

Framing Design in the Third Paradigm

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ABSTRACT

This paper develops vocabulary to discuss the phenomena related to the new design paradigm, which considers designing as a situated and constructive activity of meaning making rather than as problem solving. The paper studies how design projects proceed from the fuzzy early phases towards the issues of central relevance to designing. A central concept is framing, and it is elaborated with examples from two case studies. Several aspects of framing are explicated, exploratory, anticipatory and social framing, and related concepts of ‘focusing’, ‘priming’, and ‘grounding’ are explained. The paper concludes that understanding designing as a situated and constructive making of meaning has bearings on how designing needs to be supported.

Author Keywords

Design framing, reflective practice, user-centered design, user-driven innovation.

ACM Classification Keywords

H.5.0 Information Interfaces and Presentation (e.g., HCI);
H.1.2. Models and Principles: User/machine systems

INTRODUCTION

A new paradigm is emerging within HCI. Harrison et al. [14] identified three waves of paradigms within HCI, the first being “Human Factors/Engineering”, the second “Cognitive Revolution”, and the third “Situated Perspectives”. Change towards the third paradigm is evident, first, in the increased awareness of the dynamic character of use contexts; second, in the sociality and situatedness of interaction; third, in the issues related to learning environments; fourth, in non-task-oriented computing (such as ambient interfaces and experience-centered design); and fifth, in the role of emotions in human-computer interaction [14].

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Parallel to the emergence of the new paradigm, a heightened awareness of the importance of innovation has surfaced (see e.g. [9,20,22,24]). Globalization, increased competitive pressure, advances in technology, changing customer needs, and shortening product life-cycles are central reasons for the increased importance of innovation activities [6] in all fields of designing, including the design of human-computer systems, services, and products. As a result, Grounded Innovation [23] is beginning to form as a domain within HCI.

Innovation projects are those that aim at creating novel products, systems, or services. The central dilemma in such projects is the question “what to build”. This question is known as the most significant and difficult question a design team needs to answer [4]. The process of developing understanding of novel design opportunities differs substantially from the design process of a known product (see e.g. [5,20,34,39]). While the first two paradigms focused predominantly on the optimization of the performance of man-machine systems based on identified problems, the third paradigm promotes a view towards the situated and emergent properties of interaction [14]. The fundamental difference therein demands a critical re-consideration of the concept of ‘design problems’ that dominated design thinking throughout the 20th century.

Already in the 1970s Rittel and Webber [27] problematized the idea of the design problem. They contended that design problems are “wicked” by nature and that every attempt to solve a design problem frames the problem anew [27]. Dorst and Cross [8] have later illustrated how design problems are dependent on possible ways to solve them. Due to the open-endedness and the explorative character of innovation design, it is possible that a design problem does not exist at the outset of a project. Innovation design may be grounded, for example, on the exploration of a theme, whereby the object of action may be too ambiguous to be understood as a design object in the early stages of the project (see e.g. [25]).

Instead of design problems, the third paradigm promotes meaning making to the center of focus [14]. Understanding designing as a constructive activity of meaning making renders the terminology of problems and solutions obsolete. Rittel and Webber [27] stated, “The *formulation* of a

wicked problem is the problem!” This way of expressing the issue puts the *process character*, the formulation, in the center of focus over problems, goals, and results.

The early phases of innovation therefore cannot be grounded in the idea of design problems nor tied to the traditional ideals of optimization, but new theoretical understanding of the design process in the third paradigm is required. This paper thus attempts to contribute to the development of a theory of designing in the third paradigm with a focus on the early phases of designing.

SITUATED FRAMING

The concept of ‘framing’ is widely used in everyday language, in visual arts, and in a variety of scientific domains, e.g. in sociology [12], education [30], and design [34,15]. Not surprisingly, the term is employed with a variety of meanings. This paper builds on Schön and Rein’s [31] use of the term to refer to a process of perceiving and making sense of social reality. These authors contend that there is no way of perceiving and making sense of this reality except through a frame [31]. Blumer [3] described the issue within sociology: the “empirical world necessarily exists always in the form of human pictures and conceptions of it.”

The construction of the conceptions of reality underpins a fundamental dilemma. Anderson [1], who studied the value of ethnography for design, termed it as the “synecdoche problem for cultural forms”. According to Anderson [1] the core of the paradox is that “to understand what any individual item or part means, you have to see it against the backdrop of the whole. But in every case, the whole is constituted through the arrangement of the parts.” This idea links closely to the observation by Harrison et al. [14], who acknowledge that the *artifact* and its *context* are *mutually defining* within the third paradigm of HCI.

The border between artifact and its context, or parts and the whole, however, may not be clear and distinctive. Goodwin and Duranti [13] describe the issue in linguistics in terms that blur the perception of ‘parts’ in the whole. According to Goodwin and Duranti [13] the study of context and focus is fundamentally about exploring “the relationship between two orders of phenomena that mutually inform each other to comprise a larger whole.” This suggests a further complication, which is outlined in Gibson’s theory on perception [11]. According to Gibson perception of the “units of the environment” involves a phenomenon he named *nesting*. The smaller units are nested within the greater ones, and these units are not hierarchical but are full of overlaps and transitions [11].

In addition to the complexities related to mutuality and nesting, the context of real world projects complicates the issue even further. People create different framing depending on their “disciplinary backgrounds, organizational roles, interests, political and economic perspectives” [30]. Collaborative designing hence features

great varieties of structurally interwoven, overlapping and transitional frames in effect simultaneously.

This complexity is perplexing when approached at once. However, constructive frame-mediated interpretation provides a path through the complexity. As underlying “structures of belief, perception, and appreciation” [31] frames help to narrow down the number of available features by selecting “for attention a few salient features and relations from what would otherwise be an overwhelmingly complex reality.” [31]

The dilemma of relevance

Designers aspire to construct relevant ideas for innovation, but basically anything is potentially relevant at the beginning of an open-ended innovation project. In this paper ‘relevant’ refers simply to an idea that survives until the end of the process, i.e. is not abandoned.

The situation that innovation designers face is essentially similar to improvised acting as described by Keith Johnstone [17]. He illustrates improvisation as walking backwards into the future: The walker may not know what lies behind (in the direction he is actually heading) but knows the path from which he came [17]. An emergent idea may be completely absurd until the next ideas render it sensible. Schön [30] described the dilemma as the “paradox of learning.” He wrote that “a student cannot at first understand what he needs to learn, can learn it only by educating himself, and can educate himself only by beginning to do what he does not yet understand.” [30] Designers must therefore act upfront, and relevance becomes apparent afterwards.

To assist designers in focusing on relevant issues Beyer and Holtzblatt [2] developed Contextual Design (CD) interpretation models: the artifact, flow, sequence, physical, and culture model. These help designers focus their user studies on issues that have proven useful in information systems design. To assist social scientists in contributing to designing with relevant analyses Jordan and Henderson [18] outlined a different set of foci to analyze social interaction. The foci included “turn-taking”, “trouble and repair”, and the “structure of events”. These foci were intended to guide analysis towards relevant matters without forcing an a priori structure to organize the contents.

A priori foci guide designers’ attention towards what is potentially relevant for designing, but such foci tend to lack proper appreciation of the dynamics of change. According to Schön [29] designers develop framing through experimentation, or what he calls ‘design moves’: “what if I did *this*?” Schön wrote: “When [design] moves function in an exploratory way, the designer allows the situation to ‘talk back’ to him, causing him to see things in a new way.” [29] When placed into the use context, and in the midst of potential users, ‘design moves’ introduce novel entities that stem from the new relations and structures that emerge. A “move” may also be subtle, on the level of naming. Moore and Buur [26] studied how designers “reframed” a project

on insulin dispensers during a video analysis session. On the video one person called the insulin dispenser ‘a pen’. This triggered designers to see the project in a new light.

The following case studies illustrate design framing in practice. By contrasting two radically different cases the paper explicates some phenomena relevant to frames: anticipatory, exploratory, and social framing, frame grounding, frame artifacts, and the ideas of priming and focusing. The case studies spell out a number of situations and expose how designing was framed in these situations.

FRAMING DESIGNING IN PRACTICE

The first case study, the EU-funded Active@work project (2004-2006), was conducted at the University of Art and Design Helsinki (TaiK) in collaboration with companies (for additional details see [25]). The Finnish sub-project, called Konkari, employed methods from user-centered design in order to develop novel ideas for wellbeing at work. It also studied approaches to user empathy and user-driven innovation. The second case was a joint effort of the Department of Information Processing Sciences at the University of Oulu (TOL), TaiK, and the Laboratory of Planning and Urban Design at the University of Oulu. It was a student project with fifth-year students of architecture, applied geography, and regional planning during the fall of 2007. The section after the Kuntis project explains how technical interventions were employed to support framing.

Designing ideas for wellbeing at work

The aim of the Konkari project was to develop new concepts for ageing workers’ wellbeing at work. The overall trajectory of the Konkari project was outlined in the project plan, which defined the main activities and their outcomes. The project plan thus provided designers with an initial framing.

Situation 1.1: Discovering themes

The first workshop in the project aimed at developing a sense of the themes relevant to ageing at work. It was organized in two parts: one with maintenance workers and another with cleaning workers. The workshop was primed by manager interviews, which had resulted in an initial understanding of the work domain. The designers had also photographed some of the workplaces of the participating workers. The photographs were utilized in the workshop to frame the workers’ relevant memories from their workplaces. One of the tasks for the workers was to create a collage from the photos and other illustrations that would frame their feelings about work. The workshop resulted in a number of overall themes considered relevant for wellbeing at work.

Situation 1.2: Probe-primed interview

These themes were incorporated into a Design Probes kit [24] that was constructed to frame the workers’ thoughts on their current practice as well as their views on the potential areas of work practice development. The workers spent ten

days with the probes kit that contained a diary, a disposable camera, and tasks related to the previously defined themes.

After the period with the probes, the workers were interviewed at their workplace. The interviews provided designers with narratives about what the individual workers thought important in their work with respect to ageing and wellbeing. The photographs were especially useful in framing concrete details about the workers’ attitude towards their practice. In addition to photos and narratives (i.e. ‘framing artifacts’), the interviews provided designers with vivid personal experiences of the encounter with the workers at their workplace.

Situation 1.3: Interpreting through lenses

All of the material, i.e. the physical artifacts that were constructed during the probes study, was brought into an internal Probes Interpretation Workshop. The design team divided their foci into five frames, or “lenses”, to assist the interpretation: “interaction”, “personalities”, “ageing”, “spaces and tools”, and “personal meanings”. Each designer took the responsibility of one of the frames to guide the interpretation. A concrete aim of the interpretation workshop was to create Persona descriptions [6] of the workers. As these Personas would hide the true identity of the workers, they would frame discussion on the concrete and sensitive trouble that these people had.

The interpretation resulted in the construction of eight Personas (out of the 12 workers). These included a drawn portrait of the worker, key motivations, his/her network of actors, a day-in-a-life scheme, and some concrete details related to a worker’s attitude towards work, people, and technology.

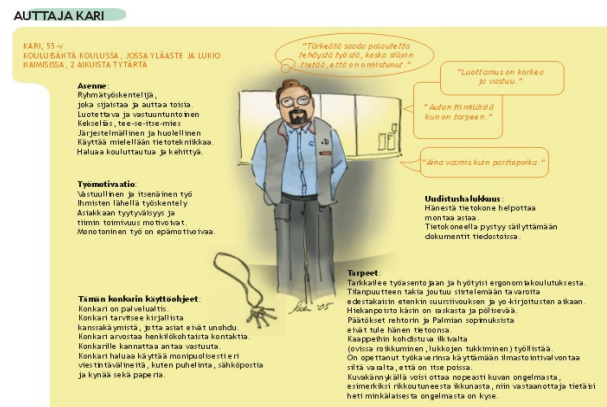


Figure 1: An overview of a page in a booklet describing a Worker Persona.

Situation 1.4: Staged ideation

The Persona descriptions were edited into a booklet (Figure 1) that was utilized to frame an Ideation Workshop, to which people from different backgrounds were invited. They included managers of the workers, design researchers, and members from partnering organizations. Prior to the

workshop some of the workshop participants were given the task to be prepared to explain one of the Personas to others in the workshop.

Three themes that had become salient during the process, “Expertise and Situated Knowledge”, “Organization of Work”, and “Community and Communication”, were employed in the workshop to provide the participants with narrower foci. The workshop resulted in a list of areas for further study, one of which was the “Mobile Digital Vision 2015”. There were two important reasons for choosing the framed “Mobile Digital Vision 2010” as the basis for the next phase: First, the study of Make Tools [28] as a means to develop new ideas for wellbeing at work was written in the original project plan. Second, the “Mobile Digital Vision 2015” was an existing intent within the target organization, and it was likely to contribute to the sustained motivation of the organization to participate in the study.

Situation 1.5: Framing in the wild

Make Tools were originally created to provide everyday people with means to express their tacit and latent needs and dreams in the form of personally authored artifacts [28]. In the Konkari project the use of the Make Tools was situated within the real workplace and in the real work activity (details of the Situated Make Tools study are described in [40]).



Figure 2. School janitor using Make Tools to construct an “appliance” to support wellbeing at work.

Prior to the site visits the workers were asked to bring a “digital tool” that they currently use at work. The visits began with an interview, where this digital tool (which was a mobile phone without exception) was employed to frame experiences of past situations. The workers were asked to tell stories about how they used their digital tool now, what kinds of situations and purposes for use they recalled, and which features they valued the most. This discussion also intended to help the workers to make sense of how “digital tool” was understood in this project.

After discussing the earlier situations with the help of the personal digital tool, the workers were given the Make Tools kit and were asked to build a tool that would help them feel better at work or work in a more focused way. Each element a worker included in the artifact had to be explained for its meaning. This was to ensure that each feature would relate to realistic work situations.

Situation 1.6: On the move

The workers were then asked to start working the way they would usually do at the time but now carrying the new “tool” along. The designers would interrupt the work occasionally to discuss new opportunities to manage the ‘just-happened’ with the assistance of the new digital tool. The situation was framed with all the richness of the real working context, including the real tools, the practitioner, the action, and the environment, instantly accessible.

Situation 1.7: Sketching the ideas on paper

Each of the work site visits resulted in several design ideas. Primed by the visits the designers sketched ideas on paper when they returned from a work site visit. Some of the ideas were also developed further and related to the ideas from the other workers.

Situation 1.8: Personas as designers

The ideas for the Mobile Digital Vision were brought into a concepting workshop, where designers combined the ideas into a smaller number of larger ‘concepts’. Eventually the grouping of idea was grounded in the Persona descriptions. The designers could associate the origins of the ideas with the visits with the workers, who were represented in the Personas. The Personas were hence essential in the framing of the eight concepts that resulted from the workshop.

Situation 1.9: Scenario crafting

The initial concepts were later combined into five product concepts based on functional similarities. Figure 3 displays a scenario that was primed by the site visits. It also illustrates how the study provided a concrete foundation that grounded the design of the scenarios.

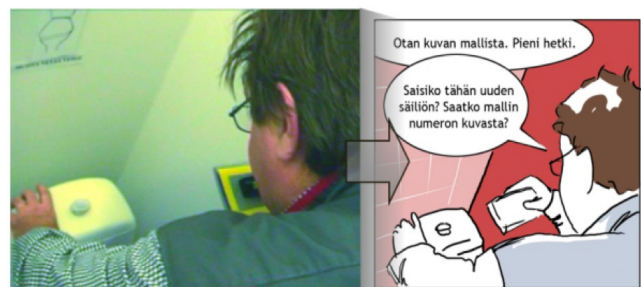


Figure 3: The situated play-acting captured on video provided a concrete frame for scenario building.

The final deliverables of the Konkari project were the product and service concepts. The fact that the client company has later launched a new development project to

work on the features discovered during the Konkari project is telling, regarding the relevance of the results.

Designing a town vision

In the second case study described here, the overall aim of the Kuntis Urban Planning project was to develop a vision plan for a small town in Finland. The time range of the vision reached from five to ten years into the future.

Situation 2.1: Discovering initial foci

The project activities started with an intensive two-day visit to the target town. With the assistance of local people the planners explored and photographed the potential places where they would create their design proposals (see Figure 5). The planners collected their first impressions of the area and annotated these with '+' and '-' signs with respect to their conceived potential for planning. In this way they developed an initial framing of their foci.



Figure 5: Urban planners exploring the target area

Situation 2.2: Shooting out ideas

After evaluation of the first impressions the planners were instructed to create “wild” and “exploratory” ideas based on their own observations. The Master teacher framed the ideation through questions: “what are the expected growth trends in your plan”, “what are the focal areas of change in the area”, “what would be the survival strategies of the town”, and “what would be the concrete actions taken in order to realize the strategies”. These questions were derived from earlier projects, and the Master teacher had to use a paper note in order to memorize the questions.

In the briefing she gave hints to utilize the large-scale map and encouraged rough sketching. She explained to the planners the value of the blurry sketching paper for ideation. The Master teacher also shared her baking experiences with the sketching paper, which made the participants laugh. All these acts primed an open-minded and light atmosphere for the ideation.



Figure 6: The Master teacher making anticipatory notes on the initial ideas.

Situation 2.3: The preconceived review

When the Master teacher evaluated the initial plans (Figure 6), she made detailed notes about each of the presentations with respect to the questions she had given earlier. These provided her with ready-made foci that framed her observations. The observations were made in a highly anticipatory way that took into consideration the next event, which was the general structuring of the whole project.

Situation 2.4: Reframing the whole

This reframing included the re-consideration of the outline of all the areas to be worked on, the grouping of the planners, and the change trends on which they would be working. “I think we’re going to create three options,” said the Master teacher to frame the session. The idea of three options was based on her earlier experiences with similar courses and planning projects. Furthermore, it had become evident during the review of the initial plans that there were generally three centers in the town. The planners had also been working on three different growth scenarios (essentially: growing, sustaining, and shrinking). This resulted in a 3x3 grid, which framed the re-structuring of the project (Figure 7).

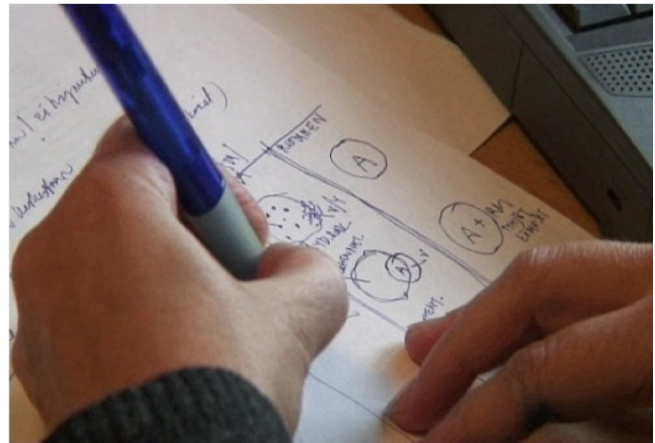


Figure 7: The Master teacher sketching alternatives into a 3x3 grid of ideas.

Situation 2.5: Assigning roles

When the new structure for the project was ready, the teachers assigned planners to their teams. Each planner was assigned to work on a plan, which included the planner’s own original ideas. The first visit to the target town ended with this assignment.

Situation 2.6: Re-grouping planners

The next visit started with a review of the plans of the first phase. Then the planners were regrouped to work on more detailed plans. Each planner was assigned to work on a different location from those of the earlier phases to prevent them becoming too attached to their own ideas.

Situation 2.7: Discovering the ‘openings’

The planners then visited the physical locations again. Two of the planners were assigned to work on the center of the town. During their walk in the environment with a map, they noticed the lake, which they considered beautiful, and that any views were largely blocked by vegetation. They had also noticed a central market square, which had a view of the lake. However, the planners considered the lake to be too distant to offer any feeling of a place beside water. During their walk the planners made markings on the map about each of the places they found interesting.

Primed by the experiences the planners returned with their edited map and photographs to their temporary design studio nearby. They discussed their findings with a more accurate map on which they discovered a hidden pathway. The path was perpendicular to the lake and was thus considered desirable. It provoked the planners to go visit the place once again to explore further the area. The exploration was grounded in the idea of the visual openings and primed by the finding of the hidden pathway.

Situation 2.8: Framing a design opportunity

The overall structure of the plan as it appeared in the final results was initially framed in the car while the planners were returning from this supplementary visit to the scene. One of the planners framed the design opportunity by explaining how the area was now built parallel to the shoreline, but there were potential areas that could open perpendicular views towards the lake. The other planner pointed out a precise place on a map. This idea was later brought all the way to the final presentation, where a new water channel perpendicular to the lake was pictured on the location.

The project ended a couple of weeks later with a presentation of the final plans to the local authorities and inhabitants.

Technical framing experiments in Kuntis

Mock-ups of new tools to support the framing of early phases of designing were developed and tested in the Kuntis project. Digital cameras and Bluetooth^(tm) GPS devices were employed to simulate (non-existent) advanced mobile technologies for producing location-dependent media, specifically photographs. Photographs with meta-data were stored in a database, which could present the data in three ways: first, as printed images; second, through an application named Ambience Wall; and third, via a web-based application called WebMapMedia. All of the interventions served as Technology Probes [16] to explore

the opportunities to support the early framing activities of designing.

Ambience Wall: Framing contextual inspiration

The Ambience Wall (Figure 8) was a projection display that provided a peripheral stream of pictures with some location data. The idea of the streaming pictures was inspired by a music album cover screensaver and by the observation by Williamson and Brown [38] that people do not even necessarily know what they want to see before they see it. The idea was to support spontaneous inspiration with the images from the real context. Over 600 geo-located (on a map beside) photographs thus populated the screen as a collage in an arbitrary order, and when a user saw an interesting photograph, she could view it in full screen by tapping on it with a mimio[®] mouse stylus.

When the planners used the Ambience Wall, they spontaneously searched for images of a certain area rather than looking for random inspiration. A random photo was seized only once on the Ambience Wall during the whole project. This was done to check if it was taken from a location relevant to their current discussion. Although the Ambience Wall provided multiple pictures from each location, the planners were specifically interested in photographs they had taken themselves.



Figure 8. The Ambience Wall aimed to provide planners with pictorial inspiration and contextual reference.

At the end of the project some planners considered the Ambience Wall to be distracting. The planners thought they would need ways to group and move images in the Ambient Wall as they currently do on a table. Most of the planners would also have liked to try the Ambience Wall in their real design studio throughout the whole project.

WebMapMedia: Framing a community

A web-based application, WebMapMedia, was created to promote citizen participation in the Kuntis project. The design of the WebMapMedia application rested on two sources of inspiration: *Photovoice*, through which people

can identify, represent and enhance their community through a specific photographic technique [36], a technique that has previously been used to give voice to people whose views are overlooked [38]; and the *Sticker-Map Method* [21] that enables citizens to mark locations with personal significance by placing colored symbols on a map. WebMapMedia thus allowed citizens to place markers on the map: A red marker symbolized places that needed to be developed, green was reserved for places that should be preserved, and a yellow marker was a sign for free opinions.

The planners considered the WebMapMedia application (Figure 9) to be of little use during the project. The planners criticized the utility of the pictures uploaded by citizens: “It is better to take pictures yourself. Then you get what you want,” said one of the planners in the closing review. Moreover, the number of comments that the site collected was very limited, and the planners considered that the comments did not address issues about which something could be done. The citizens also used the application too late to be useful in the early focusing of the designing.

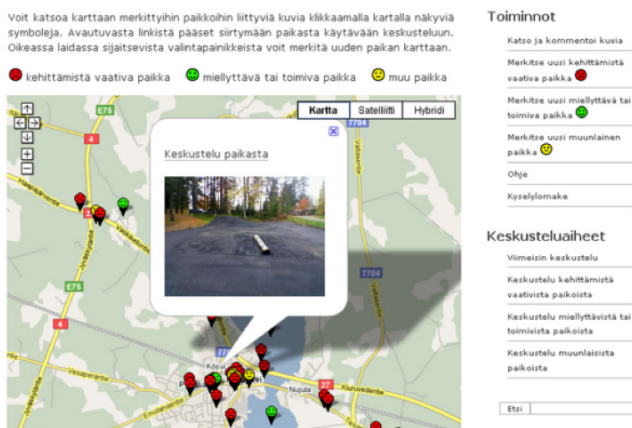


Figure 9: WebMapMedia provided local people with a way to influence the town planning by posting photos and comments.

The early prototypes of the WebMapMedia and Ambience Wall also suffered from usability and network problems, hindering the utility of the content.

DISCUSSION

Even though the technical experiments had little success in the Kuntis case in supporting designing, they enabled to better see how situated design framing takes places and how it may be supported. The following analysis of the case studies provides numerous insights that will be considered in the next round of experiments.

Exploratory Framing

The two case projects differed greatly in how “clear” the process was in the early phases. In the Konkari project the designers progressed with a very open idea of what should be created. The exploration was conducted within one broad and abstract category: that of ICTs. The early design

efforts were also framed by the Situated Make Tools method, which was chosen already upfront at the stage of authoring the project funding application. This *exploratory framing* (formed mainly by ICTs and the Situated Make Tools method) functioned as scaffolding that supported collaborative experimentation, ideation and exploration with the materials available in the design situations.

In the ‘Framing in the wild’ session (Situation 1.5), where the workers were ideating new ICTs, these Make Tools shapes were merely generic pieces of different shapes allowing the workers to easily configure rough physical mock-ups. They enabled designers and the workers to discuss new and diverse opportunities that became conceivable in the modified setting. When the action was situated within the real work environment, the relation to the work practice was immediately addressed. In short, exploratory framing functioned as a platform for divergent thinking, which was grounded in empirical reality.

Anticipatory Framing

In the Kuntis project the initial ideation, the evaluation of these ideas, and the reframing of the project were framed by the categories “focal areas”, “growth trends”, and “survival strategies” to foster convergent thinking. The *anticipatory framing*, which was grounded in these themes and primed by the visits to the physical environment helped designers to focus their effort on the relevant issues. These themes had been developed and tested in earlier urban planning projects. The process with anticipatory framing appeared very efficient, as the teachers could successfully restructure the entire urban planning project in a matter of a half-hour session (Situation 2.4).

The themes “interaction”, “personalities”, “ageing”, “spaces and tools”, and “personal meanings” that were used in the Konkari project to frame the interpretation of the probes contents (in Situation 1.3) guided designers on what to expect to find in the material. The framing helped to orchestrate the activity between designers and to ensure that the material was studied with the points of view, which had proven to be useful in earlier projects. The framing also helped to design the Persona descriptions, in which the design of the final concepts was grounded.

Social Framing

Framing is a social matter more than anything else. In order to frame designing successfully, designers need to understand a number of aspects regarding what kinds of beings people are and how they function: How do people act together and feel about a setting? How do they relate to others and engage with the things in a situation? How do they bring personal memories, thoughts, and dreams into the service of designing? What is at stake for them in the project? Social framing thus refers to the conceptual designing of co-design events for the co-designers.

One aspect of social framing is the role assigned to the co-designers. They may be framed as experts, who have the capacity to judge, design, and guide the direction of a

project. In the Konkari project the ageing workers played this role throughout the situations. Most events were organized in the presence of the workers. In the Kuntis project the local authorities and citizens played this role. People may as well be framed as stakeholders in pursuit of their own interests. A design project may influence their conditions of working and living, and it is therefore an ethical responsibility of the designers to involve them in the process.

The way people are grouped is also a matter of social framing. For example, in the Kuntis project the teachers considered carefully the skills and the personal relationships between the planners when they framed the structure of the teams (Situation 2.5). The theme discovery workshop in the Konkari project (Situation 1.1) was framed in two parts, one with the cleaners and one with maintenance workers, to enable the workers to develop themes with their co-workers. The importance of proper team setup is recognized in innovation design literature [see e.g. 5,20].

People usually have many responsibilities and ensuring their presence in a design event may require persuasion. For example, significant effort was put in the Konkari project into priming the workshop to create ideas (Situation 1.4). The Persona descriptions were designed to attract the parties to the shared workshop. Similarly the Kuntis project invested much effort in framing the design events to persuade the local authorities as well as inhabitants to participate. This framing included taking into consideration the location, the timing, and communicating the importance of participation to the local people.

The way a project connects to external organizations, people, and events is a matter of social framing too. The framing of external expectations for a project may influence how much effort becomes invested in a project. In the Kuntis case the project was intentionally situated in a real town, where the local authorities had true interest in taking advantage of the plans. The planners had to present the plans publicly to the authorities and the citizens of the target town, and they were made aware of this from the start.

Action was required to frame issues more understandable, controllable, and accessible to the co-designers. For example, in the Kuntis project the ideation of the wild early ideas was primed by an explanation of the value and the use of sketching paper (in Situation 2.2). The discussion in the Konkari project (Situation 1.5) on the current digital tool that the workers were using assisted the ageing workers to understand what ICTs are and what they can do.

Design tools may also be intentionally framed to play a particular social role in a design event. Ylirisku and Buur [39] illustrate how a video camera can be assigned a different role in design ethnography. The camera may be attended to as the central tool, which is employed to co-construct a story about current practice at a user site. The

camera may as well be hidden in the background in order to capture life as it is with minimal disturbance.

Focusing

Focusing refers to the iterative process of developing a comprehensive conception of a design object. This conception evolves through cycles that render relevant structures, i.e. frames, salient. When these structures, which guide perception and appreciation, become available, designers gain the ability to tell whether something is relevant or not. This 'sense of relevance' is apparent in how designers expressed their feelings about the value of the photographs in the Kuntis case.

In an interview after the project the planners explicitly considered the pictures taken in the early phases mainly as non-relevant. They regarded the early photos as from a "wrong" place or towards a "wrong" direction. Knowing that a picture is "wrong", however, implies that the designers are able to judge the "rightness" of it. This ability is precisely what the evolving frames provide designers with. At the same time as frames structure perception and sense making, they constitute what Schön and Rein [31] call the "normative leap" from fact to values, from "is" to "ought." This leap is fundamental in designing, when designing is understood in the spirit of the definition by Simon [32] as the activity to transform existing situations into preferred ones. The "normative leap" happens once designers develop the sense of relevance.

Priming

The concept of priming draws attention to the timely development of framing. For example, in the Kuntis project the initial discovery of foci (Situation 2.1) primed the ideation (Situation 2.2), which in turn primed the review of the ideas (Situation 2.3) that primed the reframing of the project (Situation 2.4), and so forth. In the same way previous situations primed the next ones in the Konkari project whenever the processed material and content was effectively carried on into a subsequent situation.

Major conceptual restructuring events may require a set of prior priming events. For example, the exploration, ideation, and evaluation primed the reframing (Situation 2.4) of the whole project in the Kuntis case. Similarly the whole set of consecutive design events and workshops primed the conceptual restructuring of the mobile tool concepts (Situation 1.8) in the Konkari project.

Sleeswijk-Visser et al. [33] called 'sensitization' the increased readiness of the participants to express project-relevant comments when they spend a period of time with a sensitization package. Priming sensitizes, and more precisely, develops initial and vague structures on which sub-sequent design-cognitions can be grounded. In the closing meeting of the Kuntis project the planners praised the importance of sensing the "atmosphere" of the town. The Ambience Wall was intended to deliver the atmosphere for the planners and thus prime designing within a very short time-span. One reason for the failure of the

technology in the current project may result from the vague understanding of how priming actually functions in connection with focusing, grounding and social framing.

Grounding

Grounding ultimately refers to the connection of designing to the structures in empirical reality in which the designs will eventually be placed. For example, the Personas in the Konkari project were grounded in the knowledge about the workers. The early ideation was grounded in the evaluation of the impressions after the exploration of the physical environment (in Situation 2.1).

Grounding also refers to the activity of placing something on a foundation, which implies certain clarity to what the foundation embodies. While priming promotes the timely relation between events, grounding draws attention to the hierarchical nesting of framing. Grounding thus ties closely to thinking while priming associates more with action. For example, in the Kuntis project the exploration in Situation 2.7 was grounded in the idea of the visual openings and primed by the exploration of the area.

The exploratory framing in the projects was grounded in project-specific and dynamically evolving ingredients. For example, the exploratory framing of the probe-primed interviews in the Konkari project was grounded in the themes from a workshop (Situation 1.1). On the contrary, the anticipatory framing was grounded in ideas that sustained over projects. For example, the lenses for interpretation (“interaction”, “personalities”, “ageing”, “spaces and tools”, and “personal meanings”) in the Konkari project (Situation 1.3) were created on the basis of the designers’ experiences with similar projects (see [19]).

Framing Artifacts

Grounding and priming presuppose the transcendence of relevant structures. The ideas, forms, artifacts, which are needed to (re)construct a framing, sustain from one situation to another. This phenomenon is evident in the studied projects and is facilitated by physical artifacts, and both case studies reveal the role that the material artifacts played in the reproduction of a certain frame at a later stage. For example, in the Kuntis case the Master teacher had to utilize a written note in order to remember, i.e. to reproduce in the situation, the questions that she utilized to frame the ideation in the Situation 2.2. Similarly the Master teacher’s visual notes of the initial ideas (Situation 2.3) served up these ideas in the subsequent planning session (Situation 2.4). The physical Make Tools carried the ideas from the moment of designing the new tool (Situation 1.5) into the moment of discussing the utility of the tool (Situation 1.6).

Artifacts were also utilized to frame memories for the service of design. For example, the tool that an ageing worker was asked to bring to the interview (Situation 1.5) assisted to reconstruct the memories of the workers in the form of narratives.

Zimmerman et al. [41] claim “design artifacts are the currency of design communication.” Framing artifacts have a similar value. Framing artifacts also feature a mnemonic function in the reconstruction of framing as the above examples illustrate.

CONCLUSION

The situated and constructive character of designing, as delineated in this paper, provides new perspectives for managers and designers to consider when planning design projects and events. For design researchers the development of new understanding of the character of designing provides a way to escape the old problem-solving dominated way of thinking. The situated-constructive view of designing focuses on the construction of meaningful and relevant designs rather than on the efficient deployment of useful and usable results. In innovation projects novelty is an ideal over predictability. The situated-constructive view of designing promotes new values, and this has bearings on how designing needs to be supported.

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