

It was evident that the workshops were fruitful when participants had previously worked with creative methods and processes. This was the case with the participants in the 7th Heaven workshop, and to some extent with the participants in the Danish Electricity Museum workshop. These participants quickly grasped the workshop format, and were eager to use the cards as intended. The Gumlink participants were clearly used to working in a different way. They were more reluctant to accept the workshop format, and used the cards in a limited way.

Insight into use domain

Combining Domain and Technology Cards is a process of appropriating aspects of existing technological applications that in some way transforms the domain. This is best achieved if the participants have a firm understanding of the domain. This was very much the case for the participants from the Danish Electricity Museum. They used the Technology Cards by evaluating the ways in which they might influence practices at the museum, and in which the museum could better communicate central concepts to visitors. The concepts from the 7th Heaven workshop were more speculative, in that the actual domain - the literature centre - was not yet built. The participants thus drew on experiences from similar contexts, and were limited in the level of detail they could reach in the design concepts. The Gumlink participants had a more limited insight into the use domain, namely the convention setting, as they only participate in sweets convention a few times a year, and had no formal fora in which to discuss it in their everyday work. Thus, they used the Domain Cards to start such discussions, and had very few comments on ways in which to appropriate the Technology Cards.

Different kinds of inspiration

For the preparation of the workshops we paid attention to the differences between the various sources of inspiration, which became even more evident during the workshops.

Some of the cards represented applications from the same domain as the one for which we were designing, as was the case with the Danish Electricity Museum's where the '*The Theremin*', the predecessor to the sound synthesizer, was on one of the inspiration cards. In other cases there was a larger conceptual distance between the source of inspiration and the design domain. Both technology card close to the design domain and ones with a larger conceptual distance seem to play important roles, the former making it immediately easy to acknowledge the usefulness of inspiration sources, and the latter having a greater innovative power.

Some of the Technology Cards represented a collection of technologies, such as *Slow Technologies* (Hallnäs & Redström 2001), or a combination of complex technologies, like *Khronos* (Cassinelli et al. 2005), which we found did not fit so well into a process wherein large collections of inspiration cards were presented in a short time frame. Participants simply did not grasp the idea, or could not remember the information presented.

We have however observed that it is valuable to have Domain Cards that represent single elements from the domain, such as *Gold,* as well as complex information such as *The Twilight of the Gods*.

In addition to sources of inspiration represented by the Technology Cards, a number of cases and examples were spontaneously brought into play by workshop participants. At the 7th Heaven workshop, reference was made to a specific science museum, which was used to explain a type of place the domain experts did not like. Reference was in fact made to a diverse set of previous cases and examples, including 'Vin og Ølgod', a well known Danish pub, which was used to suggest the atmosphere of Valhalla. The art of Bill Viola was also brought into the discussion of speed, atmosphere and the style of 7th Heaven. At the Gumlink workshop, Virgin airlines was mentioned as an argument for the potential of doing ordinary things in a special way, and was used in a discussion of the way in which technologies from the cards could be used to enhance the potential customer awareness and recollection of Gumlink.

The relations between sources of inspiration and ideas

Some of the ideas generated during the workshops had a very direct relation to the source of inspiration, and the creative move merely consisted of replacing a single element from the source of inspiration with an element from the design domain. At the 7th Heaven workshop it was suggested that the letters in *The Falling Letters* be replaced with short pieces of text from Norse mythology, and our Gumlink partners suggested that the letters be replaced with chewing gum.

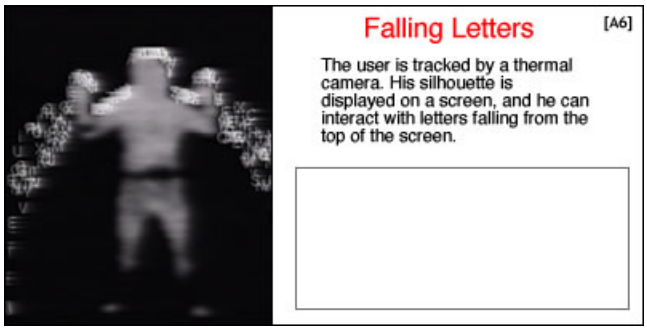

Figure 6: The *Falling Letters* Technology Card.

Clearly, combining previously unrelated elements is a crucial aspect of innovation. At the 7th Heaven workshop we explored the idea of combing *Wodan's Throne* with the *Information Table,* which stimulated a discussion about making a very contemporary implementation of Wodan's Throne.

Some situations consisted of combining just two cards, as in the examples above, but in other cases several cards were simultaneously involved. For example, at the 7th Heaven workshop, there was an extensive exchange involving several cards, including Technology Cards, Inspiration Cards and custom-made cards created by participants during the workshop.

The role of cards

In addition to their direct role in idea generation, the technology cards supported focus shifts in the process, and made it easier to bring new perspectives, and, by extension, new ideas, into the design process. Using cards in this way was particularly prominent in the last past of the 7th Heaven workshop, wherein the domain experts picked up new cards and used them to introduce new subjects for discussion, when the process was not proceeding as rapidly as in the previous very intense phase. In a similar way, participants in the Gumlink workshop used the cards to try to start the process, and made it easier for people to raise their voices.

As discussed above, the cards played a vital role in generating specific design ideas, but we have also observed that the design ideas that emerge are not always further elaborated, or at least documented. Moreover, some inspiration cards were not used at all, although we could not identify a clear reason. However, part of the rationale behind *The Inspiration Workshop* is to bring a large selection of material into the workshop, which implies that not all material will be used.

COMPARISON OF THE INSPIRATION CARD WORKSHOP AND RELATED METHODS

In this section we briefly introduce four related approaches to innovation in design, and use them as a platform for comparing them with The Inspiration Card Workshops. The selection of related approaches is by no means intended to be exhaustive, but rather to serve as a starting point for putting The Inspiration Card Workshops into perspective.

Metaphorical design

A metaphor may be defined as a concept from one linguistic category, used to describe a phenomenon normally referred to by concepts from a different linguistic category [22]. The essence of metaphorical design is to understand the product being designed by using metaphors to see it as something different, and in this way generate new perceptions, explanations, and inventions [22] and [26]. As an example, Madsen [22] describes how a library may been seen in new ways, by seeing it metaphorically as a storage for books or as a meeting place, thereby generating different ideas about which kind of information system may support activities at the library.

Future workshops

'Future workshop' is a highly structured process originally suggested by Jungk and Müllert [18]; F. Kensing [20] has

proposed its use in systems development. As briefly summarized by Kensing and Madsen [20], the Future workshop technique is meant to shed light on the common, problematic situation of generating visions for the future, and to discuss how these visions can be realized. Key elements of the technique include a set of specific rules such as restricting speaking time to 30 seconds during certain periods of the workshop, and not allowing critique during the fantasy phase. Moreover, the use of materials like Post-it®'s and posters is an important aspect.

Interaction Relabelling and Extreme Characters

'Interaction Relabelling' and 'Extreme Characters', which have been suggested by Djajadiningrat, Gaver, and Frens [10], are two methods for exploring aesthetic interaction. There has been an interest in developing new kinds of interaction, which are guided not only by ease of use and efficiency, but also by richness, attractiveness and other aesthetic qualities.

'Interaction Relabelling' has at its core a consideration of the product one is designing in terms of an existing product. In Djajadiningrat, Gaver, and Frens [10 p67] the technique is illustrated by the example of relabelling a toy revolver as an appointment manager, generating interaction design ideas like thinking of rotating the cylinder to scroll through appointments.

The idea of 'Extreme Characters', as the term suggests, takes the approach of design for characters with extreme emotional attitudes. Djajadiningrat, Gaver, and Frens [10 p68] explain the approach by showing how extreme characters, such as a drug dealer and the pope, may inform the design of an appointment manager.

Lateral thinking

Lateral thinking**,** introduced by de Bono [11] includes a large collection of creativity techniques, of which we restrict our discussion to *random input* [ibid 177], which has at its core the selection of a randomly chosen word (e.g. the word number three on page 89 of a dictionary), which acts as the starting point for idea generation.

Comparison

With the exception of Future Workshops, all approaches have in common multiple domains as sources from which they draw inspiration as a driving force to innovation. Lateral Thinking, as well as Interaction Relabelling and Extreme Characters argue for a large distance between the domain for which one designs, and the domain that serves as inspiration, as a large distance stimulates seeing the design task in a new way. By a similar argument, Metaphorical Design argues for a conceptual distance between the two domains, but also recommends that there be at least one bridging concept between the two domains. According to our experiences, it seems productive to include inspiration from both close and remote sources of inspiration. Future Workshops do not include sources of inspirations as such.

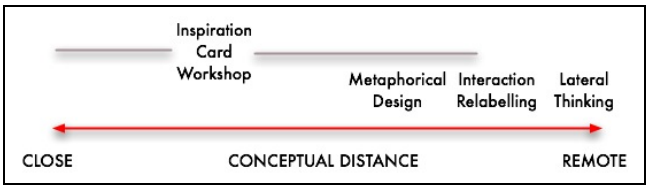

Figure 7: Comparison of conceptual distance between domains of inspiration and use.

The various approaches also differ with respect to the number of sources of inspiration they suggest bringing into the process. Lateral Thinking, together with Interaction Relabelling and Extreme Characters, propose few sources of inspiration at a time, in contrast to the Inspiration Card Workshop, which simultaneously brings into play numerous elements. We have identified Metaphorical Design as belonging somewhere between these two extremes.

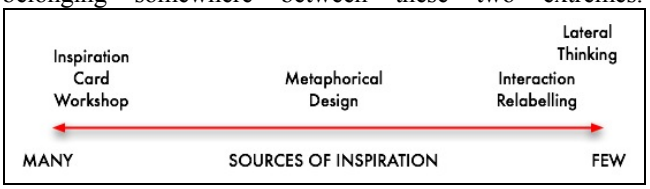

Figure 8: Comparison of the number of sources of inspiration.

Metaphorical Design and Lateral Thinking primarily use language as a tool in the innovation process, whereas physical materials are essential means of supporting the design process in Inspiration Card Workshops. Extreme characters works at the conceptual level, whereas Interaction Relabelling suggests bringing mechanical devices into the process, in order to stimulate new ways of thinking about interaction.

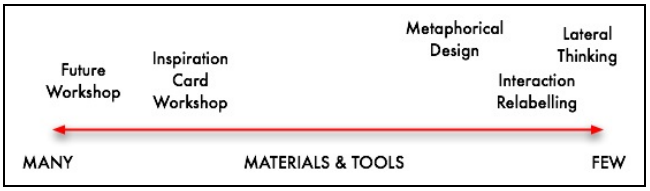

Figure 9: Comparison of the number of materials and tools.

The Future Workshop technique is a highly structured process with clearly defined phases (critique, fantasy and implementation) and with a number of specific rules, such as restricting speaking time to 30 second during certain periods of the first phases, and not allowing critique during the fantasy phase. On the other hand, Lateral Thinking is very much a 'light weight' process with minimal structure. In between, we find the other approaches with few rules and some kind of overall structure, e.g. 1) generating metaphors, 2) evaluating metaphors and 3) selecting and applying the metaphors in the case of metaphorical design; or in the case of The Inspiration Card workshop, presenting sources of inspiration and domain cards, developing design concepts, and presenting design concepts.

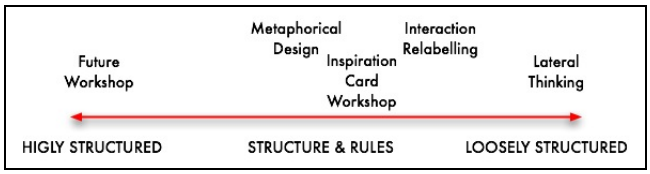

Figure 10: Comparison of structure and rules.

CONCLUSIONS AND FUTURE WORK

In this paper we have presented Inspiration Cards as a means for the designer to present condensed findings from domain and technology studies. We have further elaborated on the Inspiration Card Workshop as a method for combining sources of inspiration to develop new design concepts, and reported on three design cases in which we have employed the method.

Our over-all evaluation of the Inspiration Card Workshop method and the response from participants in the workshop sessions is positive. The Inspiration Cards have clearly stimulated an innovative and productive process, and we have observed that the design concepts developed generally find a suitable balance between being innovative, and realistic in terms of implementation. The method is designed to be informal, loosely structured, and simple (eg. we only present two categories of cards). These factors have facilitated the involvement and engagement of participants and have been crucial with respect to the productiveness of the workshop.

The findings from the design cases highlight a number of important aspects with regard to the sources of inspiration introduced in the workshop sessions, and the role of the Inspiration Cards. We recommend including sources of inspiration that vary in their conceptual distance from the use domain, in order to foster design concepts that may both fit into, and expand the domain. In our experience, the combination and co-creation phases of the workshop work well without setting up rules for roles and turn-taking. This allows participants to use the Inspiration Cards in a number of ways, such as pointing out specific ideas, framing over-all discussions, shifting focus from one aspect of the design concept to another, moving from concrete to abstract discussions etc. The experience of participants in Inspiration Card Workshops plays at least as important a role as the setup of the workshop, with regard to the generation of viable design concepts. Prior collaboration experience, insight into the use domain, and familiarity with creative methods and processes have proved to be valuable prerequisites for participants in the workshops from which we have reported.

The Inspiration Card Workshop method addresses the way in which designers draw upon repertoires of prior knowledge and expertise, while respecting the discreteness of the situations they encounter, referred to by Schön [27] as a process as of reflective conversation. Fallman [14] suggests that accounts of development of new prototypes in HCI literature focus primarily on the attributes of the prototypes themselves, rather than on the vital design process by which the prototypes come about. On the one hand, The Inspiration Card Workshop method can be construed as an approach for designers to actively consider their repertoire in relation the distinct situation they face, and, on the other hand, to engage in reflective conversations between the repertoire and the situation.

We continue to experiment with the workshop format in order to incorporate our findings and iteratively improve this design technique. Among other things, we are looking into ways of supporting the method technologically, both with regard to the Inspiration Card Workshop, and the creation, storing, and sharing of the inspiration cards throughout the design process. One possible avenue to pursue in this regard would be to combine a database for inspiration card storage and sharing with input devices and displays for use during the workshop, like the Video Wall presented in Jensen, Buur & Djajadiningrat [17]. However, the current "low-tech" solution has proved successful in yielding ideas and concepts. The implementation of digital support for the method might hamper the creative, explorative and collaborative processes that the current workshop format supports, by presenting entry barriers in terms of having to learn to use new technological tools.

The Inspiration Cards have a range of applications in the design process, which goes beyond the workshop method presented in this paper. One such application is the use of the cards as a standard means of representing and communicating sources of technological inspiration, as well as key findings from field studies. We plan on typologically classifying the Technology and Domain Cards into subsets as our repertoire expands. With regard to Technology Cards, this will help generate an overview of state-of-the-art applications of IT, whereas a typology of Domain Cards will support comparative analyses of recurring patterns across domains.

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