

# Some lessons learned, regarding prototyping and framing, from PD workshops

Bo Westerlund

HCI, School of Computer Science and Communication, KTH, Stockholm  
SE-100 44 Stockholm, Sweden  
bossew@kth.se

## ABSTRACT

This position paper discusses lessons learned from several cooperative design workshops that can be of importance when designing for co-design also in other settings. The workshops that are the foundation for the paper have been conducted with several different settings and participants: families, knowledge workers, people with different disabilities, elderly, etc.. Besides the ‘users’ other stakeholders have also been actively participating. During the workshops the user-participants share recent experiences that they regard as meaningful. Thereafter all participants collaboratively generate ideas for improvements of the situations/activities. Since these ideas are triggered by someone’s particular experience the suggestions tend to be very specific and not too general or unarticulated. The ideas that are regarded as the best ones are presented as video prototypes, i.e. movies that show how the activities are performed with the help of lo-fi prototypes. The lessons learned include accounts for what helps the participants create meaningful ideas. A non-representational approach to the understanding of the collaboratively created artifacts is also suggested. Basically the lessons are the importance to support the designerly ways of working as well as taking care when interpreting the prototypes.

## Keywords

Workshops, participatory design, prototypes, co-design,

## INTRODUCTION

At the multidisciplinary research centre for user oriented IT design, CID (later renamed HCI) at KTH in Stockholm, Sweden we have been involved in several research projects with a participatory design approach over the years. I have a background in industrial design and the other researchers have backgrounds mostly in ethnography, computer science and psychology. For several years we have integrated the methods of video brainstorming and video prototyping of Wendy Mackay [13, 14, 22] as parts of the workshop

method that is discussed here. It involves designers and people not trained in design working together in the design process.

We have conducted these workshops with several different settings and participants: families, knowledge workers, people with different disabilities, elderly, etc.. They have been situated both in our lab but also in situ at the participants’ workplaces. The participants have been participating as themselves, not as representatives for their work position, a group of people with similar disabilities or so. Besides the ‘end-users’ other *stakeholders* [9] have also been actively participating. These can be persons from manufacturers of products, service providers, from relevant authorities and other persons that in some way have a relation to the field that the workshop concerns.

## The workshop process

The main objective is to create design ideas that are grounded in the lives of the participants. Instead of general descriptions that are reduced and without detail, we ask for descriptions of real situations that make sense to the participants. Critical Incident Technique [5] is here used in a rather ‘loose’ way to help the participants focus on meaningful activities, aspects or perspectives. Basically when the workshop starts we ask the ‘users’ to focus on *real and recent* situations and activities that they regard as meaningful in some sense.

When the user-participants share recent experiences that they regard as meaningful all participants in the group collaboratively generate ideas for improvements of the situations/activities. Since these ideas are triggered by someone’s particular experience the suggestions tend to be very specific and not too general or unarticulated. The ideas that are regarded as the best ones are developed into scenarios. Then these are staged and videotaped into video prototypes, i.e. movies that show how the activities are performed with the help of lo-fi prototypes. The ‘quick-and-dirty’ prototypes are created by the participants in order to be able to show the scenarios.

The concept of prototype is here used in an inclusive manner and includes artifacts that sometimes are referred to as sketches [4], mock-ups, ‘lo-fi prototypes’ and ‘paper prototypes’. Christiane Floyd writes that “a prototype should always be considered a *learning vehicle*” [6].

*Position paper presented at the Designing for  
Co designers Workshop held October 1st 2008 in  
conjunction with the Participatory Design Conference  
2008, Bloomington, Indiana. Workshop documentation  
available online at: <http://mlab.taik.fi/co-design-ws/>*

Beside the request for real and recent experiences, *show me* is a common encouragement. This is because we are not so interested in the participants' *espoused theory* of action. Chris Argyris and Donald Schön [1] have noted that people have two different theories for action, one *espoused theory* and one *theory-in-use*. "We cannot learn what someone's theory-in-use is simply by asking him." [1:6] We try as much as possible to engage the participants in actions in order for them to show us how they want to interact in the particular activities. Elisabeth Sanders also emphasizes the importance of design instruments that support understanding not only of what people say but when "all three perspectives (what people say, what they do, and what they make) are explored simultaneously" [18].

### ONE EXAMPLE

Below follows a description and a discussion of one video prototype. It is from 'Project K', a design project with employees at a Call Centre for the Stockholm County Police in three rural workplaces [11, 17]. The main part of the work consisted of receiving phone calls from people that reported non-ongoing crimes.

#### The Sound Hats

The video prototype 'Happy company, without disturbance' begins by illustrating how difficult it is to work when some colleagues are talking nearby. After this account for the current situation the group shows their suggestion for how they can interact with each other in the future without disturbing their colleagues.

The basic idea is that by putting on a 'sound hat' (see figure 1) you can have a conversation with somebody else without disturbing the other colleagues that are working in the same room.

The artifact that they designed was configured for two different kinds of communication. When it was not 'used' for talking it showed if the owner was interested to talk with someone for the moment or not. This was done with two small flags on bendable antennas. If the green one was up this was intended to show an interested in a chat.

This is one of the ideas for improved working environment that also shows many of the constraints of the present situation. There is both a need for silence when talking on the phone but also a desire to be able to talk both while working with other duties and also for relaxation and all other reasons for talking with workmates.

Due to the group members genuine knowledge of their work situation in all its aspects they seem to have been able to attend to many relevant aspects of this design idea.

Perhaps needless to say, the group had really great fun during the work. And so did I who facilitated the workshop. Their colleagues of course had a great laugh when they saw the video. But they also acknowledged the important social aspects that the video involved.



Figure 1. The 'sound hats' enable conversations in the workroom without disturbing the other colleagues.

The basic agency that is demanded in relation to the Sound Hats is that they should move sound between the two or more of these that belong to people that for the moment want to talk. This is clear although the group has not prescribed any specific technology. They also have shown what quality this interaction should have. This should be done without the need to attend to some distracting setting, other than the availability flag. This interaction could be described as *fluency* as Jonas Löwgren defines it, as "the degree of gracefulness with which the user deals with multiple demands for her attention and action" [12].

I regard this example as a beautiful instance of when video prototyping is at its best. The exact design that is shown in the video is most probably not an acceptable solution, i.e. it should not be seen as a representation of the final system. But it should be interpreted as precise description of the agency that the system shall support. The actual boxes that the participants put on their head should be seen as an approach, a first attempt to 'discuss' the idea. When interpreting the results it is important to distinguish between what aspects are judged to be loose and the ones that seem relevant and precise. It normally takes some experience to be able to judge the relevance aspects of prototypes.

To summarize: the video prototype shows relevant and problematic experiences of the work. It also shows what a meaningful solution should feel like, how they would like to work. The prototype does not represent a proposed solution. Instead it seems to show that in order to perform the work in a desirable way some technology could be used. The technology is the *means* needed *in-order-to* be able to perform the work in a better way [8].

### Results

The workshops have been conducted within research projects or commissioned mostly to create knowledge and understanding. The video prototypes are working material and contribute to the design work in the project in various ways. In the K project the video prototypes both helped to

understand the work situation as well as other important aspects. They also helped to understand that the proposed video space would be useful not only for creating a feeling of togetherness [17] but also for actual work.

### LESSONS LEARNED

I will here briefly mention a few lessons learned from this work that can be important to acknowledge within the workshop at PDC'08. These are: *naming and framing*, *articulation through physical artefacts and activities* as well as that prototypes should be interpreted with a *non-representational* approach.

#### Naming and framing

Donald Schön identified the important activities of *naming* and *framing* in the *problem setting* process [19]. This is a skill that every designer needs to have but is not that widespread among the workshop participants. They clearly need support in this activity. Perhaps extending some lines of thought or exaggerating a statement is what is needed to support the framing of what seems to be of interest to design and supports the participants to go on. During design work all kinds of decisions and judgments are made and designers are good at making these designer-generated-constraints in order to be able to continue the design work [10]. Most other people want to have more 'evidence' before they proceed.

#### Doing and Making

Elisabeth Sanders identified that "Listening to what people say tells us what they are able to express in words (i.e., *explicit* knowledge). But it only gives us what they want us to hear. Watching what people do and seeing what they use provides us with *observable* information" "Seeing and appreciating what people dream shows us how their future could change for the better." "It is another form of *tacit knowledge* that can reveal *latent needs*, i.e., needs not recognizable until the future." [18]

We really need to acquire accounts for these dreams, these needs and desires, the desired futures. And it is possible if we trigger the 'users' to externalize their thoughts in similar ways as designers do: by creating prototypes, reflecting on them and 'using' them in imagined future activities and situations [10, 7]. But the participants must get past the verbal-only accounts in order for them to show their *theory-in-use*. The physical artifacts are very important here.

#### Prototypes interpreted non-representationally

A non-representational approach to the understanding of the co-created artifacts is suggested. This approach is an alternative to the common conception that prototypes should be understood as representations of the future product [2, 3, 16]. Stewart states that we cannot at the same time use a representational and a constituting model [20].

This paper argues that such a representational approach will limit the design space [21] since it affords interpreting the prototype too 'literally'. Instead I suggest that the artifacts should be read in a non-representative way, from the shown agencies, interaction qualities and other aspects they afford in the context of the workshop. The prototypes can be seen

as a constituent part of the situated dialogue that takes place during the workshop where some relevant aspects are articulated while others are not.

#### Discussion regarding the 'design' activity

In the design process roughly described here the 'end-users' participate in the design process by contributing with their personal experience and also by reflecting on the meaning that the proposals created may have to them in future use.

A professional designer must be able to create a *second-order understanding* [9] i.e. understand the users' understanding.

So the professional designer contributes with experience and skills in naming and framing as well as pushing the creation and acting. The designer can also create a rich understanding of the shown interaction with the prototypes.

The judging of the ideas' relevance is done in dialogue, users, stakeholders and designers, all from their own standpoints.

### CONSIDERING HOW TO SUPPORT THE USERS TO CONTINUE DESIGNING

I can see several possibilities. The workshops discussed in this position paper could benefit from individual and collaborative activities done both before and after the actual workshops. 'Mobile digital devices' can support these activities.

Before the workshops it could be good if the participants easily could record accounts for experiences, critical incidents or so. It could also be an advantage if the participants could continue the discussion and share reflections afterwards.

With the increasing amount of mobile computing platforms, devices with accessible and powerful operating systems and with sufficient possibilities to access the Internet, like the Apple iPhone and the upcoming Google Android OS [15] we will see applications that will run on these and can be used for all kinds of co-creative activities. These can be more ethnography oriented 'observation' and recording but also involve information being pushed from 'users'. This can become excellent tools for collecting images, sound and other records of events.

But it would be really interesting if 'users' created video prototypes of 'what-if' scenarios and shared these. They could concern critical incidents as well as desirable futures.

Other possibilities can involve 'participants' collaborating and communicating with the help of these platforms. There are many on line tools but I think that there is a great potential in the mobile ones since these do not tie the user to a computer context.

#### Different users need different support when designing

Henrik Gedenryd writes "...design can be described as an inquiry into this future situation of use." [7]. Some people can imagine and articulate relevant futures while others need support in the process. From a democratic point of

view it is important to support people with different abilities and preferences to be involved in design work.

These persons need support to focus and frame. This is important since we are normally not interested in 'just' creative, top-of-the-head ideas but ones that are crafted out of relevant, particular and personal experience. Normally these ideas have never been explicitly stated. This articulation is done with designerly ways of working, to paraphrase Cross. Then the participants rapidly can create artifacts that enhance their capacity to reflect on the possible futures that they are suggesting.

If the ideas are not framed within the scope of the project (assignment) it is normally difficult to proceed with further development since it can be difficult to get producers interested in putting the product on the market. They have their own agendas, road maps for development.

Whatever setting and technology some 'end-users' will benefit from support with the design process aspects, i.e. the naming, framing, creation of physical prototypes that support reflection and description. Some ideas will also be better developed with the help of reflection of other participants, 'end-users' as well as other stakeholders. This should be taken into account when designing the design approach and process.

#### ACKNOWLEDGMENTS

I wish to thank the knowledge workers that participated in the workshops without whose participation none of this work could have been conducted. I also thank the researchers at HCI, KTH and finally the reviewers of previous versions of this paper.

#### REFERENCES

- Argyris, C. and Schön, D. A. (1974) *Theory in practice: increasing professional effectiveness*, Jossey-Bass Publishers, San Francisco.
- Beaudouin-Lafon, M. and Mackay, W. E. (2003). Prototyping Tools And Techniques In: J. A. Jacko, J. A. and Sears, A. (Eds) *The Human-Computer Interaction Handbook*. Lawrence Erlbaum Associates. pp. 1006-1036
- Brandt, Eva (2006) Designing Exploratory Design Games: A Framework for Participation in Participatory Design? *Proceedings Participatory Design Conference, Aug. 2006*, Trento, Italy
- Buxton, Bill (2007) *Sketching User Experiences, getting the design right and the right design*, Morgan Kaufmann
- Flanagan, John C., (1954) Critical Incident Technique. *Psychological Bulletin*, Vol. 51, No. 4, July 1954.
- Floyd, Christiane (1984) A systematic look at prototyping, in *Approaches to prototyping: [proceedings of the Working conference on prototyping, Namur, October, 1983]* ed. by Budde, R. Springer, Berlin. pp. 1-18
- Gedenryd, Henrik (1998). *How Designers Work. Making Sense of Authentic Cognitive Activities*. Lund University Cognitive Studies [No.] 75. Lund, Sweden.
- Ihde, Don (1990) *Technology and the Lifeworld : from garden to earth*, The Indiana series in the philosophy of technology, Indiana University Press, USA.
- Krippendorff, Klaus (2006) *The Semantic Turn, A New Foundation for Design*, Taylor & Francis.
- Lawson, Bryan (2006) *How Designers Think: The Design Process Demystified*, Elsevier.
- Lenman, S., Räsänen, M. and Thuresson, B. (2002). A User-Oriented Approach to Building a Video Community in a Distributed Workplace. In Binder, T., Gregory, J., Wagner, I. (Eds.), *PDC 02 Proceedings of the Participatory Design Conference*, 324-327.
- Löwgren, Jonas (2007). Fluency as an experiential quality in augmented spaces. *International Journal of Design*, 1(3), pp. 1-10.
- Mackay, Wendy E. (1988) Video Prototyping: A technique for developing hypermedia systems. In *Conference Companion of ACM CHI '88 Human Factors in Computing Systems*. Washington, D.C. ACM.
- Mackay, W. E., Ratzer, A. and Janecek, P., (2000) Video artifacts for design: bridging the Gap between abstraction and detail, in *Proceedings for DIS 2000*, ACM.
- Mossberg, Walt (2008) Walt Mossberg on the Internet and Rise of the Cell Phone, Aspen Festival 2008, available at fora.tv, [http://fora.tv/2008/07/07/Walt\\_Mossberg\\_on\\_the\\_Internet\\_and\\_Rise\\_of\\_the\\_Cell\\_Phone](http://fora.tv/2008/07/07/Walt_Mossberg_on_the_Internet_and_Rise_of_the_Cell_Phone) (accessed 2008-08-29)
- Preece, J., Rogers, Y. and Sharp, H. (2002) *Interaction Design. Beyond Human-Computer Interaction*. New York: Wiley.
- Räsänen, Minna (2007) *Islands of Togetherness*, Doctoral Thesis in HCI, KTH, Stockholm.
- Sanders, Elizabeth B.-N. and Dandavate, Uday (1999) Design for Experiencing: New Tools, in *Proceedings of the First International Conference on Design and Emotion*, Overbeeke and Hekkert (Eds.), TU Delft.
- Schön, Donald (1983) *The Reflective Practitioner*, Basic Books
- Stewart, John (Ed) (1995) *Language As Articulate Contact: Toward a Post-Semiotic Philosophy of Communication*, SUNY, New York.
- Westerlund, Bo (2005) Design space conceptual tool - grasping the design process, in *Proceedings for Nordes, the Nordic Design Research Conference*, 'In the Making', Copenhagen.
- Westerlund, B. and Lindquist, S. (2005) Reality based video-prototyping, Video published in the *Proceedings of ECSCW'05*, Paris.