Evoking the future: Drama and props in user centered design

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ABSTRACT

This paper describes how we have worked with setting the stage and providing props for collaborative generation and exploration of design ideas. We work within the Scandinavian participatory design tradition. For a number of years we have experimented with the use of drama and various props as an approach to engage users more directly in the design process. Examples from two projects are discussed.

We find it fruitful to involve users in envisioning the future artifacts with the use of drama. Evoking the future can be realized through collaborative meetings between designers and users. In order to establish fruitful meetings we find it promising to explore settings, scenarios and props. The paper presents results from using drama as a way of bringing in new voices in the user centered design process. It describes how we have experimented with the use of various props as not only "things to think with" but also as "things to act with" during a collaborative design process.

Keywords

User-centered design, drama, props, design artifacts, participation, staging, empathic design.

INTRODUCTION

The participatory design (PD) tradition covers a large array of techniques to involve users in design work (see e.g. Greenbaum & Kyng, 1991, Schuler & Namioka, 1993). During the resent years it is evident that there has been a growing interest for participation as "collaborative inquiry" where the aim is that designers and users explore design aspects on a collaborative basis. Having this focus the meeting with the users and how to set the stage for collaboration is important.

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Kensing and Madsen, for instance, suggest combining metaphorical design with the format of future workshops as a way of staging this meeting (Kensing & Madsen, 1991). Ehn and Sjögren suggest playing design games and they stress the productive role of stages and props to create a common language of engagement between designer and users (Ehn & Sjögren, 1991).

There also seem to be a growing interest for the emphatic engagement with the context of use. For instance Blomberg describes how ethnographic field methods can be linked to designing and by this expand the designers understanding of the users work practices (Blomberg, 1993). Suchman and Trigg suggest interaction analysis of video recordings from field studies as a mean to understand the relation between work and technology (Suchman and Trigg, 1991).

In relation to the design process as such various engineering fields seems to be in a process of opening up towards other fields. For instance, attempts are seen to open up for the specification process towards including usability properties (Beyer & Holtzblat, 1998). Users also seem to be involved throughout the design process. For instance Buur & Bagger describe how usability testing in an industral setting is replaced by continuous dialogue with users (Buur and Bagger, 1999).

Our research has especially focused on the meeting between various stakeholders in the design process and how to stage this meeting in order to assist "collaborative inquiry". For some time we have used drama and various props in user centered design projects. We are convinced that the world of participatory design can find inspiration from the world of drama. In user centered design it is important to be creative and be able to explore the context of use and the artefact from new perspectives in collaboration with users. The paper describes how drama and props have been fruitful to us in various projects. Drama seems to be a valuable way of thinking about and looking upon design. Furthermore drama offers concrete ways of staging meetings between designers and users.

Collaborative use of drama techniques in design projects can evoke the future of artefacts and their use. In the paper we discuss examples of using drama from two design projects. We also reflect upon the use of design artefacts as props in the design process and how different kinds of props can be used to unfold design possibilities and how they play a role in creating coherence within the projects.

The paper is structured in the following way. In the first section we introduce a number of drama techniques used within the world of drama. In this section also parallels to the PD design field are drawn. Second section includes a description and discussion of the staging and emphatic work in a work oriented design project. Third section describes the use of drama in a project looking at technology outside work. In the fourth section we explain why it seems useful to use design representations as props when engaging users as co-designers in design projects. Section five introduces and discusses three examples of various props that have been used in the two projects. The final section is discussion and conclusions of both drama and props in user centered design.

DRAMA: BRINGING IN MORE VOICES IN THE DESIGN PROCESS

Introducing drama in design

Forum Theatre (Boal, 1974) is one of the drama techniques that we have found inspiration from. Forum Theatre is a technique developed by the Brazilian playwright, director and theoretician Augusto Boal. Boal is regarded as a contemporary pioneer of political protest theatre. He considers theatre as a powerful weapon that can change oppressive political conditions. His aim is to use theatre as a way of turning the audience from being passive members of society into active subjects and transformers of the dramatic situation.

In the Forum Theatre a group of actors play a conventional piece of theatre at first. Secondly the audience are asked to suggest changes in the play according to their preferences. After a debate about the play which according to Boal always will be a reflection of the political situation the play is being performed again but this time with the changes incorporated. It is up to the audience to make sure that the play is just to their wishes and experiences. From a design perspective Forum Theater can be seen as a way to open up for participation in the design process. The political aspect of the Forum Theatre is not as evident or highlighted when applied in user-centered design projects. In a design setting the set-up will always be more controlled and the issues discussed will be more narrow than in the Boal's theatrical setting. The designers create a design setting that does not invite to an open political discussion to the same extent. However, conducting Forum Theater can engage users as players, audience or both, and it gives them the legitimate power to change and influence the agenda of the meeting between designers and users.

While using the Forum Theatre we have found it very inspiring to practice some of Keith Johnstone's improvisation techniques. Johnstone sets up directions for improvisations. Paradoxically enough Johnstone argues that it is easier to work with at set of well-defined restrictions than improvising freely (Johnstone, 1993). If accepting Johnstone's argument it should be easier for the participants in a design session to improvise when having guidelines. For instance it should be easier to improvise a use situation when having a specific user in mind than just improvising as any user. In this sense restrictions or guidelines give the users or designers something to hold on to from which they have to design.

Another central part of acting is according to Johnstone an awareness of status. In a discussion or a relationship of any kind one person will take a higher status (position) than the other. A harmonic relationship is build upon a constant switch between high and low status. Most dramatic dialogues in theater and film build upon a "master-servant" relationship (Johnstone,1993). In design awareness of status among users or other people they interact with might give valuable hints to the design of the artifact. For instance, one can choose to design the artifact in order to maintain a high and low status relationship or one can try to design an artifact which gives more power to the low status users. When two people meet on a stage or in a working situation a relationship automatically will emerge. An effective way of analyzing user relationships is to focus carefully on the internal relationships among users because it has an influence on the different needs and possibilities of each user. The designers have to be aware of which special functions that are required according to the relationship among the users.

Acting techniques from the Soviet-Russian actor-director-teacher Stanislavskij (Stanislavskij, 1988) is another important source of inspiration in our design work. Stanislavskij is the creator of the most influential system of acting in the Western world. The system is primarily known for its focus on the empathy of the actor when creating a character. "The magic if" is one of his famous techniques. Stanislavskij believed that the little word "if" is what initiates all kind of creative processes. "The magic if" is what brings us out of reality into a world of art which is full of questions. When the actor creates a role he has to ask himself questions like: "what if the character was in this or this situation – how would she react?" Such questions can easily be translated into questions raises in empathic design: "What if the user was in this situation – how would he solve the problem..." or the user could say: "What if the battery runs out of this tool and I need to use it? Or "What if there is a breakdown situation, and I need to....".

Within the PD field metaphorical design uses similar techniques. For instance Kensing and Madsen mention: "What if the library was a ware house, a store or a meeting place etc. (Kensing & Madsen, 1991). More generally Schön argues that it is important for designers to make design moves by imposing an order on what they are working on. Afterwards it is necessary to appreciate how the material (with the imposed order) 'talks back' to the designer. When the imposed order leads to new insights the designer needs to re-frame the design problem. Schön argues that designers work in a cycle that he calls: seeing-drawing-seeing (Schön, 1983).

In PD Ehn and Sjögren use the theatrical metaphor when explaining what they call "design-by-playing". They describe several projects were they have created design games which were played by the users. All games were played sitting around a table, and the players had game boards and cards that had to be drawn. The designers were always facilitators while the users were players. The users can be said to have the role as designers while engaged in the design game (Ehn & Sjögren, 1991). The ways in which Ehn & Sjögren organized the plays seem to reveal inspiration from the classical way of structuring a play derived from Aristotle. All design games had a three-act structure with a clear defined beginning, middle and end. However the important differences between their and our approach is that they do not seem to have acted out their ideas or use situations in theatrical settings. Following is two examples of how we have used drama in user centered design projects.

THE SMART TOOL PROJECT

Using drama to understand work situations and to build up characters

The aim of the Smart Tool project was to develop a design concept of a future electronic service tool for refrigeration technicians serving cooling systems in supermarkets, restaurants etc. One of the main ambitions was to focus on the human aspects of design and to bring a bodily approach into the design process. In this project Grunnet & Skak introduced the concept of drama in design (Grunnet & Skak, 2000).

Field studies were conducted and the design team put a strong emphasis on analyzing and understanding the user and the use domain with the use of drama. The understanding developed through focusing on the refrigeration technicians and their various work tasks, their personalities and their lifestyles, and finally how they interact with one another or other persons. Drama was used to get a bodily understanding of the refrigeration technician's work. For instance we chose a work task and broke it into a sequence of single actions. In turns the designers expressed these actions with their body. They made a bodily expression like a statue ("frozen image") corresponding to the physical action (see figure 1).

In each statue members of the design team showed the user caught in an essential action in a working situation. Hence the design team moved from an intellectual interpretation of the working procedures to include a physical interpretation as well. Expressing yourself dramatically makes you realize that you have to be very precise in your movements. Drama can be viewed as a way of testing if the team has got a similar perception of the users and the user's work. The bodily approach can help making tacit knowledge explicit.

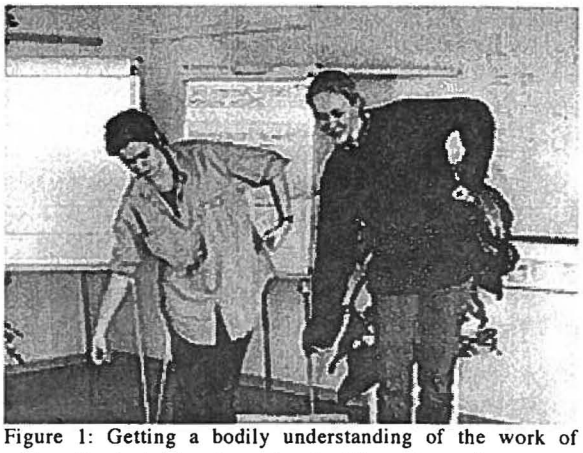

Figure 1: Getting a bodily understanding of the work of refrigeration technicians by performing "frozen images".

The users' personalities and lifestyles were also explored using drama. Based on the field studies and drama we tried to create four different characters of refrigeration technicians that could help guiding the design process. Allan was one of these characters. In a magazine we found a picture of how we thought his type would look like. We decided he was 35 years old, ambitious, quick and competent and always one step ahead with technology. The design team used drama as a way to learn more about Allan (e.g. his values, likes and dislikes).

The designers pretended to be Allan and to act the way they believed he would do both in work situations and outside work. For instance, what would his kitchen look like, and what would he bring with him on a holiday to Greece? Drama was in this sense used to get empathy for Allan. It was a way to explore how the tools in Allan's toolbox would look like and how he carried the toolbox around. Based on both field studies and the character work we visualized how Allan's future Smart Tool would look like in order to correspond with his personality. Each user character made the design team think of different ideas because of their different personalities. The aim was to design a Smart Tool from the point of view of each of the four very unlike user characters and not just according to specific working situations or the use environments.

Exploration of how users interact with one another or other people during their work was another point of focus in relation to using drama for emphatic design. Inside the design team we made a comparison of work situations and personalities with the help of the "frozen images". The designers made various "frozen images". To each of the "frozen images" we related work situations we had identified in the field. The social status, the work hierarchy and the interaction between users became visible when we added dialogue to the "frozen images". The dialogue together with the "frozen images" gave more "life" to the performance. Discussions about what the users talk about and how they talk in the specific work situations brought us much further in the analytical work.

Staging and dramatizing scenarios

In the process of getting ideas to how the future Smart Tool could be the design team acted out scenarios themselves. This was a way to identify problems and at the same time generate ideas for their solution. The design team made scenarios showing a typical work sequence of installing, maintaining or repairing refrigeration machinery. During collaborative design sessions within the design team the scenarios were used to improvise concepts for new tools that could solve the problems revealed when acting out the scenarios.

A setting build of cardboard boxes indicated the world and environment of the refrigeration technicians. The room where the design sessions took place was a workshop room only used for this purpose during the project. The fact that this room was dedicated to the Smart Tool project meant that the various settings could be kept and developed during the whole process. The room was with very few means turned into a stage with different locations such as the car of the user, the road, at the supermarket, home etc. Simple props like boxes and chairs were used when setting the stage for the acting. Having established scenarios of the users working procedures the design team generated simple cardboard mock-ups of possible tools. The mock-ups were used as props in the scenarios. Whenever an idea about functionality or design came up the idea was written down on a post-it and placed on the props. The new ideas were immediately explored by being acted out. It was never enough just to tell about an idea. Any idea was written down and was shown – acted out in the scenario.

Users as directors in dramatized scenarios

When the design team tried out ideas themselves in simple settings the situations were constructed on the basis of the field studies incorporated with the designers own ideas. Since the designers were not the real users in a real environment they wanted selected refrigeration technicians to evaluate their ideas and understanding of the refrigeration technicians work. During a user workshop a scenario was dramatized using the Forum Theater concept in order to create a productive setting for dialogue and collaboration. The dramatized scenario included what the team believed to be the procedures and conflicts in a refrigeration mechanic's day. The scenario was constructed as a story with a clear beginning, middle and end: The refrigeration technician leaves his home in the morning (beginning), he drives away to solve a problem in a supermarket which causes some difficulties (middle) and finally the problem is solved (end).

Figure 2: A performance of a dramatized scenario. The refrigeration technicians directions were incorporated in the scenario and acted out on the spot.

As in the internal design sessions the stage was constructed of cardboard boxes which in a stylized way served as an illusion of the different locations in the scenario. The setting provided an informal atmosphere that was very fruitful when meeting the users. At first the service mechanics sat as an audience and watched the play. After the first showing of the "performance" the refrigeration technicians were asked to comment and discuss the dramatized scenario critically (see figure 2).

The role of the refrigeration technicians changed from being a passive audience into being directors with an expert knowledge. The users recognized the situations shown in the dramatized scenario as situations they often experienced. Because of the openness of the scenario there was a lot of "holes" to be filled out. The refrigeration technicians could provide the information that the designers needed. For instance one refrigeration technician explained that he preferred to solve the problems himself instead of calling his boss. This information meant that the future Smart Tool should be able to help him solve his problems while being in his car. With the help of props the refrigeration technicians realized that during the user workshop nothing was "too wild". This meant that they increasingly expressed their ideas. One participant wanted to have both a computer, fax and printer in his Smart Tool. Another wanted to have personal informations that his boss was not allowed to get access to.

Discussion

In the Smart Tool project drama was used in various ways to get a bodily understanding of the refrigeration technicians and their work tasks, to build characters through acting, and not least as a way of engaging them in the development of the artifact. Through out the project there was a focus on creating shared experiences with the refrigeration technicians and experimenting with different staging of these meetings. The refrigeration technicians valued the possibility to change the dramatized scenario and to e.g. add functions to the tool. They were given the power to change the script according to their ideas. Still the workshop took place in the home environment of the design team. The designers had both decided which scenario to work with and the functionality of the props. In this respect it can be discussed how much power the refrigeration technicians were actually given. Another critique could be that we should have asked the refrigeration technicians to evaluate the use of drama as a design approach. This knowledge could be beneficial in our continuous development of the use of drama in design processes.

The Smart Tool project was about the work setting of refrigeration technicians and how to design a product that could support their ways of working. The following project is about designing an artifact to be used outside work. We have experienced that this change in the artifact context of use means that the focus of the design work are more open. In a work setting the field studies usually is about getting an understanding of the work practice, breakdown situations and the like. Products are here often designed to help users perform specific tasks more effectively. Outside work people might not buy products because they focus on how to solve specific tasks. Instead they might choose artifacts in order to create the setting they would like to live in.

In the Smart Tool project the props were used as tools for specification. They were closed in the sense that the design team had chosen which functions that the Smart Tool could contain. In projects concerned about domestic artifacts the props that are to be used might need to be more open and flexible because living outside work is less concerned with tasks and tools.

THE DYNABOOK PROJECT

Exploring the sensitivity of modern living

In another project we developed design concepts for electronic books; Dynabooks. The Dynabook project opened up for new settings and different ethnographic material than in the Smart Tool project. In the Smart Tool project the settings and the material were defined much more strictly and was in this perspective more limited than in the Dynabook project. The Dynabook project was about nothing less than life outside work. Instead of analyzing and understanding work tasks it became a question of looking at situations and environments, interest, lifestyles, age, gender, and preferences etc.

The field studies involved visiting adults and children in their homes. With inspiration from ethnographic methods observations was made and questions asked in order to find out about the potential users interests, their family situation, how they perceive reading on electronic books etc. The aim of these ethnographic snapshots was to learn about different users and their home environments.

Staging a brainstorm session

In order to explore the domestic area further the design team arranged an internal brainstorm session with dramatized scenarios. The dramatized scenarios were build upon the field studies and formed the basis in the brainstorm session.

The staging of the scenarios was simple. A small traditional theatrical scene arrangement was created: A scene with an indication of different locations and a group of chairs in front to the audience. The locations (the rooms) in which the scenarios took place were illustrated with the use of props like a hat-and-coat stand (the hall), a toothbrush (the bathroom), table cloth and coffee mug (the kitchen), and a television made from a cardboard box (the living room). The "actor" from the design team used a teddy bear, a cap, and a pair of sunglasses as props to illustrate three groups of users. The child had a teddy bear, the teenager a cap and the adult wore sunglasses (see figure 3).

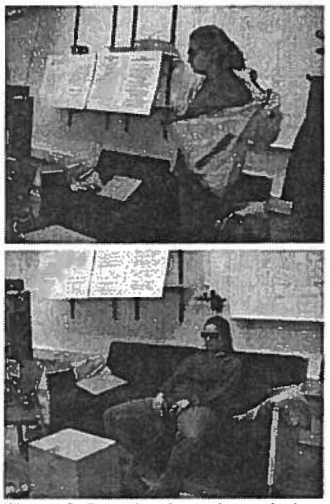

Figure 3: In a simple setting a designer acts out a scenario.

Each scenario contained of three typical situations; one in the morning: e.g. at the breakfast table, one in the afternoon: e.g. coming home from work or school and one in the evening: e.g. watching television or cooking dinner. The scenarios were more general and open than in the Smart Tool project. In the Dynabook project the concern was to brainstorm around several very different use

situations and surroundings. Since the Smart Tool project there has been a movement away from stylized character descriptions towards continuous dialogue and involvement of users throughout the design process. The reason for this is that the face to face contact and the collaborative inquiry seem to evoke more ideas and suggestions for design solutions.

Each scenario was performed with breaks included. The breaks were small "pauses" where the designers reflected on and discussed a particular sequence in the scenario. The invited designers were asked to comment on the situations. One of the participants commented on the situation of reading the newspaper at the morning table. If several people in the family would like to read the newspaper at the same time how would this affect the concept? Questions like "should the Dynabook be able to have more than one section of the news paper visible at the same time? Or how would a social Dynabook look like?

Users create scenarios in their own environment

In the Smart Tool project the designers played out scenarios based on the environment of the user. In the Dynabook project we took the scenario work a step further in the sense that it was the users themselves that created the scenarios in their own settings. In the Smart Tool project the users visited the design team when they participated in the user workshop. In the Dynabook project the design team were guest in the homes of the users.

Mike and Joachim get dressed, take the "Dynabook prop" and go out to Mikes car.

With the help of the "Dynabook prop" they try to find out what is wrong with Mike's car.

Later Mike and Joachim use the "Dynabook prop" to check the prices of spareparts and to find the way to the car workshop.

Figure 4: The users create a scenario in their home environment.

The second time we visited Mike in his home we asked him to show us situations and how he would like to use the Dynabook. Mike and his friend, Joachim took the prop, put on their jackets, and went out of the house to Mike's car. They pretended that something was wrong with the car but they did not know what it was. Joachim operated the "Dynabook-prop" while Mike was searching the engine. The prop became an interactive error-detecting devise for car repair. After a while they had identified the problem and with it, which parts of the engine that, had to be replaced. Then the Dynabook was used to check prices of spareparts and locations of car workshops in the area where they live. Later the Dynabook helped Mike and Joachim to find their way to the workshop while driving the car (figure 4).

Discussion

In product development projects we have primarily used drama in design as a tool for generating ideas in the beginning and evaluating design concepts or prototypes later on. Using dramatized scenarios generated a lot of ideas in the early stages in both the Smart Tool project and the Dynabook project. However after the brainstorm sessions it were necessary to choose among the ideas in order to take the design process further. We have not used drama in these inevitable situations in design work. This could be seen as a limitation of this approach.

The Dynabook project is an example of how domestic settings are more fragile than work settings. In the Smart Tool project is was easier for the designers to find focus as they "just" had to observe and learn about one specific work setting. Focusing on tasks and tools seemed obvious whereas it seems to be another and more confusing challenge to grasp the setting of the domestic and the individuals. However when having found a focus and decided which scenarios to dramatize it was more difficult for the designers to act as refrigeration technicians than acting as various family members. We have learned that it is a bigger challenge for the designers to use drama when designing artifacts for contexts that are unknown in the outset. Our experience is that it was more difficult for the designers to familiarize themselves with the refrigeration technicians than with the users of the Dynabook. However when designers are to design artifacts to be used in contexts that they do not know very well the bodily approach provide the designers with valuable new insights about the users and the contexts of use.

In both projects drama was used to establish a fruitful design setting and to develop a better empathy for the users. It was fascinating how little scenography that is required to create an illusion of being in the world of the users. The Dynabook project proved that meeting the users in their setting might create meetings on more equal terms than always meeting on the premises of the designers. In the Smart Tool project we created and focused on four extreme types of characters. This should be seen as a first

step in the recognition and emphasis of the fact that users are very different. In the Dynabook project we established empathy for the users through the on-going dialogue with them. We believe in an alternation between meetings in the user environment and meetings in the designers setting. For instance the design teams internal work on creating empathy for the users should be combined with the users creating scenarios in their own environment. This is in line with Binder who argues that improvised scenarios in the reel setting of the users should not be seen as a substitute for having designers themselves working emphatically with scenarios (Binder, 1999).

Furthermore it seems that no matter the project it is the props that contribute to set the agenda for the design process. In meetings where props are present discussions often circle around these. Hence the discussion can develop due to the chosen type of props. This means that the role of props in user-centered design projects should be investigated further. In the following we will give examples and discuss the importance of props in user centered design.

FROM DESIGN REPRESENTATIONS TO PROPS

Henderson describes how drawings and 3D design models are central in designers communication with other designers in the design team. For instance it is common within meetings that one designer leaves the meeting in order to fetch a drawing that illustrate a specific point (Henderson, 1999). Design representations are most often used to describe and visualize design ideas when communicating with others. When collaborating on a cross-disciplinary basis it is important that the design models in use make sense to all parties involved. Star (Star, 1989) and Henderson (Henderson, 1999) make a notion of shared objects from which different groups can see and understand different meanings as 'boundary objects'. Boundary objects shall be understood as objects that can give different meaning to different participants. In Star' words boundary objects are 'objects which are both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites" (Star, 1989).

In relation to the meetings between designers and users we find it important to find ways in which the users can be co-designers in design projects. This objective with user involvement simultaneously put a focus on which representations to use and how to bring them into the design process. We have found it useful to think of these representations as props. This because these design representations' role in participatory design can involve more than just a way to present design ideas. Just as much props can be used to evoking the future of artefacts. They can be seen as a way to transform now-situations to future-situations. In the following we give three eksamples of different kinds of props that were used in the two projects mentioned.

EXAMPLES OF PROPS IN DESIGN

Props from the world of fairy tales

Besides the use of simple card board props of possible products the Smart Tool team experimented with the use of dream tools as props in the design proces. The props were a crystal globe where you could see whatever you wanted, a magic wand where you could do whatever you felt like, and a magic box where you could store whatever needed.

The concept of dream tools were taken from the world of fairy tales. Like in the world of theatre and when children play known objects often change meanings while other objects are created for specific purposes. The crystal globe was in fact a bulb, the magic wand was a painted stick, and the magic box was constructed from painted carb board had (see figure 5). These props did not contain many details. What mattered was the functions each of the dream tools.

In the crystal globe you can see whatever you want

With the magic wand you can do whatever you feel like

With the magic box you can store whatever you need

Figure 5: Props made with inspiration from the world of fairy tales.

The refrigeration technicians incorporated the dream tools into the dramatized scenario. For instance, one participant wanted to see the face of the person he should talk to at the supermarket. In relation to the magic box one would like to have a customer's card file and another wanted to store information about the problems they had just solved. Their instructions were incorporated in the scenario and acted out on the spot. From looking at the scenario that was

acted out a refrigeration technician, for instance, commented on the danger of having to look at the "crystal globe" while driving as the attention is taken away from the road.

Props in simple abstract generic forms

In the Dynabook project we produced eight simple abstract cardboard props in various generic shapes and size. One was a tall cylinder, a couple of them were squares in different sizes, one was a small cylinder with a uneven top, others had elliptic and circular shapes and finally one was pyramid-shaped (see figure 6).

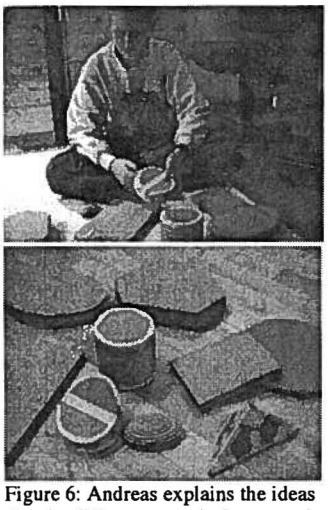

Figure 6: Andreas explains the ideas that the different generic forms evoke.

The props were brought into the users home environments at the first visit. The users were asked to generate ideas based on the various forms or just comment on what shapes and sizes they preferred. They chose one or two forms they liked the most, and we prompted them to generate ideas and explore their possible use. They were then asked to describe and show how they wanted the shape(s) to be used. The aim was to stimulate their fantasy and explore the value of using abstract generic props for this purpose.

For instance we visited Andreas who is 13 years old. Quickly he picked the small cylinder with the uneven top. His spontaneous reaction was that it looked funny. Another one was too big, and a third was okay. When asked to pick the one or two shapes he liked the most, he chose the four smallest ones as they were easy to have in his pockets or carry around in his bag. Each shape evoked different ideas. He chose the smallest square for reading books (schoolbooks and literature), writing essays, and making calculations. Another was for chatting with others, and a third was for translating words from one language to another (see figure 6).

The first time Mike and his family were visited in their home the generic forms were discussed. Mike chose the big square form and he explained how he would like the Dynabook to help him cock dinner. For instance he wanted help to find recipes based on the ingredients they had in the home at present and he wanted the recipe to be read out loud while preparing the food. Mike also showed where he wanted the Dynabook to be placed in the kitchen; on a cabinet door above the kitchen table. Here it was easy to look at the display and it did not take up space on the kitchen table.

Props with many details

Later in the Dynabook project design models with more details were also used as props in the design process. During a two weeks course students from Art, Culture and Communication at Malmö University designed and produced various examples of electronic books (see figure 7). The focus of their design task was to find interesting ways to illustrate if the electronic book were active or pasive, if it was open or closed.

The detailed design models were made at a stage in the design process where we did not know what components the electronic books should consist of. In other words we worked with a design approach where the artefact is developed from the outside and in. This can be seen as turning the most common design approaches up-side down. However from a user perspective this seems a valuable approach as the users find the interface between themselves and the artefact as the most interesting.

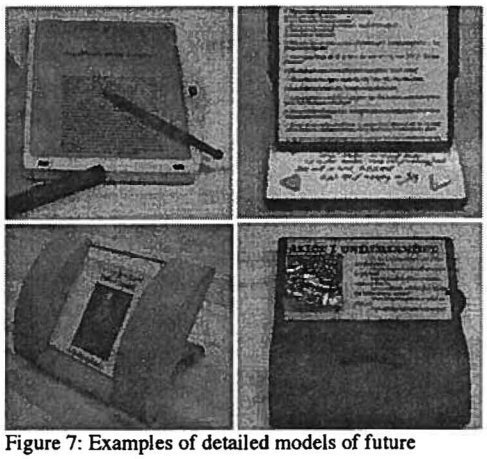

Figure 7: Examples of detailed models of future Electronic books made by students from Art, Culture and Communication at Malmö University.

During a design seminar the detailed models were used as props to try out specific use situations and by this explore pros and cons with each design suggestion.

DISCUSSION AND CONCLUSIONS

Within the participatory design field Ehn suggests that the meeting between designers and users should be understood as a meeting between different "language games" (Ehn, 1989). If accepting this it is needed to find ways to overcome communication barriers in order to be able to collaborate. Our experience with drama as new "voices" in user-centered design provides an excellent way of building bridge between the designers and the users "language-games". As drama appeals to more senses than verbal language alone it offers a common platform for the designers and users that makes the communication and understanding easier among them. However the use of drama in design demands courage from both the designers and users. We are trained to express our thoughts textually or verbally and by adding bodily expressions the focus of the collaborative inquiry changes to include both body and mind. Consequently this may cause vulnerability for both designers and users. For instance one can be reluctant towards exposing oneself to others. Drama in design demands that neither the designers nor the users are afraid of being banal or too concrete when explaining ideas or arguments.

Drama can help designers to achieve a greater empathy for the users and the contexts of use. With inspiration from how actors can build up psychological characters the designers can enter the world of the users with both body and mind. This deeper understanding of the users improves the meeting and the dialogue between users and designers. The bodily expression of arguments seems to be much more revealing than only verbal argumentation. When designers and user, for instance, explore ideas by dramatizing them the actions in the performance will often tell whether the assumptions are useful or not.

Ehn and Kyng has described their experiences with the use of simple card board design models for trying out design ideas. They found it important that the design models gave hands-on-experience, that they were cheap and fast to make, and that it was easy for everybody to make changes with scissors and pens (Ehn and Kyng, 1991). We agree on their points but will add that card board models can embrace many aspects of the future artefact because of their simplicity. One can choose to focus on shape, interaction, functionality etc. dependent on the current case of questions. Simple design models have an openness that stimulate the possibility of setting free our fantasy. Therefore they are useful for unfolding and exploring design possibilities.

The three dream tools had defined functions which restricted them as props compared to the more generic forms. The discussions fostered by the more detailed props were not as broad and varieted as when discussing props with few details. Where the simple design models seem to open up solution space the detailed models can help narrowing the solution space and create coherence in the design process. The detailed design models can also be used as props to find out what is missing in the design of the artefact.

In the Smart Tool project the design team made field studies in the refrigeration technicians environment in the beginning of the project. Based on the field studies the design team created a number of scenarios. The design team did not return to the refrigeration technicians setting later on in the process. Instead the refrigeration technicians were invited to a workshop that took place in a setting created by the designers. In contrast to this the scenarios in the Dynabook project were created in the world of the users by the users themselves. In line with Binder (Binder, 1999) we argue for the importance of users improvising scenarios in their own settings. It is important because it is a way for users and designers to meet on more equal terms. This is necessary if we seriously wish the users to be co-designers in design projects. However we still want to stress that this should not replace the emphatic work of the designers themselves.

The design representations that we have used in collaboration with users were not just used to present what the designers had in mind. The design representations was just as much used as props that evoked new design possibilities. When using drama in user centered design projects props shall not "only" be described as '"things to think with' where reflections from different participants result in re-seeing the design in order to gain new meanings (Papert, 1980; Bamberger, 1991). Props used to gain a bodily understanding of the users and the contexts of use should also be viewed as "things to act with".

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