Actionable Ethnography in Participatory Innovation: A Case Study

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ABSTRACT

In this paper we describe how ongoing work with ethnographic material in a participatory innovation sets the scene for innovation to happen. We elaborate on how actionable formats of ethnographic material have been mediated to industrial partners with a stake in an innovation project. We illustrate how the stakeholders engaged in activities such as sense-making, co-analysis, and cross-comparison of the ethnographic materials, and the specification and mapping of innovation opportunities. We argue that these activities served to establish a shared understanding and ownership of the participatory research, design material.

Keywords: Ethnography, Design Methods, Participatory Innovation, Stakeholder Involvement, Workshop Facilitation
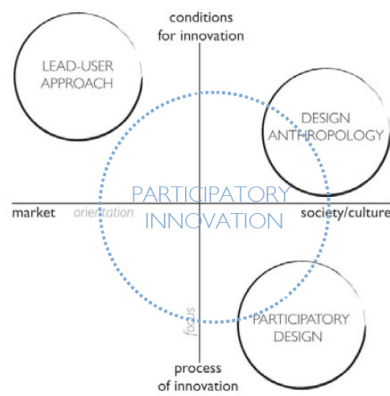
TOWARDS PARTICIPATORY INNOVATION

Within the field of design research, there has been a long-standing focus on how to relate to and empower the user of a certain product or service. Especially in fields such as Human Computer Interaction [28], Computer Supported Cooperative Work (CSCW) [13] and User Centered Design (UCD) [2, 21], there have been multiple research and design projects to study the context of use and to ask for feedback from the user in the design process. This relatively passive role of the user has been turned into a more active one since then, and users have been directly involved in the research and design process to make findings from the context of use more realistic and actionable. One quite influential approach to this is Participatory Design, which has been practiced at universities and research and design institutes particularly in the Scandinavian countries [16, 25, 26, 30]. In a participatory design process, design researchers often stage an iterative design process, which, amongst other activities, consists of field visits, workshops and design sessions. During this process, the ethnographical material and in-situ design experiments undergo a form of collaborative analysis, ideally leading to a shared understanding and ownership of design materials between designers and users (as co-designers [11]).

Besides the field of design research, there has been a similar but 'slower' development in innovation research. Leonard & Rayport [19] engage in the discussion about probable limitations of traditional User Centred Design, and they advocate enriching the innovation process with empathic design methods. Empathic Design mainly focuses on observing the user in his/ her own environment, e.g. the interaction with and modification of a product and the tacit needs of the user. Leonard & Rayport [19] suggest a five-step process for Empathic Design, consisting of observation, data collection, reflection and analysis, brainstorming, and prototype development. The basic preamble of such a process does hardly compare to the co-design perspective of participatory design.

Despite the agendas of Participatory Design and Empathic Design to involve the user, Buur & Matthews [5] have criticized that these approaches might nevertheless fail to take the 'business perspective' (e.g. a company's business model and its values, visions) into account. This is crucial for bringing the user centered designed products into the market. In a similar vein, newer innovation literature has explored methods that enhance the product or service design process not only in terms of observing and co-creating with the user, but also with regards to involving and co-designing with all the different stakeholders [3, 4, 22, 27]. Here, stakeholders include any person who have a 'stake' in the planning, designing, launching and using of a certain product or service, e.g. the 'ordinary' consumer, designer, system developer, sales or marketing personnel, project manager, distributor etc. Buur & Matthews [5] propose the new field of Participatory Innovation in order to meet the challenge of involving many different stakeholders and letting a shared understanding of and ownership over the design process evolve.

Participatory Innovation borrows from three relatively independent approaches to user driven innovation, namely participatory design, design anthropology and the lead user approach (figure 1).

Figure 1. Participatory Innovation as a merger of three approaches to user driven innovation [5].

Within user driven innovation, Participatory Design offers a range of practical methods to involve the users and project team in the design process, whereas Design Anthropology helps to bring deeply ingrained product use and user knowledge to the surface. The Lead User approach suggests an early collaboration of innovation companies with a small group of users that lead future trends of the market [31]. A participatory innovation process has a twofold aim, which is to generate knowledge, i.e. study use practices to trigger an innovative reframing of company identity, and to generate business opportunities in terms of new products, services and visions.

SHARED ETHNOGRAPHIC ACCOUNTS IN PARTICIPATORY INNOVATION

Ethnography in design research and practice
The reason why ethnographic field research, in its less exotic form [9], has been conducted within the area of design is often described as "…understanding the particulars of daily life in such a way as to increase the success probability of a new product or service or, more appropriately, to reduce the probability of failure specifically due to a lack of understanding of the basic behaviors and frameworks of consumers" [23]. In the field of Human Computer Interaction, Suchman [28] borrowed tools and techniques from ethnography to study the interaction between human beings and technology in workplace settings. Other scholars have followed to look at the details of interaction by visiting, observing and recording highly complex and often routinized workplaces such as airplane cockpits [14], underground control rooms [12], medical practices. Some of them have critically looked at how and with what type of ethnographic data (e.g. notes, audio, video) a researcher can contribute to systems design and development [1, 29]. Sometimes termed as 'design ethnography' or 'design anthropology', it has been practiced in User Centered and Participatory Design projects to understand and build sensitivity toward user experience and user values. It has become common to use video supplemented by notes and drawings to document field

visits, thus allowing for the detailed analysis of interactions. Often the "ethnographic camera" is fed back by presenting user portraits or using drama [2] to make both users and designers reflect on their practices and promote shared understandings [32]. In some projects, users have been asked beforehand to record their everyday life by using cultural or technology probes [10, 15]. In many cases, interaction design researchers and practitioners in design companies translate and present these ethnographic accounts in the forms of storyboards, scenarios and personas.

Ethnography in the landscape of participatory innovation
Despite twenty-five years of adaptation and exploration of ethnographic techniques in design practice and research, there has been less attention paid to how to mediate and co-analyze the actual raw material with business people and companies with a stake in a particular innovation project. From a participatory innovation perspective, these non-designers and non-users often have a critical say in the design process. They are also a considerable, strong link to making innovation happen.

With regard to this, both designers and practitioners in participatory innovation come to realize more and more that it is important to develop a language that enables the multidisciplinary project team to innovate together, related to Buur & Larsen's [7] 'quality of conversation' and Sanders & Stappers' [24] 'co-design language'. A facilitator has to adjust his/ her tools and techniques as well as his/ her role to enable such a process. In Sanders' & Stappers' [24] "new landscape of design", both the nature of the design researcher's and designer's role change. In their example [24], the design researcher does not just translate a user study but rather facilitates (e.g. guides, provides scaffolds for) the process of building shared ownership and creative expression at all levels (user, researcher, company people). The designer, on the other hand, focuses on using his skills and knowledge (in e.g. interaction design, industrial design, interior design) to support the complexity and scope of arising problems. Designers are often asked to develop tools, similar to what Sanders & Stappers [24] call 'generative design tools', to encourage non-designers to participate and express themselves in workshops. Besides this new landscape of changing roles and tools and techniques of facilitation, the process of co-analyzing the user study (in the form of ethnographic material) together with the stakeholders in user driven design and innovation projects might bring about shared ownership and understanding that grows a co-design language and spurs innovation.

In the following, we describe a participatory innovation project and especially the phase during which ethnographic material was prepared and mediated in different formats to the industrial stakeholders, non-

designers and non-users. We will claim that this helped to create a common language in the project. This paper contributes to design research and practice in innovation by stressing the need for an active integration and co-analysis of ethnographic material with industrial stakeholders, as opposed to a passive presentation in forms of e.g. portraits or personas.

CASE STUDY

Project Overview

In the participatory innovation project entitled 'Indoor Climate and Quality of Life', researchers from the Sønderborg Participatory Innovation Research (SPIRE) Center and from the Center for Indoor Environment and Energy at the Technical University of Denmark (DTU) together with five industrial partners, developing indoor climate products and systems, are looking into the potential for user driven innovation for the indoor climate context. The three-year design research project (2008-2011) aims at developing new knowledge about people's experience of comfort in homes, offices and institutions in order to demonstrate innovative indoor climate solutions to the industry that can enhance people's quality of life in terms of health, well-being and economy. The design process is split up into five phases, that are 1) literature screening of the concept of 'comfort' within different disciplines, 2) field studies of five Danish families (in homes, offices, kindergartens), 3) development of 'comfort themes', 4) innovation projects for new indoor climate solutions/ concepts and 5) mediation to the industry. Currently, the project team has reached the fourth phase, innovation projects.
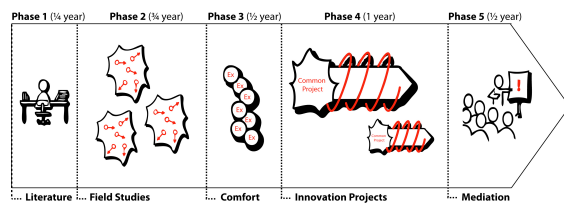
**Figure 2.** Process Overview of the Indoor Climate project.

Following a participatory innovation process, this project has been organized to encourage the meeting between researchers and practitioners with different professional backgrounds and research traditions (quantitative and qualitative). Together, this multidisciplinary team conducted expert interviews, field studies (both participant observations/ interviews and measurements of indoor climate parameters), and workshops in order to permit for an exchange of viewpoints, sharing of expertise and understanding between the disciplines [18], and thus let a common co-design language evolve and innovation happen. Relatively raw ethnographic material was continuously mediated and shared in different, actionable formats during the workshops with the researchers and practitioners from indoor climate product development.

In the following, we will describe in greater detail how the sensemaking and co-analysis of the field material (user studies) was facilitated and how it helped to co-ideate concepts and find innovation potential. Due to the focus being on facilitation and results of the actual process, we will not go into depth with the content and meaning of themes developed during the workshops.

Stakeholder Workshops

Within phase 3 of the project (figure 2), the SPIRE Center facilitated three workshops where ethnographic material from the private homes, offices, and kindergartens was co-analyzed in order to identify directions for innovation. Facilitation of the workshops ran according to the idea that "researchers reflect on the basis of their own participation" [7], where the facilitator participated and shifted between stepping fully in and then out to reflect.
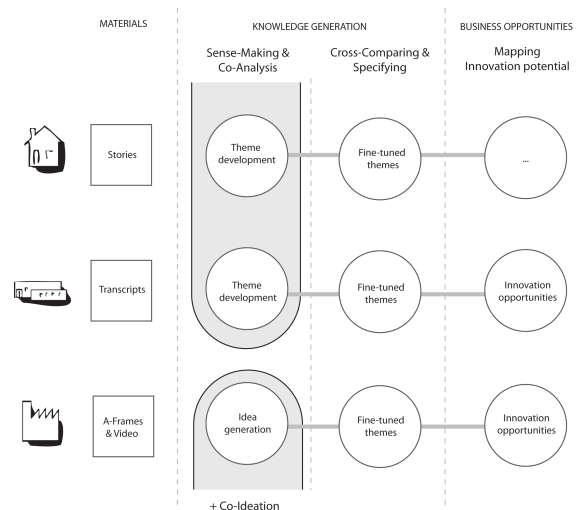

Figure 3. Overview of the three workshops (horizontal) with their corresponding ethnographic materials and collaborative activities (vertical).

The Home Context

The first workshop (figure 3, first row) dealt with the ethnographic material of the five private homes. Beforehand, researchers from SPIRE, who had also conducted the field studies, selected a range of interesting indoor climate scenes and situations that could represent the whole of the field material, while being sensitive to one's own social categories [9].

The multidisciplinary project team was split into groups of three, each of whom obtained seven to eight A4 sheets of paper with a story, quotes and a situational picture describing indoor climate related actions and motivations at a particular home (figure 4).
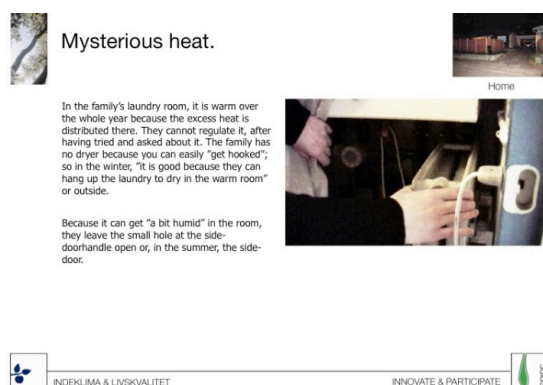
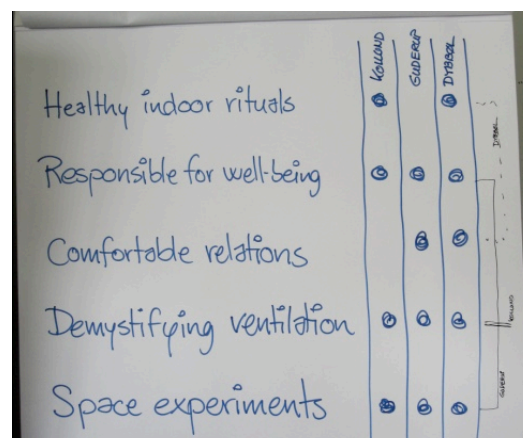**Figure 4.** Material from the workshop on homes: a story card

Then, the groups were asked to map out interesting comments with post-it notes on another A3 sheet of paper, which were presented to the other groups afterwards. From these comments, the facilitator (SPIRE Center) together with the project team clustered and fine-tuned indoor climate themes across the different homes.

During the workshop, the industrial project partners in the groups were particularly surprised about how unsustainable and atypical the home owner/ the user often acts. One of them, a development manager from a Danish production company of insulation materials, helped to pinpoint the theme *"an expert you trust"* with regard to dealing with one's indoor climate. She concludes that in many of the home settings, which were visited, *"people are often trusting their neighbors and friends more than an expert. They don't want an expert to tell them what to do."* Many of the dilemmas and situations presented in the story cards (figure 4) were rather mundane and familiar at first sight, but during the reflective workshop session they became strange and were suspiciously looked upon. What the researchers from SPIRE aimed for was that especially the industrial partners being experts in providing an indoor climate product and/ or system for optimal comfort would slowly recognize everyone is a novice in experiencing indoor climate systems and comfort in real life. Furthermore, the whole project team would come to gain a shared understanding, let new knowledge evolve and concepts of indoor climate and comfort be reviewed. From the results of the first workshop, it seemed promising, in that it could also trigger a discussion about the industrial partners' own experiences, interests and possible future directions for innovation, but challenging as well to wanting to do this with the help of simple observations from the ethnographic material.

The Kindergarten Context
In the second workshop (figure 3, second row), the ethnographic material of the kindergarten setting was presented for co-analysis. Here, the multidisciplinary groups of three to four people received an A4 sheet of paper with transcripts and corresponding pictures of kindergarten personnel dealing with everyday indoor climate related situations. They were asked to read through, discuss and comment with post-it notes on another A3 sheet of paper in order to present 'their kindergarten' situations to the rest of the team. Afterwards, the facilitator tried to pinpoint some indoor climate themes (figure 5) across the different kindergartens, and then moved on to collaboratively transfer them to an x-y coordinate system to frame innovation potential of these themes. Themes were found to be strong and worthwhile to be explored further when high innovation potential (x-axis) was met with the project partners' strong belief (y-axis) (figure 9).

Figure 5. Cross comparing the themes and kindergartens in the workshop on kindergartens.

When one of the groups presented comments about the material from the kindergarten that they had co-analyzed, one of the industrial partners, a development engineer from a Danish company producing controlled window openings for buildings with natural ventilation, listens carefully and finds a commonality to 'their' kindergarten case (figure 6). *"That's kind of interesting because we had kind of a similar problem [refers to his transcript]. She [one of the pedagogues] wouldn't air out because she was afraid that other people would hear what they were talking about… Tavshedspligt [duty of confidentiality]. [..] That they [pedagogues] go here [kindergarten office] and were talking about some children. So they find an excuse not to air out."* With his reaction, the engineer shows his ability and willingness to make a fine-grained observation, comparison and to draw a conclusion from it.

Figure 6. Development engineer (left) refers to one of the group's transcripts.

In another instance (figure 7), he discusses with the project team the fact that *"it is weird that our user is talking a lot about this responsibility they have to take. [...] And she's [points at his transcript] talking about getting away from structure, and yours [points at other group] is talking about having structure. [...] But she's- she says [reads off transcript] "we should not have a procedure for when we open the window. [...] She [the pedagogue] was totally opposite."*


Figure 7. Development engineer (left) discusses by pointing at ethnographic material.

From these and other interactions during the second stakeholder workshop about ethnographic material from kindergartens, the project team moved towards owning the material and reaching a shared understanding in the participatory process of innovation. They seemed to loose their initial hesitance, to directly refer to the material, compare and analyze it, to show empathy with "their user", to tell about "their experiences", and to see the challenge that e.g. existing routines in kindergartens present if one wants to keep optimal indoor climate conditions ("not airing out"). The facilitators were confident in challenging perspectives for another time.

The Office Context
The third workshop would concern the ethnographic material about indoor climate and comfort issues in five offices. Prior to this, there had been an internal workshop with researchers from the SPIRE Center where the project was recapitulated and indoor climate themes across the offices were prepared. The internal workshop served as a way to rehearse and to share different viewpoints of the material. In the beginning of the workshop, the groups of researchers were handed ethnographic material of the different offices in forms of six to seven A-frames [8]. A-frames were developed as a performative tool for co-analysis, consisting of an A4

sheet of paper with a transcript, a picture and some space for comments, folded to a standing A5-sized prop. Besides the A-frames, the groups also received the corresponding video clips (approx. one minute long). Their task was to read through the transcript, see the video clip, and then annotate on and give a title to the A-frame. Afterwards, the group should collaboratively collect some of the A-frames each under one theme, which they had to present to the other teams. After the group presentation, the facilitator tried to summarize five indoor climate themes, by also taking the themes from the workshops about homes and kindergartens into account.

Following the internal workshop, the project team conducted the stakeholder workshop with the companies and DTU (figure 3, third row). Here, the groups of three picked each an indoor climate theme they wanted to work with. They were asked to familiarize themselves with the A-frames and video clips, and possibly add some comments. Then, the groups began to generate design ideas for indoor climate solutions based on their theme and field material (figure 8). These ideas were presented and discussed with the rest of the workshop participants afterwards. In the end, the facilitators and the project team tried to fine-tune and discuss innovation potential of the indoor climate themes, by assigning them a place in the same x-y coordinate system (figure 9).
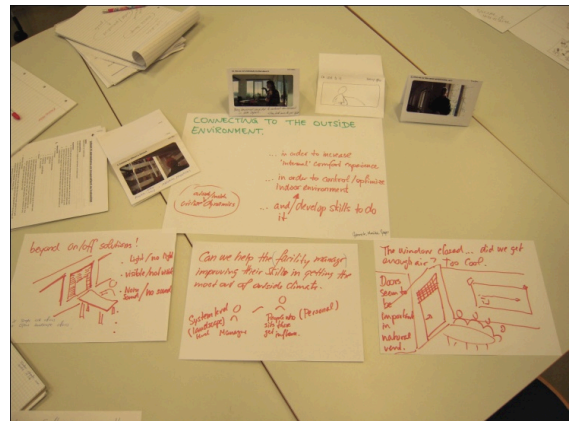
Figure 8. Co-ideation in the workshop on offices: A-frames and concepts.

Figure 9. Mapping innovation potential of the indoor climate themes in the workshop on offices.

The third stakeholder workshop meant another stepping-stone for the industrial partners, the Technical University (DTU) and the Participatory Research Center (SPIRE) to share perspectives and understanding with the help of observations from and the co-analysis of raw ethnographic material. When discussing his group's design ideas with the rest of the project team, an engineer from the standardization and product regulation department of a Danish manufacturer of daylight and sun lighting systems, gives a detailed account of one of the A-frames: *"In one of the offices [points at A-frames], they solved the problem of shading with posters. But they didn't think about moving their workplace. [...] So having [an] allowance to discuss in the room [office] different situations and solutions should be encouraged, because their [workers] awareness leads to responsibility which was one of our subthemes in this [points at A-frame grouping]."* (figure 10).

Figure 10. Engineer (right) discusses by pointing at A-frames grouping.

This comment guided the discussion towards possible solutions to raise awareness, e.g. using one's mobile phone to measure light, heat and noise. Often, the industrial partners related with utterances such as *"if we had to see it from the users' point of view", "in these/ our cases", "people do…"* to the ethnographic material in order to support and to make their claims relevant. They also seem to have an account of what has happened during the project so far. *"We could relate them [the indoor climate themes] to the study [literature study/ expert interviews] that we did in the start where we asked different types of people what they are thinking about indoor comfort. I think it was very interesting to see that every science and art actually does have this theme in a way"*, as two of the participants proposed.

From the three workshops, the project team could see the merits of making ethnographic material actionable to practice sense-making, co-analysis and cross-comparison together with stakeholders early in the design process. It could produce not only shared ownership and understanding of the design material but also participants having to negotiate their stakes and interests in the innovation process. The indoor climate themes that emerged during the workshops served further as user driven design directions in the innovation projects (figure 2).

CONCLUSION

Within a participatory innovation project or any innovation project, we see it as important to nurture the meeting of different perspectives and disciplines in the development process because it "create[s] a complexity that none of us can foresee" [7]. In agreement with Buur & Larsen [7] we see such a complexity as a resource for innovation. One of the ways for how to take up this challenge could be to mediate and analyze field data in forms of ethnographic material together with the different stakeholders in a participatory innovation project. This certainly asks for new formats and approaches compared to existing design research and practice.

During our project 'Indoor Climate and Quality of Life', we engaged the entire project team in the work with well-crafted, actionable ethnographic material and staged activities such as sense-making, co-analysis and cross-comparison. This helped create a shared language and ownership of the project. The workshop participants could see the value of the ethnographic material in terms of innovation directions and often returned to it in their discussions and reflections. We also saw it as important to address the companies' stakes and interests throughout the workshops in a language that they can easily relate to. During the process of engagement, especially the industrial partners came to actively reflect over the users' and their own practice and also readjust their stakes to let innovative ideas emerge.

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