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Architects and users in collaborative design

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ABSTRACT

The custom of involving users in building projects has increased over the last years, following a focus on the importance of front-end activities, both in practice and in academia. This thesis explores user participatory design and more specifically the co-design process from the architect's point of view. How can architects support clients and users in identifying, expressing and developing their requirements for their future environment, and preparing them and their new facilities for the challenges of tomorrow?

The text rests on two surveys. One is a set of focus groups and the other a series of interviews combined with mapping of cases. The text is also largely based on the writer's own experience, observations and analysis from working on such user-participatory projects. The text thus takes the character of being both descriptive and explorative.

By following a set of projects made by a practical framework for co-design, called design dialogues, some issues connected to planning and executing co-design processes is presented. The text reflects on the role of the user in participatory design (PD) and views of users' competencies and involvement. It further illustrates the field of participation and collaboration in relation to users in architecture – what it is and has been. Further discussion considers the consequences for architects engaging in PD, such as, what role to take and challenges and possibilities with the user-architect interaction.

The study found that there are several basic problems hindering the engagement of any user participating process – one being the users being a multifaceted group. Still it becomes clear that there is a basic need for support of identifying and developing requirements from the user side.

My study found that design methods and visualization, together with the process leader's facilitative skills in establishing a platform for and climate of trust, work as a hot-bed for innovative thinking, deeper understanding of the situation and its possible future development. There is a need for a certain competence for doing this, but there is also a need for a competence structuring, analysing and interpreting the outcome. The discussions show that many architects should be well equipped to do most of this, although this is not specifically trained in education.

Keywords*:* *Architect, Co-Design, Collaborative Design, Facilitator, Front-end activity, Participatory Design, Users*

List of publications

This licentiate thesis is based on the work contained in the following papers, which are referred to by Roman numerals in the text:

Paper I *Mapping a framework for Co-design in health care projects- an empirical study.* Conference paper presented at ARCH12 in Gothenburg, 12-14 November 2012.
Authors: Johanna Eriksson, Peter Fröst, Nina Ryd, Department of Architecture, Chalmers University of Technology

Paper II *User involvement in residential building projects: a stakeholder perspective*. Paper under review for the Journal of Housing and the Built Environment.
Authors: Johanna Eriksson, Department of Architecture, Chalmers University of Technology, Wiktoria Glad and Madelaine Johansson. Linköping University, Department of Thematic Studies.

Earlier versions; *Attitudes and Experiences of user involvement in early stages of residential projects* conference paper presented at ENHR 2012 (European Network of Housing Research) in Lillehammer, 9-12 June 2012.
Authors: Johanna Eriksson, Department of Architecture, Chalmers University of Technology, Wiktoria Glad and Madelaine Johansson. Linköping University, Department of Thematic Studies.

Abbreviations used in this the thesis and papers

DD	Design dialogues
DL	Design:lab
DMO	Design med Omtanke / Concerning Design
FfC	Framework for Collaboration (used mainly in Paper I)
PD	Participatory Design
UI	User Involvement (used mainly in Paper II)

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My trio of supervisors have guided me through these three years and complemented each other in helping me to understand the world of research. Thank you Nina Ryd for sharing your experience and knowledge of how to maneuver in the academic field, of what the craft of research is about and for continuously reminding me that all steps should contribute to the whole. To Peter Fröst for introducing me to design dialogues several years ago, for including me in your projects, and soon trusting me to conduct and develop them on my own. Thank you for pointing me back to the core, when I wandered off in other very interesting research directions. I wish to thank my third supervisor Wiktoria Glad, from Linköping University, for offering an "outside" perspective on the world of architects, where things are apparently done differently. In conducting the focus group study I had great help from both you and Madelaine Johansson. I learned a lot about the practical craft of writing an academic paper and I really enjoyed working with you.

In parallel to my studies I have worked as a consultant at Sweco together with my colleagues in projects. Many of you are also part of the result and the reflections presented here. I am very grateful for your interest and discussions. Special thanks to my studio manager Inge Bohlin, and Anders Öreberg regional manager, who initially expressed skepticism towards the idea of me venturing into research, but nevertheless supported me throughout the whole process and made it possible. I am most grateful to my colleague and friend Susanna who at a very late stage corrected the language of my last minute additions.

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Finally I want to thank my whole family, especially my sister Gunilla, my liana in the research jungle. And to Panda for love, intellectual and emotional support and for patience, especially during those intense days in the end when I turned our sofa into a library and chased you out of our apartment to get peace for writing.

Thank you all, let's do it again!

Table of contents

1. Introduction

The introductory section presents a statement of the issues investigated, the area of research, and the background to the research questions. It also describes how the research project and this thesis came to be and the driving forces behind them. It follows a formal structure but includes a personal perspective.

1.1 Introduction

Front-end activities have been identified as an area needing improvement in the building sector (Byggkommittén, 2007; Sveriges Arkitekter, n.d.), especially focusing on user and client needs (Engman et al, 2006). In line with this, clients are becoming more demanding in terms of the quality, performance and functionality of their buildings (Emmitt and Ruikar, 2013).

If user needs are addressed early, there are implications and expectations of higher quality in the output, satisfaction for the tenant, and improvement in the building sector image (Engman et al, 2006).

Nevertheless, the user-centred approach is not enough to solve the complex challenges of today, not to mention the future (Sanders and Stappers, 2008). The building industry in general and architects in particular, need to take a more collaborative approach (Emmitt and Ruikar, 2013; Cuff, 1992), not just collaborating in small groups of experts, but expanding to a larger context, including society (Gibbons et al, 2002) and end-users (Scariot et al, 2012).

In relation to this, design methods have been highlighted as suitable for solving complex problems, involving stakeholders, and achieving innovative solutions in design and other fields (Cross, 2011; Rylander, 2009; Jahnke, 2013). Several approaches of user participatory design have emerged and been studied. These include the design dialogue (Fröst, 2004), co-design in the design lab (Binder 2011) or the workshop models described by Hygum Thyssen et al (2010) and Malins (2011), all applications in the building industry.

Although methods of user participatory design have been on the agenda for several years, there is limited documentation and analysis of the consequences resulting from involving building users and the value it adds. Furthermore, the array of associated methods and concepts are inconsistently defined, and there is a need for common denominators (Wang and Oygur, 2010).

1.2 Where it started

The background to writing this thesis begins with the years I spent working as a consultant at Sweco, an architectural firm. For five years I was engaged in working with front-end activities and the user participatory design (PD) approach, design dialogue (DD). I found this an educational, inspiring, and rewarding way of working, for me as an architect as well as for the client and the other actors involved. This working method brings you right into the middle of an organization’s issues, be it connected to the building project or not. I often entered projects in situations involving a long on-going, and sometimes tiresome, search for solutions. The approach I worked with proved fruitful in many situations, and less so in others. It has grown through each new situation and through initiatives from participants, clients and the architects involved.

These experiences wakened new ideas and questions about why and how the components of design dialogue could work together. I felt I lacked understanding of why it worked when it did, and why it sometimes failed. What critical elements were there? I could point to circumstances or mistakes in project planning, but to take the next step into understanding what I was dealing with, I needed to get a bigger picture. I wanted to study the process behind participatory design and place my experiences in the landscape of other methods. When engaging in research, I soon realized that the experiences and empirical material Sweco had in nearly 70 projects, could tell us all something, including both those who worked on these projects and others, especially if I managed to describe these projects well, putting them in a wider context. With this, I hoped to grow as an architect, and be able to improve the methods used, and in doing so provide better services for clients, and ultimately, better environments for the users.

1.3 Arena: Users & Requirements

BQR, *the Council for Constructing Excellence*, was a network for Swedish building industry actors. In 2006 they published a small book called *Kan omvärlden ha rätt???*, (Engman et al, 2006) (In Swedish only: Can everyone else be right?) in order to investigate what affected the image of the industry. The book presents four areas crucial to the development of the construction industry. These four areas were called *arenas* and represent selected actors and aspects having a high impact on quality development in the industry. One of these arenas, *Arena: Users & Requirements* developed into a research project. The project describes how the user – tenants and customers of the real estate sector – in many cases lack the tools and competencies to translate their business or organizational objectives into requirements and demands for their facility planning (Engman et al, 2006).
The research project Arena: User & Requirement received funding from the Swedish Research Council Formas and Sweco Architects. Another key actor in the project IQS, *the Swedish Centre for Innovation and Quality in the Built Environment*, a network of building industry actors and a coalition between BQR and BIC, another industry network. Chalmers Univerity of Technology hosts the research project as associated professor Nina Ryd is scientific project manager.

1.4 Sweco and design dialogues

Sweco Architects belong to the Sweco group, a large consultancy firm that "creates architecture for a sustainable society and contributes to good environments where people can live, work, learn, play and heal" (Sweco, 2013).
When I started working at Sweco in 2006, I became acquainted with Peter Fröst and his work with design dialogues in front-end activities of health care planning (Fröst, 2004). He used several methods to engage co-workers facing a change of work environment to describe needs and requirements, and create solutions. I started working with Peter and over the years, our method of working developed and has, up to now, been used in around 70 projects. These vary in scale, application and focus, but have an emphasis on healthcare.
Design dialogue is a framework that functions as support to formulation of customer requirements and provides a tool for a wide group of stakeholders to

discuss and develop their future environment. In the process of translating business needs into building needs, requirements are further established, making the method particularly well suited for contexts with operations where needs are evolving and dynamic, as co-locations or introduction of new working methods. Design dialogue uses design methodology, creation of artefacts, and scenario play as several key elements when involving users in workshops. For further description of the approach, see chapter 4 and Paper I (2012).

1.5 Being a PhD student

As a PhD student in architecture, I became accepted as a member of Swedish Faculty for Design Research and Research Education, which gave me access to recurring workshop events covering common design issues of theory, method and application with other doctoral students focusing on design research. This has meant that although my research field is architecture, I use terminology in common with design research, which I feel has a strong connection to my areas of interest.

For me, the journey into design has been a way of understanding my profession and of developing insight in how the design process works. It also made me aware of additional changes are needed in ordinary working methods as well as in the design dialogue framework studied.

I also come to realize that because of who I am and what I have been working with as a practitioner, I never venture far away from practice. My interest lies in application and direct contributions to the role of the practicing architect.

1.6 Goal, aim and research questions

Development of Aims and Questions

When I started, I had practical experience of participating in and leading processes of user participation in design dialogues in approximately 30 projects. In my professional life, it had become an almost mandatory working method. I started my research programme by asking myself why it was so important and if others thought so too? For me, the need for user involvement was obvious – it seemed to add both stability to the outcome, and crucial information for those managing the project – and that made it strange that everyone else was not doing this, too. Why wouldn't you involve those who a new environment would affect the most? Could there be reasons for not involving users? What were the limits to any method? And, at the same time – what were the added value and quality that user involvement brought to a project – that would otherwise be lost? These questions were mirrored in the Arena: Users & Requirements research projects and brought me to the first study – focus groups with building industry actors to determine attitudes and experiences of user involvement. (Paper II, 2013)

Up to the point, as I started my research programme, there had been no formal evaluation or follow-up of any completed design dialogue projects. No study has been done to find if and how the approach added value to the overall process, and to the finished output. This was the basis for the second study; a series of interviews in eight health care building projects that used design dialogues in their early phases (Paper I, 2012).

I look at the part of design that involves users, participatory design, and I focus here on the part of the building industry that has a significant influence on people's life. I have focused in my papers on residential circumstances and healthcare environments, but believe there is a wider application.
Infrastructure and outdoor public spaces are not included, although these enter the discussion through interviews.

The aspect of the architects' role in user participation was always present, but during the first year or so, it played the role of another question. Over time it grew and became one of the central issues. I have chosen to look mainly at the front-end activities in building projects. Front-end activities are early stages that have been identified as crucial to the overall success and quality of the project. The Royal Institute of British Architects (RIBA, 2013) presents a Plan of Work, a model where stages in building design and construction process are presented. The first two stages are called *Strategic Definition* and *Preparation and Brief* and include the formulation of core objectives, project objectives and budget. The following stages are characterized as *Concept Design*, *Developed Design* and *Technical Design* followed by *Construction*, *Handover and Close Out* and *In Use*. When I write about front-end activities, it is the first three stages I refer to. In the stage of Concept Design, ideas and solutions are getting further developed and evaluated. Even before the model start there is often an ongoing activity of development within a company or user organization, but I will here focus at the time when organizational discussion starts being of a project specific nature.

RIBA Plan of Work 2013	
Strategic Definition	Front-end activities
Preparation and Brief	
Conceptual Design	
Developed Design	
Technical Design	
Construction	
Handover and Close Out	
In Use	

Table 1. Front-end activities include Strategic definition, Preparation and Brief and Conceptual Design.

I define *participatory design* (PD) as a design process where participants who are not designers are actively included in design work. *Collaborative design* or *co-design* is a version of PD where the emphasis is on collaboration. This means that participants in co-design are more equal in influence than in PD. I also use the terms user involvement, user participation, and user interaction when describing elements of participatory design. *User participatory design* is then, naturally, when the activity aims to including users in the design process.

Aim

• Overall goal: Increase the knowledge about how to improve quality in the design, building, and management of the built environment.
• Deepen understanding of how to capture users' needs and requirements in front-end activities of building projects.
• Offer architects, users, and real estate managers the tools to collaboratively identify, express, and develop requirements and desired quality in front-end activities.

Research questions

RQ 1: What is *participatory design* and especially *co-design* in the process of designing buildings and facilities. What are the characteristics of participatory design and co-design? When and how are they used? Why are they used?

RQ 2: How and why could architects contribute to a user participatory design process; does user participation effect the architect's work, and if so, how?

1.7 Research Design

I use this chapter to position myself within the research methodological environment. Each paper's separate considerations are presented. I also discuss subjectivity, risk and quality criteria and end with explaining the disposition of the thesis and papers and possible ways of understanding it.

Research Approach

The scientific approach, for me, is to be open about what there is and to make related reasoning traceable. My intentions throughout are to explain why choices were made, being aware and explicit as to the risks involved.
It is suggested that the research question itself can offer guidance in the planning and implementation of the study by the way it is formulated, or rather what words are used to make it questions. A why-question or a how-question implies a qualitative way of searching for the answer, while a what- or a how-much-question will indicate a quantitative study (Flick 2009).
Methodological fit is described by Edmondson and McManus (2007) as the logical connection between research questions, earlier work in the field, research design, and the theoretical contribution. They also present three levels of research history (mature, intermediate and nascent research theory) to relate your contribution to. Based on their levels and my experience of the field of architecture, I would say architecture is a field between the examples of nascent theory and intermediate theory, thus pointing my research design in the direction of qualitative or a mixed method research design (Edmondson and McManus, 2007).
To undertake studies of people and processes, an emphasis on qualitative approach is required. I base my investigations on a general qualitative approach. A qualitative research design is used to find the reasons and processes behind a system or a situation, to understand why things are in a certain way.

Since my project starts with collection of empirical material, my approach is inductive. My intention is to be descriptive and, through this, generate understanding. Albena Yaneva tells about description that it is never neutral, in describing anything, you have already started analysing. There are always choices made, an interpretation of what something is, what it does, how it interacts with us – there is an implicit theory within description (Yaneva, 2012, lecture).

Paper I (2012) Case study – evaluating design dialogues

I entered this research programme with a metaphorical backpack of projects from Sweco, projects where the framework of design dialogues was used. As a consultant in everyday practice, very little or no time is given to evaluating the project after the occupancy stage.
I set out to find key factors affecting the participations and the processes, looking at contemporary conditions with some retrospective studies of event outcomes and processes 1 to 4 years ago.
Suitable cases were selected, how is explained in paper I (2012). The challenge for me was to distance myself from my own participation and look at the projects through the eyes of a researcher. One way of doing this was to rename the design dialogues, to find a new, neutral description – leading to a Framework for co-design (FfC).
The empirical material includes documentation of discussions in the early phases of the health care projects, revisited and evaluated through interviews. This material was categorized and coded in order to perform comparisons between them.

A mapping was done to get an overview of relevant research designs.

<table>
<tr><th colspan="2">CASE STUDY DESIGN</th></tr>
<tr><td colspan="2">General characteristics
A case study focuses on a bounded situation or system in its context. It is not used to generalized, but to generate theory. (Bryman and Bell, 2011).
Often a combined strategy (Groat and Wang, 2002).</td></tr>
<tr><td>General Strengths
Focus of study is in depth and within its natural context.
Rich material.</td><td>General Weaknesses
To little typicality in one case to be able to use the outcome in another case, generalization problems.
Hard to cover all perspective. (Flick, 2009).</td></tr>
<tr><td colspan="2">Comments:
There are many possibilities for deep case studies in the empirical material from Sweco.
There is limited time for really deep studies of one case if several cases are studied.</td></tr>
</table>

HISTORICAL / RETROSEPCTIVE DESIGN	
General characteristics A reconstructed view of the events (Flick, 2009). Perspective on process (Flick, 2009). Biographical perspective, life histories.(Flick, 2009). Aim of theory development (Flick, 2009).	
General Strengths Allows a real process perspective. (Flick, 2009)	**General Weaknesses** Time changes how an historical event is valued. Limited access when material l or informants are not easily accessed. Overlap issues – present and history (Flick, 2009).
Comments: Not a typical retrospective study since I will focus on the connection between current situation and earlier events.	
COMPARATIVE DESIGN	
General characteristics A multiplicity of cases is studied with regard to particular excerpts (Flick, 2009). Could be seen as an expansion of the case study design (Bryman and Bell, 2011).	
General Strengths Generalizability is higher.	**General Weaknesses** How similar do the cases need to be to constitute a scientific comparison? What conditions should be kept constant (Flick, 2009)?
Comments More cases to compare from will help validity and generalizability My own participation in some of the studied projects makes me biased. Tools for approaching these more objectively are needed. I need to find relevant characteristics to compare.	

Table 2. An overview of three relevant research designs.

Paper II (2013) Focus group study – attitudes of user involvement

I wanted to put my personal experiences working with users into a more general context on how user involvement was regarded by other architects, and by other actors in the construction industry. The choice of focus group as a method has its benefits as it offers participants to react to and discuss each other's statements. As it turned out, they could also interview each other, which was encouraged. In addition to me getting their views and experiences with each other, they also had

the opportunity to learn from each other, to make their effort in participating more worthwhile.
Given that I also had the experience of working in similar workshop situations, some visual aids were added to help the group express their ideas clearly. Thanks to this, I obtained additional material as output from the focus groups, besides the transcript, including commented models or illustrations of the discussion or conclusions.
The method is described more thoroughly in paper II (2013), but I would like to add that I had great support from the book *Fokusgrupper*, by Viktoria Wibeck (Wibeck, 2011).
In the analysing phase, I had great help from my co-authors, Wiktoria Glad and Madelaine Johansson. Glad has a background in Human Geography and Johansson in Centre for education and learning.
My aim with the focus group study was:
-orienting myself in the field (Flick, 2009)
-guidance for what additional data I need to investigate in later focus groups or interviews (Flick, 2009)
-generating hypotheses or propositions based on informants insights (Flick, 2009)
The outcome of paper II (2013) is limited by the fact that all those who responded to our focus group invitation were likely to be interested in the subject, and thereby not representative of those who were against user involvement. This biased the result somewhat.

Considerations of subjectivity and risk

By investigating in a qualitative way, the researcher becomes a part of what is investigated, both through affecting the result – by participation – and by interpreting the data. For me, I also was connected to some of the material itself through earlier work.
A key component of qualitative research design is to be explicit and explain the risks. As researchers and humans, we react to and interpret our data, which means we can never be totally objective. We can only strive towards minimizing our influence on the outcome when essential, in order to be as objective as possible.
Basing my research on interactions with people, as in the interviews and focus groups, involves the risk of people not telling me what they really think – for several reasons. Working with material and people that I have previous connections to, also adds to this risk as well as compromising my own subjectivity. As I see it, you can never avoid the risk of subjectivity as a researcher, since everything you do is affected by your previous experience. As a researcher, I will interpret the material based on who I am and what I have experienced.
In particular, I have also based paper I (2012) on material produced and provided by Sweco. The material was not produced with research in mind and should not be seen as such. Nevertheless, the focus was on a communicative process and many of the records were very detailed and informative. It was also part of the communicative process to let all participants review the record from each meeting. With this in mind, the material proved to be a rich source for study.

Early in my formulation of research question, I ran the risk of ending up in circle arguments when looking mainly at the design dialogues and following up on how they were conducted. When looking at them as one example of what I was studying, the scope widened and became more relevant for those outside the design dialogue sphere. In paper I (2012) this meant that the design dialogues are described as *framework for co-design* (FfC), however, in this thesis I will refer to this approach as *design dialogues* (DD).

The focus group study resulting in the second paper (Paper II, 2013) had a more open approach. By collaborating with co-authors from different disciplines than my own, my preconceptions about participatory design were questioned and hopefully, somewhat neutralised.

I also want to add that I have not met expectations or demands to look for a specific output from anyone in any position. I have met only openness to criticism, people have not hesitated to discuss poor consequences of something related to design dialogue and I have been encouraged to problematize and closely assess the process, rather than simply confirming its benefits.
In the end, my studies are possibly, or likely, limited by my own limitations.

Quality criteria

The issues of quality criteria in my research design are much influenced by my qualitative approach. Traditional quality criteria such as reliability, replicability, and validity are all constructed to measure the quality of quantitative studies (Bryman and Bell, 2011). When using qualitative data collection approaches, such as focus groups, issues of transferability become important.
Transferability reflects the concept of internal validity (Bryman and Bell, 2011). This concept is important because of the ambition to work closely with the industry, as well as the aim of finding a general user-involvement approach that can be applied to both housing and commercial building construction.
At the same time, there are personal reflections and influences that form a part of the empirical material. This may pose a problem regarding objectivity and confirmability criteria.

Disposition - Sewing it together

How are these two studies connected and what did they contribute to my research questions?
For me, they stand for the crucial parts of the fields I am studying. The role of the user, an understanding of who the user is and how to engage them (paper II) connect closely to how a user-involving approach like design dialogue is planned, executed and experienced – by the users themselves and by the other actors who are participating. Both the papers point to the importance of architects working closely with users in early stages.
Here, I chose to search for experiences in other fields, the more general facilitator, to be able to compare the role that the architects took in DD.

1.8 Summary of papers

Paper I: Mapping a framework for Co-design in health care projects - an empirical study (2012)

Conference paper presented at ARCH12 in December 2012.
Authors: Johanna Eriksson, Peter Fröst, Nina Ryd, Department of Architecture, Chalmers University of Technology.

This paper starts by looking at four themes (representativity, continuity, ownership, and innovation) in eight cases of healthcare building projects, each built using a framework for co-design. It is a comparative multiple-case study with retrospective parts and is based on archival studies, interviews and critical reflections. The study has a qualitative approach with some quantitative parts.

Abstract
Rapid technological development and changing demands from a changing population call for new working methods in the healthcare sector. As the working environment should support these new methods and be prepared for yet more changes, new strategies for facility planning need to be studied.
Architects have a long tradition of working with end-user involvement in the early stages of building projects, but over the past ten years, a shift in focus or trend is noticeable. Over time, the purpose of end-user involvement has moved from mere participation to co-designing, making fuller use of user knowledge and experience.
This paper revisits seven healthcare building projects, now in various stages of realization but initiated in 2007–2011 using a design driven co-designing framework, involving end-users in the early stages of developing and designing their future environment.
The co-designing framework and its outcome are revisited and scrutinized here in light of four factors presumed to influence the quality of the process and its outcome: representativity, continuity, ownership, and innovation. Each case was mapped through archival studies, observations, and interviews with involved architects, project managers, and users.
The intention is to deepen our understanding of the planning framework and the consequences of user participation and co-designing by highlighting recurring factors connected to the collaborative planning process and its outcome.
The findings indicate that the framework's basic structure has proven stable and useful in several projects and although affected by external factors such as timing, politics and finance still offer good conditions for engaging and involving end-users in project development, ownership creation and enable development of innovative ideas.

Paper II: User involvement in residential building projects: a stakeholder perspective (2013)

The material was presented as a conference paper in Lillehammer in June 2012 at European Network for Housing Research titled “Attitudes and experiences of user involvement in early stages of building projects”, but has since been extensively revised and developed into this version, submitted to the *International Journal of Housing and the Built Environment* in November 2013 under the title above.
The paper is based on four focus groups with building industry actors and is a qualitative description of attitudes and experiences of user involvement. The study, conducted in fall 2011, was made with the purpose of mapping and collecting material as a base for identifying relevant questions.

Authors: Johanna Eriksson, Department of Architecture, Chalmers University of Technology, Wiktoria Glad and Madelaine Johansson, Linköping University, Department of Thematic Studies.

Abstract
Deficiencies in the building sector have been highlighted in recent decades. Construction defects, cartels, and insufficient communication are issues that must be resolved to improve the quality of building projects. One factor influencing quality in the building industry is the ability of users, such as residents, to identify and express their requirements for the product, i.e., the residential building. However, the handling of communication with users in building projects has been insufficiently specified and studied. Drawing on a study of user involvement in building project design, production, and management, this paper examines user participation in Swedish residential projects. To map current perceptions and approaches, building industry actors met in four focus groups. Group participants were asked to reflect on the definition of users, communication handling, how information from users is used, and challenges and opportunities in user involvement. Our initial emphasis was front-end activities, but focus group results revealed that user involvement was a continuous process extending from project initiation to evaluating the finished project as a basis for future projects. Discussions indicated confusion about who constituted users in various situations, but regardless of the level of experience, focus group participants agreed on the importance and potential of user involvement and on the need for specific methods to acquire useful input.

2. The Users – Finding their needs

Architecture and users are two concepts, or actors if you like, constantly intertwined with each other. The architecture shapes the users' whereabouts, but the architecture itself is also shaped by its use. It is an on-going design process where the actions of those engaged within an environment differ from the intended ones and hence reorganize it. In this sense architecture is seldom silent and rarely constant.

Users could be defined as anyone who is using a building or an environment. It could be an employee working in a building or a person inhabiting an apartment or a house. Further there are those who are customers/patients/students/etc in using a building. Users are also those who maintain or work temporarily in a facility, such as a cleaner, postman or a chimneysweeper. Furthermore, users are guests visiting, or citizens passing by, also using a building or a built environment. Consequently there are first hand-users and second- and third-hand users. This issue and building industries actors' ambiguity towards the word user is further discussed in paper II (2013).

The users as the main utilizers of a space make them interesting for the architects and architects have a long tradition of trying to understand the users and their needs.

Hans Kristensen (2006) tells about how homes were designed in the middle of the last century. User needs were based on a normative image of a typical Danish family of four, where the man worked and the woman took care of the home duties. Their needs for a home were considered to be general and the homes produced were based on that assumption. It is plausible that many families looked like that and that those homes suited their life, but it is also plausible to imagine that those standardisations shaped the idea of what a home was supposed to look like, and the life lived in them, ideas that are still present when new homes are designed, even though the needs of the population of the 21st century is hardly reduced to a specific family typology. Many of those buildings that came to be earlier are of course still standing and inhabited.
This simplification of user needs worked well as long as there was a real shortage of places to live, but as economic standards increased, homes grew bigger. The competition for housing customers increased and the standard view of user needs were no longer valid.
What happened in Denmark is mirrored in Sweden. Peter Fröst describes a parallel movement within hospital planning (Fröst, 2013, seminar). He describes it as a pendulum going from one end where the planning was based on a repertoire of standard rooms, developed centrally to the other end where every project was based on the unique situation with a dynamic approach. Fröst also points at how the pendulum has started turning back again, how bottom-up solutions also need support from normative standards that are evidence-based (Fröst, 2013, seminar).

In society in general, there is a trend towards individualization and focus on the individual. Concepts like user-centered design, or patient centered care are

becoming more established and tell the story about how generalizations no longer apply to fill individual's needs.
This focus renders the users a certain power, the user is a consumer and a customer. What happened with those users who are not seen as consumers with power?

In a specific project, a user becomes a stakeholder. Olander (2005, 2007) studied what constitutes a stakeholder and concludes that a stakeholder is "a person or a group of people with a vested interest in the success of a project and the environment within which the project operates" (Olander and Landin, 2005, p 321). Olander and Landin reference Mc Elroy and Mills. It is also implicated that "a stakeholder is any individual or group with the power to be a threat or a benefit" (Olander and Landin 2005, p 321, referencing Gibson, 2000). By this description a stakeholder could be anyone from a resident, employee, or neighbour to a local politician, the government or media. To distinguish between this wide range of groups, Olander suggests a *stakeholder analysis* sorting groups according to their degree of *power*, *legitimacy* and *urgency*. Power is explained as means to impose its will on the project, legitimacy is explained as a group involved by a risk in the project, risk of winning or losing something. Urgency is "based on the following two attributes: time sensitivity, the degree to which managerial delay in attending to the claim or relationship is unacceptable to the stakeholder; and criticality, the importance of the claim or the relationship to the stakeholder. Urgency is defined as the degree to which claims call for immediate attention" (Olander, 2007, p 279).

Architects are possibly one of the actors in the building industry working closest to users, or at least have the possibility to do so. To be able to identify user needs, they borrow from research methodologies. Architects interview, observe and collect data that feed into their process of design. The notion is that if the architect can find the requirements they will incorporate them into their design and find good solutions. This view wrongly assumes that the user possesses all the answers, or that the architect can find all the answers just by looking for them in the user's contexts.

We seem to be balancing right now in the building industry. On the one hand we have the previous way of looking at users, as a generalizable group with a manageable set of needs. On the other hand the understanding of the power of user groups and the shift in user behaviour and expectations. This is considered by many companies today and used as a ground for their decisions, but there is still an uncertainty on how to handle this information, what frameworks and tools are needed in the involvement of users (Paper II, 2013).
Once again methods traditionally associated with research are used, focus groups, in depth interviews and questionnaires to find out what product to produce to meet the new customer needs.
Many design professions have for several years developed these user interactions, as a crucial part of their design process, used for early ideas, involving in developmental phases or testing beta versions and prototypes.

Some users are ahead of the major group, users with cutting edge behaviours and needs that are not yet fulfilled on the market today. These are called lead users (von Hippel, 2004). Who could be considered the lead users of architecture?
Von Hippel points out, in his book *Democratizing Innovation*, that anyone close to a situation or a need can work with innovation, because of their unique insights and closeness to the problem, they have the possibility to see solutions that a professional designer will never have. User-innovation could be seen as substituting for manufacture-innovation but is rather complementing and inspiring the designers work. User-innovation provides a deeper understanding of the user needs. By working with an innovation as a user you learn more about "the real nature" your needs; hence you get better at expressing your needs than before (von Hippel, 2004).

3. From participation to co-design

An understanding of all those close connected and commonly used concepts

When digging into the literature and whereabouts of user interaction and PD as an architect, one encounters a field of concepts commonly used for what appears to be more or less the same thing. As the use and popularity of user involvement increases the meaning of the words gets worn out, blurred or even shifted. I will therefore try to find what I mean with these words and what distinguishes them from each other.
There seems to be something in these concepts that appeals to people, something that we feel has previously been lacking, they fill a hole.

One way of understanding participatory design is to look at how the concept has developed over time.
In two papers Granath (2001) and Granath, Lindahl and Rehal (1996) give an overview of models of participatory design used in Sweden from the 70's up till early 2000's. The texts offer a way of defining various approaches in relation to actors, roles, view of users, modes of communication and goals. Granath, now a professor emeritus, belonged to the research group at the department of Architecture at Chalmers who studied user participation at workplaces during the 80's and 90's. The earlier paper is co-authored with researchers and architects Saddek Rehal and Göran Lindahl.
Granath (2001) and Granath, Lindahl and Rehal (1996) explain how the interest for participatory design research started in Sweden in the late 60's with, amongst others, the architect and professor Johannes Olivegren, (Olivegren, 1969) a pioneer of participatory design practice and research. Around this time two new laws were passed, the Co-determination Act in 1976, granting employees the opportunity to have their say in issues regarding their workplace, and the Work Environment Act in 1977 (SFS 1976:580 and SFS 1977:1160).
At this stage, projects with participatory design had the character of bargaining between employer and union representatives. The discussion focused on distribution of power and democratic issues. The reason the user was included was because the legislation said so.
Experts were consulted from both sides but never participated in the actual communication between parties. The challenge for the architects was to use methods that didn't give client's control away, but still let the employees feel that they had an impact on the result.

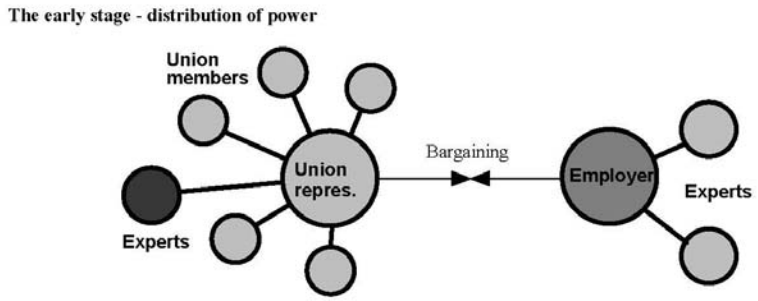

Figure 1. From Granath, Lindahl and Rehal, (1996).

Subsequently, the view of users and employees developed into being a resource for information and the structure of participatory design changed. Users were seen as having important knowledge, knowledge that could increase the quality of the company's output. This knowledge needed to be collected and incorporated in the project, a task assigned to the architect who hereby took a more active role interviewing employee representatives.

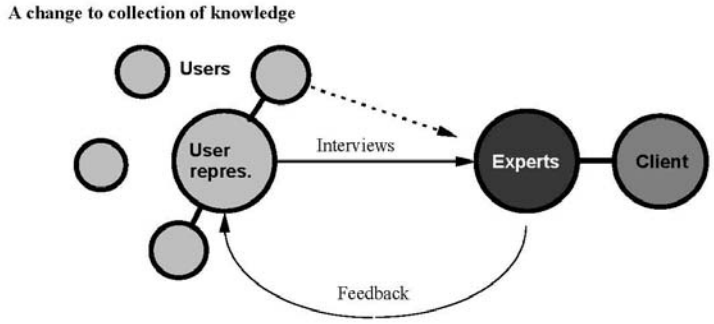

Figure 2. From Granath, Lindahl and Rehal, (1996).

The focus was on the workplace and quality of that workplace. The user was seen as a source of information and the architect was the collector and interpreter of that information. After working with the material the architect returned to the user group with solutions, although the users had a limited possibility and capacity of decoding the proposal and give feedback. It was hard for the users to determine whether the suggested design will work for them (Granath, Lindahl and Rehal, 1996).

The risks with this way of working, as Granath, Lindahl and Rehal (1996) point out, is that the architect had all the information and the different user groups did not meet each other to discuss common concerns or prioritization.

The next principal scenario of PD could be called the collective design process. It is described how all the participants were seen as experts and hence had an equal role in the discussion (Granath, Lindahl and Rehal, 1996; Sanders and Stappers, 2008). "The common knowledge and objectives of the organisation is both questioned and developed" and "knowledge and values confront, complete and modify each other, leading to something new" (Granath, Lindahl and Rehal, 1996). The main communication here was the dialogue and different methods to help bridge the differences in language were used.

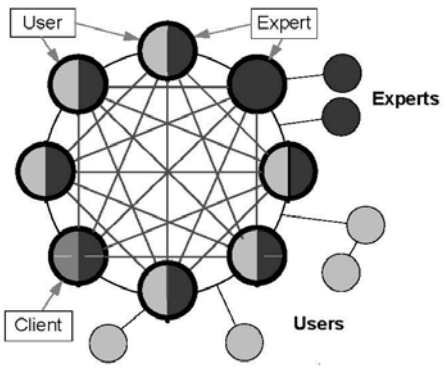

Figure 3. From Granath, Lindahl and Rehal, (1996).

The three scenarios describe how PD is moving from a power-oriented process towards a knowledge-oriented. Granath, Lindahl and Rehal (1996) states that all of the above stages are valid and exist at the same time and sometimes in the same project. This description about how the view of users has changed is mirrored in another overview of how the field has developed. Elizabeth Sanders and Pieter Jan Stappers, (the former living in Ohio where she works in her own firm Maketools as an architect and researcher, the latter at Delft University of Technology, Faculty of Industrial Design Engineering) write about how the shift from seeing the user as a consumer via a more active user becoming a participant and co-creator (Sanders and Stappers, 2008). They describe how several of the design professions have adopted these roles to various extents, where interaction design works closest to the user and architecture is pictured as still a bit behind the other design professions (Sanders, 2006). Architects are still seeing people as consumers, on their way of adopting the user concept.

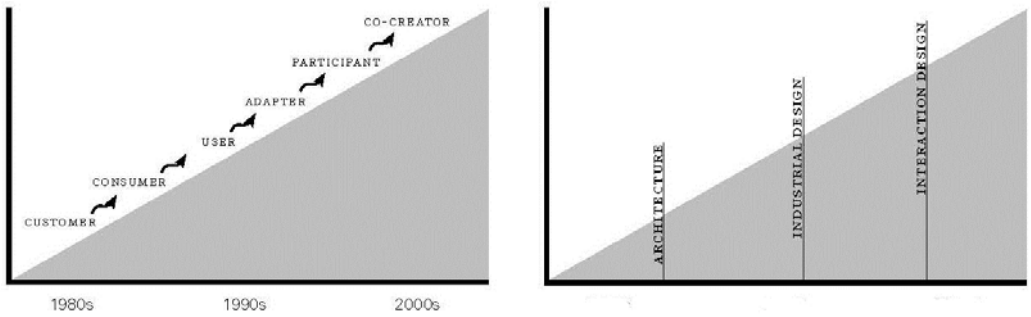

Figure 4. Roles played by everyday people in the design process and level of active involvement with the designer (slightly modified version of figure in Sanders, 2006.)

When the role of the user changes, the roles of architecture changes. Lindahl, Hansen and Alexander (2012) point at the trend involved, how the concept of *usability* is moving the users from their passive position to being the focus of attention. Usability concerns "how a space, an artefact, is actually used and the effect of that use" (2012, p 105) and the concept is increasingly practiced both in planning and in evaluation of the build environment.

Ladder or stair of citizen participation?

It is quite common, when working or writing about participation to reference Sherry R Arnstein and her "ladder of participation". Though published in 1969, it is still a template for people who want to argue where the difference between manipulation and dialogue lies, for example (though dialogue is not mentioned in Arnstein's text). Arnstein describes the difference in power between the municipality and the citizens when meeting each other in interaction. It is depicted as a ladder with the municipality giving no power at all to the citizens at the bottom of the ladder and citizen control at the top of the ladder. She describes the situations on each step and variations of this are used in several contexts.

Pål Castell takes the contemporary Swedish example of the Swedish Association of Local Authorities and Regions (SKL) stair of participation and discusses differences in use and motives (Castell, 2013). The stair is, of course, inspired by

Arnstein but differs from it in that is used to support politicians and public servants in interaction with citizens. Castell describes Arnstein's ladder as a tool for analysis in research. The two lowest parts of the ladder are called non-participation by Arnstein and is represented by the lowest step (information) on the stair. This step gives no power to the citizens. Arnstein's following three steps, tokenism, are called symbolic participation by Castell and represents the second step on SKL's stair. It is participation, but involves no real power.
Real participation is not happening until the sixth step of the ladder according to Castell and the top part in the different models has no real connection. The Swedish word dialogue could be described as a more open ended form of consultation, but in a Swedish context, dialogue has an emphasis on exchange of ideas (Castell, 2013.)

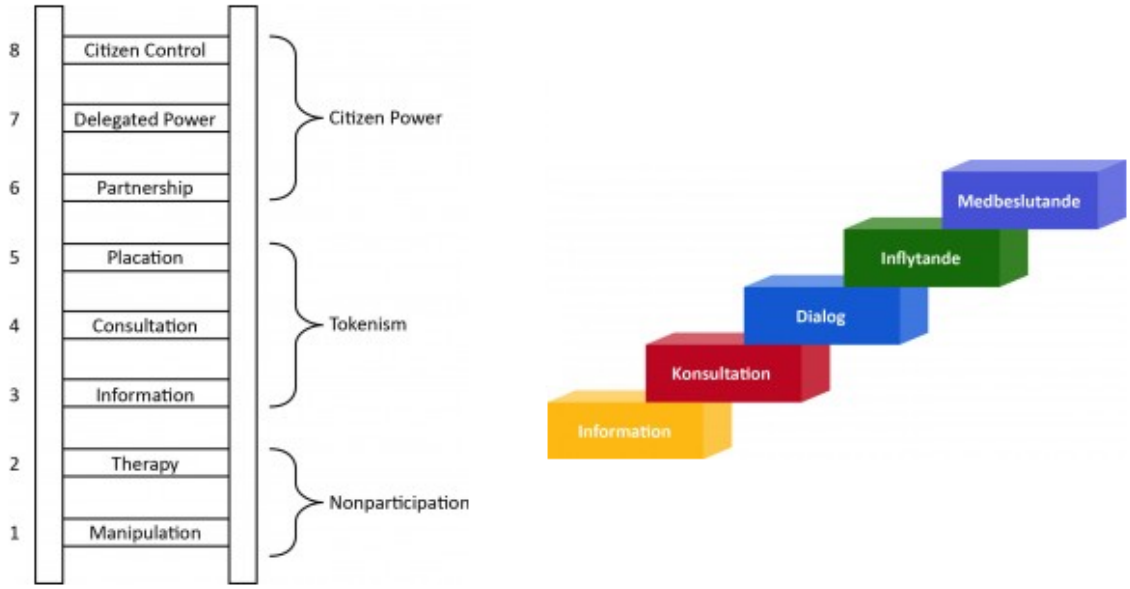

Figure 5 Arnstein's Ladder of Participation and SKL's stairs (Castell, 2013)

The fourth step on the stair is called influence and in similar models co-operation or participation, and is when applied a participation throughout the process, but could also in practice means no formal power. The top step in SKL's stair, collaborative decision procedure usually means participation as an equal member on boards.
Both models focus on power relations and one critique of this image is that there is more to it than just power (Tritter, and McCallum, 2006). The actual knowledge exchange, is not mentioned in Arnstein's text, nor what is happening when people meet – the creation of new knowledge. When depicting these ideas as a ladder or a stair there is also an indication that higher up on the ladder is somewhat better, that citizen control or collaborative decision procedure is the most desirable state of participation.
There is still something very striking about Arnstein's image and the ideology connected to it. Despite its singular focus and normative hierarchy, it visualized the variety of user involvement, not merely citizen involvement and highlights the risks of pretending to be on a step of a ladder when the prerequisites or circumstances are placing you somewhere else.

Design and prepositions

The models illustrated above could also be described with what the much referenced paper by Kaulio (1998) is showing in his interpretation of Easons *level of engagement from the user's side*. Kaulios interpretation connects to user participation within product design, but has bearing on building users as well. The three levels are design *for* users, design *with* users, and design *by* users.
Design for users includes the users via interviews or focus groups, similar to the middle stages explained by Granath, Lindahl and Rehal. In design with users, users are consulted, they have the opportunity to react to a proposition. In the third level, the design by users, users are actively involved in the design process, finding solutions for their own problems. Kaulio describes it as if the "sharp distinction between customers and designers cease to exist" (Kaulio, 1998, p 147).

We have now looked at the level of involvement and role of the user and all scales are ending somewhere close to a very inclusive, activating collaborative action.
Participatory design is the most commonly used word in the literature; co-design is a part of it where the user is involved with equal roles of expertise as other participants, non-professional designers together with professional designers, working as co-designers. Emmitt and Ruikar (2013) define the difference between participative and collaborative as a difference in power, where the participant in a collaborative process are more equal in power than in a participatory process. Scariot et al (2012) says "the broader purpose of collaborative design is to share an understanding of design through the integration of different skills, ideas, resources and responsibilities in a developmental process" (Scariot et al, 2012, p 2701).

Key Components of collaborative design according to Wang and Oygur

David Wang, professor of architecture at Washington State University and Isil Oygur, experience designer and researcher at Bahcesehir University, together set out on a similar quest as mine, asking what defines the word *collaboration* and pointed out that *who* is in the group and what is *their relation to each other* are central to what kind of work it can perform and what it should be named (Wang and Oygur, 2010).
Wang and Oygur (2010) identified five key components (A-E) in an heuristic framework for what could define collaborative design. The components are taken from their review of "collaboration-in-design" literature. A design process is more likely to be considered collaborative, the greater the number of the following components it includes.

A. At least two distinct Cultural-Epistemic-Praxis units (CEPs)

A CEP is exemplified as a domain, and here the authors cite Howard Gardner; "Any cultural activity in which individuals participate on more than a causal basis, and in which degrees of expertise can be identified should be considered a domain" (Gardner in Wang and Oygur, 2010, p 362). With this definition a CEP could be a discipline or a profession, but also a university, corporation or a neighbourhood. To fulfill the criteria of being design collaboration, there has to be at least two CEPs in collaboration, and at least one has to belong to the design

discipline. If the two (or more) CEPs are too close in focus, i.e. not distinguishable enough, the work that occurs should rather be called team work (se chapter above).

B. Productive threads of CEP exchange

Here the focus is on the exchange, the output of the collaboration. Wang and Oygur call it "demonstrable results via threads of CEP exchange" (Wang and Oygur, 2010, p 363). This output could be shared viewpoints, new knowledge or joint decisions.

C. Knowledge brokering

Knowledge brokering is described by Wang and Oygur as the activity where the "threads of exchange" contribute to the goal of the process. It is further described as a figurative place not just for *transporting* ideas between actors, but for *transforming* them.

D. Iterative cycles

Wang and Oygur suggest that the iterative cycle is the fourth component that characterizes collaborative design. Since iteration is a common attribute for describing a design process it is naturally also a part of collaborative design.
Three dimensions explaining and driving the design are described.
Firstly, in order to achieve shared understanding, several cycles are needed. Secondly it is described how new knowledge is found and incorporated and that this requires both time and iteration. The third dimension is the possibility of getting immediate feedback on an idea or artefact, and the use of 3D printing is mentioned as one aspect which is speeding up the process.

E. Tangible new outcomes

Here Wang and Oygur present the idea of a result that "should be easy to recognize as a new outcome" (p 366). They also propose that the outcome should be "documentable, replicable, internally and externally valid" (Wang and Oygur 2010, p 366).

4. Fictional Lecture: Making models of reality

In the spring of 2013 Peter Fröst and I were asked to present at a seminar in the CVA-series (Centre for Health Care Architecture at Chalmers) called Models Are Real. This text is based on that presentation.

Working with models of reality as a way of understanding a situation is a well-used tool among architects and designers. For a professional, simple representations and sketches convey an idea of something much more complicated than when depicted. Among architects, there are several almost mythical stories about how a sketch in the margin of a magazine or on a napkin became the starting points of currently famous buildings. Architects' models could also be more elaborate sketches, diagrams, assemblages in cardboard, drawings or digital 3D representations of reality.
To use models in participatory design is a useful tool for inviting the users into the design process, to visualize their knowledge and construct mutual grounds for further discussion. Nevertheless it involves several considerations to work well in a non-professional designer context. This issue is further reflected upon below.

In my work with design dialogues, one of the key features is to let the participants make models of how they would like their future environment to appear. Models, in this case, are not necessarily miniatures of houses, rather anything expressing an idea, a quality or relation in a visual way. They are usually made by out of coloured paper, pictures and glue.

The models make the discussion more real, and by this I mean that by making models illustrating ideas, instead of just talking about it, participants in user-involving workshops get closer to reality. By building something tangible, they understand the situation they are trying to describe in a new way. Their understanding is clarified better for themselves, but this also enables sharing that understanding and to understand other participants in order to come to a mutual interpretation of what the models stand for, that is, what they want to change

about their current situation. By expressing their ideas and thoughts in a visual model, they make their discussion explicit. In addition to this, a model made out of simple material is *in progress*. It is not finished, which makes it adjustable, and by more than the person who first illustrated it.
The process works as a tool to put what they know but haven't expressed into the model, thereby making new knowledge visible and discussable.
It is a common trait in many approaches for participatory design to use models and images instead of words. Visualisations like this works in finding mutual language, and admits silent knowledge to be articulated.

How real can it be?

Having said that, the challenge for the architect offering these tools, is to find tools suitable for the discussion at hand. It is not just the participants who make the models; architects produce, summarize, illustrate and elaborate models to feed into the new discussion. For this the level of detail needs to be considered as well as how to make the material manipulable? With manipulable, I mean it offers the chance to change it in a desired direction – with your hands.
The material needs to have the character of openness, inviting workshop participants to use and engage with it. In early phases, it should not be directed, but later in the process, it should be able to focus the discussion on relevant topics and level of detail, but still maintain the openness, the unfinished feeling that invites further exploration. Making it too real will interfere with the aim of developing a concept further, stopping participants from discarding part of it and continue to seek something better.
Another challenge in working with participants in workshops is that they are asked to describe their requirements on a future environment based on their previous experience of the situation. This is by all means valuable information to get, perhaps a message easily missed when working with other methods, but it is important to distinguish it from, and complement it with, other more objective or quantitative data.
The experience of there being too few rooms for meetings could very well relate to an actual shortage of such rooms, but it could also stem from a uniform use of the rooms, a tradition of wanting to have meetings at a certain time, when everyone else also wants to have meetings, leaving rooms empty most of the day. In a situation like this a complementary observation on how much the meeting rooms are occupied is recommended and a change in behaviour and how the rooms are used is a cheaper way than solving the problem by building more rooms.

Risk of being too real?

There is also a risk of being too real, not just because a model may appear too much like a finished solution, but also because it stops participants from stepping outside their immediate reality. There is a need for a space to fantasize, and to allow visions. It is common to only imagine what you already know. There is a benefit with working with an abstraction of an idea and not the implementations of it. The abstract concept could stand as a framework for later models and work as a way of evaluating solutions. It is not only the chosen material in the model affecting this situation, but also the whole set up, the climate of the discussion, what kind of input and expectations there are and the capability of the participants. Here, the challenge lies in finding what the group needs to leave their present work situation and start being innovative in their way of looking at their future environment. Being too real could mean objecting to suggestions with the argument that it is too expensive, or that there is a wall blocking the desired solution, preventing the discussion to seek alternative locations or cheaper solutions based on the same idea.

The real future?

Is it the real future that is depicted in the models? This is related to the overall setup of the task. It is important that participants have all the information they need to work with the problem, to make an informed decision. The right participants should be present. If someone is left out, important information could be missed. The level of information coming out of a workshop like this is also dependent on the participants' aptitude, and willingness to look at their own situation in a new perspective.

What else is making it real?

To summarize, not only the models make it real, but the task itself and the ability of the participants. To these, I would like to add two more aspects. First is time, and second, as I have touched upon earlier, is the role and competencies of the architect.

Time could also make it real, and by that I don't just mean that a proposal eventually getting built and inhabited, although that undoubtedly is making it real! Having a discussion about a future, with or without models, reaches a moment when you cannot really say if something is going to work or not. Sometimes the best thing is to try it in full-scale. Rebuild a small part of a floor and try the new working method or look at your day-to-day life with the new insights gained from your discussions and model-making – how could it work? In an interview with a project manager, taking over a project that had been on halt for more than a year, after an initial process of workshops with the design dialogue, told that he had never met a more mature group when picking up the project again. The team had continued discussing and testing solutions in small scale during the period when the project was stopped, and thereby developed a shared (and somewhat, empirically tested) vision of how they wanted their new workplace to be (Paper I, 2012).

A halt in the process is not necessarily a disadvantage – it offers the opportunity to engage in investigation of other kinds, being more prepared, when process continues again. The use of time is therefor also a factor of how to make it real.

Finally and perhaps foremost, since it has the power over several of the other factors – what the architect chooses affects the experience and the outcome of the whole project. It concerns issues from finding the right participants and securing representativity to the choice of materials and focus, as well as what input the group needs to work well together. The architect is also responsible for creating a discussion climate permitting the participant to have a creative and productive discussion.

To conclude, I would say that it is challenging but rewarding to include users in the design process with the help of models. It will help them understand the current and future reality and it will help you understand them and their needs. Models and users are making it real.

5. A comparison of three selected models

There are several examples of and lessons to be learned from how models of participatory design and co-design are applied in projects. Here, I have chosen three of them to illustrate how they present themselves and what elements they use or emphasize. The three models of participatory design are Design med Omtanke, Design dialogues, and Design:lab. They are presented below, first with the background of how they came to be and then they are illustrated separately using descriptions based on their own published material. At the end of the chapter, their different take on some elements and perspective are compared.

What unifies the three examples is that they all have been used in several projects. They are all aiming at engaging users, clients and consultants in developing their organisations and work environment. Common for all of them are also their structure of workshops filled with interactive exercises. The exercises include using visual tools such as pictures and collages. All of them emphasize the use of pictures or artefacts instead of only using words.

Design med Omtanke, Considerate Design (DMO), was initiated by VGR (Västra Götaland Regionen) and started as a collaboration between the region and SVID, the Swedish Industrial Design Foundation and HDK School of Design and crafts (Holden et al, 2010). It has since then developed to be a manual for making sustainable choices concerning refurbishment of public as well as private facilities.

Design dialogue (DD) and *Design:lab* (DL) have a strong relation since they both emerged from a research project that took place in a research group at interactive institute in Malmö around the turn of the millennium. The institute had strong connections with both Malmö University and Chalmers Technical University (Fröst, 2004). Since then, DD has developed in the context of a consultancy firm and DL as a tool for experimental design research, based in Copenhagen.

Considerate Design

DMO is described in the book *Design med Omtanke, en metod för hållbara miljöer* (Nilsson, 2011) that is written as a manual for staff as well as architects. Additional publications about the model include an academic paper about an economic comparison between two projects; *Design med Omtanke: participation and sustainability in the design of public sector buildings*. (Holden et al, 2010).

DMO is an “approach to the design of public sector buildings that combines participatory design techniques alongside sustainable design to achieve integrated holistic design outcomes” (Holden, 2010 p 235). It points out the benefits of having a well thought through idea beforehand, an idea of where an organization wants to be when a project is finished (Nilsson, 2011). The process is guided by a certified DMO-adviser who acts as a facilitator and “informs, assists and mediates” throughout the whole project (Holden et al, 2010, p 239).

The model as developed takes the knowledge, experience and ideas of the staff into consideration. In addition, the model’s objectives are to increase the demand and supply of sustainable product design for public environments, and therefore it has had a focus on interior design.

DMO consists of a 4-step process of exercises performed in workshop format (*see fig. 6*), where steps 1 and 2 are performed in a 2 day-workshop; step 3 is described

as a large inclusive workshop with the majority of co-workers present. The exercises are made in a small group of representatives led by the DMO advisor. An architect or an interior designer is also present during workshops to observe and give professional guidance (Nilsson, 2011).
The process takes place before sketches and for example financial limitations are on the table. In step 4 the architect takes on a more active role "bringing ideas from the work with users into one, coherent vision" (Holden et al, 2010, p 244).
The DMO process starts by describing and evaluating the present situation, and ends in a written document describing the needs and requirements of the new environment. The objective of the process is to create an organizational program for upcoming changes to facilities. The program includes prioritizations and argumentation for solutions and a written text with some simple illustrations, such as a bubble diagram. It is described that when words are left for pictures, collage, visualization in the process, something happens (Nilsson, 2011). Output is mainly text-based, though.

The model emphasizes sustainability, both as a factor for assessment during the planning process, but also offers a list of recommended products when furnishing in what is called Gröna Listan. Another focus emphasized is the teaching of sustainable aspects (Holden, 2010). The description of the model points out the advantage of actors meeting and creating relations for the upcoming stages and argues that participation leads to work satisfaction and enjoyment (Nilsson, 2011)
.

Design dialogues – to a large extent, this text is from paper I (2012),
This framework for co-designing, the design dialogue, was developed to serve as a tool for architects seeking to involve users and their knowledge in the design process in a strategic way. The framework consists of a structure of workshops, methodologies and tools (*see fig. 7*) and includes active collaboration between clients, users, other stakeholders, and architects. The basic concept is to use design methodology to simultaneously handle identification of needs and development of solutions. While working together as a cross-disciplinary group the participants use design artefacts to explore spatial relationships and new design concepts.
DD starts by involving a wide group, in order to gather all perspectives and lend credibility to the output. It is applied in an initial planning stage, emphasizing the production of materials that a smaller group can continue working on in subsequent stages, after DD.
A typical process conducted according to DD consists of three to five workshops, similar in structure, the focus of which shifts from the current situation, inspiration, and vision to an increasingly detailed proposal.
The architects, working in teams of two or three, take the role of workshop facilitators, planning and preparing the material and workshop exercises in addition to coaching the participants during the workshop. Between workshops, the architects document the discussions, translating them into new foundations for more focused discussions, eventually leading to concrete proposals for facility layouts.

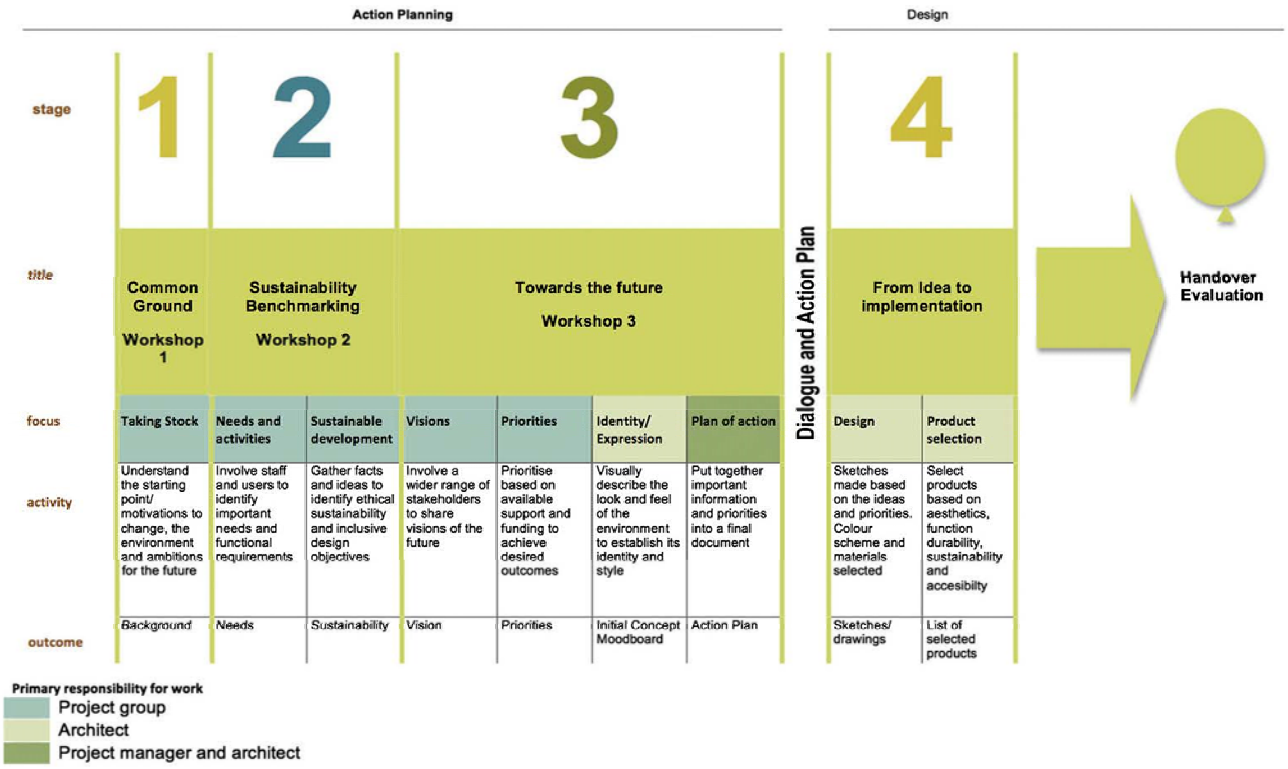

Figure 6. The DMO-process, from p. 241 in Holden et al, 2010..

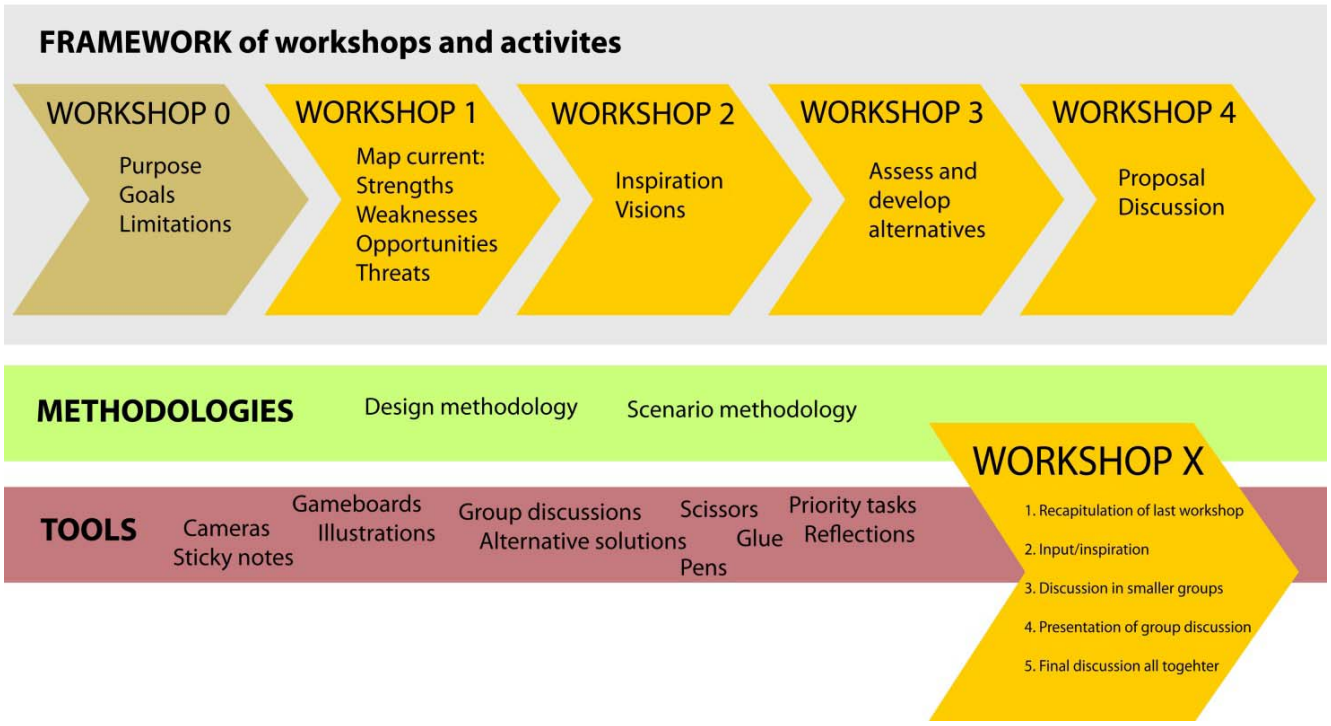

Figure 7. Author's illustration of the studied framework, showing the setup of the framework with workshops, methodologies and tools, as well as of how an individual workshop is composed.

Using this framework of workshops and tools, a platform for discussion is established between the architects and the organization. The tools support the articulation of formerly tacit knowledge, and when stakeholders meet and discuss the project through this platform, new knowledge is created.
Since the group is handling major decisions, it is important that it include representatives from all workplace levels. With 12–35 participants, the group is generally larger than in traditional planning processes. The DD gives the stakeholders involved a chance to listen to each other, so they all gain a comprehensive overview and can eventually formulate an approved proposal. Participants are asked to disseminate workshop information to their organization between workshops, to obtain new feedback for the next stage of discussion. One objective is to advance the work from one workshop to the next. Participant continuity throughout the process is emphasized in the initial planning stage.
After a common introduction, the group is divided into smaller discussion groups working on a specific workshop topic, supported by artefacts prepared by the process manager. The group presentations and the final discussion are videotaped and transcribed into informative notes of every workshop.

In the workshops, participants use various visual "design artefacts" such as video, workbooks, scenario games, and interactive real-time 3D visualizations. These artefacts play the role of guiding participants into the designer's way of working, and make the discussion open and flexible as well as accessible and engaging to those less familiar with planning protocols.
The framework's advocates claim this way of working results in stable solutions closely related to user needs and requirements, as well as incorporating the capacity and flexibility to accommodate future changes.

Design:lab and Workspace:lab

In Denmark, a family of models have been developed where the common denominator is that they end with :lab. They share the basic idea, but for example Workspace:lab (Binder et al, 2007) has a directed focus on workplace situations, whereas DL has been used in a variety of contexts. The description here is based on the papers *Why design:labs?* (Binder, 2007), *Living the lab* (Binder et al 2011) and the report *Worskpace :lab – en indragande udviklingsprocess* (Binder et al, 2007).
The model has primarily been used within research situations commissioned by private and public institutions and also research council and innovation schemes (Binder et al, 2011). The DL points out that it is one version of many since several organisations continued a design:lab-like exploration on their own after initial workshops (Binder et al, 2011).
The metaphor of a laboratory is used to emphasise that the ambition with DL is to create an environment where ideas can be explored and investigated and a result that can be measured and documented (Binder 2007). It is also said to have an emphasis on method rather than outcome and the lab is described as "sheltered from day-to-day realities" where participants "negotiate what possibilities to explore" (Binder et al, 2011).

DL is described as a laboratory for change, not a forum for decision, where the collaborative research leads to consultants developing solutions in dialogue with the group, rather than handling demands and negotiation (Binder et al, 2007). The focus is on “exploration of the possible rather than the factual” (Binder et al, 2011).
The model collects stakeholders such as co-workers, management and consultants to meet in a series of workshops. Workspace:lab points out that when you are already in a process of change, old and new challenges float and get attention. The co-workers are often those who know these challenges the best, and they are also the ones to handle the result of the change, following through the changes (Binder et al, 2007).
In studied examples there were full day workshops on three occasions and the projects ranged three to five months. The fieldwork before and in between workshops is emphasized as an important element of DL (Binder et al, 2011).
The dialogue in between workshops is called “homework” and described with the purpose of keeping the discussion alive and connected to the everyday work. It could work as self-reflection or processing of the material from the workshops or as a preparation of new material to share and work with on next workshop occasion. One example of this is that participants, before their first meeting, are asked to document something from their everyday life and its purpose is described, not primarily as actual documentation, but rather for the purpose of offering the participants an opportunity to start reflecting. The design researchers “elaborate, refine and sometimes even distort” what the participants have produced in between workshops, in order to trigger new discussions (Binder et al, 2011).

Those leading the process are external to the situation which is argued as an advantage; it is hard to manage a process where you are too deeply involved. An outsider is neutral and hence has greater opportunities to look at a situation from the outside, which is considered preferable (Binder et al, 2007). In described cases the process mangers were design researchers. DL advocates the need for professionalism in preparing and facilitating the process – when choosing exercises and materials, for example – to make sure they correspond with reality. The design researcher shapes the situations with their involvement (Binder et al, 2011).
DL rests on three guiding principles. The first principle is that the lab is a mutual learning space. The second is based on “the porosity of the laboratory”, which refers to the “homework” between workshops (Binder et al, 2011, p 3). Third, the DL facilitators are more than just facilitators and take an active part in the lab, committing to the result (Binder et al, 2011).
DL aims at creating a “what-if-world” where new possibilities could be explored.
Elements of the workshop include storytelling, tools of self-evaluation, workbooks, probing kits, scenario enactments and design games (Binder et al, 2007). In the design games, user research turns into design exploration (Binder et al, 2011). Tools are chosen to inspire and help, and tasks should not be too difficult or time demanding. Pictures, video or graphics are used to get the discussion a visual form and to get common images of a situation.

Frameworks and limitation are declared important for the work and the focus lies on creating understanding of what a specific change may mean for the co-workers. The challenge is said to be finding tools that will make a diverse group ready to see design possibilities, how to make it a constructive and explorative dialogue.

Comparison

Based on what the approaches chose to emphasize, the previous descriptions give a fairly good mapping of what PD is or could be. An overview of selected comparisons are illustrated in table 3 and a few topics are discussed below.

	Considerate Design	**Design dialogue**	**Design:lab**
Purpose and focus	Teaching sustainability Procure sustainable design	Engagement and new knowledge creation. Focus on working methods	Exploration of ideas and understanding Focus on process
Output	Needs and requirements analysis	Visual brief and conceptual design	Design solutions
Lead by	DMO adviser	Architect	Researcher
Participants	Co-workers, client, architect	Co-workers, client, stakeholders	Stakeholders, consultants (designers and engineers)
Role for architect or designer	Participant	Process leader	Participant or researcher
Time	3-4 months	3-5 months	3-5 months
Commercially used	Initially not, later yes	Yes	Partly, but with research element

Table 3. Overview for comparison.

Output and scope of task

One of biggest differences between the three studied examples is that DD and DL are based on design methodology. Their iterative use of models and artefacts feeds into the discussion towards proposals. This adds a new dimension to the distinction *design by* (Kaulio, 1998). The concept of *design by* could be said to also include the DMO process, since users are actively involved in discussions and visions about the future environement. Holden et al (2010) describe DMO as a co-design process, but the literature lacks descriptions of how the users are engaged in the actual design process, since the user focus is on requirements rather than solutions. Due to this you could argue that DMO is not a co-design process but belongs to Kaulios definitions *of design by users.*

DMO emphasizes that they are not working with solutions, merely a description of how the future is supposed to be. They point out the benefit of not engaging in solutions at that early stage.

DD, on the other hand, works deliberately with problems and solutions in a mixed sequence, stating that it is not until you start finding a solution that you

completely understand the problem. DL works in a similar way but has a focus on process due to its basis in research. This means that the outcome of the three approaches is of different character. Depending on the complexity of the project, DD outcomes are a proposed layout, or even a drawing. DMO produces a requirement analysis with a program of intentions, mainly in text, but with some simple illustrations. DL makes a point of not letting the discussion stop at the end of the lab situation, called, *beyond the lab*.

Documenting
In DMO it is the users who are in charge of documentation, with support from the architects. D:lab states that much of what is produced during a workshop stands on its own and is brought back for the next workshop to continue working on it. In DD very thorough notes were found much appreciated, (Paper I, 2012) based on video recordings of presentations at the end of each workshop. Notes were transcribed by facilitators and distributed to participants. Together with photos of the produced material, the outcome could be multiplied and shared and discussions could be followed by those not in the process, or perhaps joining later.

The role of the facilitator and the architect.
DD works with a team of 2-3 people, where one or more takes on the role of process manager or facilitator and the others as observers or assistants. Between workshops, the team works together to produce and prepare the material.
It is not quite clear how DL staff their projects, though architects and design anthropologist have been involved, in the role of researchers. DMO is driven by a process leader, the DMO advisor, preferably not the architect in charge. Still there is an expressed wish to have the architect in charge involved from the start of the process.

In all three models the facilitator are portrayed as having a strong impact on and power over the process and its topics and procedure. In all models the facilitator comes from the outside of the project situations. In DL the facilitator is also participating actively in the discussions and explorations whereas facilitators in DMO and DD take on a more supportive mediating role. DD is the only out of the three where the role of facilitator explicitly coincides with the architect.

6. Facilitation and enablement

When working in complex building projects with many stakeholders and many different needs, there is a risk of sitting at a too many meetings, which likely do not favour productivity. Using facilitative workshops at strategic moments is proposed by Emmitt and Ruikar (2013) and supported by research by Gorse et al (2006), for example. Participating in a co-design situation could very well be described as a facilitative workshop. The workshop is managed by someone who prepares and directs the discussions. Let us call this person a facilitator and ask what this person needs to be and do.

When looking at the definition of facilitate, it merely means *to make (something) easier or to help (something) run more smoothly and effectively*. (Merriam Webster 2013). In the case of a facilitator, however, the same source defines the task somewhat more specifically; a facilitator is "one that helps to bring about an outcome (as learning, productivity, or communication) by providing indirect or unobtrusive assistance, guidance, or supervision". This stands in parallel with the definitions of the similar word *enabler* which means *making something possible* or *one to enable others to achieve an end, to provide with the means and the opportunity*.

To further understand and describe what characterizes a facilitator's work, I have turned to literature describing facilitation and group collaborations in a more general context. One source is Roger Schwarz's books on *the skilled facilitator approach* (Schwarz, 2002), a value based systems approach and a description of the facilitator's roles, challenges, and tools. Schwarz is an organizational psychologist and leads a consulting group offering facilitating skills to organizations. His book '*The skilled facilitator*' (2002) addresses consultants, facilitators, managers, trainers and coachers. The other source, John Herons '*The complete facilitator's handbook*', (Heron, 1999) addresses facilitator roles in a wide range of situations, from therapy to organizational development, and with a focus on experiential learning. Heron is a researcher in social science, author and creator of the concept of co-operative inquire.

Heron describes the facilitator's purpose as to help a group "engage in productive conversation" (1999, p 40). He is emphasizing the individual and collective learning towards some kind of productivity (Heron, 1999). The facilitator's skills, decisions, values and personality are important for how productive the meeting gets (Schwarz 2002; Heron, 1999; Emmitt and Ruikar, 2013). Emmitt and Ruikar (2013) write that the results of such a workshop "relies heavily on the facilitator" and the facilitator's ability to create the right environment, where participants feel safe and feel that they can openly discuss pressing issues. A skilled facilitator offers more than just a productive meeting (Emmitt and Ruikar, 2013).

Objectives of a facilitative workshop

The objectives of a workshop differ according to situation but there are common motivations for many workshops. Here are examples of listed intentions. Schwarz (2002) describes the purposes of facilitated workshop as:

- Increase the quality of decisions
- Increase commitment to decisions
- Reduce effective implementation time
- Improve working relationships
- Improve personal satisfaction in groups
- Increase organizational learning.

Emmitt and Ruikar (2013) state that facilitated workshops are used to:

- Establish group membership and social identity
- Build trust
- Confront groupthink
- Create knowledge
- Develop working relationships
- Establish project parameters
- Explore different perspectives (and disagreements)
- Resolve conflict.

Mattsson and Jöborn (2009) focus more on the motivations of the participants' point of view when describing what should be aimed at in a good meeting, such as:

- To meet and exchange ideas
- Be seen and contribute
- Learning and personal development
- Motivation and inspiration
- Be part of something unique.

Based on this overview, there seems to be agreement on the potential when gathering a group of people in a room, in a meeting situation. The facilitator's task is to direct and develop that potential. I have summarized the lists above into 5 points I feel capture the objectives of a facilitated workshop.

First there is the purpose of *creating relationships* between those present. The relationships are used within the meetings and throughout the project.
Secondly, facilitated workshops function as a way of *sharing ideas and opinions*, to create a shared experience and understanding. Opposition and problems also surface and the group becomes aware of them. Third, all of the above references mention the desired result of sharing; the process of *exchange and learning*, even creation of new knowledge. The fourth point involves *agreeing on and establishing goals for the project* and the process. Fifth, is to have a more instrumental character and could involve *problem solving, decision-making or conflict resolving*.
For a facilitator, the task is to set a stage where this could happen, to enable a focused discussion. A distinction in description between different forms of facilitation lies in what is considered the main outcome of a process.

Heron references purpose for a facilitator as "*the role of empowering participant to learn in an experiential group*" (Heron, 1999, p 1), that is how participants' experiences and competencies are creating a new, often shared knowledge. Here the result lies within the participants and in their mutual understanding of a situation and each other. Schwarz describes the purpose as helping "a group increase its effectiveness by diagnosing and intervening largely on group process and structure" (2002, p 44). Structure refers to the overall structure of recurring group processes, exemplified by roles and who is participating, process is what is going on at the workshops, how the group work with the content. Content is described as the task, the challenge that the group is working on. Although Schwarz also emphasizes the learning and personal development, his focus is mainly on productiveness and on finding a solution.

Schwarz points at an interesting distinction between two different kinds facilitation. There *is basic facilitation* – solving a specific problem or a *developmental facilitation* – solving a problem, but at the same time offering tools for the group to solve future problems without the facilitator. In the basic version, the group expects you to guide them and teach them how to accomplish a goal; you do something for the group. Developmental facilitation involves the improvement of process skills, there is a focus on learning, and you teach the group and make it reflect on its behaviour. These two kinds, the basic and the developmental, is said to work in a continuum (Schwarz 2002).

Facilitative roles

There are different styles and roles to take as a facilitator. Schwarz presents four possible roles, where the choice of role is related to what your expertise and what your previous relation with the group is. He also presents the risks with choosing an incorrect role for a situation, for example when trying to be neutral when you are not, or when you are stating that you are taking a specific role, but in reality behaving like another. The risks involved will compromise your credibility and the confidence from and acceptance of the group. The best way, Schwarz advises, is to "select the appropriate role given the situation, accurately and explicitly describe to the group the facilitative role you plan to fill, seek agreement with the group, and then fill the role according to that agreement" (p 45).
Heron is not talking about roles, but instead of *style of facilitation* and notes that the style depends on the objectives and composition of the group and its skills and experiences.
A facilitator could be seen as a neutral third part with no decisions making authority outside facilitative issues (Schwarz 2002) but usually the role of facilitator of a meeting is taken by someone with a relation to a group and with an expertise needed in the project. Schwarz describes the *facilitative consultant,* who has a certain expertise that could help the group make informed decisions. The facilitative consultant helps the group explore an issue and could also recommend a course of action. Another role is the *facilitative coach* who helps the participants in their reflection of their own behaviour and through this helps them improve their effectiveness. *The facilitative teacher* role works in a learning or teaching situation and implies that the facilitator has knowledge to share with the

participant. The trainer “uses facilitative skills to enhance the participant learning experience” (Schwarz 2002, p 43). *The facilitative leader*, the fourth of Schwarz facilitative roles, is said to be the hardest role to take, because it combines being a facilitator and having strong views on things discussed. In addition to Schwarz’s roles I see several others, complementing the facilitator, for example, the role of mediator.

Empowerment

Empowerment (Granath, Lindahl and Rehal, 1996) is another concept that appears in relation to facilitation and participation. (Heron even uses it in his definition of a facilitator’s purpose). Empowerment means to give or delegate power to, and is commonly used in collaborative workshops with citizens or groups that are less loud in the public discussion.

Empowerment could be seen as a consciousness raising activity and could be divided into empowerment from within versus empowerment through tools to express the thoughts in a way that gets publicly heard (Heron, 1999). Schwarz states that empowerment means giving the group power to decide, but it also means providing relevant information to actually enable group to make informed choices.

The use of this word is not uncontroversial. Ann Christine Larsson states that to empower someone you have to empower someone else, in a chapter about interactive research (Larsson, 2006). She also points at the possible difference between empowering an individual or a collective. There are advocates of participatory design that suggest not talking about power at all, rather dissolving the power structures between all participants (Day, 2003).

Level of intervention in group activities

Heron points out three levels of interventions that the facilitator can take at a meeting and advises to establish that level collaboratively in an initial phase of the workshop. That facilitator then either takes the hierarchical approach (Heron calls them modes), the co-operative or the autonomous approach. In the hierarchical approach you “direct the learning process, exercise you power over it, and do things for the group” (Heron, 1999, p 8) In the co-operative approach, power is shared and a guide, but acts together with the group in negotiation.

In the autonomous approach you give the group freedom to do things without your intervention. You rather use “the subtle art of creating conditions within which people can exercise full self-determination in their learning” (Heron, 1999, p 8).

7. New roles and challenges

Entering a co-design process changes the roles from how architects and users usually meet. The user role on the one hand moves from passive to the more active, a co-designer. The architect on the other hand needs to shift their working method to be able include users in the design process, often using a facilitative way of guiding users, see chapter 5. In 6.3, I discuss the idea of the architect expanding into a more facilitative role.

7.1 Users

The underlying assumption in co-design is that everyone brings something essential to the discussion and that everyone is capable of developing ideas and expressing them, being creative. Everyone is seen as experts on their situation and the power is evenly distributed in the group. By appointing them experts, there is a slight shift from individual to representative. Although there is always a risk of misinterpretations when dealing with representatives, to engage with participants who not only convey their thoughts based on a personal view is an advantage.

For many users finding themselves in a design situation, there is some adjustment time, others adapt almost immediately to the design task. In general, they are often badly prepared for participation and have problems with conceptualizing their wishes, articulating themselves, and communicating what they think to colleagues, not to mention the architect (Granath. Lindahl and Rehal, 1996).
For this they need guidance. Ehn points out that there is a need for tools that connect their daily work experience with the design of their future environment (Ehn in Fröst, 2004). There is also a need for tools to create a mutual language (Granath, Lindahl and Rehal, 1996).

7.2 The architects

Participating in a co-design process will mean challenges for your role as an architect as well:

- You will have to incorporate users in you design process and adjust it.
- You will have to explain how the process works to the non-professional designers.
- You will share your expertise by asking questions and pointing at consequences.
- You will not have full control over what is discussed and the ideas, and also have less freedom.
- You will get a much deeper understanding of a situation and its motives for change, use it for inspiration!

What is you role then? As an architect you have the ability to see and talk about architectural qualities as well as visualizing them. This is still part of your task, but participating in co-design means that you share your expertise by opening up the design process. By asking questions or pointing at issues that need attention.

Through this you help users find relevant focus. The users in their turn will help you find focus on the most important aspects for them.
Architects may have preconceptions and their interpretation will be coloured by their culture and previous experience (rather than the users'). The important thing to remember is to not make decision to soon, to keep an openness and a humble listening ear. Wait for the group.
Your view on the user is challenged. To see them as equal co-designers could be hard. But you shouldn't see them as an excuse for not engaging in the project with your own expertise as an architect.
You will have to have an understanding of how the design process works and in addition to that be able to explain and convey it in a way that makes the other participants understand what they are engaging in.
The challenge is clearly finding the balance between involvement and power structures, and understanding that the designer can be an equally important (and powerful) player in the situation as anyone else.

7.3 The architect as a facilitator

Is there a new role to be developed for architects, *the facilitative architect*, or are architects already working in a facilitative way, without knowing it? What a facilitator does at a facilitated workshop sometimes coincides with what many architects do or the role they take in their meetings with users.
I want to test the idea of what the role of facilitative architect would mean and discuss the reasons for this as well as limitations with the role. Peter Fröst suggests a role like this, but rejects the term facilitator, and advocates the term *design coach.* He describes it as someone who needs to be good at working with active participation, to have design experience and a skill for managing and supporting the design process (Fröst, 2004). Different facilitative roles have been presented in earlier chapters (Schwarz, 2002) and for the sake of comparison; I have chosen to call the architect as facilitator *the facilitative architect.*

The facilitative architect borrows aspects from some of Schwarz' roles, primarily from the facilitative consultant, since the architect brings their expertise to this role. There is an element of the facilitative trainer where the facilitative architect shares knowledge of the process and its context, but in addition to all of Schwarz' roles, there is a mutuality in learning between you and the group. You are not only there to facilitate and share, but actually to also learn and incorporate the group's knowledge into your own.
Between workshops, the facilitative architect works on the project and the output of the project, as a base for further development. The tools architects use in communication with users - drawings, illustration and visualisations – are in a facilitative context extended and combined with design games, and scenario games. These visual tools enrich the facilitator's work when used in the hands of a facilitative architect.

The facilitative architect works in the continuum between basic and developmental facilitation, leaning a bit more on the developmental in co-design. Schwarz mentions time as one issue affecting what kind of facilitative role to

choose. When only one occasion is possible, the basic facilitation, looking at the solution of a specific set of problems, is the only possible. Developmental facilitation requires several occasions and rather than aiming at making the facilitator obsolete, by giving the group tools to handle future problems for themselves, a successful developmental facilitative architect creates a competent group that could easily be gathered and discuss new circumstances and priorities when they, sooner or later, occur in the process.

The literature states that the facilitator is important but facilitation is dependent on the facilitator's decision, values and personality (Binder, 2007; Emmitt and Ruikar, 2013; Heron, 1999; Schwarz, 2002). It is not desirable or possible for every architect to work in this way, just as it is not desirable or suitable for every architect to work with written reports, digital models, research or construction management.

One of the benefits with you as facilitator having additional expertise in architecture is for the group to gain quick support and guidance regarding architectural issues and qualities. This also creates risk: you could be perceived as subjective, which can undermine your credibility as facilitator and create confusion within the group about your role and agenda. What is prioritized, your relation and task from the client or your responsibility in the group? There is also a risk that the group could become dependent of you.
The advice from Schwarz about moving between roles is clear: only act as expert when asked to do so by the group, announce that you are shifting your role when doing so, and then shift back (and announce again).

8. Reflections

This chapter exemplifies a couple of reflections on relevant themes connected to the studied cases in Paper I (2012) and the selected models in chapter 4. They all refer to challenges for architects working with participatory design with users.

8.1 Design methodology and artefacts

Central to design methodology and what architects use in their way of working is creating and developing design artefacts. Schön describes it as a reflective conversation with the design material (Schön, 2011), which could be a sketch, a diagram or a model of the idea. He is saying that to engage with an object is part of understanding the object, but if you don't have access to the object you could use a representation of the object, like a diagram or a picture, and it becomes a "prototype for learning without objects". An artefact is a representation and the important thing is that there is less information in it and thereby easier to understand and manipulate (Schön 2011). Artefacts are the same things as Sanders and Stappers (2010) mean when the write about the importance of "tangible objects".

When the design process is opened up to include more participants, the design artefact becomes even more important. Heinemann et al (2011) have investigated "how "things" are employed, made sense of and talked about as part of the creation of new knowledge in collaborative activities of design and innovation activities" (p 222). They further state that artefacts work as a way of "democratizing the process" (p 221) evening out differences in skills, hierarchies and experiences (Heinemann et al, 2011). The significance of design artefacts are discussed in the thoughts behind the design dialogue (Fröst, 2004). Fröst describes the characteristics of design artefacts referencing a lecture by Donald Schön and an interview with Pelle Ehn. "Design is a social process, and the design artefacts work as transmitters between participants in the design process." He also emphasises the level of detailing as well as the having fun part (Fröst, 2004).
The design artefact in a collaborative workshop is related to the notion of "boundary object" (Star, 2010). They are described as objects that people act toward and with, and that has an "interpretive flexibility" (Star, 2010). This means that the object could be interpreted differently depending on who is looking at it and is used for bridging the positions of different groups in collaboration. In the studied approach, the models work as boundary objects in the sense as they bring aspects of different professions together to discuss solutions.
The artefact as a tool for developing knowledge, and new ideas could be compared to Jan Capjon's ideas of variations of prototypes (Capjon, 2004). Capjon, professor at the Oslo School of Architecture and Design wrote his dissertation in industrial design about 3D-printers rapid prototyping's consequences for product design he introduces a more diversified set of concepts for the prototyping process. He describes four stages of prototyping referencing Fowlers's concise English dictionary's definition of "type" as "a thing serving as illustration, symbol, prophetic similitude or characteristic specimen of another thing or class".

First there is the *visiotyping*, which is an early prototype, conveying the vision and the concept of a proposed idea. Like Fröst, Capjon points at the challenge of finding the right balance of detail at this point. The balance is between not really knowing very much at this stage and portraying this as openness and not finish. Next step is the *negotiotype* aiming at "conceptual negotiation" (Capjon, 2004). Here, the negotiotype should communicate the consequences of the idea to participants, but still be able to be modified. As a third stage, the prototype as it is originally described appears. Capjon defines it as a "representation of a finished project or concept" (p 250). At this point the possibilities to manipulate are gone, but with adding the fourth stage, the seriotype, there is still an element of evaluation left. *Seriotypes* are versions of prototypes, which could be tested in real-life situations.
Since Capjon's field is industrial design his prototypes gets very close to a final product in this series of prototyping, strongly reinforced by the use of 3d-printing. Still, I feel there is a resemblance to the work with artefacts in design dialogues. Then the visiotypes are the very early representations of ideas, the negotiotype is the development of this, showing consequences of what is stated in the earlier "type." The prototype and seriotype phase of evaluation is represented by investigating alternatives and using scenario play in the design dialogues.

8.2 Working with an unknown and changing future

Architects and designers are used to working with projects where the goal is not clearly defined from the beginning. What characterizes a design problem is that many factors are unknown and that there are no given solutions that are the best. In addition, there is the challenge for all architects to not just find a solution to the problems at hand in the present situation, but to think ahead and find a solution prepared for the changes to come. In addition to this, there is also the issue that the future is usually unknown and constantly changing. A building project could prepare for a situation three years later, but when that time comes the assumptions made three years before are no longer valid. Working with users, the challenge is extended to how to work collaboratively with these questions and how to use this collaboration as a stepping stone towards more qualified assumptions.

With design, you have a tool to tackle the complex problems that many architectural projects are. It is called using design as a method and process, and means using both the designer's repertoire of familiar cases as well as understanding the problem through engaging with it, trying out solutions to learn more about the problem itself. It is an iterative, trial and error process, where several models of reality are created. Some express this process, the design process, as pictures repeating certain steps, some as a spiral of reoccurring modules that still advances towards a more clear idea.

An architect works with the design process on their own or in collaboration with co-workers, others who also understand how the process works. This leads to clashes when architects cooperate with other professions less used to the iterative process. When working collaboratively outside the circle of professional designers the architect needs to be more transparent in what the design process means. To be

able to invite and involve users in the design process, architects need to explain how the process works, and also offer tools for handling the issues raised in the design process.
If this succeeds the non-professional designer could help the process to identify and complement the knowledge needed to make more qualified assumption and preparation for the future.
The challenge lies in finding methods that help capture future needs. The design methodologies investigational approaches as well as scenario building are two ways of working with these issues.

8.3 Dealing with experienced-based data

The information and knowledge that are created and distributed in collaborative workshops originate to a great degree from participants' experiences. It is based on how they see their work environment and what is lacking and valued there. The risk with mainly experience-based data is that it is not objective enough to always capture the source of the problem, and hence limits the possibilities for finding good solutions. In the fictional lecture in chapter 2 there was an example of how this could work:
The experience of there being too few rooms for meeting could very well relate to an actual shortage of such rooms, but it could also stem from a uniform use of the rooms, a tradition of wanting to have meetings at a certain time, when everyone else also want to have meetings, and rooms being empty most of the day. In a situation like this a complementary observation on how much the meeting rooms are occupied is recommended and a change in behaviour and how the rooms are used is a cheaper way than solving the problem by building more rooms.

If you add more qualitative input in an experience-based process it could work to raise awareness, to provoke and generate new solution. Qualitative input could come from observations or use of documented data. The important thing is to make these two forms of information work together.

9. Discussion and Further research

My research interests were based on searching to understand how PD in front-end activities of architectural projects function. As a starting point, attitudes and perceptions from the industry were studied, providing an overview of the motivations, experiences and challenges a collection of building industry actors saw in user communication. Here, industry actors' own words formed the basis for description, together with some additional references from literature. I also wanted to find ways of understanding what processes were at play in my own experiences of participatory design, the design dialogue.

This was mainly done in two ways: first by revisiting projects where DD was used, interviewing participants and studying the process during and after the DD. Secondly, I searched for ways of describing and defining PD. Collaborations between architects and users have been described using both literature and case studies, and I have presented models for describing and comparing them. One is to specify to what degree users are participating, another is to define at what stage (and hence to what degree) the participation takes place. Another way of looking at PD is to compare what output and purpose a process has.

During all my investigations, one issue that many discussions as well as the literature seemed to return to was the importance of managing a collaboration and participatory process. Architects are in some cases identified as crucial factors for success, as are the process leaders' ability to facilitate a productive collaboration. I have looked into if there is a constructive overlap and found there is, but with several challenges that must be further investigated.

Is there a need for a facilitative architect?

Some of the issues raised here are of a general facilitative nature that is valid for any facilitative or collaborative situation, but other issues are connected to the work of the architect in a project situation. These are not two separate issues, but closely related and intertwined. What I found interesting is that the facilitative role often is incorporated in the role the architect takes in a collaborative situation with users. It is the role of teacher, enabler and researcher. At the same time, there seems to be parts of the architect's practice and toolbox that could be very useful from a facilitative point of view.

Nevertheless, there seems to be a need for further studies to understand in what way a facilitative architect (FA) could work. I have focused on the activities in the front-end of building projects where facilitation of user PD seems of special importance. If there is a need for the FA, the limits of the role in terms of phases and focus must be studied further. Is the FA working in the front-end activity solely or following the group throughout the project?

When a discussion is bordering something of a non-architecture related kind although related to the project but of a more organisational character, limits to the FA's competencies needs to be studied.

The double nature of FA is also a concern that calls for more investigation.

How much architect could a facilitative architect (FA) be and still be credible as a facilitator? Does the facilitator necessarily need to be an architect or could there be a team, an architect and a facilitator collaborating in planning the facilitation?
Is the architect loosing something by trying to be a facilitator as well? Many things in the surrounding world are changing, but the role of architects has not changed in relation to that. What roles do we play in building future society?

Equality

In PD and co-design, the user is collaborating with the architect in the design of a new environment. This means new roles and challenges for both users and architects. In co-design, there is a specific focus on equality – but where lies the equality and how equal can you be, in a situation where people of different backgrounds, professions and competences meet.
Primarily I understand equality as based on two statements:

- Everyone has something to contribute because everyone is an expert on his or hers situation.
- Everyone has the ability to be creative and can participate in the design of the project.

The workshop as a sanctuary

Within the workshop situation in co-design, you create a space, defined in time and place, where certain rules apply – outside, the ordinary world and its hierarchies apply. I like the idea of the workshop as a sort of sanctuary, but it is also problematic, because what happens within the workshop inevitably meets the power systems from the outside.
It seems to be important to incorporate the co-design activity within the overall structure of project management and be clear about the purpose and transparent about relevant information. I think that the non-hierarchical way of working within a workshop is desirable, and should work as something to strive for, that guides the work, even if it is not always fully achievable.

The facilitator and equality

The discussion about equality in co-design processes has implications for the facilitator role as well. It could be seen as a task for the facilitator to work towards this desired equality by decreasing the knowledge and information gap between the participants, using exercises of sharing and by providing tools that develop mutual understanding, a common language, and consensus solutions.

Interpretation of user needs

When the process continues without the presence of users, someone, (and paper II (2013) provides examples of how) the architects or sales managers, take on the role of representing user needs. However, the material is valued is very much related to how it is presented and interpreted and by whom. Paper II (2013) discusses the role of the interpreter. It would be interesting to look further into how the user perspective is handled; interpreted and evaluated – what role it plays in relation to other perspectives and also in relation to how the participatory process is conducted.

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