

# REVERSING THE CO-DESIGN PROCESS: CO-DESIGN TOOLS FOR POST- OCCUPANCY EVALUATION

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## ABSTRACT

Visual tools such as probes and design games are used during co-design events to facilitate a common design dialogue. They evoke new ideas and invite users, designers and other stakeholders to explore and rehearse future opportunities. This "toolkit" and working practices are continually evolving, but the focus is almost always on the upcoming design. Based on an experiment, this paper investigates how co-design tools can be used as a part of a post-occupancy evaluation (POE).

When you do a POE, you evaluate the performance of an already completed building in relation to the daily use. Unlike a traditional co-design process the POE looks back on the process in order to adjust or redesign the building.

The paper argues that co-design tools can be an instrument to make architects and other stakeholders reflect on the project once again in order to see it from a different perspective.

## INTRODUCTION

Post-occupancy evaluation of buildings arose along with the Participatory Design tradition in the 1960s focusing on engaging the users' perspective. Usually a POE follows all the major steps of project delivery and

may be used as feedback for fine tuning a building (see fig. 1) (Preiser et al. 1988).

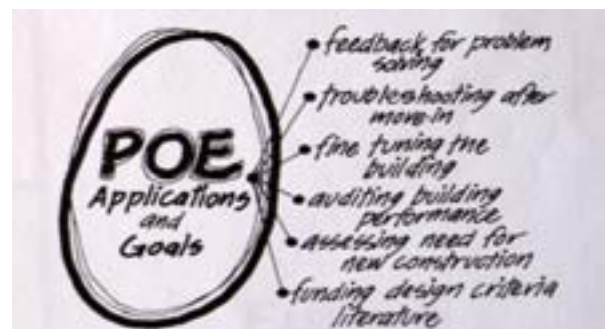


Fig. 1 POE may be used for any number of purposes (Preiser et al. 1988).

A typical Post-occupancy Evaluation has three phases: The first one is a preparation phase. Secondly, the evaluation team collects and analyzes data. In this phase interviews are often conducted while walking through the building. In the third phase the findings are reported by the evaluators and recommendations are made (see fig. 2) (Preiser et al. 1988).

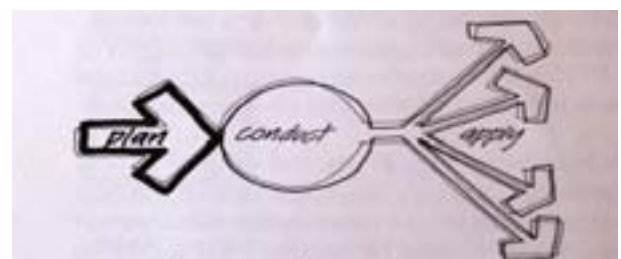


Fig. 2 The POE phases and steps are intended to be generic and they do not necessarily apply to all POE projects (Preiser et al. 1988).

Co-design (collaborative design) has its roots in the participatory design tradition and focuses on including users in the development of new design solutions (Sanders 2008). In a co-design process, users and other stakeholders are often involved in a series of workshops. These temporary spaces are intended to

build commitment and share experiences facilitated by tools such as probes (Mattelmäki 2006) and design games (Brandt 2006) (see fig. 3). These tools inspire the participants to experiment and explore a new range of possibilities by creating common tangible outputs.



Fig. 3 Designgame facilitating a common design dialogue.

Co-design and POE both focus on involving the users, but in two different ways. The POE seeks to test and evaluate the performance of building by conducting feedback from the users. The co-design process supports reflective ideas for an unknown future and engages the users in the design process as co-designers.

This paper focuses on what happens when co-design tools are used for evaluation. Is it possible to “reverse” the design process and give users and developers the opportunity to reflect on the project once again and realize something new? The following experiment will shed light on this question.

#### CASE STUDY: ENGAGING AN ARCHITECT IN A POE

The case study is a large development center in Denmark. An aim for the premises at the new building was to make the workplace more project-oriented rather than being divided according to professional backgrounds. Employees and other stakeholders were involved in this process.

As a preliminary session to a POE, a research team meets the main architect to uncover his intentions with the construction and his experience with user involvement doing the project. The purpose with the session is to articulate important locations in the building and bring up questions that the architect would like the user of the building to answer in a POE. Another purpose is to provide an indication of whether co-design tools are suitable for an evaluation situation.

At the beginning of the meeting, the architect (Martin) presents a power point presentation giving an overview of the project and showing how they involved the employees in a co-design process by using for instance

LEGOs. In his presentation, Martin explains that the building has 25 “base units” with space for 20 people in each. Each unit is designed with two project rooms as the core of the unit and sliding doors between them make it possible to join them to one large room. Adjacent to the project room there is a project-workshop and a “quiet room” decorated in relation to the base units occupants’ wishes. Two base units are interconnected with a joint meeting room and a wardrobe. The meeting room can be expanded or contracted with the use of curtains and the meeting rooms and project rooms can be interchanged, depending on the needs.

Martin points out that the building is not always used as intended although they involved the users in the design process. As an example, he mentions that the main corridors in the building, located outside to avoid noise, are not used properly as the employees tend to use the secondary ones, located inside the basic units. Several times during Martin’s presentation, he says that it is difficult for the users to change their behavior and he feels that a user manual might be a way to show how they are supposed to use the building.

Prior to the workshop, the research team prepared the framework and the materials to be used during the session (see fig. 4). In order to make the architect reflect on the project in reverse and perhaps get a different picture of the building, a metaphor tool resembling the tools used during a co-design workshop was introduced. Metaphors have also been used by Kensing and Madsen (Kensing et al. 1991), and according to them, the use of metaphors stimulates how to see things in a new way and is a way to broaden the users’ perspective. The aim of using the metaphor technique in this case was to get the architect’s attention away from his standard presentation and to see the project in a new light.



Fig. 4 Each task was presented in a booklet that also included metaphor symbols to be used.

To set the “stage,” a floor plan with an overlaying piece of manifold paper was put on a table. The transparent manifold paper made it possible for the architect and the research team to draw contours of the building and add other illustrations without destroying the floor plan. The architect was given three different tasks. The first one was to talk about the building from a city and a home metaphor. If the building were a city, where would the

shopping mall, the playground, the homes be and so on? In order to spark reflections to the story, the architect was provided with different symbols from both the city and the home context (see fig. 5). To complete this task he was asked to choose three important sites on the drawing with green rings – sites that he felt needed more attention in an ensuing evaluation of the building.

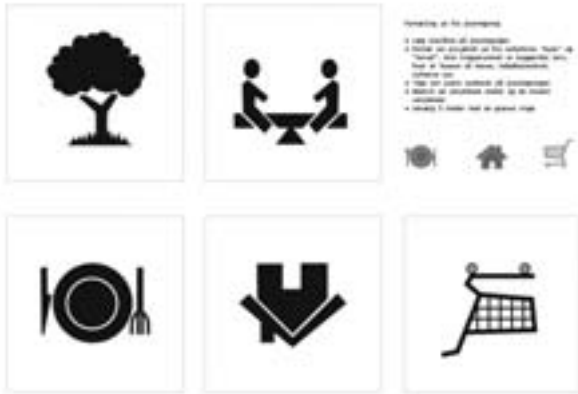


Fig. 5 A booklet unfolded with symbols of the city metaphor.

In the second task, the architect had to describe four employee types that could represent all the employees. Small icons of eyeglasses, scissors, a light bulb, a paint palette, a cup etc. were printed on the sheet as an inspiration (see fig. 6).

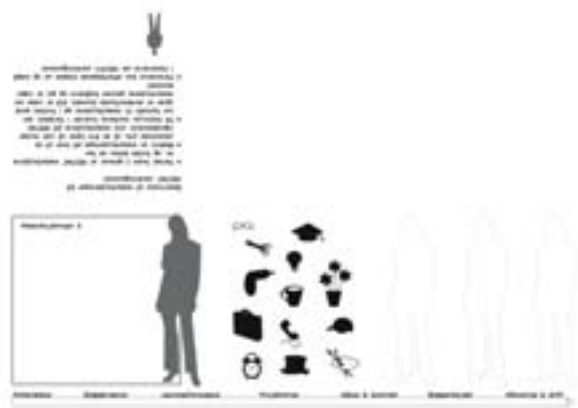


Fig. 6 The sheet with employee types unfolded.

In the last task, the architect had to draw scenarios in the booklet that he imagined could happen at various places in the building. When the booklet was folded it was possible to place it upright in the floor plan on a spot that the situation referred to (see fig. 7).



Fig. 7 The situation booklet in upright position as a test before the session

### MARTIN MAKES THE METAPHOR HIS OWN

Based on the city metaphor, Martin talks about the common facilities for the construction, which is primarily located on the ground floor of the building. This is a social place where people have fun, can be noisy, meet with colleagues and receive guests.

Along the way, Martin takes symbols cut out from the city metaphor sheets and uses them as props in his story. The metaphor symbols he takes up along the way provide a framing of the story. He also invents new symbols such as the "garage," which represent the test facilities in the basement (see fig 7).



Fig. 7 Martin uses the metaphor symbols as props. They set a frame to reflect within.

By moving into a metaphor terminology, inspired by the symbols, Martin begins the story of the basic unit, which he refers to as the "spatial toolbox." The "spatial toolbox" makes various types of configurations that can match the needs of the employees. These needs might change day by day, but also hour by hour.

Sometimes Martin tells the story through his own body instead of using the floor plan. In these situations, we get an extra dimension, namely the experience that Martin imagines the users have (see fig. 8).





Fig. 8 Martin tells the story through his own body. In this case, he shows the dimensions of the meeting room.

Through the home metaphor, the story of the basic unit evolves. Martin explains that each unit is divided into a primary living area where the family's life unfolds. This room can be both quiet and noisy. Martin then tells of how the basic units can almost be seen as a collective or a fraternity, as each base shares space with the family next door. They share the multi-functional meeting rooms that can be divided and joined.

Martin uses the green rings to point out three sites he feels are important for the building (see fig. 9). The base unit is pointed out very quickly. The second is the connection point between two base units. The final site is the connection between one base unit and the common facilities.

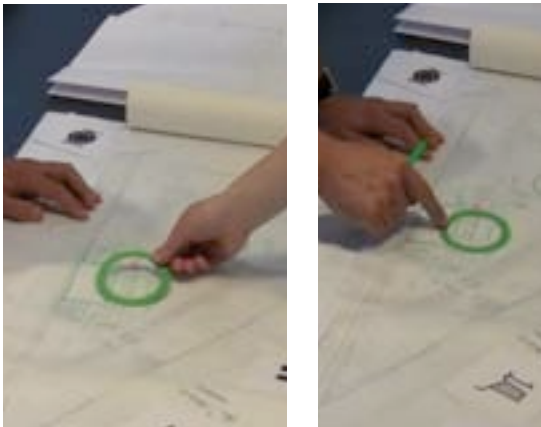


Fig. 9 Martin places the rings to mark important sites on the floor plan.

#### A DAY IN THE DEVELOPING CENTER

After we have introduced the second task, Martin begins a story of how he imagines the typical employee uses the building:

“If you imagine any employee who has a daily life here in the building, then he will always enter through the main entrance, meet some colleagues as he passes through the atrium and then he will choose a main staircase, depending on where he is located in the building...”

Further, Martin explains how the fictional employee arrives at the first floor, where the basic units are located and where he might start his computer work with different test equipment. Martin envisions a project meeting with some of the employees from the base unit. Not necessarily all 20 employees from each unit participate in the meeting, but it may be a sub project that a smaller group discusses in the project room. The base units are presented as a very vibrant and dynamic place where project teams expand and downsize at any time.

Instead of elaborating on the user types, Martin chooses to tell about the typical employee's usage of the building. This is rather an answer to the last task, but in a different way than intended. He never draws scenes of imagined situations from the building; he just tells about them in a very vivid way.

#### A SEARCH FOR EMPLOYEE TYPES

In the following, we try to make Martin define the various employee types, by probing what he sees as characteristic of the staff. Martin tells that many of the employees are comfortable shutting themselves inside their own little universe. During a user survey, they discovered that they barricaded themselves with very high shelves and walls of directories and files or computers and electronic equipment - cooped up in all their technology knowledge. In a way, the new facilities try to force the employees to work closely together although they are more characterised as loners.

In the search of employee types, Martin starts reflecting on the project and the users once again. His dream of the perfect office with its flexibility and great potential is replaced with some tension between how the building was conceived and how the employees use it. When he is asked whether the base unit works in reality he answers very quickly that it doesn't.

Martin starts to get curious about how the building is actually being used. He starts wondering whether the "nerd," who tends to be a "nest builder," is using noise as an excuse to put screen walls up in the basic units. He seems to realize that it might not only be because of the overstaffing but also because the base unit's flexibility and configurable potential is not exploited in practice.

Along the way, Martin seems to acknowledge that there might not be a right or wrong way to use the building and in that way a user manual is useless.

These considerations lead him into specific questions that he would like to ask the staff in a future POE:

- How do the basic units support the various work processes and needs?
- How do they see the interconnectedness with the adjacent base units?
- Do they feel disturbed in their workday, and in case they do, by what?
- Do they feel limited in their daily life?

## DISCUSSION AND FUTURE WORK

The session with Martin becomes a good foundation for a further evaluation, but in a similar session in the future, some adjustments should be made. First of all, the tools were intended for more people to engage and negotiate during the session. Unfortunately, we only had one architect attending the session and it became more of a monologue than a co-session for various participants. Secondly, we didn't know in advance what the floor plan looked like or the scale of it. This is important knowledge, but unfortunately floor plans and similar materials are often confidential. In addition, the tools were made as booklets, which made them inaccessible for the architect. Especially during the first task, it felt awkward to cut out the metaphor symbols. It would have been easier if they were separate pieces and not in a booklet. Finally, the task that encouraged the architect to draw scenarios from the building seemed too time consuming and not straightforward - even for an architect. By fine-tuning the method, it has potential in a session with the users of the development center, not as a substitute to a POE, but in addition to it.

In design research, we see a growing interest in design after design. This paper explores how the co-design process can be extended to handle what happens after a project is completed. It shows how the use of co-design tools can provide reflections and a new story of a completed project, a story that is different from the static power point version and different from a traditional POE aiming at testing the building's performance.

According to Schechner, a performance is a time-space sequence composed of proto-performance, performance and aftermath (Schechner 2002). If you study the use of a completed building as a performance, then one can recognize the co-design activities that occur in connection with a development project as a proto-performance and a traditional POE as the aftermath. A design evolves during the process like a proto-performance and in order to help the performer or the participants express themselves in action, the proto-performance seeks to help participants compose, control, embody and express emotions using material from personal, historical and other sources. The continuing life of a performance is its aftermath. Schechner states that the aftermath persists in physical evidence, critical responses, archives and memories and in that way it resembles the POE. When actors, singers and other professional performers use a coach to observe how well they are performing, it provides them with the feedback they need to do a better job. In the same way architects and other stakeholders need to take advantages of the lessons learned from both successful and unsuccessful building performance (Preiser et al. 1988).

By extending the co-design process to include design after design and implement it in POE activities, the participants get the opportunity to work their way backwards from the final performance to the proto-performance. Through the metaphor tools they get to explore, rehearse and reflect on the project once again instead of "just" entering the aftermath with feedback through a traditional POE.

The point here is that you cannot separate the design process from an evaluation as these two are closely linked as a proto-performance and aftermath is in a performance perspective. One must acknowledge that the design process continues after the building is inaugurated. The premises of the building are not as static as architects and clients might think, but dynamic and always evolving with its users. Thus, it is important to find ways to reflect and learn as much as possible during the aftermath.

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