Material Means…
'Re-Representing' - Important Explicit Design Activity

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ABSTRACT

Based on various practical experiences from several interdisciplinary and participatory design (PD) sessions and research projects the paper exemplifies and argues, like many others, that physical working materials - Material Means - can encourage engaging ways of collaborating during intense interdisciplinary and participatory design work. However, the paper rises the question what the Materials really Mean. As an initial analytical framework the terms 'Materials', 'Materializing', 'Materialized' and 'Re-Representing' are used to briefly distinguish and discuss different types of 'Material Means' used during 3 different types of activities e.g. Working with User insights, Mock-ups & Scenarios and Key Issues. Yet challenging, from a designer's perspective, the paper argues that most of the 'Materialized' outcomes also need to be exposed to activities of explicit 'Re-Representing' to seriously get an ongoing life within an iterative design process.

Keywords

Physical Representations, Material Means, Interdisciplinary collaboration, Design work, 'Re-Representing'.

INTRODUCTION

'We have post-it notes, cardboard, large pieces of paper, rubberbands, sissors, maybe even lego bricks, cameras, etc, so let's do it…' - Within PD lots of methods involving explorations of physical materials have been designed to support interdisciplinary collaboration. The use of physical materials and representations e.g. called *Boundary objects* [12], *Material Catalysts* [3], *Probes* [6], *MAKE-tools* [11], *Things-to-think-with* [2], *Hands-on-the-future* [5] show that it is widely accepted within design oriented fields that they do play an important role, foster and encourage engaging interdisciplinary dialogue and collaboration.

Originally trained as an industrial designer the author is very much in favour of these types of engaging collaboration, however, from a design perspective this is

only half the job of doing design work.

Capjon puts it this way: 'Design Experiences involve both affective involvement with material representations and abstracted analysis of the experienced, and both modes must be accounted for.' [3]

Based on practical experiences from working in established Scandinavian PD research environments, for some reason there seems to be much less focus on explicit methods and activities assuring that the lessons learned become an integrated part of the ongoing design process. The abstracted analysis or reflective parts of collaborative design sessions often tend to be done towards the end of the session when people are tired. Typically quick summaries and conclusions of what has been discussed and learned are made verbally in plenary sessions, where someone might write a few keywords on a flip chart, which might be copied or photographed for the record.

Among a few within research e.g. Capjon argues for a trial-and-error-based approach by using 3D-scanning and Rapid-Prototyping to collaboratively work on variations and details of a design object [3] and Brandt has been exploring ways of focusing on 'Continuity' when working with representations in Event-driven Development. [2]

Figure 1. The aim is to avoid that the physical representations just end up maybe as a fun memory but packed in a box.

This paper is written as part of an ongoing research project and from a design perspective as well as ambitions of developing innovative design proposals, the paper raises the question what the 'Materialized' really Mean by suggesting a focus on 'Re-Representing'.

Examples and experiences are drawn from the projects and sessions mentioned in the Acknowledgements whereas the analysis and perspectives of this paper is by the author.

MATERIAL MEANS – STATES OF MATERIALITIES

Materiality can have many meanings, so to be able to study and analyze these through specific and practical examples initially the author work with an analytical framework including the terms 'Material Means', 'Materials',

'Materializing', 'Materialized' and 'Re-Representing', which currently are categorized like this:

'Material Means' is an overall term used as a synonym to all the other names mentioned in the introduction. It is chosen because it indicates the importance of focusing on what the used Materials really Mean as part of an ongoing design process. A focus on meaning, which seems in line with the new foundation for design that Klaus Krippendorff suggests in his latest book 'The Semantic Turn'. [8]

Figure 2. 'Materials' cover physical things, papers, tools, etc etc which are more or less off the shelf but generally still open-ended. They can be combined and attached a variety of meanings depending on the decided focus and aim.

Figure 3. 'Materializing' cover the process of designing, exploring and giving specific meaning to the 'Materials' being used. Some kind of facilitation and/or previous agreement is usually needed to focus the activity.
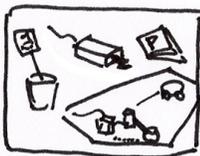
Figure 4. 'Materialized' cover the Material representations resulting from the process of 'Materializing'. They are either produced before or during the activity (by one or more producers), are not likely to be much further physically modified, but are explored and used during (and maybe after) collaborative sessions and therefore get to hold some shared implicit meaning among the participants.

Figure 5. 'Re-Representing' covers the explicit process of abstracted analysis, taking different perspectives, and making design-oriented decisions e.g. by critically relating [+ -], comparing [< >], and possibly transforming the 'Materialized' to modified formats. Formats like annotated photos, digested diagrams, movies, annotated mock-ups, sketched comparisons, etc etc which are likely to also get a life in the ongoing iterative design process. Depending on the nature of the activity this can happen preferably along the way, towards the end of a session, or as a separate explicit collaborative activity.

MATERIAL MEANS - IN DIFFERENT PARTS OF COLLABORATIVE PD DESIGN WORK

As mentioned in the introduction the author is very much in favor of using various representations – Material Means – to support interdisciplinary collaboration. As exemplified below obviously they can take very different forms depending on where in the design process you are and what the aim of the session is. The different examples are briefly discussed in the light of the analytical framework introduced above, and they are aimed to illustrate and discuss the need for different activities of 'Re-Representing'.

Material Means – Exploring User Insights
Logically end users cannot participate all the time or share their experiences with everyone, and within PD it is now quite common to also combine various methods e.g. of ethnographic studies and the use of probes as ways of gaining user insights. [9,6] A challenge is still how to share all this knowledge with other team members. Reports, posters, stories etc are useful but in some sense one-way communication. In some of the projects from which these experiences are based, we explored how various quite open-ended 'Materialized' formats could involve other professions in engaging ways during collaborative sessions. [1]

Figure 6. 'Materialized' User insights e.g. as cartoons, ill. transcripts, scaled down context models, used artifacts, image-cards maybe with video-links, etc - here collected in appealing 'fieldpacks' (left) and/or used in design-oriented games (right).

User Insights are typically 'Materialized' by field-working researchers before a collaborative session, so activities of exploring and understanding it all with team members of other professions could be viewed as a process of 'Re-Representing' from the very beginning - For example when it has been decided beforehand to use field-image-cards to play design-oriented games (Figure 6 - right) [7]. In this case different cards include images from use sites and links to video stories. By combining different cards physically (and in this setup also digitally) new stories and design themes arise. However, the different stories and key issues of each round of the game were only annotated on small post-it-notes –which not is an unusual situation. Afterwards the information on the notes was so simple that it was impossible to incorporate the findings of an otherwise interesting PD activity. This indicates the importance of also 'Re-Representing' the key issues in formats which are accessible and useful in the ongoing design process.

Material Means – Exploring Mock-ups & Scenarios
Using prototypes and – in these cases low-fi - mock-ups to explore ideas and foster collaboration within PD projects is a well-established and concrete way of working with specific design proposals. [2,5,10] Furthermore exploring use situations and possible future scenarios by e.g. creating storyboards, role playing and experience prototyping are also widely accepted PD methods for encouraging engaged collaboration. [e.g. 4] Very often the two techniques are intervening and before a scenario can be played various 'Material Means' e.g. mock-ups has to be produced to set the scene and equip the actors.

Figure 7. 'Materialized' mock-ups and other supportive 'Material Means' used for exploring and staging possible use situations either in miniature (left) or full-scale (right).

In these two examples all the 'Material Means' were 'Materialized' during the collaborative sessions using the appropriate 'Materials' available in the area, but later in the design process the situation would most likely have been, that some parts had been prepared/'Materialized' beforehand e.g. more detailed prototypes.

In the left miniature example the purpose of 'Materializing' the setup was to create specific situations which could be photographed to illustrate a story about ideas for a future tourist service. When working in miniature scales the processes of 'Materializing' and 'Re-Representing' can be intervening, but additional activities of 'Re-Representing' by relating e.g. the produced scenario to other ideas in the project would be necessary to integrate it in the ongoing design process.

The right full-scale example is a very valuable way of exploring different design ideas in use – in this case scanning things on a moving belt either using handheld (transformed disposable cup) scanners or scanners integrated in (blue cleaning) gloves. However, if everybody are in there engaged full scale with many things happening at the same time, then it is argued, that it is necessary to explicitly debrief or 'Re-Represent' what was discovered and learned afterwards not least to be able to communicate what was possibly decided to team members not participating. The activity could for example be explicitly comparing the two quite simple and therefore open-for-interpretation versions of scanners (e.g. discovered interaction strengths and weaknesses, etc). Or even if one participant has the role of capturing as the situation is played through e.g. like in this case by taking still or video images - then this could be interpreted in a thousand ways.

As there already have been two different engaging activities during the session ('Materializing' and Role Playing) no new versions of e.g. 'scanners' are typically made to incorporate the findings, but if they are key objects or the activity seem essential, then the argument is, that it needs to be exposed to more explicit activities of 'Re-Representing' to actually play a role in an integrated, ongoing, iterative design process of e.g. detailing ideas and concepts.

Material Means - Capturing Key issues for later use
As mentioned in the introduction, within PD explicit and practical methods to be used during collaborative sessions

for integrating lessons learned in the ongoing work have not gained the most attention. Below are two quite straight forward but integrated examples which also could be viewed as activities of 'Re-Representing'.
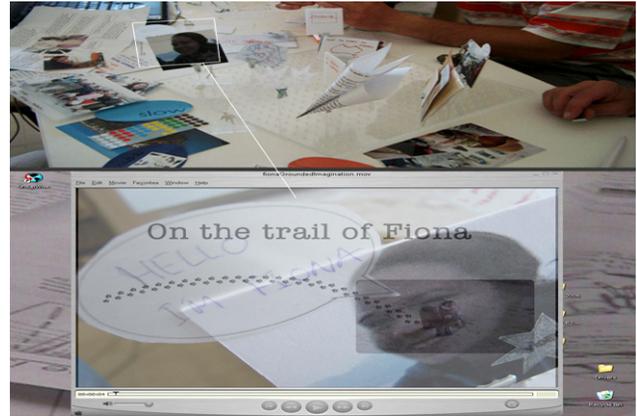
Figure 8. Above various fieldwork info about 'Fiona' was interpreted collaboratively by organizing it as a 3D collage > Below then 'Re-Represented' as a movie supplementing the ongoing design work during a 1½ days intense workshop.

Figure 9. Above a collaborative, mainly verbal discussion was temporarily wrapped-up by physically mocking up the arising issues with workshop leftover 'Materials'. Below the 'Materialized' key issues - captured as precise still images – were later 'Re-Represented' by annotating and comparing them with previous work. Here in the format of a traditional paper document, which was used several times during the ongoing design process.

The first example (Figure 8) builds on to the section above on 'Material Means - User Insights'. It shows an example of how previously 'Materialized' User Insights goes through several explicit and integrated activities of 'Re-Representing' to focus and communicate the main areas of interest as part of the working design process.

In the last example (Figure 9) a wrap-up activity like exemplified in the introduction could very well have been the end of this session, but by using 'Materials' it became an energetic and engaging activity intervening processes of both 'Materializing' and 'Re-Representing' in one. By briefly comparing with similar types of sessions, if this had

not been done, the interesting arising issues from the session would very likely not have played a role in the ongoing design process.

DISCUSSION AND FUTURE WORK

Re-Representing –challenging but important explicit design activities

Like e.g. Brandt [2] also describes, obviously to make 'Re-Representing' work like any other applied method e.g. involving physical materials and representations - it has to be part of the plan, the session/project leader has to approve, it usually calls for some facilitation and there has to be consensus that it is part of the collaborative work and not just something someone might do afterwards.

Based on the different examples above it does seem to make a difference whether the 'Material Means' are 'Materialized' before or during the session. 'Material Means' made before seem to need introduction and some facilitation to get used during the session, which then quite quickly can move into activities of 'Re-Representing', whereas if the energy is spend 'Materializing' and exploring first-hand ideas, etc then activities of 'Re-Representing' seem more cumbersome. This indicating that there might be a limit to how many different activities of 'Materializing' participants have the energy to engage in within one interdisciplinary collaborative PD session.

The author is very well aware that it is challenging, but it is argued that explicit processes of 'Re-Representing' also can become enjoyable and specific by being 'Materialized' like showed in the two last examples (Figures 7 & 8). Formats can be many, e.g. just taking precise still images like shown above, but then the important turn is to agree what they illustrate and Mean, and how they are to be integrated in the ongoing work. To avoid everyone being tired, a separate session shortly afterwards might be preferred, but whenever possible the author suggests to aim at making 'Re-Representing' an explicit, integrated and engaging activity during collaborative design-oriented PD sessions.

Future Work

The issues raised will be further explored as part of the ongoing research project e.g. by collaboratively experimenting with different material and methodological interventions aiming to support activities of 'Re-Representing'. This will happen within the EU IT-research project PalCom [13], within the Xlab project at the Centre for Design Research in Denmark [14] and as part of teaching.

ACKNOWLEDGMENTS

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