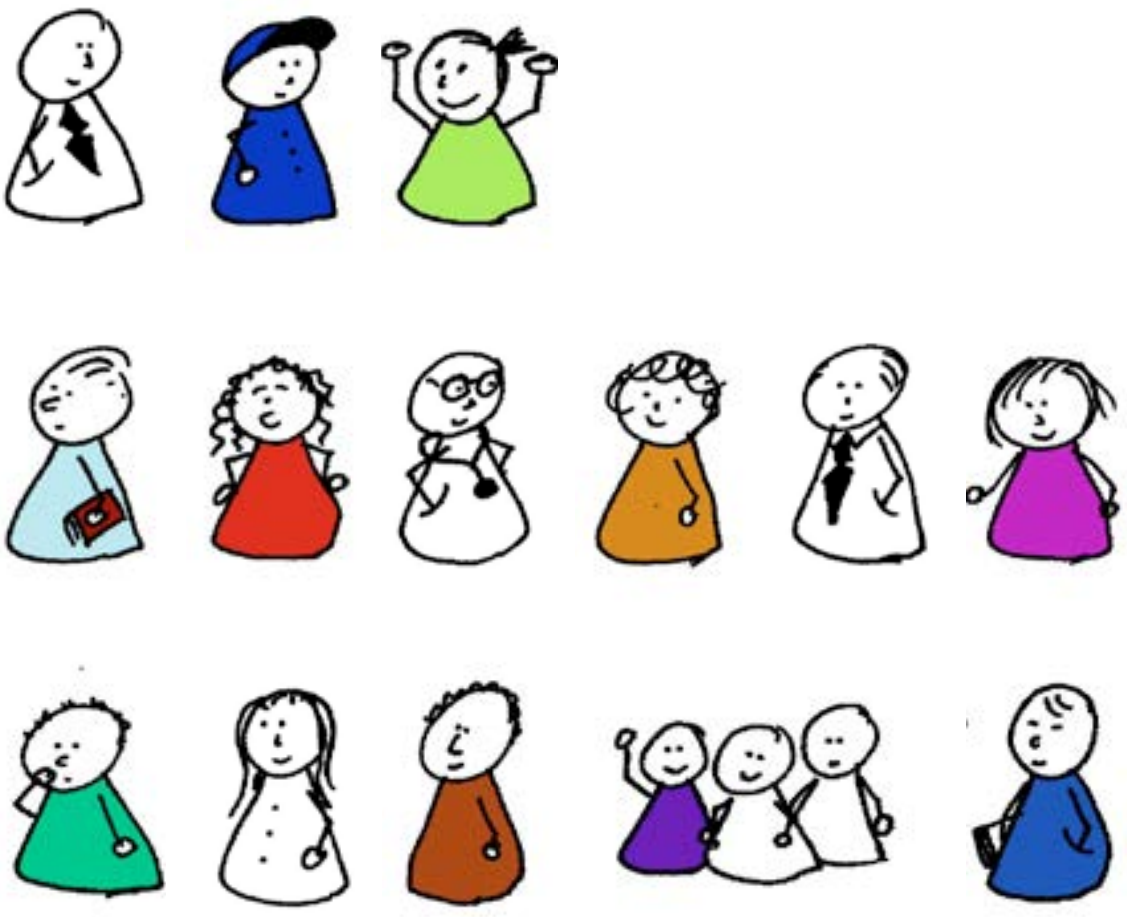
Creating Socionas

Building creative understanding of people's experiences in the early stages of new product development **Carolien Postma**



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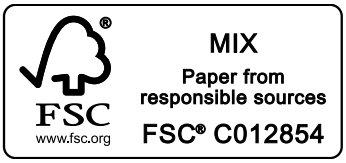

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▶ **Figure 1.1**

David and baby Oskar

Feeding and sleeping dominate a major portion of babies' lives during the first months after their arrival. In a user study about baby care, first-time dad David explained that he felt his bond with baby Oskar was rather remote, because he didn't have any role in breast-feeding him. "As a father, I feel as if I'm standing on the side-line," he explained. In case of bottle-feeding, moms and dads would often feed the child in turns, or even together.



▶ **Figure 1.2**

Jan Donkers

In a user study about staying in hospital, Jan explained that his wife, Nellie, visits him twice a day and brings him plates of food from home. "I still don't like the smell of the food that is served in hospital. It's…yuk! The quality has improved over the years, but it's still a medical meal that is served in a medical environment in a medical way," he explained.



► **Figure 1.3**

Corry de Groot

In a user study about seniors' social lives, Corry and her husband Hans told that their friends put eggs up for raffle during their weekly dancing classes. All couples would bring their empty egg boxes to dancing classes, just in case they might win. "They usually have five or six eggs. It's not a big thing or anything, but it's really nice," Corry explained.



1 Introduction to Creating Socionas

This thesis is about designing for people's social experiences. It is about designing for people like David and his experiences of caring for baby Oskar (figure 1.1), for people like Jan Donkers and his experiences of staying in the Máxima Medical Center (figure 1.2), and for people like Hans and Corry de Groot and their experiences of taking dancing classes (figure 1.3). Their stories were presented on the previous pages. They illustrate the ways products and services are instrumental in how people deal with each other, and show how people's experiences of product and service use are inextricably linked to "the social".

Creating Socionas seeks to address two questions: What do design teams need to understand about "the social" to develop products and services that delight users? And how can they build this understanding under the constraints of new product development practice? It presents the research into a step-by-step approach to building creative understanding of users' experiences in the early stages of new product development. The approach is based on empathic design, which, Fulton Suri concisely explains, "is about using our understanding to inform and inspire the creation of more useful and enjoyable things for people we may never meet" (Fulton Suri, 2003a).

In this introductory chapter, I give a brief introduction to empathic design, after which I explain two challenges of practicing empathic design and how I intend to address these challenges in Creating Socionas. The last section offers a guide to reading the thesis.

1.1 Empathic Design in a Nutshell

Empathic design is a design approach that is directed towards building creative understanding of users and their everyday lives for new product development (NPD).

Wright and McCarthy define *creative* understanding as an understanding of the user that the designer can translate into pleasurable and easy to use products and services (Wright & McCarthy, 2005). It draws on information about the user and his/her everyday life, and it includes inspiration for design and empathy for the user (Postma, Lauche, & Stappers, 2009). By *empathy for the user*, I mean, "an understanding of what it feels like to be the user, what the user's situation is like from his/her own perspective" (Wright & McCarthy, 2008, p.638). In this meaning, empathy involves a combination of affective resonance (i.e., an immediate emotional response) and cognitive reasoning (i.e., understanding the other person's feelings), both of which are required in empathic design (Kouprie & Sleeswijk Visser, 2009).

To gain a sense of how creative understanding evolves in empathic design, I find it helpful to think of creative understanding evolving in a similar fashion as I think empathy does. Wright and McCarthy nicely explain this process as follows: "Empathy evolves in the context of ongoing relationships wherein one person learns about the needs of the other by responding empathically, and then attuning future empathic responses. Without this communicative, relational framing of empathy, each person has only their own emotional responses upon which to base their emotional response" (Wright & McCarthy, 2008, p.639). Similarly, Koskinen and Battarbee (2003) describe the process of gaining empathy in empathic design as a dialogue in which designers and users comment on each other in turns and in which products are key statements. Designers' creative understanding of users and their everyday lives may grow in a similar way; that is by responding creatively (e.g., proposing a use

scenario), and attuning future creative responses as their creative responses do, or do not resonate with users.

1.1.1 Principles of Empathic Design

Over the past few years, empathic design has rapidly evolved in response to "design for user experience". *Design for experience* means design guided by broad and thorough understanding of users and their activities, thoughts and feelings. It is a design attitude that emerged in the 1990s when the design community was increasingly faced with the design of complex integrated systems that affect users' behaviors and experiences beyond the individual product or service, and started to realize that a broader approach to user-centered design would be necessary to develop products that are pleasurable and easy to use. At the same time, the business community came to see design for experience as a way to build stronger emotional connections with their customers (Brazen, 2009; Dandavate, Sanders, & Stuart, 1996; Fulton Suri, 2003b; Pine & Gilmore, 1998).

Many design researchers and practitioners agree that user experience is holistic, situated and constructed (Dewey, 1934). They share the idea that experiences are built in the dynamic relationship between individual, artefact (e.g., a product or service) and setting, and thus change over time. This idea implies that designers cannot design an experience, because experiencing is in people (Fulton Suri, 2003b; Sanders, 2001b). However, as Wright and McCarthy explain, "with a sensitive and skilled way of understanding users, designers might design *for* experience" (Wright & McCarthy, 2005, p.12). Frameworks of user experience play an important role in this regard; they sensitize designers to the various aspects that need to be considered in building creative understanding of user experience. A variety of user experience frameworks have been developed since the emergence of the design for experience attitude in the late 1990s. Battarbee (2004) provides a comprehensive overview, and identifies three groups of frameworks based on the fundamental principles that the frameworks address: "person-centered frameworks", "product-centered frameworks", and "action-centered frameworks". *Person-centered frameworks* are frameworks that identify elements of an individual's experience; examples are Jordan's framework of pleasures (Jordan, 2000) and Hassenzahl's model of goals and action (Hassenzahl, 2003). *Product-centered frameworks* are frameworks that discuss product features in relation to experience; for example, Rhea's lifecycle model of product experiences (Rhea, 1992). *Action-centered frameworks* are frameworks that focus on the interaction between an individual and a product in context; for example Sanders' experience domain (Sanders, 2003) and Forlizzi and Ford's framework of experience (Forlizzi & Ford, 2000). Designers may choose to employ one or more frameworks of user experience in empathic design, depending on the project's needs and/or their personal preferences.

The design for experience attitude involves respecting users, being committed to understanding users' needs and desires, building holistic understanding of users' activities, and relying on personal insight and creativity (Mattelmäki, 2006). The attitude is reflected in four principles that Postma, Zwartkruis-Pelgrim, Daemen and Du (2012b) argue, lie at the heart of the empathic design approach (Postma et al., 2012): The first principle is addressing people's rationality and their emotions in product use in a balanced way by combining observations of people's actions with interpretations of their thoughts, feelings, and dreams.

In 1996, Dandavate, Sanders and Stuart noticed that the human factors discipline has mainly focused on the scientific study of the rational domain, i.e., how people understand and use products. Understanding people's experiences of owning and using products, they argued, requires a more holistic approach that includes the emotional domain, i.e., their feelings and experiences. Addressing emotions and rationality in a balanced way will help researchers and designers "to understand those uniquely human traits that are responsible for people's liking, using, and wanting to live with the products [they] design" (Dandavate et al., 1996, p.415).

The second principle is making empathic inferences about prospective users, their thoughts, feelings, and dreams, and their possible futures of product use. In empathic design, people's feelings and experiences are thought to be best understood through empathy (e.g., Dandavate et al., 1996; Segal & Fulton Suri, 1997), therefore the approach calls upon designers' and researchers' empathic abilities in the process of developing creative understanding of user experience (Black, 1998; Fulton Suri, 2003a; Steen, 2008).

The third principle is involving users as partners in NPD, so that researchers and designers can continually develop and check their creative understanding in dialogue with users. Users are seen as the experts of their experiences and crucial partners in building creative understanding of these experiences (McDonagh, 2008; Sanders & Dandavate, 1999; Wright & McCarthy, 2008).

The fourth principle is engaging the design team members as multi-disciplinary experts in user research. In the article "Design for Experiencing: New Tools", Sanders and Dandavate (1999) notice that the roles of designer and researcher are becoming mutually interdependent. Social scientists bring in research skills and frameworks that are necessary for gathering user experience data and for understanding users' experiences, while designers bring in design skills necessary for transforming understanding of user experience into opportunities and ideas. In empathic design, researchers and designers are encouraged to join forces in designing and conducting user research to ensure that the users' perspectives are included in NPD

The four principles are not exclusively related to empathic design. There are several design approaches, such as participatory design and critical design, that share one or more of these principles. The (sometimes subtle) differences between these approaches often lie in emphasis of principles, and in the ways in which the principles are practiced. Sanders' topography of user research in design is useful in explaining how we see empathic design fit within the design discipline (Sanders, 2008). The map has two dimensions along which different user research and design approaches are positioned (figure 1.4).

The vertical dimension of Sanders' topography distinguishes between research-led approaches and design-led approaches. Research-led approaches have been introduced into practice from a research perspective, and mainly focus on building understanding of users and their present and past situations. Examples are human factors approaches and applied ethnography. Empathic design best fits with the design-led approaches. Design-led approaches have been introduced into practice from a design perspective, and typically focus on transforming and understanding users' experiences; the idea is not so much to develop an ultimate truth about relationships between people and their environment, but to build actionable understanding for design (Kurvinen, 2007; Steen, 2008). In this group of approaches, designing is part of doing research, and often design methods and techniques,

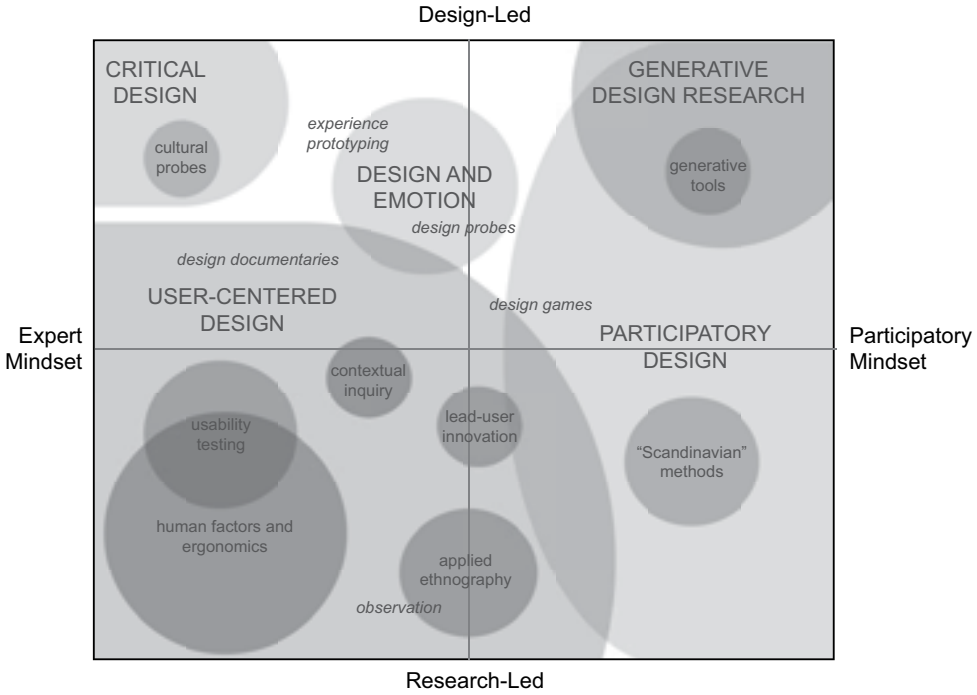


Figure 1.4

Topography of user research in design, adapted from (Sanders, 2008).

such as making collages and future scenarios, are used in the research method.

The horizontal dimension of Sanders' topography describes the mindsets of the people who practice and teach the design approaches. It distinguishes between approaches that involve an expert mindset on the one hand, and approaches that require a participatory mindset on the other. In approaches that involve an expert mindset, the researcher is seen as the expert and the user as subject. This group of approaches focuses on designing for users. An example is critical design, in which design experts challenge people's social values through speculative design proposals (Dunne & Raby, 2001). In approaches that require a participatory mindset, the user is seen as a partner who actively participates in the NPD process. This group of approaches focuses on designing with users. An example is participatory design, which strives for democratization of decision-making and design, and attempts to actively involve users throughout the design process. Empathic design, which also tries to involve users as partners in NPD (principle 3), equally relies on designers' personal insight and creativity in envisioning possible future situations of product use (principle 2), and therefore may be positioned in between the two groups of approaches, where it largely overlaps the area that Sanders refers to as "design and emotion".

1.1.2 Methods and Techniques

Empathic design draws methods and techniques from all the other areas of user research and design in Sanders' topography. The methods and technique that are often used in empathic design typically try to raise awareness of what makes people's lives rich, personal and meaningful, and deal with data about users' experiences that is rich, multi-layered and open to interpretation (Gaver et al., 2004).

Fulton Suri (2003a) distinguishes three categories based on the designer's role in the empathic design effort. The first category is about looking at what people do in their own context, and mainly involves observational techniques (Black, 1998; Leonard & Rayport, 1997). The second category involves asking people to participate by reflecting on their personal experiences and by expressing their thoughts, feelings and dreams. This class includes methods and techniques such as contextmapping (Sleeswijk Visser, Stappers, Van der Lugt, & Sanders, 2005), cultural probes (Gaver et al., 1999; Mattelmäki, 2005), and generative techniques (Sanders, 2000). Cultural probes are packages of tools and playful exercises that are designed to evoke inspirational responses for designers. Generative techniques, such as collage making, cognitive mapping and prototyping, are used to help people to express their thoughts, feelings and/or ideas. Contextmapping is a procedure for conducting contextual research with users that generally involves cultural probes and generative techniques. The third category involves trying things ourselves and learning about other people's experiences by approximating their experiences. This class of methods and techniques includes experience prototyping (Buchenau & Fulton Suri, 2000) and role-play (Boess, Saakes, & Hummels, 2007). In role-play, designers embody and enact the role of user to imagine the user's perspective and to build empathy with the user. Experience prototyping is a technique for simulating experiences with products, spaces or systems, enabling designers to understand, explore and communicate what it might feel like to engage with the product, space or system.

Others have suggested alternative ways of categorizing that provide different, yet equally

relevant perspectives on user research methods and techniques in design. For example, Sanders, Brandt and Binder (2010) provide a participatory perspective on the range of methods and techniques in design. They focus on methods and techniques that involve users in the design process, and distinguish three categories based on the activity that is creating dialogue between users and designers: "making tangible thing", "talking, telling, and explaining", and "acting, enacting, and playing". The first category, *making tangible things*, refers to activities in which designers and users create 2-D or 3-D objects, such as collages, mappings, and mock-ups, to reflect on their current experiences and to envision possible future experiences. The second category, *talking, telling, and explaining*, includes activities in which designers and users share and discuss experiences and ideas using tools and techniques such as storyboards, diaries, and cards. The third category, *acting, enacting, and playing*, refers to activities that use tools and techniques such as game boards, props, and play-acting to understand current experiences and to design concepts for the future. Techniques in which the designer images the user's experiences, e.g., experience prototyping and role-play, are not included here as they do fit the participatory view, but the category as such is new and not discussed in Fulton Suri's grouping.

1.2 Challenges of Practicing Empathic Design

The empathic design approach is considered most valuable in the early stages of NPD, when product opportunities need to be identified and product concepts developed (Koskinen & Battarbee, 2003). These stages typically focus on discovering what to make, deciding whom to make it for, understanding the purpose of making it, and defining the attributes for success (Buijs, 2003; Koen et al., 2001; Rhea, 2003).

In reviewing the design research literature, I found that the founders of empathic design, including leading academics and design consultancies such as IDEO and SonicRim, have successfully explored empathic design in projects for and with clients in the industry (e.g., Black, 1998; Sanders, 2001). Several examples are presented in table 1.1. Much less has been published about the theoretical understanding of people's social experiences in empathic design, and how others can successfully introduce and practice empathic design within a public or industrial organization. Consequently, design practitioners may encounter several challenges when trying to apply empathic design. In this thesis, I refer to these practitioners as "user researchers" and "designers", meaning the people who perform the user research and the people who manage the concept design, respectively. People in the latter group may or may not have any background or education in design.

The current research focuses on two challenges of practicing empathic design. The first challenge is to make sense of user experience for design. Recent societal issues and socio-technological developments, including the mass adoption of real-time social media services (Contagious, 2009), have made understanding of "the social" essential for empathic design. In an empathic design project for the Netherlands Architecture Institute (NAi), for example, Postma (the author) and Stappers found that "the social" played an integral part in teenagers' activities, and that understanding of "the social" was a requisite for developing an enjoyable and insightful museum activity for teenagers who visit the museum in the context of a required school activity (Postma & Stappers, 2006) (see chapter 2, box 2.2).

The social denotes the idea that human activity is fundamentally social, as opposed to

Table 1.1. Examples of Empathic Design in an industrial context

Continuum for Chicco (ICSID, 2006).	A design team of Continuum, an international design consultancy, used empathic design methods in developing a new baby bottle line for Chicco.
Sleeswijk Visser and Stappers (TU Delft) in collaboration with Sara Lee (Sleeswijk Visser & Stappers, 2007a).	Sleeswijk Visser and Stappers, affiliated with Delft University of Technology, facilitated an empathic design study about footwear for Sara Lee.
Jump Associates with Mercedez-Benz (Patnaik & Mortensen, 2009, p.105).	A team from Jump Associates, an innovation strategy firm, organized an afternoon session in which they facilitated contact between senior executives of Mercedes-Benz and prospective car drivers using empathic design techniques.
Sanders (MakeTools) with NBBJ Architects (Sanders, 2009).	Sanders (founder of MakeTools, a design research consultancy) and her team are working on a project with NBBJ, an architecture firm, in which they build understanding of hospital staff's and patients' experiences of working and staying, respectively, in hospital.
Mattelmäki and Battarbee (Aalto) with Polar Electro Oy (Mattelmäki & Battarbee, 2002).	Mattelmäki and Battarbee, at that time both affiliated with Aalto University in Helsinki, facilitated an empathic design study about the experience of wellbeing and exercising for Polar Electro Oy, a heart rate monitor manufacturer.
Multiple design consultancies with small and medium enterprises (SME) (Van der Lugt et al., 2009).	In a Pressure Cooker project, design researchers from different consultancies facilitated empathic design studies for ten Dutch SME's.
IDEO for and with various organizations (e.g., Fulton Suri, 2008; Samalionis, 2009; South, 2004).	IDEO is well known for employing empathic design approaches in projects for and with organizations.

individual. Figures 1.1-3 and figure 1.5 present six cases from daily life. A closer look at these cases reveals that "the social" plays an important role in each of these six cases, and that it is more than just another flavor of context: The social permeates our lives. This idea has been at the core of computer-supported cooperative work (Benyon et al., 2005), but is only peripheral in (empathic) design. The suggestion has been made in the design research literature that designers need to establish creative understanding of the social to develop products and services that delight users (e.g., Black, 1998; Buchanan, 2001; Fulton Suri & Marsh, 2000); for example, Buxton succinctly argued that, "we are deluding ourselves if we think that the products that we design are the 'things' that we sell, rather than the individual, social and cultural experience that they engender, and the value and impact that they have" (Buxton, 2007). However, most existing frameworks of user experience in design still place the individual at the center and merely implicitly address the social (Battarbee & Koskinen, 2008), leaving user researchers and designers unclear about what "the social" actually encompasses and how it relates to product and service use.

The second challenge is to build creative understanding of user experience in the context of new product development practice. A few years ago, my former colleagues and I experimented with empathic design in a number of projects at Philips Research, a corporate research organization (Postma et al., 2012b). When doing so, we encountered several challenges due to discrepancies between the theory of empathic design as described in the literature on the one hand, and the application of empathic design in an industrial context on the other. One important discrepancy concerned the designers' role in building creative understanding of user experience.

In the theory of empathic design, no clear distinction is made between the roles of designer and user researcher in empathic design. The principles of the approach as identified by (Postma et al., 2012b) even seem to suggest that designers adopt the role of user researcher, and build creative understanding of user experience in direct interaction with users. In our projects at Philips Research, however, direct interaction between designers and users was not always feasible as the people who performed the user research (we) and the designers who managed the concept design (our team members) were usually not the same people. Consequently, the user researchers in the organization faced the challenge of sharing rich user data with designers in ways that enabled the designers to build creative understanding of user experience for design – a challenge that is well recognized in the design research literature (e.g., Buur et al., 2000; McQuaid et al., 2003; Sleeswijk Visser et al., 2007).

The research into Creating Socionas seeks to address these two challenges of empathic design. It investigates what design teams need to understand about people and their social experiences to develop products and services that delight users, and how the teams can build this understanding under the constraints of NPD practice. "Creating Socionas" is proposed as a possible solution.

1.3 Creating Socionas

Creating Socionas is a step-by-step approach for building creative understanding of people and their social lives in the early stages of new product development. *Socionas* is new jargon for a design approach that includes understanding the social, and that, like Cooper's personas (Cooper, 1999), supports user-centeric innovation in industrial organizations where

designers and user researchers are not necessarily the same people. The approach builds on empathic design, but (parts of) the approach may also be applied in the context of other design approaches such as critical design, user-centered design and generative design research (see figure 1.4).

Creating Socionas is rooted in design practice at Philips and is based on two ideas. First is the idea that designers should be engaged in making sense of user experience for design. The design research literature offers several good ways for capturing and sharing rich user experience data in situations where the designer is not the user researcher. The personas technique as propagated by Cooper (1999) is probably the most widespread in industrial practice. Personas are fictitious characters with individual histories, thoughts and feelings, whose goals and behaviours are based on real user data. A persona provides the design team with someone concrete to understand and identify with. The idea of personas is reflected in many other techniques for capturing and sharing user experience data, including storytelling (Gruen et al., 2002) and design documentaries (Raijmakers et al., 2006).

In reviewing literature about personas, Brandt (2006) observes that discussions of personas seem to focus on the aesthetics and the content of representations of personas, and much less on the process of creating personas. Moreover, she notices that in the literature, personas are typically constructed by user research specialists and consultants, and thereafter handed over to design teams. Pruitt and Adlin's practitioner-oriented book "The Persona Lifecycle", for example, suggests that a core team of user- and customer research and profiling specialists takes the lead in developing personas, and introduces the personas to design teams only when the personas are finished (Pruitt & Adlin, 2006). Thus the designers who are to use the personas are not necessarily engaged in the process of creating the personas.

Different design researchers and practitioners agree that a more effective way of ensuring that the user perspective is included in design is for designers to discover users' aspirations and dilemmas themselves, rather than to be told about them (e.g., Brandt, 2006; Beyer & Holtzblatt, 1998; Fulton Suri, 2003a; Gaver et al., 2003). This idea inspired me to develop an approach that explains how designers may partake in making sense of user experience for design in situations where they cannot talk to users first-hand. In this thesis, I talk about "engaging designers" to mean "inviting designers to participate" – a definition of engagement that is slightly different from the one used by Sleeswijk Visser in this context; she uses the term engagement to mean designers' commitment and motivation to study users' experiences throughout the design process (Sleeswijk Visser, 2009; Sleeswijk Visser et al., 2007).

The second idea that is fundamental to Creating Socionas is sensitizing designers towards the social in making sense of user experience for design. In their chapter titled, "Co-experience: Product experience as social interaction", Battarbee and Koskinen (2008) notice too that the social is underexposed in most existing frameworks that are intended to generate perspectives of user experience in design, and argue that a theoretical framework is needed to sensitize designers towards the social in designing for user experience – not only in designing for the experience of products and services that aim to generate a societal benefit (like in "social design" and in "design for sustainability"; e.g., Tromp et al., 2011), but in designing for the experience of potentially "any" product or service. They present "co-experience" as a theoretical framework for doing just that (Battarbee & Koskinen, 2005).

Co-experience nicely describes the emergence and shaping of user experience as a process







Figure 1.5

Examples of "the social" affecting product- and service use, and vice versa.

The table arrangement in a restaurant influences how guests will interact during dinner and with whom (Gaver, 1996) (left, top).

Showing a personal SMS message to a friend is a way of communicating trust and friendship (Taylor & Harper, 2003) (left, bottom).

When faced with buying wine in the supermarket, we often choose the bottle of wine from a nearly empty shelf, assuming it's the best one (Erickson & Kellogg, 2000) (right, top).

involving two or more people in social interaction; it provides design researchers with new theoretical perspectives on studying and interpreting people's experiences of owning and using products. The framework may be more difficult to apply in design practice, as it provides limited hands-on guidance as to what aspects of the social need to be considered in building creative understanding of the social for design. In this thesis, I carry Battarbee and Koskinen's idea of sensitizing designers to the social further by developing a conceptual framework that could serve as "thinking tool of the social" – a model that guides both user researchers and designers in making sense of user experience for design. Creating Socionas combines this conceptual framework with five steps for building creative understanding of user experience under the constraints of new product development practice.

1.4 A guide to reading this thesis

This thesis presents my research into Creating Socionas. It is directed at practitioners and researchers who are interested in user-centric innovation, and who would like to learn about ways of building creative understanding of user experience in new product development practice.

The thesis is divided into eight chapters that can be read in succession or individually, depending on the reader's interest. This first chapter introduced Creating Socionas. It explained how the current research relates to the fields of design research and design practice. Chapter 2, *The Research into Creating Socionas*, continues to describe the research approach. The chapter explains how action research methodology was used as a framework for practicing a research through design approach in addressing the research questions. Chapter 3, *Challenges of doing empathic design: Experiences from industry*, reports our experiences with introducing and practicing empathic design in NPD practices at Philips. It provides the reader with a broader understanding of the problem that the current research intends to address and its context.

The next three chapters lead the reader to a deeper understanding of the insights and theories that underpin Creating Socionas. First, chapter 4 introduces "trialogue", a framework that describes the tri-partied interaction between users, user researchers and designers in new product development practice, and discusses implications of trialogue for sharing rich user data in empathic design. Then chapter 5 reports the search for a conceptual framework that design teams could use as a thinking tool of the social in empathic design. Our search concludes with "Activity Theory" as the best fit between design teams' needs and the framework's offerings. Chapter 6 proposes "Stanislavsky's System" as an intuitive way for practicing Activity Theory in empathic design. The chapter discusses the conceptual relations between Stanislavsky's System and Activity Theory, and presents a case in which Stanislavsky's System was used to translate Activity Theory for empathic design.

For readers who would like to learn about the implications of the current research for NPD practice, chapter 7, *Creating Socionas step-by-step*, explains how user researchers and designers might introduce and practice Creating Socionas in their own organizations. The chapter describes the different phases of the approach and offers indications for its use.

In the last chapter, the discussion, I look back on the current research, and draw implications for education and future research.

2 Research approach

The research into Creating Socionas proceeded through cycles of developing and evaluating the approach in ongoing new product development (NPD) projects at Philips. Development of the approach was guided by principles of user-centered design, and theories and frameworks found and appropriated from social sciences and theatre. Implementing Creating Socionas in NPD and evaluating its consequences in light of the research objectives, provided insight into the value of these theories and frameworks in designing for user experience, and generated knowledge about building creative understanding of user experience in NPD practice. The generated insights and knowledge are documented in this thesis and consolidated in Creating Socionas as an approach to building creative understanding of user experience (chapter 7). I describe the research approach in this thesis as *research through design*, by which I mean, "generating new knowledge or understanding through cycles of developing and evaluating 'products'". These products can be experiential artefacts as well as process prototypes (Horváth, 2008; Stappers, 2007; Zimmerman et al., 2010).

In this chapter, I explain the research approach in Creating Socionas. The chapter proceeds in four parts. First, the research through design approach is introduced, and the conceptual relations between research through design and action research are discussed. Then I explain the methodology of research in Creating Socionas. The third section explains how empathic design and Creating Socionas fit within the context of Philips. The last section introduces the empirical cases at Philips in which instantiations of Creating Socionas were developed and evaluated.

2.1 Research through design

Research through design is an emerging research approach. It is an approach in the make which meaning and practice are still debated. Discussions of research through design (and design research in general) mainly revolve around the question of whether the approach should attempt to be scientific or not, and the relation between design and research (Horváth, 2008; Stappers, 2007).

Horváth views design research as a link between basic, disciplinary (or 'fundamental') research and industrial design engineering through which knowledge is transferred from one end to the other. He identifies three types of design research that are characterized by a growing degree of design involvement: Research in design context, design inclusive research and practice-based research. *Research in design* is most similar to fundamental scientific research; it uses research methods of the basic disciplines to study design-related phenomena. *Practice-based research*, on the other hand, is mainly driven by design practice, and uses research-inspired principles, methods and tools in support of product innovation. *Design inclusive research* sits in between the former two types of design research, and, in my view, includes the research through design approach as practiced in Creating Socionas. It uses design methods as a research means in generating and applying knowledge – often in the context of a creative process that proceeds through an iterative spiral of generative and evaluative cycles (Stappers, 2007; Zimmerman et al., 2010). Stappers nicely explains the research through design process as a process in which designers absorb knowledge from the basic disciplines and confront, integrate and contextualize this knowledge. In the

confrontation, the theories and hypotheses from the basic disciplines are put to a kind of test, thereby producing insights (Stappers, 2007). To contribute to the growth of knowledge, Stappers argues, these insights plus the decisions that are taken along the way need to be documented and fed back to the disciplinary sources.

The main benefit of the research through design approach is that it allows the researcher to explore new domains in a holistic way, and to refocus the research as understanding of these domains increases (Horváth, 2008; Stappers, 2007; Zimmerman et al., 2010). It thereby opens the door for research that, like the research into Creating Socionas, focuses on the future, instead of on the present or the past, and aims to address problems that are indeterminate in the sense that they are not framed by definitive conditions or limits that impose a particular view on the problem and way of resolving the problem (Buchanan, 1992).

Rittel and Webber talk about "wicked problems" (Rittel & Webber, 1973). They identify ten properties of wicked problems that I think also characterize the problem that Creating Socionas intends to address, i.e., the problem of building creative understanding of user experience in NPD practice. The ten properties are listed in box 2.1. For example, the third property, "solutions to wicked problems are not true-or-false but good-or-bad", holds true for Creating Socionas too, as there are no formal criteria for objectively assessing the approach – judgement of the approach is likely to differ in accord with design researchers' and practitioners' personal and group interests, values, and needs regarding user-centric innovation and NPD. And property 8, for instance, also applies to Creating Socionas: The problem of building creative understanding in NPD practice is "a symptom of another, higher-level problem", namely the organizational culture and mindset. This problem will be discussed in chapter 3.

Being explorative and future-focused, research through design perfectly lends itself to addressing wicked problems, such as the problem of building creative understanding of user experience in NPD practice. But as the approach is still in the make, there is no agreed upon standard for the proper conduct of research through design (Frayling, 1993; Horváth, 2007; Zimmerman et al, 2010). In the current research, this deficiency was tackled by using action research methodology as a framework for practicing research through design. The main advantage that action research brings to research through design is an established methodology of research that may be appropriated for the proper conduct of the research through design approach. An important advantage that the action research methodology brings to the specific research of Creating Socionas is practitioner involvement. Practitioner involvement is not important for research through design per se. But for Creating Socionas, involvement of practitioners is of crucial importance, because the research aims to address a problem that directly concerns practitioners, and that requires a solution that is relevant to practitioners. The following section explains how the action research methodology is appropriate to research through design.

2.1.1 Action research as a model for research through design

In the design research literature, it has been suggested that action research may provide the methodological framework that is needed for the proper conduct of research through design to contribute to the growth of knowledge (e.g., Walters, 1986; Zimmerman et al., 2010). Action research is very similar to research through design, but its methodology of research is

Box 2.1. Ten properties of wicked problems, adapted from (Rittel & Webber, 1973)

1. Wicked problems have no definitive formulation, because understanding of the problem depends upon the researcher's or designer's idea of solving the problem.

2. Wicked problems have no stopping rules, because understanding of the problem increases with the process of solving the problem, and because there are no criteria for sufficient understanding.

3. Solutions to wicked problems are not true-or-false, only good-or-bad.

4. With wicked problems, every implemented solution is consequential.

5. There is no ultimate test of a solution to a wicked problem, because the implemented solution generates waves of consequences over an extended period of time.

6. There is not a well-described and exhaustive list of permissible actions for solving the problem.

7. Every wicked problem is essentially unique. Wicked problems may appear similar, but the researcher or designer cannot be certain that the particulars of the problem do not outweigh its commonalities.

8. Every wicked problem is a symptom of another, higher level, problem.

9. There is more than one possible explanation of a wicked problem, the choice of explanation depends on the researcher's or designer's world view.

10. The researcher or designer who solves the wicked problem has no right to be wrong; the researcher or designer is liable for the consequences that he or she generates.

far more established (Archer, 1995). This section briefly discusses the connections between the two approaches that I believe justify assimilation of action research in research through design, before I turn to the discussion of the methodology in the current research.

The fundamental idea of action research is that the social world can only be understood by trying to change it (Brydon-Miller et al., 2003). The approach aims "to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework," Rapoport explains (Rapoport, 1970). Thus action research has the dual intention of improving social practices and generating theory and knowledge, and considers collaboration between researchers and practitioners, i.e., the people in a problematic situation, to be crucial in this regard (Bradbury Huang, 2010; Davison et al., 2004; Heller, 2004; Susman & Evered, 1978).

In the past years, a number of design researchers have successfully explored action research as a model for research through design (e.g., Boess et al., 2007; Brandt, 2004; Moore & Buur, 2005). Research through design generally operates from a different perspective than action research. It mostly intends to generate solutions to problems that are inspired by theory, rather than a specific problematic situation. Moreover, the approach is not necessarily committed to democratic social change – in research through design, design researchers may also choose to act individually (Brydon-Miller et al., 2003; Swann, 2002). But there are also striking parallels between the two approaches. These parallels became apparent to me when reading Susman and Evered's discussion of action research in organizational science, which has been widely adopted in the social sciences (Susman & Evered, 1978). For these reasons, I refer to their account of action research in this thesis.

Action research is different from more traditional, scientific research approaches, which hold that research must be objective and value-free to be credible. In discussing the epistemological and methodological differences between action research and traditional, scientific research approaches, Susman and Evered define action research in terms of six characteristics (Susman & Evered, 1978): First, action research is *future oriented*. Action research deals with the practical concerns of people, and is directed towards creating a more desirable future for them. In action research, relevance of the research (i.e., providing value to practitioners) is generally considered to outweigh rigor in a traditional scientific sense (Kemmis and McTaggart, 2000; Susman & Evered, 1978). "The ultimate sanction is in the perceived functionality of chosen actions to produce desirable consequences for an organization," Susman and Evered explain (Susman & Evered, 1978).

Second, action research is *collaborative*. The direction of the research process is partly determined by the needs and competences of both researcher and practitioner. Collaboration between researcher and practitioner challenges the position of the researcher as an objective and detached observer, and may reduce the confirmability (or objectivity) of the research; however, a collaborative approach is considered crucial for understanding and changing the problematic situation, and for generating knowledge that practitioners can make practical use of. To contribute to the trustworthiness of their research, action researchers provide criteria along which others can assess their actions, observations and judgments by explicating their objectives and position in the research (Archer, 1995; Lincoln & Guba, 1985).

Third, action research implies *system development*. "System development" means that structures that support necessary communication and problem-solving procedures are built

for improving and developing understanding of the situation.

Fourth, action research *generates theory grounded in action and in theory*. Theory is developed in a cyclic process of taking actions that are guided by theory, and evaluating the consequences of the actions taken for the problematic situation. The cyclic process involves five phases, as is illustrated in figure 2.1: "Diagnosing", "action planning", "action taking", "evaluating" and "specifying learning" (Susman & Evered, 1978). The number of phases that are carried out in collaboration between researchers and practitioners may vary for different projects. The research starts with *diagnosing*, which involves identifying and defining the problem. Then in *action planning*, possible courses of action for solving the problem are generated, and it is decided what action will be taken. *Action taking* refers to the implementation of the action plan. In the *evaluating* phase, the effect of the actions taken is studied and evaluated in light of the research objectives and expectations. The last phase, *specifying learning*, provides an opportunity for researchers and practitioners to reflect on the actions and outcomes of the research as a whole. This may lead to the identification of new problems and thus another research cycle.

Fifth, action research is *agnostic*. The action researcher recognizes that his/her theories and guidelines for action are the product of previous taken actions, and are re-examined and reformulated in every new research situation. He/she understands that the research objective, problem definition and method of the research need to be generated from the process itself, and that consequences of planned actions cannot be fully anticipated. Action researchers view the iterative process in which previously generated theories and guidelines of action are re-examined and reformulated as a form of reflexivity that contributes to the trustworthiness of the research (Davison et al., 2004).

Sixth, action research is *situational*. In action research, the object of research is considered to be a function of the situation as defined by the actors, and thus not invariant or free of context. This implies that theories and guidelines that have been generated in action research only reliably apply to the situation in which they were generated, and need to be adjusted for each new research situation. Thus action research findings are transferable (or generalisable) to a limited degree only (Archer, 1995).

In reviewing Susman and Evered's account of action research in light of the research through design as defined in the previous section, four important parallels may be identified that I believe justify assimilation of the action research methodology in research through design:

- *Being future-oriented* – Action research and research through design are both concerned with developing ideas about possible futures as well as developing understanding of an existing situation.
- *A cyclic research process* – Action research and research through design both proceed through a spiral of cycles of planning, acting, observing and reflecting.
- *Generating theory that is grounded in action* – In both approaches, developing and evaluating ideas about the future is guided by theory, and generates theory.
- *Generating actionable knowledge* – Action research and research through design share a concern for generating knowledge that practitioners can make practical use of.

The next section explains how the action research methodology was used as a framework for practicing research through design in developing Creating Socionas.

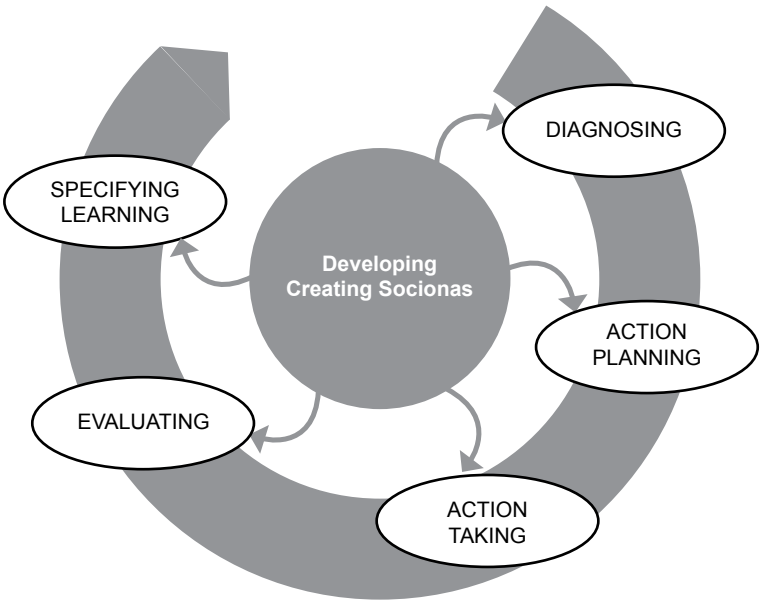


Figure 2.1

The cyclic process in action research, adapted from (Susman & Evered, 1978).

2.2 Research methodology in Creating Socionas

In their article, "An Assessment of the Scientific Merits of Action Research", Susman and Evered explain that the legitimacy of action research should be based in philosophical traditions other than the ones that legitimate traditional, scientific research, after which they propose five alternative criteria of science as appropriate for action research: "generating principles of action", "coproducing solutions", "creating conjectures", and "being engaged in the situation under study" (Susman & Evered, 1978). In this section, I discuss the methodology of research in Creating Socionas by pointing out how the research meets these criteria of science.

Criterion 1 – Generating principles of action

My primary research objective was to better understand how design teams could build creative understanding of user experience in NPD practice. This object of research is not invariant, or free of context, rather it depends upon the designers, their culture, norms and values, practices, and the objectives that make these practices meaningful. Therefore, Creating Socionas was developed from an empathic understanding of the problem of building creative understanding in NPD practices at Philips, rather than an external understanding.

The resulting approach that is presented in chapter 7 can be seen as a set of "principles of action" (Dray, 1957, p.132); they explain what user researchers and designers can do when faced with the problem of building creative understanding of user experience in organizations like Philips, rather than what is usually or always done. User researchers and designers who want to implement and practice Creating Socionas need to adjust the approach to fit with their own contexts of NPD. Thus the principles are transferable (or generalisable) to a limited degree only.

Criterion 2 – Coproducing solutions with practitioners

The research into Creating Socionas aimed to address a problem that directly concerns practitioners, and that requires a solution that is relevant to practitioners. To increase relevance of the research for design practice, Creating Socionas was developed through collaborative action between the researcher, and design teams at Philips, rather than researcher-controlled action. I (as researcher) introduced theoretical knowledge and experiences of building creative understanding, while the design team members brought in knowledge and experience of NPD practices at Philips. The contributions were synthesized in ongoing NPD projects. My role in these projects was that of user researcher, which involved (i) creating conjectures about the problem of building creative understanding and possible solutions (criterion 3), (ii) developing instantiations of Creating Socionas, (iii) actively implementing instantiations of the approach in NPD, and (iv) evaluating benefits of the approach with design teams.

Being a significant actor in the situation under study challenged my position as an objective and detached observer. To contribute to the trustworthiness of the research into Creating Socionas, I explain my objectives and my position in this research in section 2.3 and box 2.2, respectively. These may serve as criteria for assessing actions, observations and judgments in the research into Creating Socionas.

Box 2.2. My position in this research

Creating Socionas has its roots in a design project about teenagers' museum experiences, which I set up together with the Netherlands Architecture Institute (NAi) in Rotterdam and Kossman.de.Jong exhibition architects in Amsterdam (Postma & Stappers, 2006). The aim of the project was to develop an enjoyable and insightful a museum activity for teenagers. User research was conducted to build creative understanding of teenagers and their leisure activities as starting point for concept design (figure 2.2). In dialogues with teenagers we soon learned that "the social" was at the forefront of their interests and played an integral part in their activities (figure 2.3). It clearly formed an opportunity for creating an enjoyable and insightful museum activity. The challenge then became to build an understanding of "the social", and to translate this understanding into the design of a museum activity. This challenge raised two important questions: What do design teams need to understand about "the social" to develop products and services that delight users? And how can they build this understanding in NPD practice? These two questions became the starting point of my Ph.D. research.

The Ph.D. research was conducted in collaboration between Philips and the ID-Studiolab, where I also obtained my master's degree in Integrated Product Design. The ID-Studiolab is a community of researchers, teachers and students of the faculty of Industrial Design Engineering at Delft University of Technology, who share a focus on designing for user experience (ID-Studiolab, 2010). The community's aim is to promote connections between people and projects within the faculty in the field of user experience. Being part of the ID-Studiolab community offered me the opportunity to discuss insights and approaches to designing for user experience and research through design with peers, and in that sense shaped the course of my research. The research was also shaped by my personal interests and competences, including:

(1) Applying design-led approaches. In ID-Studiolab I was introduced to design-led approaches to designing for user experience. I thought these relatively new approaches would perfectly lend themselves for developing creative understanding of user experience in NPD at Philips, and was interested to explore and develop these approaches further.

(2) Generating actionable knowledge. Having a background in industrial design engineering, I wanted to generate knowledge that user researchers and designers can make practical use of. Working together with practitioners, and conducting studies in the field I think is crucial for generating actionable knowledge.

(3) Building on established theories and frameworks. My strength as a designer and a researcher lies in what can be described as "conjecturing"; i.e., bringing together knowledge and theory from different disciplines in creating future practices.

Criterion 3 – Creating conjectures

The research into Creating Socionas is future oriented, and aimed to address a problem that is indeterminate in the sense that is are not framed by definitive conditions or limits that impose a particular view on the problem and way of resolving the problem (see section 2.1). Therefore, knowledge about building creative understanding was generated by "conjecturing", rather than deduction or induction. *Conjecturing* is a principle that is similar to the principle of abduction in design research (Roozenburg, 1993), and is sometimes described as "inspired guesswork".

The conjectures were created in developing instantiations of Creating Socionas. They were made by pattern recognition, and by drawing parallels between the problem of building creative understanding and analogous problems and their corresponding solutions. The conjectures provided guidance as to what aspects of the problem should be considered, and point out possible solutions. Four important conjectures that were created in developing Creating Socionas are:

- Developing a definition of the problem and pointing out needed changes based on reoccurring experiences with building creative understanding in NPD practice (chapter 3);
- Generating guidelines for sharing rich user data in NPD practice by translating principles for building creative understanding in situations of dialogue to situations of tri-partied interaction, or "trialogue" (chapter 4);
- Identifying frameworks that could support design teams in interpreting user data for design by evaluating frameworks that social scientists use in studying social phenomena (chapter 5);
- Developing ways for designers to build creative understanding of user experience by studying techniques that actors use in embodying a role (chapter 7).

Evaluation of the consequences of the instantiations of Creating Socionas together with design teams in NPD practice either strengthened or weakened belief in these conjectures.

Criterion 4 – Being engaged in the situation under study

To develop an empathic understanding of the problem of building creative understanding and NPD practices at Philips, I actively engaged in NPD practices at Philips Research at Philips Lighting (see criterion 1).

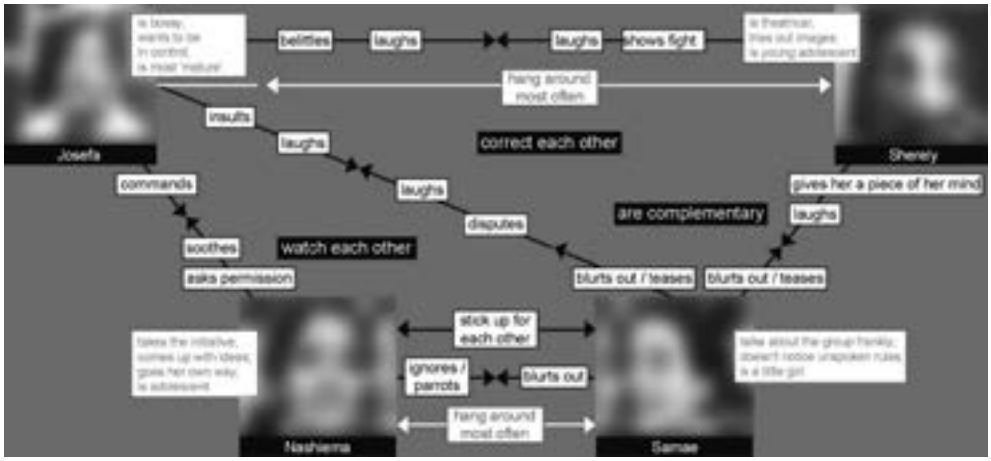
I participated in these two organizations as if I were an employee, though without having the same privileges, duties and responsibilities. My engagement involved attending the two-weekly group- and department meetings, going for lunch together with colleagues, joining the groups' social events, following the company's course about developing product propositions, taking part in a user-insights workshop organized by marketing, joining corporate events, giving several presentations about my work within the organization, discussing user-centered design methods and processes, and actively participating in NPD projects.

Criterion 5 – Building knowledge and understanding through acting

The consequences of Creating Socionas for design practice could not be fully predicted through logic reasoning. Therefore, instantiations of the approach were developed and evaluated in NPD projects at Philips. An overview of the projects is presented in table 2.1.


Dit zijn mijn vrienden / vriendinnen
ik
Wij zijn als...
1. Geef met de stickers aan hoe jullie vriendschap is.
2. Wie is wie op de plaatjes?
3. Schrijf bij elk plaatje waarom je het plaatje gekozen hebt.
Jij & je vriend(in)
Hierin verschillen we van elkaar:
Hierin zijn we hetzelfde:





◄ **Figure 2.2**

Gathering user data in the Museum project.

A school class of 18 students, 13-15 years old, participated in the user research. The students worked in groups on a probe during three days (left). Exercises in the probe invited them to take photos of group activities, to explain the activities in a voicemail message, and to indicate their favorite hangout on the city map. Then each group participated in a generative session in which the students created a poster about their group (right). By means of the probes and sessions, the researchers gained insight into the social interactions, relationships, roles and personalities within each group.

▲ **Figure 2.3**

Sharing user insights and findings in the Museum project.

The findings and insights from the user research were summarized on cards. The cards presented maps of the social interactions in the peer groups. Each map explained the social relationships and interactions in a group as well as the individual personalities and roles of group members.

Table 2.1. NPD projects at Philips

Creating Socionas was developed and evaluated in ongoing NPD projects at Philips Research and Philips Lighting. The table presents an overview of the NPD projects. The asterisks indicate which projects contributed to which parts of the research into Creating Socionas.

				NPD practice (Ch. 3)	Trialogue (Ch. 4)	Social theory (Ch. 5)	Stanislavsky's System (Ch. 6)	Creating Socionas (Ch. 7)
Philips Research	2007	Assisted Wellbeing for Seniors project	2 mos.	*				
	2007	Seniors project	1 mo.	*	*	*		*
	2007	Designed Around Seniors project	3 mos.	*	*			*
	2008	Social Presence project	2 mos.	*	*	*		*
	2008	Kitchen Lifestyle project	1 mo.	*		*		*
	2008	Baby Care project	8 mos.	*	*	*		*
Philips Lighting	2009	Bedrooms workshop	5 days	*				
	2009	Hospital project	9 mos.	*	*	*	*	*

The first project in Philips Research (i.e., the Assisted Wellbeing for Seniors project) and the first project in Philips Lighting (i.e., the Bedrooms project) had an exploratory character; I participated in these projects to familiarize myself with the organizations' members, culture, language, norms, and practices, and to become engaged in the field (criterion 4). Each of the other six projects can be seen as cycles of action research that involved five phases: "diagnosing", "planning", "acting", "evaluating", and "specifying learning" (figure 2.1). The research cycles used different methods for data collection to allow for triangulation. An overview of the methods is presented in table 2.2.

In the first phase, *diagnosing*, I attuned research objectives and project objectives together with the project managers and the user researcher(s) at Philips, and I built understanding of the problem through collaborative action (criterion 2) and prolonged engagement (criterion 4). In the second phase, *planning*, I developed instantiations of Creating Socionas in consultation with the user researcher(s) at Philips (criterion 2). Instantiations of the approach were developed based on conjectures of the problem and possible solutions (criterion 3). Debriefings were conducted at periodic intervals in which I discussed the conjectures with the members of my supervisory team, two of which were affiliated with Delft University of Technology, and one of which was affiliated with Philips Research. During the Hospital project, a fourth member, who was affiliated with Philips Lighting, reinforced the supervisory team.

In the third phase, *acting*, the user researcher(s) at Philips and I together implemented instantiations of Creating Socionas in NPD. We performed the user research, and guided and facilitated the process of Creating Socionas.

In the fourth phase, *evaluating*, I studied the effect of the Creating Socionas effort on the problem of building creative understanding by analyzing the data that had been gathered throughout the action research cycle. The data set consisted of field notes, audio recordings, and project documents, and was interpreted through a thematic analysis process, which involved five iterative steps. (Boyatzis, 1998; Braun & Clarke, 2006; Patton, 2002): In the first step, I transcribed the audio recordings of the group discussion, and read through the field notes and the project documents to familiarize myself with the data set. Then I added codes to the data by writing notes on the texts, and by highlighting parts of the texts to indicate potential patterns. Coding was to some extent theory-driven in that I approached the data with specific questions in mind that I wanted to code around. For example, in chapter 3, the data were coded around four principles of empathic design; and in chapter 6, the data were coded around the question of whether or not the designers had established creative understanding from an Activity Theory perspective. In the third step, I developed a thematic map by sorting the coded data extracts into themes and identifying relationships between codes and between themes. In the fourth step, I checked the themes with the different data items (i.e., the field notes, the audio transcriptions, and the project documents) to ascertain that the themes accurately represented the data set. In the fifth and last step, I formulated findings by defining and refining the themes. The findings were written up in the individual chapters of this thesis and then reviewed by the supervisory team to contribute to the trustworthiness of the research.

In the fifth phase, *specifying learning*, I drew implications of the findings for further research and practice of Creating Socionas; findings from the evaluation phase were assessed

Table 2.2. Overview of data collection approaches

Reflexive journal	A reflexive journal was developed in which three forms of field notes were kept (Lincoln & Guba, 1985): (a) project activities and developments; (b) the researcher's evolving understanding of the problem of building creative understanding, and her personal experiences of participating in the project and implementing instantiations of Creating Socionas; (c) considerations and decisions made in developing Creating Socionas.
Unstructured interviews	Unstructured interviews with designers and user researchers were conducted to learn about (a) their design and/or user research practices; (b) their views on building creative understanding of user experience in NPD, and user-centered design practice within the organization; and (c) their experiences with using Creating Socionas. Field notes from the interviews were kept either during or immediately after the interviews took place.
Participant observations	The researcher kept field notes of user-centered design practices within the project, and of the design team members' behaviors and activities in response to Creating Socionas – How does the approach fit into the team's NPD practices? What works well and what not?
Project documents	Documents produced by design team were collected and studied to see if and how creative understanding of user experience was reflected in (intermediate) results and deliverables of the project, e.g., definition of the target group, user insights, and opportunities for technology- or concept development.
Reflective group discussions	After the acting phase, the researcher facilitated a group discussion in which design team members reflected on Creating Socionas as implemented in their project to learn about the team's experiences with using the approach – What did they like and dislike about the approach? What would they like to change? How? And why? In the Social Presence project, the Kitchen Lifestyle project, the Baby Care project, and the Hospital project the discussions were audio-recorded and transcribed.

in light of the research objectives to judge whether belief in my conjectures was strengthened or weakened and to identify next steps.

The cycles of action research generated knowledge and understanding on four levels (Stappers & Hoffman, 2009) (figure 2.4): (i) On a user level, the researcher built creative understanding of users' experiences with, for instance, baby care, staying in hospital, and keeping in touch with friends and family; (ii) on a product design level, knowledge was generated about designing products and services that fit users' social experiences; (iii) on a tool design level, knowledge and understanding were developed about the problem of building creative understanding of user experience in NPD practice, and possible solutions; and (iv) on a methodology level, knowledge was generated about designing and implementing a research through design approach.

This thesis focuses on the level of tool design. It describes my knowledge and understanding of the problem of building creative understanding of user experience in NPD practice, and presents Creating Socionas as a possible solution.

2.3 The context of Philips

The research into Creating Socionas was conducted in the context NPD practices at Philips Research and Philips Lighting. This section explains how empathic design fits within the context of Philips and introduces the NPD projects at Philips in which instantiations of Creating Socionas were developed and evaluated.

2.3.1 The case of Philips: Empathic Design

For Philips, empathic design is a possible next step that fits the corporate ambition to become a truly customer- and user-centric organization that delivers on *Sense and Simplicity*, Philips' brand promise that was launched in 2004. *Sense and Simplicity* implies a break with the company's past in which innovation was mainly driven by technology development. *Sense and Simplicity* encapsulates the company's commitment to understand the needs and aspirations of users and customers in order to deliver innovative solutions that are "advanced" and "easy to experience". "It is the combination of two unique capabilities that enables us to deliver on our sense and simplicity promise," Philips website states (http://www.usa.philips.com/about/company/brand/brandpromise/index.page). "These capabilities are firstly, by understanding people and secondly, technology integration and product design." It continues: "Philips products improve people's lives through technology that makes sense. Technology designed around the way people live and work. Technology that's easy to use. In other words, technology that's pure simplicity."

To bring this customer- and user-centric culture to life within Philips, a framework for developing product propositions, called Value Proposition House (VPH), was developed and introduced company wide. The framework provides an overall structure and format for including the customer's and the user's perspective in the early stages of NPD. It points out when customer and user research should be conducted and provides steps for how findings from customer and user research should be processed and fed into the NPD process. For example, part of the VPH framework proposes a structure for generating so-called "platforms" and "end-user insights", which are themes or need areas captured by keywords and/or mood boards, and brief textual descriptions of customers' and users' dilemmas and

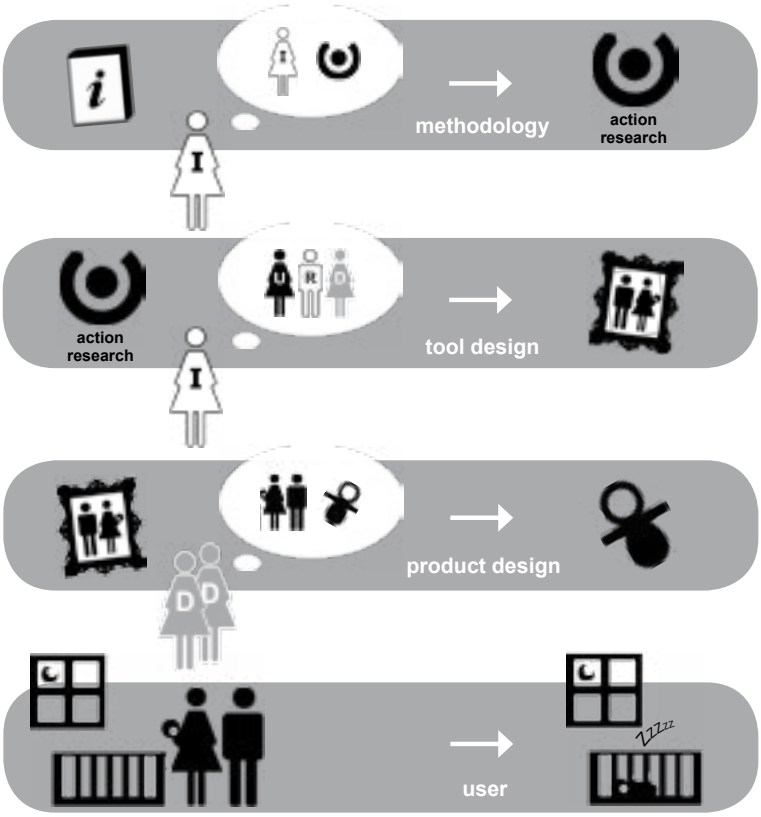


Figure 2.4

Four levels of knowledge, adapted from (Stappers & Hoffman, 2009)

The research into Creating Socionas generated knowledge and understanding on four levels. On a user level, on a product design level, on a tool design level, and on a methodology level. The objective (right) on one level (grey field), is used as a tool (left) in achieving another objective on the next lower level.

aspirations, respectively (Pauwels, 2008). The framework, however, does not provide the methodology necessary for understanding the customer's, or user's perspective; it does not explain how design teams can build understanding of customers' and/or users' experiences in order to deliver on sense and simplicity. We (the author and practitioners at Philips) have experimented with empathic design and Creating Socionas to fill this gap at Philips Research and Philips Lighting.

The case of Philips Research and Philips Lighting

At the time of the research, both Philips Research and Philips Lighting were interested to learn about approaches that would help them to fulfil the corporate ambition to become a truly customer- and user-centric organization. They expected the research into Creating Socionas would help design teams to address user needs in NPD, and therefore decided to support the research by letting me participate and experiment with Creating Socionas in ongoing NPD projects and by funding part of the research. Both organizations have historically been mostly technology oriented, and share the ambition to become truly customer-, and user-centric. They may be characterized as large organizations with a high division of labor and specialization. People in these organizations typically work in dynamic, multi-disciplinary and networked teams that involve different parties and stakeholders in different phases of the NPD process.

Philips Research is an established research organization within Philips that provides technology options for innovations in the area of health and well-being, targeted at both developed and emerging markets. It serves the three Philips operating sectors, i.e., Philips Lighting, Philips Healthcare and Consumer Lifestyle, in introducing meaningful innovations that improve people's lives. Positioned at the front-end of the innovation process, Philips Research works on everything from spotting trends and ideation to proof of concept and, where needed, first-of-a-kind product development.

In the period from March 2007 to October 2009 (two-and-a-half years), I was engaged in the User Experiences (UX) group at Philips Research, a group that focuses on the research and development of user interaction concepts. The members of this group generally work on projects with a mid- to long-term focus, i.e., three to five years. These projects often involve members from other groups within Philips Research too; e.g., the Digital Signal Processing group, the Optical Storage group, and the Visual Experience group.

From January 2009, I spent another nine months at the Global Organization Applications Lighting (GOAL) department at Philips Lighting, one of three Philips operating sectors. Philips Lighting is dedicated to the development and introduction of innovative, end-user driven and energy-efficient lighting solutions and applications for lighting, both for consumer- and for professional markets. Its key business areas include lamps, automotive, home luminaires, and professional luminaires. The organization is end-to-end responsible for the development and realization of new propositions in these areas.

The Global Organization Applications Lighting at Philips Lighting focuses on creating, building and validating new lighting concepts. The members of this department generally work on projects with a short- to mid-term focus, i.e., one to three years. These projects typically involve people from different departments within the organization, including marketing intelligence, light architecture, and control systems.

Because of the company's privacy and confidentiality policies, it is not possible to provide detailed descriptions of the people at Philips Research and Philips Lighting who participated in the Creating Socionas efforts. To provide the reader with an understanding of these people, box 2.3 introduces pen portraits of six fictitious people that I think represent the design team members who participated in the Creating Socionas effort, three at Philips Research and three at Philips Lighting. The portraits reflect my understanding of the participants, and do not describe specific individual people.

2.4 Empirical cases at Philips

Creating Socionas was developed and evaluated in eight ongoing NPD projects: Six projects at Philips Research, and two projects at Philips Lighting. These projects all concerned the development of user insights as a starting point for concept and/or technology development, and were selected through opportunistic sampling, meaning that projects were selected when the opportunity arose and (part of) the design team was interested and motivated to participate in the research (Miles & Huberman, 1994).

An overview of the projects, and how the projects contributed to the research into Creating Socionas is presented in table 2.1. Collaborative action in the Assisted Wellbeing for Seniors project and the Bedrooms project had an exploratory character. I participated in these projects to familiarize myself with the organization's members, culture, language, norms and practices. The other six projects can be seen as cycles of developing and evaluating instantiations of Creating Socionas, in which the empathic design approach as described in the design research literature (chapter 1) was point of departure.

The following subsections briefly introduce the NPD projects at Philips, and point out the key insights and findings that were generated with respect to building creative understanding of user experience in these projects, as well as lessons learned. More detailed descriptions of the Baby Care project and the Hospital project are presented in chapter 5 and chapter 6, respectively.

Box 2.3. Pen portraits of six fictitious design team members

David (29)

Senior Researcher. Ph.D. degree in electrical engineering (obtained in the UK). Expertise in digital signal processing. Joined Philips Research one year ago. Frame of reference is natural sciences.

Actively participates in one big project. Is advisor for another, smaller project. Is mainly engaged in projects that require expertise and research in the area of digital signal processing.

Was introduced to the Sense and Simplicity values and the VPH framework in a company course. Has no prior experience with user research and user-centered design.

David is not sure about the value that empathic design will bring to the project, but he is willing to try it out.

Loraine (43)

Senior Researcher. Ph.D. degree in computer science (obtained in France). Expertise in network systems. Joined Philips Research eleven years ago. Developed ex-pertise in gerontology within the organization. Frames of reference are natural sciences and social sciences.

Is project leader for two projects, and actively participates in one other project. As a project leader, Loraine manages the project planning, and aligns project objectives and deliverables with stakeholders. As a participant, Loraine conducts user- and desk research in the area of gerontology.

Was introduced to the Sense and Simplicity values and the VPH framework in a company course.

Has gained experience with user research and user-centered innovation in design practice, and in collaboration with the academic design research community. Has adopted research-led approaches to design. Has experimented with design-led methods and techniques (e.g., probes) in a number of projects as part of a research-led approach. Has no prior experience with the empathic design approach.

Loraine is interested to learn more about empathic design. If the empathic design effort turns out to be successful, she may decide to adopt (parts of) the approach in other projects too.

Box 2.3. (Continued)

Alexei (36)	Senior Researcher. Ph.D. degree in physics (obtained in Russia). Expertise in optical storage systems. Joined Philips Research five years ago. Frame of reference is natural sciences. Is project leader for one project, and actively participates in another project. As a project leader, Alexei manages the project planning, and aligns project objectives and deliverables with stakeholders. As a participant, Alexei conducts experimental- and desk research in the area of optical storage systems. Alexei is an active member within the academic optics community. Was introduced to the Sense and Simplicity values and the VPH framework in a company course. Has been exposed to research-led user research in working togetherwith psychologists and human factors specialists in previous projects. Has no prior experience with empathic design. Alexei is interested to learn more about empathic design, but is also critical towards its quality of research.
Gerard (49)	Light architect. B.Sc. in electrical engineering (obtained in The Netherlands). Developed exper-tise in lighting systems and light architecture within the orga-nization. Joined Philips Lighting thirteen years ago. Frame of reference is design practice. Designing for an aesthetically and functionally pleasing lighting experience is part of his daily practice. Creates lighting solutions based on best practice and many years of professional experience. Was introduced to the Sense and Simplicity values and the VPH framework in a company course. Has been exposed to market- and user research in working together with market- and user experience researchers in previous projects. Has no prior experience with empathic design. Gerard is interested to learn about the context of use to inform his design.

Box 2.3. (Continued)

Marije (43)

Market intelligence officer. M.Sc. degree in marketing and communication (obtained in The Netherlands). Joined Philips Lighting two years ago. Frame of reference is market research.

Managing consumer- and mar-ket research is part of her daily practice. Marije often collaborates with market research consultants. She is planning a market research study, in which the user insights that have been generated in the empathic design effort are validated with a large number of consumers.

Ambassador of the VPH frame-work. Has gained experience with both design-led and research-led methods and techniques (e.g., diaries, collage techniques, personas) through her previous employer. Has no prior experience with the empathic design approach.

Marije is interested to see what empathic design delivers in terms of new user insights. She thinks that user research should be performed by user research experts, rather than by designers.

Daniël (41)

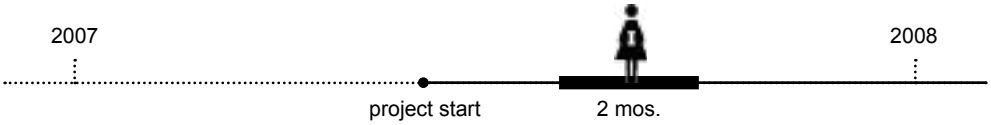
Project manager. Ph.D. degree in physics (obtained in The Netherlands). Developed expertise in intelligent lighting systems within the organization. Joined Philips Lighting six years ago. Previously worked as senior researcher at Philips Research. Frames of reference are natural sciences and design practice.

Managing new product develop-ment projects from ideation to launch and managing stakeholder relationships is part of his daily practice.

Was introduced to the Sense and Simplicity values and the VPH framework in a company course.

Has been exposed to market- and user research in working together with market- and user experience researchers in previous projects. Has no prior experience with empathic design.

Daniël is committed to the corporate ambition to become a truly customer- and user-centric organization that delivers on Sense and Simplicity, and is interested to learn about approaches that could help him and his design team to fulfil this ambition.



- **Who**

  The author, one design team member, and two industrial design students

- **What**

  Gathering user experience data, analyzing the data, reporting and presenting findings, and ideating

- **When**

  August - September 2007

- **Where**

  Philips Research

- **Why**

  Familiarize myself with the organization's members, culture, language, norms and practices.

2.4.1 The Assisted Wellbeing for Seniors project

The aim of this project was to develop new technologies and concepts for seniors (ca. 65 to 75 years old), based on a rich understanding of seniors' social lives. The design team consisted of eight designers with backgrounds in computer science (3), social science (4), and communication science (1). They were affiliated with Philips Research (2), the Telematica Instituut (3), and Logica CMG (3).* The author and one designer participated in the role of user researcher. Two industrial design students supported the user researchers in preparing the user study and in gathering user data.

The empathic design process involved four steps – gathering user data, analyzing the data, reporting and presenting findings, and ideating –, and was organized and facilitated by the user researchers. The user researchers and the students used methods and techniques, including probes (Gaver et al., 1999; Mattelmäki, 2005), generative techniques (Sanders, 2000), and contextmapping (Sleeswijk Visser et al., 2005), to gather user experience data about seniors' social lives.

Eleven seniors, of 65 and older, participated in the user study. The study with the senior participants was conducted in two phases. In the first phase, the seniors worked on probes individually during one week. The probes contained tools and exercises that invited them to map and reflect on their social world (figure 2.5). Then the participants were visited for an interview, in which they explained what they had created in their probes. In the second phase of the user study, the seniors invited a friend, their partner, or a family member to co-participate in the remainder of the study. The seniors and their co-participants worked on probes individually during five days. The probes invited them to reflect on their shared experiences. Then the senior and his/her co-participant jointly participated in a generative session, which was facilitated by the user researchers. During the session, they explained what they had created in their probes, and together made a poster on which they mapped a shared activity, such as having dinner together, playing tennis, grocery shopping, or baby-sitting (figure 2.6).

The study resulted in rich user experience data about seniors' social lives in the form of video recordings, completed probes, photos and poster. The user researchers analyzed the user data following the affinity diagramming approach (Nayak et al., 1994; Holtzblatt et al., 2005) (figure 2.7), after which they identified three themes as opportunity areas for the project. Their findings and conclusions from analysis were presented in a report, which was distributed among the design team members through e-mail.

A week later, the ideation session took place. The aim of the session was to generate ideas for new technologies and concepts for seniors, based on understanding of seniors' social lives. The ideation session started with a presentation in which the user researchers explained their findings and conclusions from the user study to the team, and brought forward the three opportunity areas as starting point for ideation. The design team then used a variety of creativity and brainstorm techniques for generating ideas within these areas.

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* The Telematica Instituut, now called "Novay", is an independent research institute in the Netherlands with expertise in variety of areas, including information technology and media interaction. Logica CMG is a consultancy with expertise in information- and communication technologies.

Key insights and findings

- The report and the presentation temporarily brought the users to life for the designers – All designers attended the presentation; half of the team had read the report. The designers were interested to hear about our findings from the user research. They asked questions about the findings and about implications of the findings for the project, and they projected the findings on people they knew. After the presentation, however, the designers seemed to have forgotten about the user research; they did not refer anymore to the findings, or the users who had participated in the user research.
  Lessons learned: It requires time to take in and digest user experience data. Organize and facilitate a process for the designers to become immersed in the user experience data (chapter 4).

Figure 2.5

Gathering user data in the Assisted Wellbeing for Seniors project (1)

The probe invited the seniors to put all their contact moments of a day on a timeline, and to create a field of family and friends. The seniors explained what they had created in their probes in an interview. For example, Mr de Groot told us about his contributions to the local table tennis club paper. He regularly sent articles through e-mail and would always phone the receiver to make sure his article had been received.

▶ **Figure 2.6**

Gathering user data in the Assisted Wellbeing for Seniors project (2)

In the generative session, Mrs. Blom and her best friend mapped their weekly dinners together (this photo).


Ik & mijn vrienden en familie
GEVEN
GEVEN & ONTVANGEN
ONTVANGEN
GEVEN & ONTVANGEN
GEVEN & ONTVANGEN
GEVEN & ONTVANGEN
GEVEN & ONTVANGEN
GEVEN & ONTVANGEN
GEVEN
GEVEN & ONTVANGEN
GEVEN & ONTVANGEN
GEVEN & ONTVANGEN
GEVEN
een kynnus



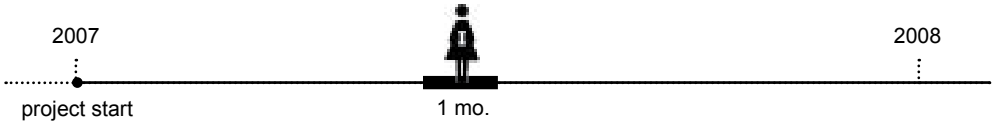




Figure 2.7

Preparing the user data for sharing in the Assisted Wellbeing for Seniors project

The user researchers used an affinity diagramming approach in structuring and interpreting the data: They annotated the data with observations and comments, put the annotated data on cards, and grouped the cards to identify themes in the data.



- **Who**

  The author

- **What**

  Preparing the design team, insights session, and ideating

- **When**

  June 2007

- **Where**

  Philips Research

- **Why**

  Explore the idea of engaging designers in reading, interpreting, and rephrasing the user experience data as a possible solution to building creative understanding of user experience in NPD practice (chapter 4).

  Find ways of sensitizing designers to "the social" in NPD practice by means of social theory, in this case Goffman's theatrical metaphor (Goffman, 1959).

2.4.2 The Seniors project

The aim of the Seniors project was to develop new technologies and concepts for seniors (ca. 65 to 75 years old), based on a rich understanding of seniors' social lives. The design team consisted of four designers with backgrounds in computer science (3) and social science (1). The author participated in the role of user researcher.

The empathic design process involved three steps – preparing the design team, insights session, and ideating –, and was organized and facilitated by the author. The user study that had been conducted as part of the Assisted Wellbeing for Seniors project (section 2.4.1) formed the basis of the empathic design process in the Seniors project.

First, the user researcher developed immersion kits to immerse the designers on an individual, first-hand basis with the user data. Two different kits were developed. Each kit focused on a different senior participant in the user study. The kits included a screensaver and raw user data, i.e., a video, a transcript, and a cultural probe. The screensaver explained concepts of "the social"; it showed situations in which products and services are instrumental in how people deal with each other, and was developed to raise the designers' awareness of how people's experiences of product and service use are inextricably linked to "the social" (figure 2.8). The team members were asked to install the screensaver on their computers, to study the raw user data, and to capture their observations and findings from studying the data on cards.

The designers worked on a kit individually in the course of two weeks. Then they participated in a half-day insights session. The aim of the insights session was to develop a shared understanding of seniors' social lives, and to identify opportunities for technology and concept development. First, the team members discussed and structured their observations and findings on a poster, and labelled each group of observations and findings with a theme. Then the researcher introduced Goffman's dramaturgical theory to the team (Goffman, 1959). She asked the team members to study a poster in which the theory was explained (figure 2.9), and to review their organization of observations and findings based on their understanding of the theory. Having reviewed their organization of observations and findings, the designers identified three themes as opportunity areas for the project. The session was concluded by a brainstorm in which the designers generated ideas within these three areas.

Key findings and insights

- The designers were immersed in the user experience data, but they were not necessarily empathically involved with the seniors – Different design team members had prepared differently for the insights session, as is common in practice. Three of four team members had worked on the immersion kit. They already started to share their findings from studying the user experience data before they arrived at the insights session. The team members were not necessarily empathically involved with the user experience data. Two of four designers had generated findings that demonstrated factual understanding of the user experience data (e.g., "Mr Roelands hardly ever makes a phone call.") as well as empathic understanding of the seniors and their situation (e.g., "To Mr Roelands, helping each other is a social value and a duty. It's what one ought to do."). The other two designers had merely scanned the transcript for product-related problems, and issues that were brought up most explicitly by the user.

Lessons learned: Guide the designers in reading and interpreting the user experience data; e.g., by connecting the user researchers' preliminary findings to the data (chapter 7).

- Completing the immersion kit required too much time – The designers remarked that watching the video, and reading and interpreting the transcript required too much of their time. One designer had decided not to watch the video. Another designer had only read parts of the transcript, and had not written down any findings or observations.
  Lessons learned: Prepare the user experience data for sharing with the designers by pre-structuring and pre-analyzing the data to improve efficiency (chapter 4).
  Lessons learned: Find ways of motivating the designers to invest time and effort in building creative understanding of user experience (chapter 7).
- The concepts of the social were not used in reading and interpreting the user experience data – The designers' findings from analyzing the user experience data did not appear to reflect the concepts that were explained in the screensaver. When asked about the screensaver, the designers said that they thought the examples were interesting to read, but that they had not used the concepts in reading and interpreting the data.
  Lessons learned: Introduce social theory as a thinking tool of the social for NPD, rather than as a theory in social sciences; so design teams can use the theory to reflect on user experience in their projects (chapter 5).
- Goffman's dramaturgical theory raised interesting discussions of the social, but was not used by the designers (chapter 5) – When Goffman's theory was introduced in the empathic design process, the designers had already developed an understanding of seniors' social lives, and had gained inspiration for technology and concept development. The team members were interested to learn about Goffman's theory, but they did not feel the need to reconsider their interpretations of the user experience data for generating ideas.
  Lessons learned: Introduce social theory as a thinking tool either earlier in the empathic design process when the user experience data is analyzed, or later in the process when use case scenarios are developed (chapter 5).

▶ **Figure 2.8**

Immersion kit in the Seniors project

The immersion kit included a screensaver that showed combinations of photos and stories that exemplified “the social”.


For several days we observed the main square, which had the highest degree of activity.
We saw how people draw together people and how artefacts in the square facilitated this also.
[Battarbee, 2005]


The text messages [...] are gifts, in so far as they have value. This value is connected with the giver, the recipient and the context in which the exchange takes place, and is embodied and retained in material form.
[Taylor, 2002]


The sociologist Simmel (1949) argued for the importance of this kind of shared experience of enjoyable conversation — experience he called 'sociability', where the purpose is not external to that experience but rather is that experience itself.
[Brown, 2005]


We have evolved an exquisite sensitivity to the actions and interactions of others. Whether it is wrapping up a talk when the audience starts fidgeting, or deciding to forego the grocery shopping — because the parking lot is jammed, social information like this provides the basis for inferences, planning, and coordination of activity.
[Erickson, 2000]



ERVING GOFFMAN

DRAMATURGICAL THEORY

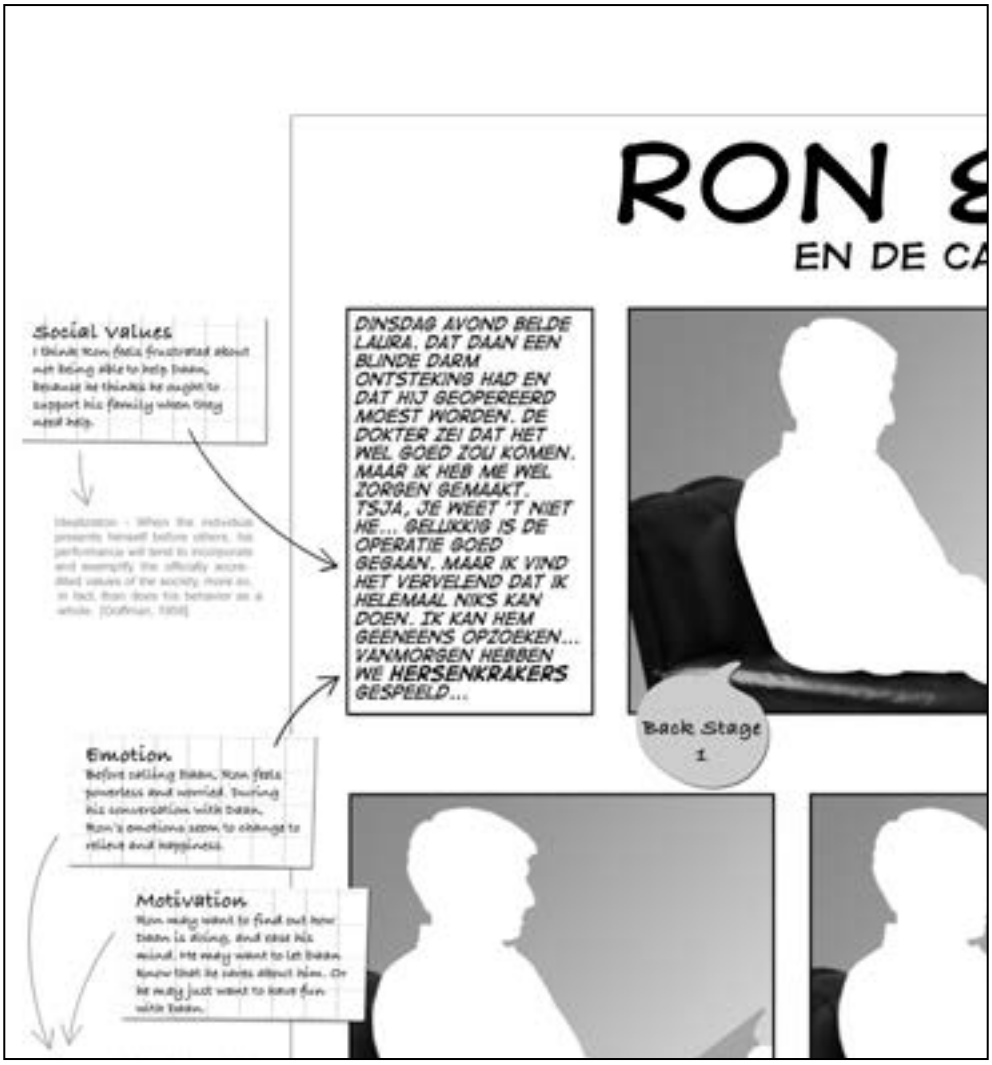


Figure 2.9

Poster of Goffman's dramaturgical theory in the Seniors project

The poster showed how Goffman's (1959) dramaturgical theory can be projected on a scenario of product use, which involves a product concept that had been developed by Philips Research, "CareServant".



- **Who**

  The author and three design team members

- **What**

  Structuring the user data, preparing the design team, insights session, and ideating

- **When**

  September - November 2007

- **Where**

  Philips Research

- **Why**

  Explore the idea of engaging designers in reading, interpreting, and rephrasing prepared user experience data as a possible solution to building creative understanding of user experience in NPD practice (chapter 4).

2.4.3 The Designed around Seniors project

The aim of this project was to develop new technologies and concepts for seniors (ca. 65 to 75 years old), based on a rich understanding of seniors' social lives and care practices. The design team consisted of eight designers with backgrounds in computer science (3) and social science (5). The author and three design team members participated in the role of user researcher. Three industrial designers temporarily joined the team.

The empathic design process involved four steps – structuring the user data, preparing the design team, insights session, and ideating – and was organized and facilitated by the user researchers. The user researchers set up a kick-off meeting in which they explained and discussed the process with the design team. The empathic design process was informed by user experience data that had been generated from user studies in the Netherlands and North-America (USA). The study in the Netherlands focused on the social lives of seniors, and had been conducted as part of the Assisted Wellbeing for Seniors project. The study in the USA focused on the informal care practices of seniors living at home, and had been conducted as part of the Social Intelligence for Tele-Healthcare program (Lutz, 2008).

The user researchers pre-analysed and pre-structured the user experience data, and then developed immersion kits, intended to immerse the team on an individual first-hand basis with the user data. Five different kits were developed, each focusing on a different senior participant in the user studies. The kits contained small fragments of data (i.e., video clips, snippets of cultural probes and photos), and five exercises in which the team members were asked to reflect on the data (figure 2.10).

The design team members worked on an immersion kit individually in the course of one week. Then they participated in a one-day insights session. The aim of the insights session was to develop a shared understanding of seniors' social lives and care practices in the team as a starting point for identifying opportunities for technology and concept development. First, the designers created people representations similar to personas (Cooper, 1999; Pruitt & Adlin, 2006), based on their findings from working on the kits (figure 2.11). In groups of three, they then analyzed additional video material from the user studies, and captured their observations and findings from studying the video clips on cards. The groups structured their observations and findings on a poster, and labelled groups of findings with themes. Finally, the groups presented their themes to the other groups, after which the team identified eight themes as opportunity areas for technology and concept development.

The design team used three one-day sessions to translate their understanding of seniors' social lives and care practices into concept designs. In the first session, the designers generated ideas within the opportunity areas that had been identified in the insights session. The session was concluded by selecting the most promising three areas and their corresponding ideas for further development into concept designs. In the second session, the designers reconnected the selected areas and ideas with the user experience data, after which they formulated guidelines for concept development. In the third and final session, the designers used the photo-boarding technique (Saakes & Keller, 2005) to further develop their ideas into nine product concepts (figure 2.12).

Key findings and insights

- The designers built creative understanding of seniors' social lives and care practices – The designers' findings and observations from working on the immersion kit showed factual understanding of the user experience data (e.g., "Mr de Groot mainly uses his computer for sending pictures by e-mail.") as well as empathic understanding (e.g., "Mr de Groot likes to be independent; he likes to plan his day himself, and to contact others on his time."). In evaluating the insights and ideation sessions, the designers commented that the reflexive exercises in the immersion kit had really set them thinking about the users and their situations, and that they felt that they had come up with ideas that were different from the ideas that they had generated before. Two designers mentioned that they felt that the ideas were thoroughly grounded in the user experience data.
  Lessons learned: The designers liked the empathic design process. They enjoyed and appreciated being engaged in data interpretation, and they highly valued hearing stories about users and their everyday lives.
- The designers actively participated in the immersion process and the sessions, but were concerned for the amount time required for participation – All designers but one had completed the immersion kit, and all designers actively participated in the insights and ideation sessions. After the sessions had taken place, they continued working on the product concepts, even though it was uncertain whether the project would be continued or not. In evaluating the sessions, the designers noted that they enjoyed participating in the sessions, but they also expressed their concern for the time that had been consumed.
  Lessons learned: Improve efficiency by integrating the data analysis process and the immersion process, asking the designers to capture their findings and observations from studying the user experience data as they work on the immersion kit.
- Relations between the user experience data and the concept designs were implicit, making it difficult to explain the rationale behind the concepts to stakeholders.
  Lessons learned: Ask designers to back-up their insights and concepts with user experience data to facilitate the process of discussing and sharing insights and concepts with others (chapter 7).

▶ **Figure 2.10**

Immersion kit in the Designed around Seniors project

The five exercises in the immersion kit invited the designers to read and reflect on the user data. In one exercise, for example, the designers were invited to watch a video clip in which a senior participant talks about his activities during the day, and then compare the participant's day to their own day. The designers used their findings from working on the exercises in creating personas of the senior participants during the insights session.


day
day of my (senior's) life?
at did you do today? Try to put your activites of today on the time line on
card. Please feel free to explain why, when, where and with whom you
these activities!
n study the file(s) in folder 5 on your DVD:
low does a day of your life differ from a day of your senior's life? Are
here similarities as well?
Monday
My senior's family & friends
First study the file(s) in folder 3 on your DVD:
Can you explain on this card how your soci
senior's social life? Are your social relation
maintain your social contacts differently, a
similarities, and if so what are they?
Saturday
What does your senior do?
First map your preconceptions about your senior's activities on this card
Does he/she participate in many, or only few activities? In what
activities does he/she participate, e.g. hobbies, social activities, daily
tasks? And with whom? Etc.
Then study the file(s) in folder 2 on your DVD
Do your preconceptions match your findings from studying the
document(s)?





Figure 2.11

Insights session in the Designed around Seniors project

In the insights session, the designers analyzed additional video material from the two user studies, and identified opportunities for technology and concept development by structuring their observations and findings from studying the video material on posters (this photo).



▶ **Figure 2.12**

Concept design session in the Designed around Seniors project

The design team used the photoboarding technique to further develop their ideas into product concepts. Creating the photoboards involved four steps: (1) developing props (right); (2) capturing the role-playing sessions in photos (next page); (3) printing and annotating the photos into storyboard posters that communicate the played scenarios (next page); and (4) presenting the photoboards in the design team (next page).



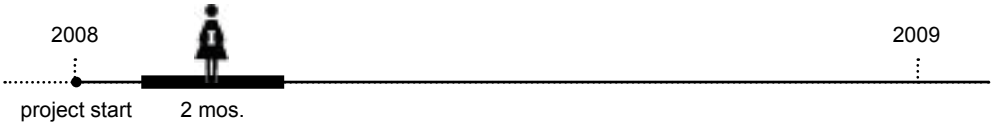





Maggie




RAPBOARD



- **Who**

  The author

- **What**

  Preparing the design team, insights session, and ideating

- **When**

  February - March 2008

- **Where**

  Philips Research

- **Why**

  Explore whether Goffman's theatrical metaphor is useful as a thinking tool of the social in interpreting user data in NPD practice (chapter 5) (Goffman, 1959).

2.4.4 The Social Presence project

The aim of the Social Presence project was to develop new technologies and concepts that support or strengthen social connectedness. The design team consisted of eleven designers with backgrounds in computer science (6), physics (3), and social science (2). The author participated in the role of user researcher. Two industrial designers temporarily joined the team.

The empathic design process included three steps – preparing the design team, insights session, and ideating –, and was organized and facilitated by the user researcher. During a kick-off meeting she explained and discussed the process with the design team. Since time did not allow for conducting a full-fledged user study, like the user study in the Assisted Wellbeing for Seniors project, it was decided to derive user experience data from the designers' personal experiences of feeling socially connected. For this purpose, the user researcher developed probes that invited the designers to observe and reflect on how they feel socially connected with family members, friends and colleagues, and to capture their observations and findings on cards (figure 2.13).

The team members worked on the probes individually during five days. Then they participated in a one-day insights session. The aim of the insights session was to develop a shared understanding of what feeling socially connected means, and to identify opportunities for technology and concept development based on this understanding. First, the designers discussed their observations and findings from working on the probes in groups of three or four. Then the user researcher introduced Goffman's dramaturgical theory to the team (Goffman, 1959): She asked the team members to study a poster on which the theory was explained (figure 2.14), and demonstrated how the theory can be projected on a use case scenario. The designers then practiced with using the theory by projecting the theory on another scenario themselves. Having practiced using Goffman's dramaturgical theory, the groups used the theory to structure their observations and findings from working on the probes (figure 2.15). Groups of observations and findings were labelled with themes. Finally, each group identified one theme as opportunity area, and developed a scenario based on this area (figure 2.16).

A second insights session was organized, because the designers felt interesting themes had emerged in discussing the observations and findings that had remained unexplored in the first insights session. During the second insights session, the design team members re-discussed their observations and findings from working on the probes, and structured the observations and findings in their own intuitive ways. Each group of observations and findings was labelled with a theme. Finally, the designers identified three themes as opportunity areas for their project, and used these areas as starting points for generating ideas.

Key findings and insights

- Goffman's theatrical metaphor was not useful in structuring the designers' observations and findings from studying the user experience data (chapter 5) – Firstly, the metaphor required the design team members to focus on a particular action or performance as well as a particular performer in the user experience data, while the team members were concerned with drawing the big picture, which covers many performances. To develop a holistic understanding of user experience, one would need to apply Goffman's theatrical

metaphor a large number of times. Secondly, the metaphor led the design team to dive into the complexity of the social within one performance, while the designers needed to identify broader patterns and trends in the data. And thirdly, the metaphor put the designers out of their depth in a way that paralyzed the creative process; they dived into the complexity of the social and did not return.
Lessons learned: Goffman's theatrical metaphor may be useful as a thinking tool of the social in later stages of NPD, when a more detailed understanding of users' actions and activities is needed for concept development.

- Goffman's metaphor was introduced too late in the analysis process for the designers to be useful as a thinking tool in interpreting the user experience data. – The designers had already established an initial understanding of user experience in reading and interpreting the data. They felt that interesting themes had emerged in discussing their findings from interpreting the data and in jointly structuring the findings using the affinity diagramming approach (Nayak et al., 1994). Therefore, they preferred to continue to use affinity diagramming to using Goffman's metaphor as an approach to structure their findings.
Lessons learned: Introduce social theory as a thinking tool of the social in reading and interpreting the user experience data, rather than in structuring the findings from interpreting the data, to provide the designers with guidance as to what aspects they need to pay attention to in reading and interpreting the data.



▲ **Figure 2.13**

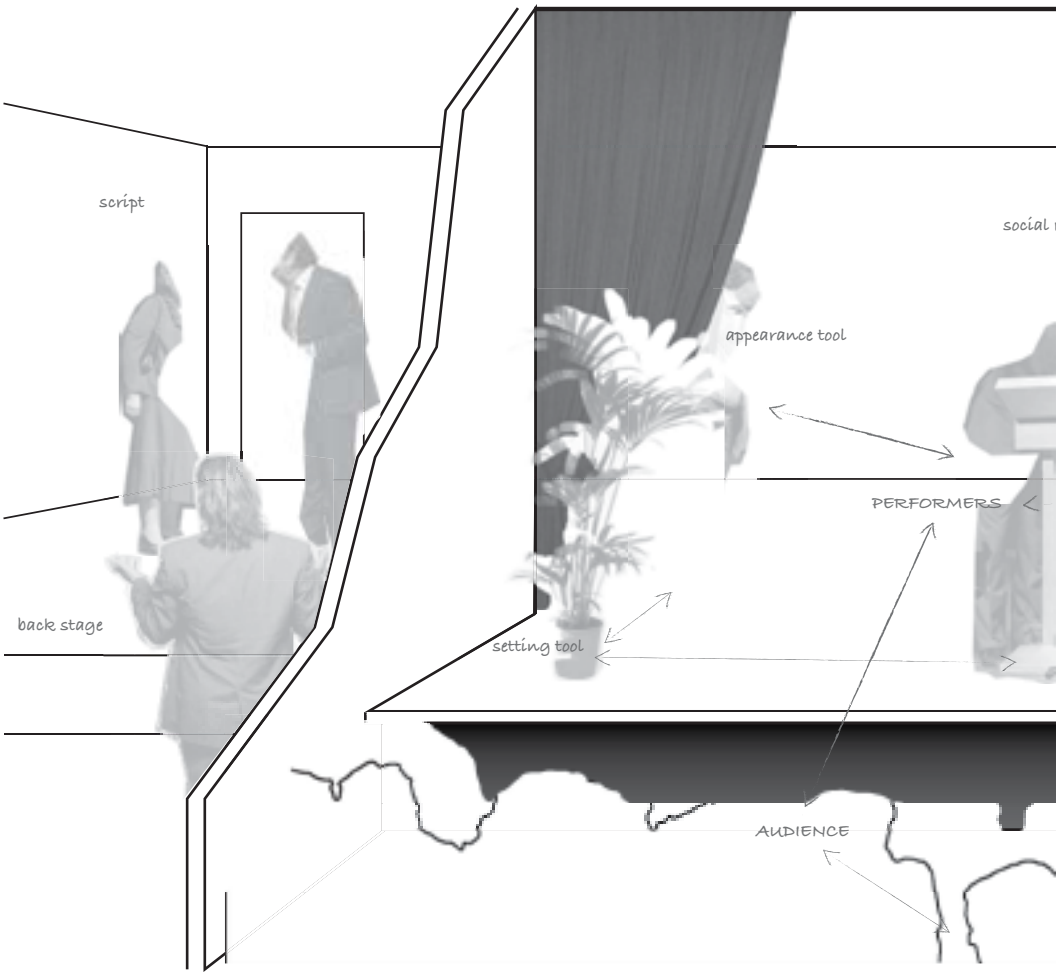
Probe in the Social Presence project

The exercises in the probe invited the designers to observe and reflect on how they feel socially connected with family members, friends and colleagues. For example, in one exercise, the designers were asked to map their positive and negative experiences with being socially connected.

▶ **Figure 2.14**

Insights session in the Social Presence project (1)

Goffman's (1959) dramaturgical theory was explained in a poster (next page).



PERFORMERS & AUDIENCE

In their performance, the **performers** consciously or unconsciously project their roles and their definition of the situation to the audience.
The **audience** observes the performance and makes inferences about the performers (e.g. their motives, emotions, beliefs, attitudes) and the performers' definition of the situation. The roles of performer and audience may switch.

At one extreme, the performer truly believes that the impression he fosters is the real reality. At the other extreme, the performer doesn't belief in his own act at all. This doesn't necessarily mean that the performer is interested in deluding his audience for purposes of self-interest. Sometimes the audience doesn't allow the performer (e.g. doctors, salesmen) to be sincere.

Outsiders are people in the outside region. They are not part of the performing team, or the audience of a particular performance. Outsiders may unexpectedly witness an ongoing performance.

When outsiders witness a performance that was not meant for them, they may become disillusioned about this performance as well as about the performance that was meant for them.

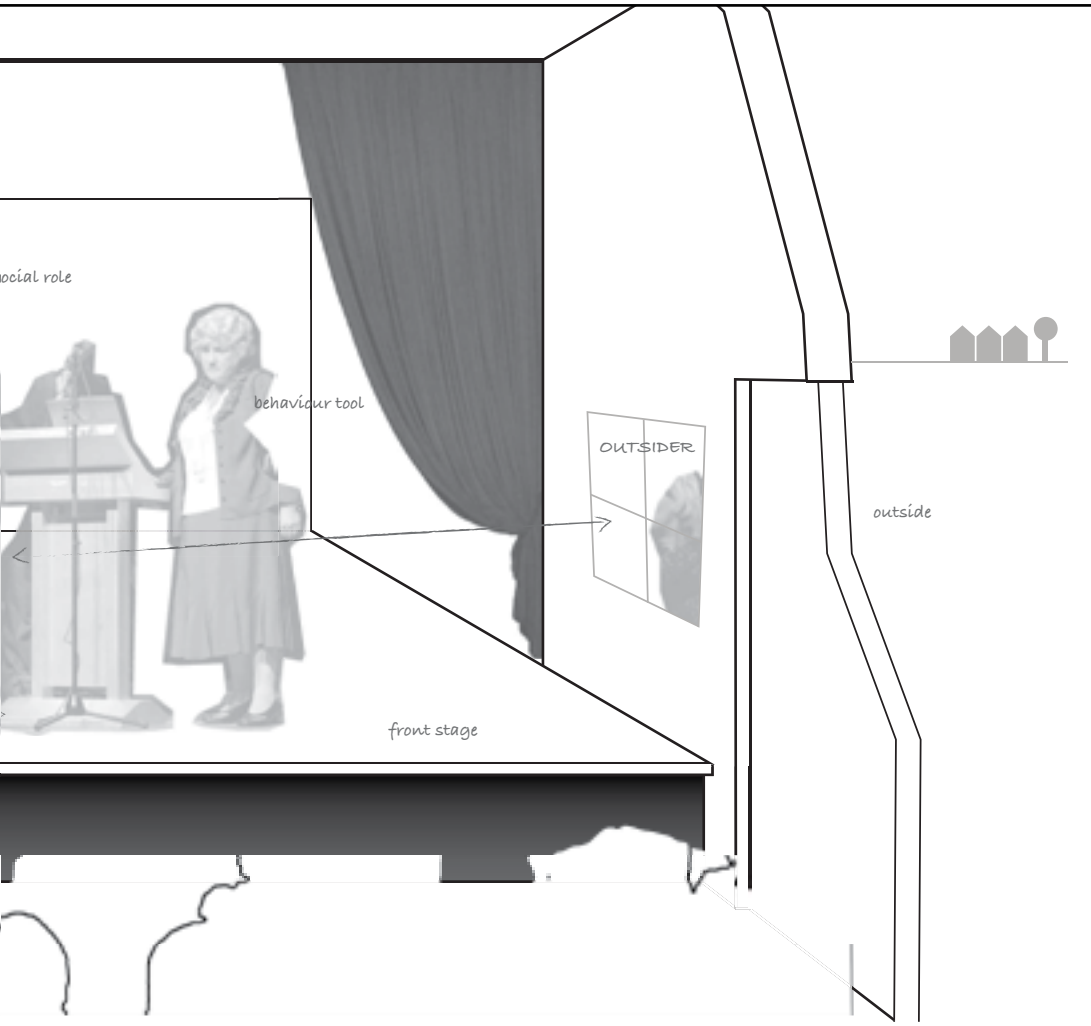
PERFORMERS & LOCATION

Front stage is where the performance takes place and both performers and audience are present.
Back stage is where the performers are present but the audience is not. Here action occurs that is related to the performance, but inconsistent with the appearance fostered by the performance.
The **outside** is all the places other than the front stage and the back stage of a particular performance.
Regions may switch.

Back stage the performers can relax and behave out of character. However, this region only exists in regard to a specific audience. When performers are back stage together, they are in another performance: that of a loyal team member.

Metaphor of THEATRICAL PERFOR

The world is a stage, people are actors, and social behaviour is a drama...



PERFORMERS & SCRIPT

The **script** prescribes the performance:
What happens to whom, when, where, how and why?
How is tension built up? When does the scenery change?
The script instructs the performers what to say, what to do and the way of doing this.

Performers can stop saying words, but cannot stop expressing meaning!

PERFORMERS & TOOLS

Tools for expression are vehicles for conveying signs, which the performers – consciously or unconsciously – employ in their performance.
There are three types of tools:

- **Appearance tools** (e.g. clothing, posture, and age);
- **Behaviour tools** (e.g. facial expressions, attitude, and gestures);
- **Setting tools** (e.g. stage props, physical lay-out, and scenery).

In some occasions, physical lay-out and social behaviour are strongly related, and direct the performance. In these occasions, particular ways of behaving are expected by the people involved in the performance. Examples of such occasions are a church service, a school class, and shopping in the supermarket.

PERFORMERS & ROLES

Each performer has a particular **social role** (e.g. the role of 'father', 'manager', or 'teacher'). Social roles involve one or more parts (or 'routines').
A **part** is a pre-established pattern of action that is unfolded during a performance. The performer may play the same part on different occasions.

When an actor takes on an established social role, usually he finds that particular tools for expression have already been established for it.

ORMANCE

ıa... | After Goffman (1959)

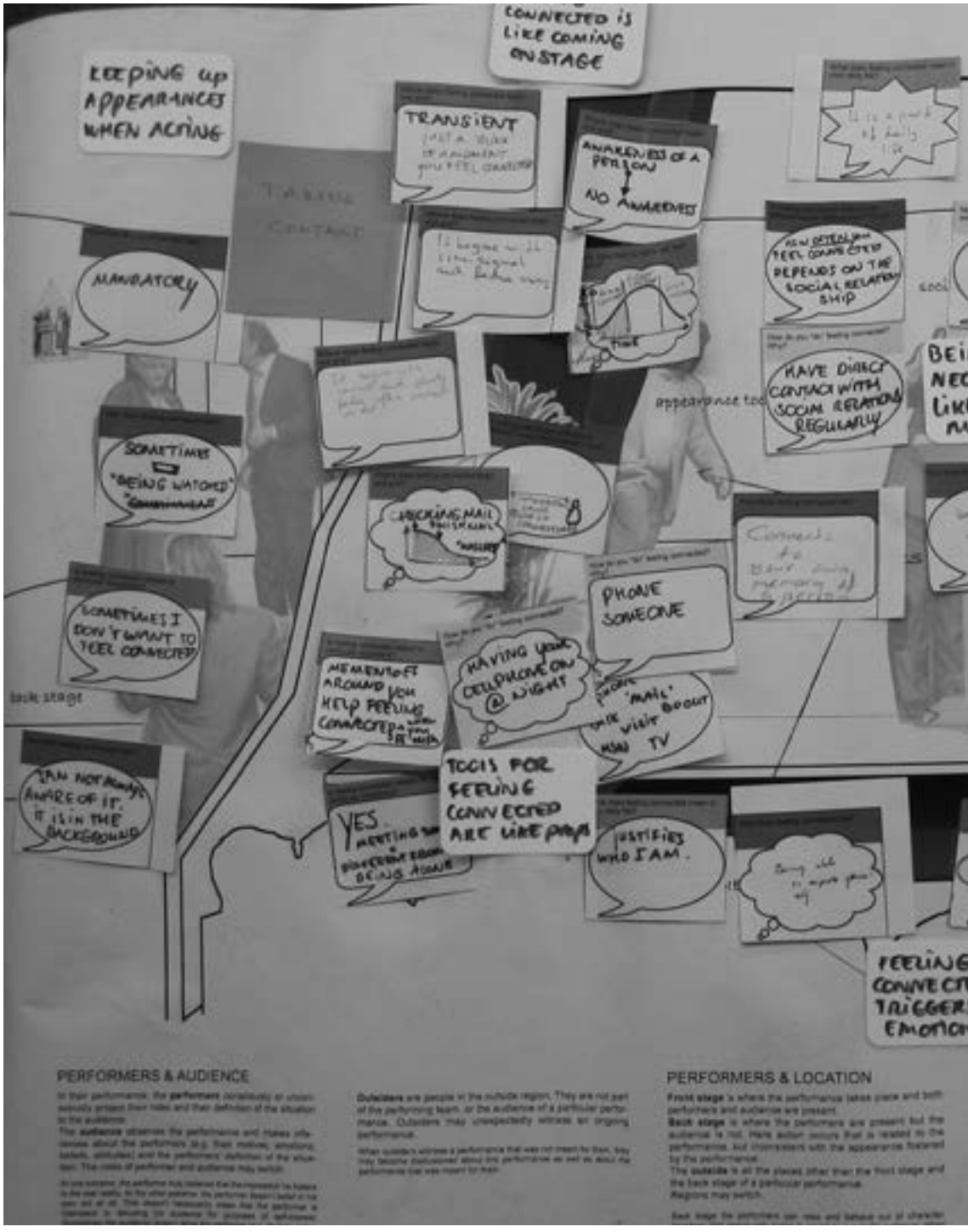


Figure 2.15

Insights session in the Social Presence project (3)

The designers used Goffman's (1959) dramaturgical theory to structure their observations and findings from working on the probes (this photo), after which they labelled each group of findings with a theme (next page).




KEEPING UP APPEARANCES WHEN ACTING
CONNECTED IS LIKE COMING ON STAGE
TRANSIENT
AWARENESS OF A PERSON
NO AWARENESS
MANDATORY
SOMETIMES "BEING WATCHED"
HAVE DIRECT CONTACT WITH SOCIAL RELATIONS REGULARLY
SOMETIMES I DON'T WANT TO FEEL CONNECTED
PHONE SOMEONE
HAVING YOUR CELLPHONE ON @ NIGHT
MEMENTOS AROUND YOU HELP FEELING CONNECTED
TOOLS FOR FEELING CONNECTED ARE LIKE PROPS
JUSTIFIES WHO I AM.
back stage
PERFORMERS & AUDIENCE
PERFORMERS & LOCATION



PERFORMERS & SCRIPT

The **script** prescribes the performance:
What happens to whom, when, where, how and why?
How is tension built up? When does the scenery change?
The script instructs the performers what to say, what to do and the way of doing this.

PERFORMERS & TOOLS

Tools for **expression** are vehicles for conveying signs, which the performers – consciously or unconsciously – employ in their performance.
There are three types of tools:

- **Appearance tools** (e.g. clothing, posture, and age)
- **Behaviour tools** (e.g. facial expressions, attitude, and gestures)
- **Setting tools** (e.g. stage props, physical lay-out, and scenery)

PERFORMERS & ROLES

Each performer has a particular **social role** (e.g. the role of 'father', 'manager', or 'teacher'). Social roles involve one or more parts (or 'routines').
A **part** is a pre-established pattern of action that is unfolded during a performance. The performer may play the same part on different occasions.

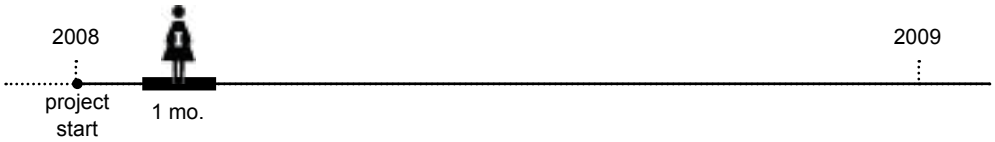


Figure 2.16

Developing scenarios

The designers developed scenarios for the different opportunity areas that they identified (left). Goffman's (1959) dramaturgical theory was used to point out important relations and interactions in the scenario on an overlay (right).


1
2
3
Metaphor of NEIGHBOURS



- **Who**

  The author and one design team member

- **What**

  Preparing the design team, insights session, and ideating

- **When**

  February 2008 (1 month)

- **Where**

  Philips Research

- **Why**

  Explore whether Goffman's theatrical metaphor is useful as a thinking tool of the social in developing use case scenarios (chapter 5) (Goffman, 1959).

2.4.5 The Kitchen Lifestyle project

The aim of this project was to generate ideas for technologies and concepts that enhance people's cooking and dining experience. The design team consisted of six designers with backgrounds in computer science (3), social science (1), industrial design (2). Five designers with backgrounds in electrical engineering (1), computer science (2), social science (1), and industrial design (1) temporarily joined the team. The author and one design team member participated in the role of user researcher.

The empathic design process included three steps – preparing the design team, insights session, and ideating –, and was organized and facilitated by the user researchers. Since time did not permit conducting a full-fledged user study as described in the Assisted Wellbeing for Seniors project, it was decided to immerse the designers with the user perspective through interviewing users themselves. Each designer was invited to interview one or two people (e.g., a neighbour, friend, or colleague) about their cooking experiences, and to capture his/her findings from interviewing on cards. A week later, the designers participated in a half-day insights session. The aim of the insights session was to develop a shared understanding of people's cooking and dining experiences, and to identify opportunities for technology and concept development. First, the designers shared and discussed their findings in groups of three or four members (figure 2.17). Then they structured their findings, and labelled each group of findings with a theme. Each group of designers identified one theme as opportunity area for the project, and developed a scenario based on this opportunity area (figure 2.18). Next, the user researcher introduced Goffman's dramaturgical theory to the team and demonstrated how the theory can be projected on a scenario (Goffman, 1959). Lastly, the groups were asked to review and edit their own scenarios using Goffman's theory to develop a more detailed understanding of the opportunity areas.

Two days later, the designers joined a half-day ideation session. The aim of the session was to generate ideas for technologies and concepts that enhance people's cooking and dining experience. The opportunity areas that had been identified during the insights session were starting point for generating these ideas.

Key findings and insights

- Goffman's theatrical metaphor was not used in reviewing and editing use case scenarios (chapter 5) – The designers said they preferred not using the metaphor, because they thought the metaphor was too difficult to fully grasp within the time frame of an insights session.
  Lessons learned: Find more efficient ways for designers to adopt and use social theory in NPD.
- Developing use case scenarios did not fit the scope of the insights session – The insights session focused on the user perspective, but determining a focus for developing use case scenarios required business and technology perspectives as well. Bringing together the different perspectives did not fit the scope and tenor of the insights session.
  Lessons learned: Conclude the insights session with identifying opportunities and/or criteria for concept development (chapter 7). Develop use case scenarios in subsequent sessions or workshops, when a particular project focus has been defined based on user, business and technology perspectives.



Figure 2.17

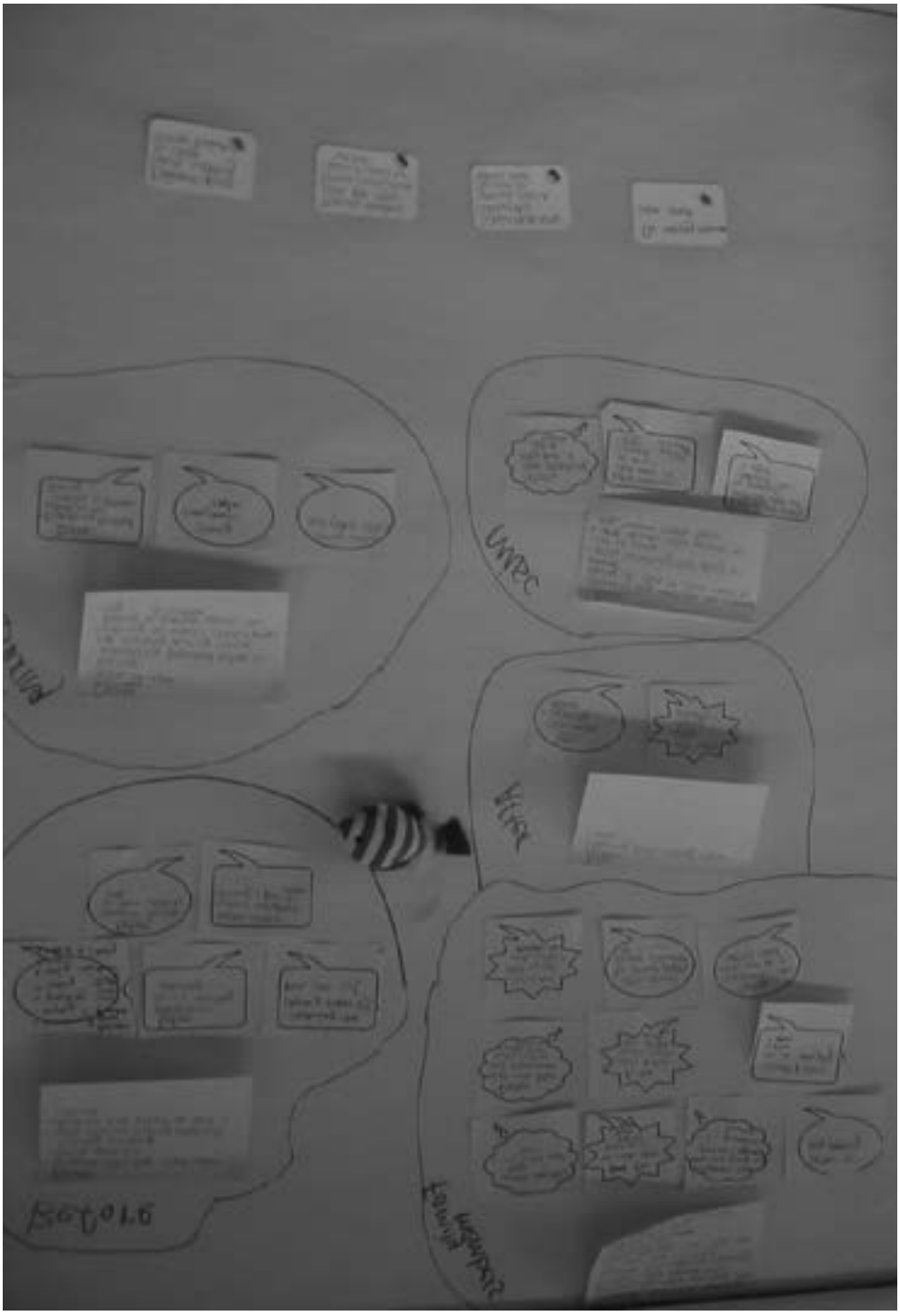
Insights session in the Kitchen Lifestyle project (1)

The designers shared their findings from interviewing people about their cooking experiences, and identified opportunity areas by structuring their findings on a poster (right).

▶ **Figure 2.18**

Insights session in the Kitchen Lifestyle project (2)

The designers created scenarios for the different opportunity areas (next page, left), after which they used Goffman's (1959) dramaturgical theory to review and edit the scenarios on an overlay (next page, right).





The Cooking Decision Chain





- **Who**

  The author and one design team member

- **What**

  Preparing the user study, gathering user data, analyzing the data, preparing the design team, insights session, ideating

- **When**

  January - August 2008

- **Where**

  Philips Research

- **Why**

  Explore whether Activity Theory is useful as a thinking tool of the social in interpreting user experience data in NPD practice (Engeström, 1987; Leont'ev, 1978; Vygotsky, 1962).

2.4.6 The Baby Care project

The aim of the Baby Care project was to develop new technologies and concepts for baby care, based on a rich understanding of the lives of parents with babies. The design team consisted of six designers with backgrounds in electrical engineering (1), computer science (2), psychology (2), and industrial design (1). The author and one design team member participated in the role of user researcher.

The empathic design process involved six steps – preparing the user study, gathering user data, analyzing the data, preparing the design team, insights session, ideating – and was organized and facilitated by the user researchers. The user researchers and the designers jointly prepared the user study by mapping their preconceptions about baby care, identifying research questions, selecting focal areas of the user research, recruiting participants, and by developing research materials, including probes (Gaver et al., 1999; Mattelmäki, 2005), and generative tools (Sanders, 2000). The probes contained tools and exercises that invited parents to reflect on their routines and daily experiences of caring for their babies. Six couples with babies aged between 3 and 10 months participated in the user study. They worked on the probes individually over five days. Then each couple was visited for a generative session, which was facilitated by the user researchers, or one user researcher and a designer. During the session, the parents explained what they had created in their probes, jointly mapped their baby's bedtime ritual on a poster, and showed the researchers around in their baby's bedroom (figure 2.19).

The study resulted in rich user experience data in the form of video recordings, completed probes, posters, and photos. The user researchers structured and analyzed the user data using Activity Theory (figure 2.20). See chapter 5 for a more detailed description of the analysis process. Then they developed three different immersion kits, each reflecting a different parenting style, for sharing the user data and the user researchers' initial findings with the design team. The kits contained parents' personal stories of baby care in the form of quotes, photos and audio fragments, the user researchers' preliminary findings, and five exercises. The parents' stories had been selected using Activity Theory, and covered the different components of the Activity Theory model. The exercises were developed to support the designers in reading and interpreting the data fragments. They invited the designers to reflect on- and compare their own situation with the parents' situations, addressing different components and concepts of Activity Theory. Examples of exercises are presented in chapter 5. Yellow cards were included for capturing observations and findings from working on the immersion kits.

The design team members worked on the immersion kits individually during five days. Then they participated in a one-day insights session. The aim of the insights session was to develop a shared understanding of baby care, and to identify opportunities for technology and concept development. First, the designers discussed their observations and findings from working on the immersion kits in groups of three or four members (figure 2.21). Then the groups structured the observations, findings and the parents' stories on a poster, and labelled each cluster of findings and data with a theme. The themes were then used as starting points for envisioning parents' possible aspirations and dilemmas, and generating ideas about possible futures of baby care. The ideas were added to the poster, enabling the team to see how the ideas related to their findings and the parents' stories of baby care. The session was

concluded with presenting and discussing the groups' themes and ideas.

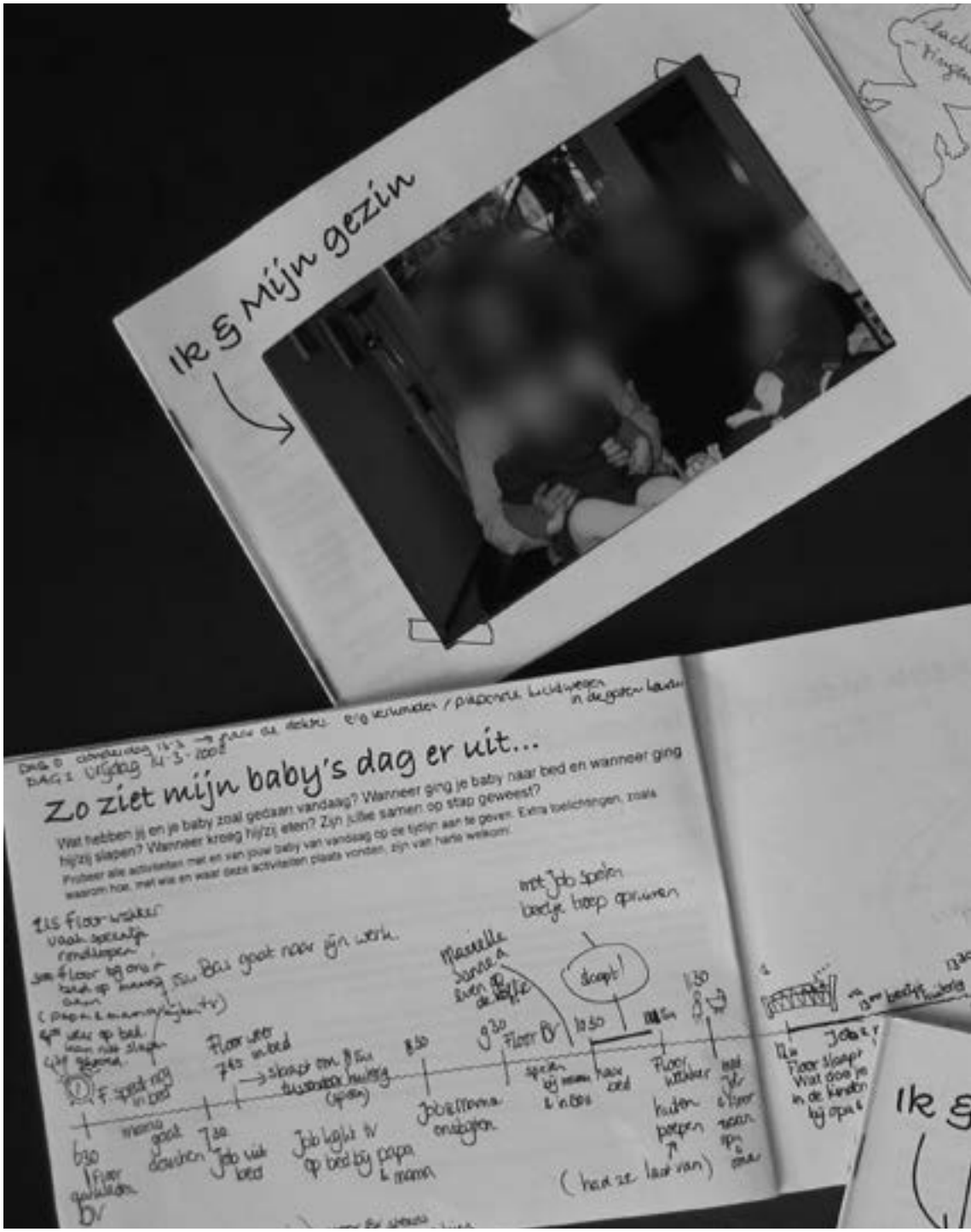
Key findings and insights

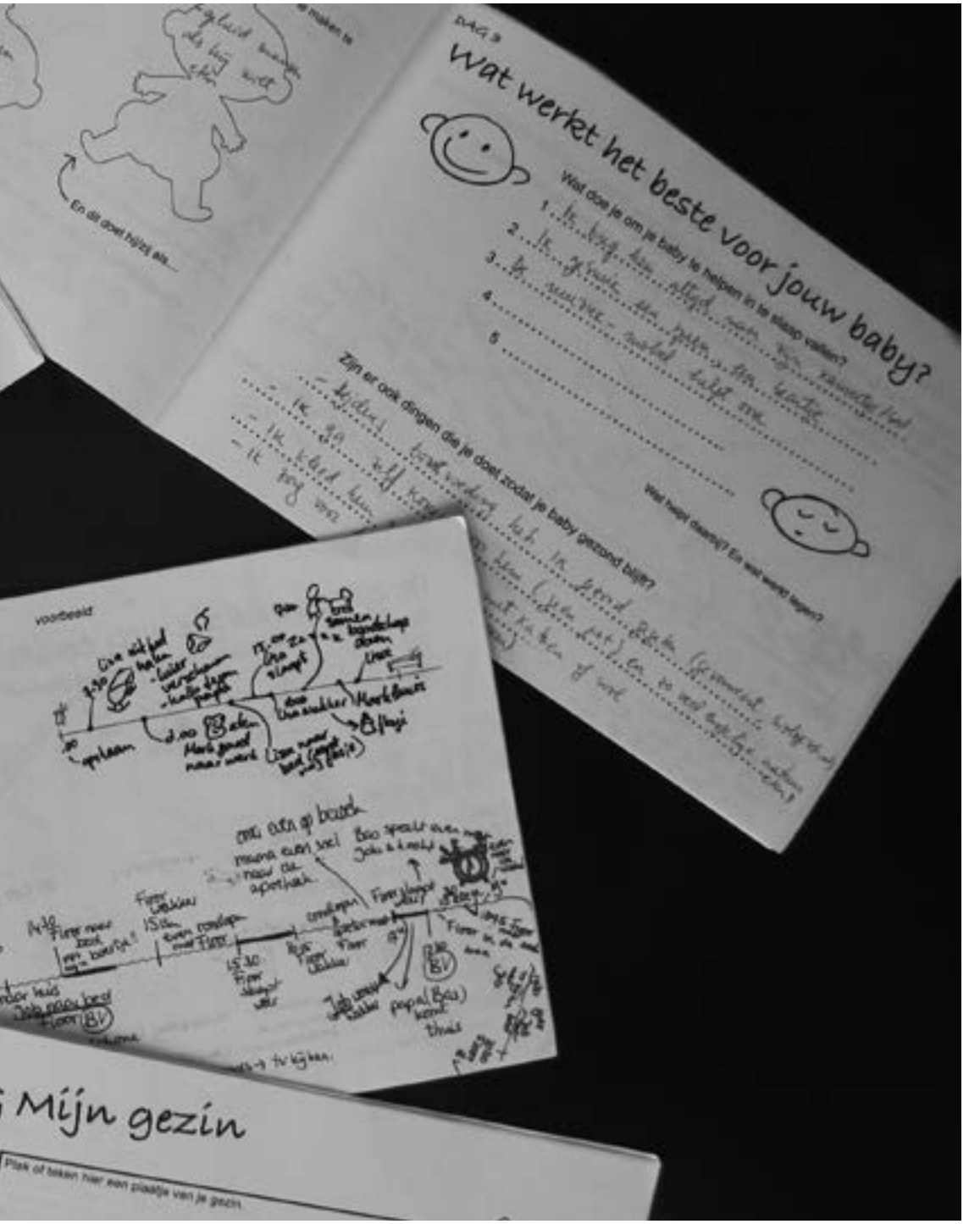
- Activity Theory provided the user researchers and the designers with a platform for structuring, discussing and sharing user experience data (chapter 5) – The framework provided the user researchers a structured approach to preparing the user experience data for sharing with the designers. The designers used the components of Activity Theory as anchor points in discussing and structuring their findings from studying the user experience data. The components were reflected in the themes that they identified from structuring their findings.
- Only part of the Activity Theory framework was used by the designers – The designers appeared to only use one concept of Activity Theory in generating findings, namely the idea of contradictions within and between activity systems, while the strength of Activity Theory is in its integration of concepts and components (chapter 5).
  Lessons learned: Translate Activity Theory as an integrated system for NPD, rather than a set of individual concepts and components, to help designers use the framework to its full potential.
- The structure of the immersion kit did not help the designers to develop a full picture of the families and baby care (chapter 5) – The user stories were printed on separate cards and revealed over time. The designers indicated they would have preferred to have an overview of the families and baby care as introduction to the immersion kit.
  Lessons learned: Develop representations of user experience data that provide an overview of the users and their situation. An overview of the different users also helps the designer to see how "his/her" user is special (chapter 7).
- Emotions are at the forefront of empathic design, but rather obscured in AT (chapter 5).
  Lessons learned: Explicate the role of emotions in AT when using AT as thinking tool in future empathic design projects.
- The NPD process involved multiple parties and stakeholders (chapter 3). It was not possible to get all parties and stakeholders together to participate in an insights session.
  Lessons learned: Consider who should be engaged, and who should be informed in the process of building creative understanding in project planning (chapter 7).

▶ **Figure 2.19**

Gathering user data in the Baby Care project

In the generative session, the parents explained their completed probes, created a poster about their baby's bedtime ritual, and showed us around in their baby's bedroom. The posters provided insight into the babies' bedtime routines and the parents' issues and concerns in this regard.


Ik & mijn gezin
Zo ziet mijn baby's dag er uit...


En dit doet hij/zij als...
Wat werkt het beste voor jouw baby?
Wat doe je om je baby te helpen in te slaap vallen?
Zijn er ook dingen die je doet zodat je baby gezond blijft?
Wat helpt daarbij? En wat werkt tegen?
voorbeeld
Mijn gezin





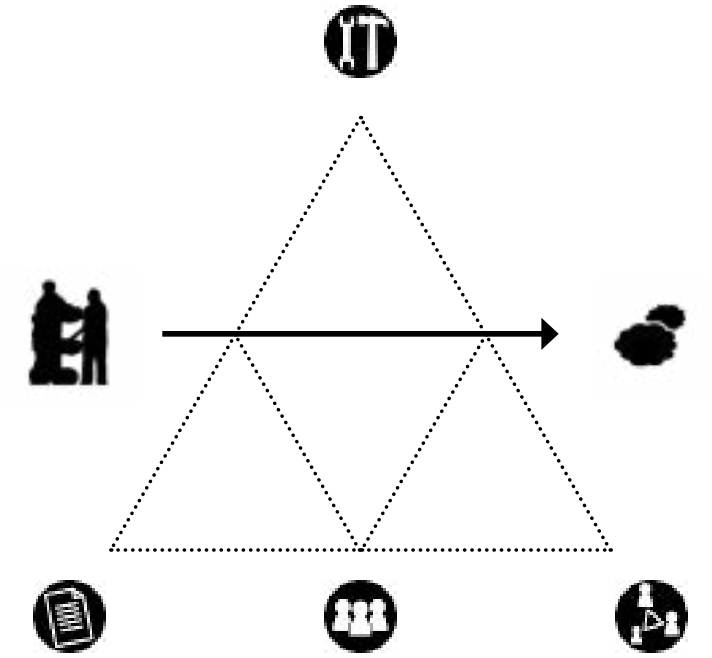
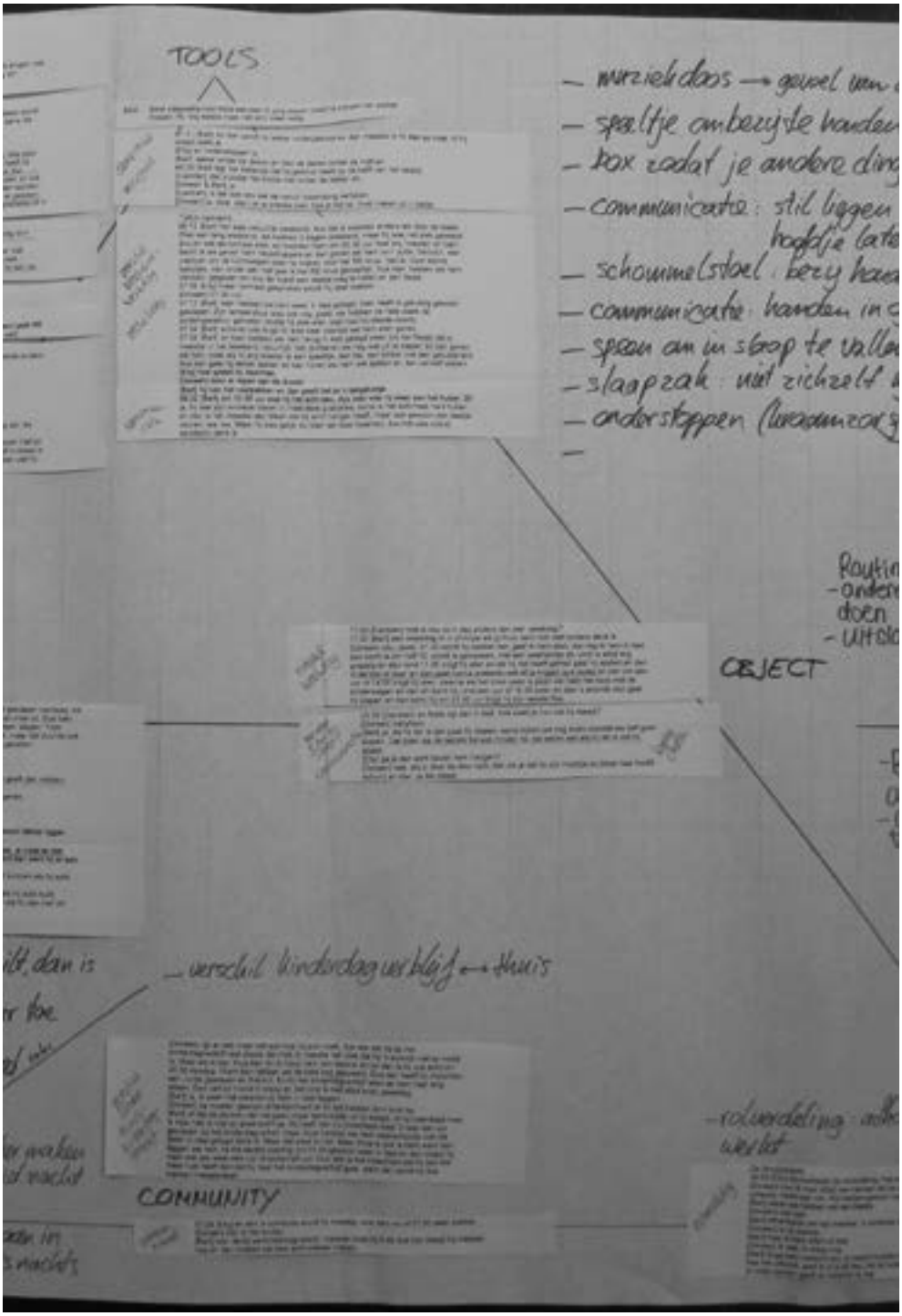


Figure 2.20

Preparing the user data for sharing in the Baby Care project

The user researchers used Engeström's (1987) model of an activity system (left, see chapter 5) to structure and analyze the user experience data (right).


TOOLS
COMMUNITY
OBJECT

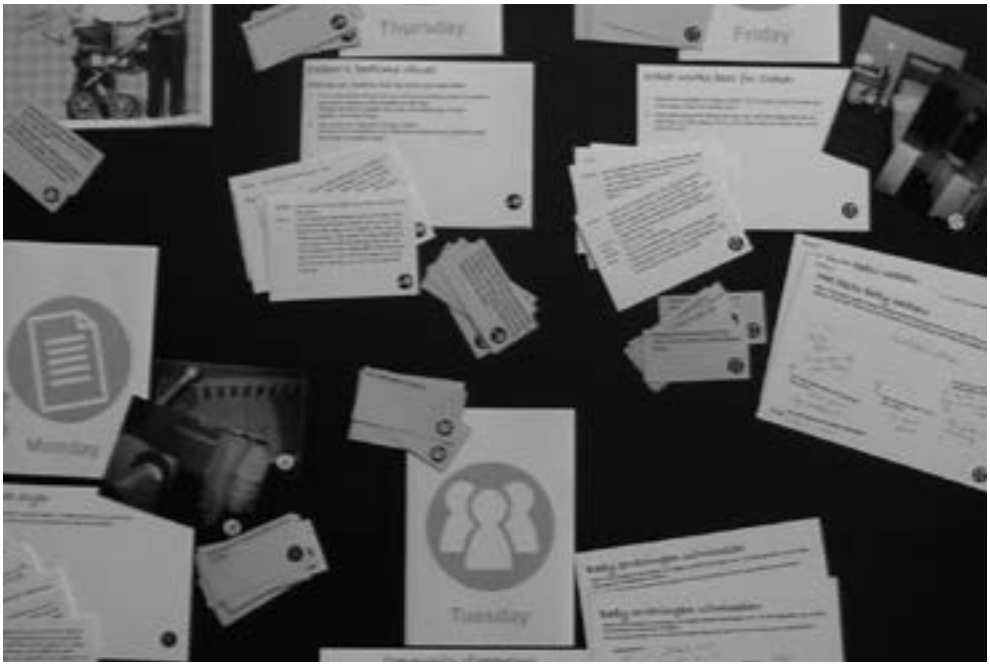

Thursday
Friday
Monday
Tuesday





Figure 2.21

Insights session in the Baby Care project

The designers worked on the immersion kits individually during five days (left). Then they joined an insights session, in which they discussed their findings from working on the kits, identified themes in the data by structuring their findings on a poster (right), and generated ideas about parents' possible futures of baby care based on these themes.



- **Who**

  The author and one design team member

- **What**

  Participate in a workshop for identifying need areas, or "platforms", based on learnings from market- and user studies

- **When**

  March, 2009

- **Where**

  Philips Lighting

- **Why**

  Philips Lighting is a part of the Philips organization that has a slightly different culture from Philips Research. So I needed to familiarize myself with the organization's members, culture, language, norms and practices again.

2.4.7 The Bedrooms workshop

The aim of this one-day workshop was to identify need areas, or "platforms", based on learnings from market- and user studies. A group of nine people, most of whom were working within the marketing department, participated in the workshop. The workshop was organized and facilitated by a member of the strategic marketing department. The author joined the workshop in the role of participant and presenter.

Five days before the workshop took place, each designer received two market-, or user study reports through e-mail. In the e-mail, the designers were asked to study the reports, to list their key learnings from studying the reports, and to bring their learnings plus photos of their own bedroom to the workshop. The workshop started with a show-and-tell round, in which each designer was invited to present his/her bedroom to the group. Then the author presented the user study that she had conducted as part of the Baby Care project. After the presentation, each designer was asked to share his/her key learnings from listening to the presentation and from studying the reports. The key learnings were discussed in the group, after which three possible target groups were identified. Next, the group was divided into three smaller groups. The groups were asked to identify need areas for one particular one target group, based on their insights and learnings from studying and discussing the market- and user studies. An hour later, the groups rejoined and reported their identified need areas. The workshop was concluded with a discussion of the need areas and possible next steps.

Key findings and insights

- At Philips Lighting, the process for sharing user data was similar to the empathic design process that we followed in the projects at Philips Research, in that the "owner" of the user (or market) research organized and facilitated the process, and in that the designers were immersed in the data as preparation for a group discussion of the data and its implications for NPD.
- Marketing is the "owner" of user-insight generation – Within Philips Lighting, marketing was in the lead of generating end-user insights. They conducted and outsourced user- and market studies, identified need areas and opportunities for NPD, and defined propositions (i.e., design briefs). Designers were involved in identifying platforms for NPD, but a design team was composed after the proposition had been approved or validated. The team was concerned with identifying criteria for NPD, rather than identifying platforms. *Lessons learned:* Consider how to engage a design team that does not exist yet (chapter 3).



- **Who**

  The author and two design team members

- **What**

  Preparing the user study, gathering user data, analyzing the data, preparing the design team, insights session, and developing use case scenarios and user requirements

- **When**

  January - September, 2009

- **Where**

  Philips Lighting

- **Why**

  Explore whether Stanislavsky's approach supports designers in building creative understanding of user experience from an Activity Theory perspective (Engeström, 1987; Leont'ev, 1978; Stanislavski, 1961; Vygotsky, 1962).

2.4.8 The Hospital project

The aim of the Hospital project was to develop new lighting solutions for patient rooms, based on understanding of what staying in a patient room means for patients, and what working in a patient room means for nurses. The design team consisted of twelve designers with various backgrounds, including chemical engineering, psychology, marketing, business management, electronic engineering, and architecture. The author and two design team members participated in the role of user researcher.

The empathic design process involved six steps – preparing the user study, gathering user data, analyzing the data, preparing the design team, insights session, and developing use case scenarios and user requirements –, and was organized and facilitated by the user researchers. The user researchers and the designers jointly prepared the user study by setting the goals of the study, formulating research questions, and recruiting participants. The user researchers used Activity Theory to ensure that key components and concepts of "the social" were addressed in the user research. Ethnography-inspired methods and techniques, including probes (Gaver et al., 1999; Mattelmäki, 2005), and contextmapping (Sleeswijk Visser et al., 2005), were used to gather the user data.

Staff members of two hospital departments, six patients and five nurses participated in the user study. The study with the patients and nurses was conducted in two phases. In the first phase, the user researchers walked along with nurses during four different shifts to obtain an understanding of the flow and dynamics in and around the patient room, and to learn about issues nurses face in their everyday work. In the meantime, staff members of two hospital departments were invited to work on cultural probe packages. The packages contained tools and exercises that invited them to show their daily work practices to the user researchers (figure 2.22). In the second phase of the user study, the patients and the nurses worked on probes individually during two and five days, respectively. The probes invited the patients to map and reflect on their stay in hospital, and invited the nurses to map and reflect on the patient room and social practices in and around the room (figure 2.23). Then the patients and the nurses were visited for interviews in which they explained what they had created in their probes.

The study resulted in rich user experience data in the form of audio recordings, completed probes and photos. The user researchers structured and analyzed the user data using Activity Theory. Then they developed immersion kits for sharing the user data and their preliminary findings from data analysis with the designers. The kits contained "context maps", five exercises, and yellow cards that invited the team members to capture their observations and findings from working on the immersion kit (figure 2.24). The context maps presented the patients' and nurses' personal stories and the user researchers' initial findings in the form of maps. Each map addressed one component of Engeström's Activity Theory (Engeström, 2001). The exercises were developed based on Stanislavsky's System (Stanislavski, 1961), and aimed to support the designers in reading and interpreting the stories in the context maps from an Activity Theory perspective, focussing on one particular patient or nurse. (Examples of exercises are presented in chapter 6.)

The design team members worked on the immersion kits individually during five days. Then they participated in a half-day insights session. The aim of the insights session was to develop a shared understanding of patients' and nurses' experiences. First, each designer

introduced him/herself in the role of the patient or nurse that was studied in the immersion kit. Then the team members shared their observations and findings from working on the immersion kit (figure 2.25). They grouped their observations and findings on a poster, and labelled each group with a theme. Finally, the team members selected three themes that they thought were important from the patients' perspectives, three themes that were important from the nurses' perspectives, and three themes that were important from the project's perspective. The insights session informed the development of use case scenarios and user requirements.

Key insights and findings

- The designers actively participated in interpreting the user experience data (chapter 6) – Nearly all designers had completed the immersion kit. From the level of detail of the designers' introductions of the patients and nurses at the start of the insights session, it became clear that the designers had carefully studied the user experience data.
- The designers were able to build creative understanding of user experience from an Activity Theory perspective (chapter 6) – They did not perceive the exercises to be too theoretical or difficult to grasp, and they generated a broad range of findings and themes that covered aspects of material and social-cultural context that they had not paid attention to before.
- The designers' creative understanding of patients' and nurses' experiences did not last, because the designers struggled to use their creative understanding within the organization's established procedures and practices of NPD (chapter 6).

▶ **Figure 2.22**

Gathering user data in the Hospital project (1)

Staff members of two departments worked on cultural probe packages in course of two weeks (left, next page). The tools and exercises in the package inquired about the staff members' daily work practices. We expected the participants to tell many stories about medical procedures, but received many stories about social care practices instead, e.g., making patients feel comfortable and listening to their stories (right).

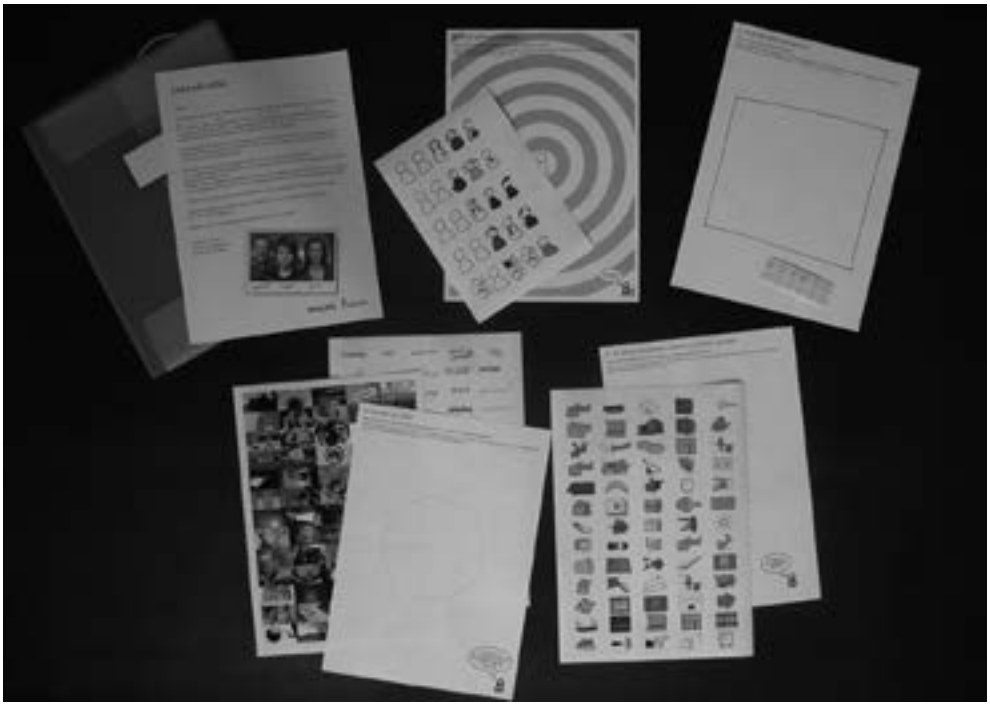

Wat ik (nóóit) zou willen veranderen


Watvoor koekje is jouw contact met patienten?
vinder koekje
crème koekje
choco koekje
of 'n ander koekje...?
Zo wordt de patient snel weer be
wil ik nog even kwijt
Bijvoorbeeld iets wat je laatst heb meegemaakt op jullie afdeling, dingen
op wilt wijzen, of steeds voor de patientenkamer.
we hebben graag een patienten
(huiskamer)
Dimlichten op kamers voor in nachtdie
radio op de kamer / internet









◄ **Figure 2.23**

Gathering user data in the Hospital project (2)

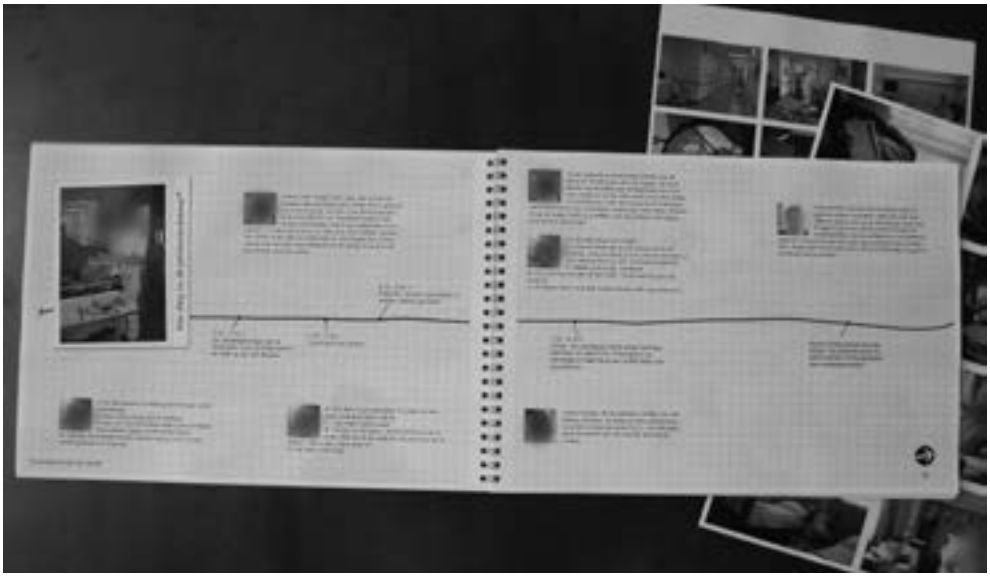
The patients and the nurses explained their completed probes in interviews. Patient Jan, for example, told us how a lively and dynamic view from the patient room, e.g., being able to see people enter and leave the hospital entrance, was very important to him. Nurse Sonja explained that nurses and room members can be as close to the patient as family members, or even closer, as they go through similar experiences.

► **Figure 2.24**

The immersion kit in the Hospital project

The user researchers developed an immersion kit for sharing the user experience data with the designers (left). The kit included maps that showed patients' and nurses' personal stories in the form of quotes, photos and returned probe materials (right, top), and five exercises that guided the designers in reading and interpreting the maps (right, bottom).

In de patiëntenkamer
Hi Filip Jan, meet...




Hi Filip-Jan, meet...

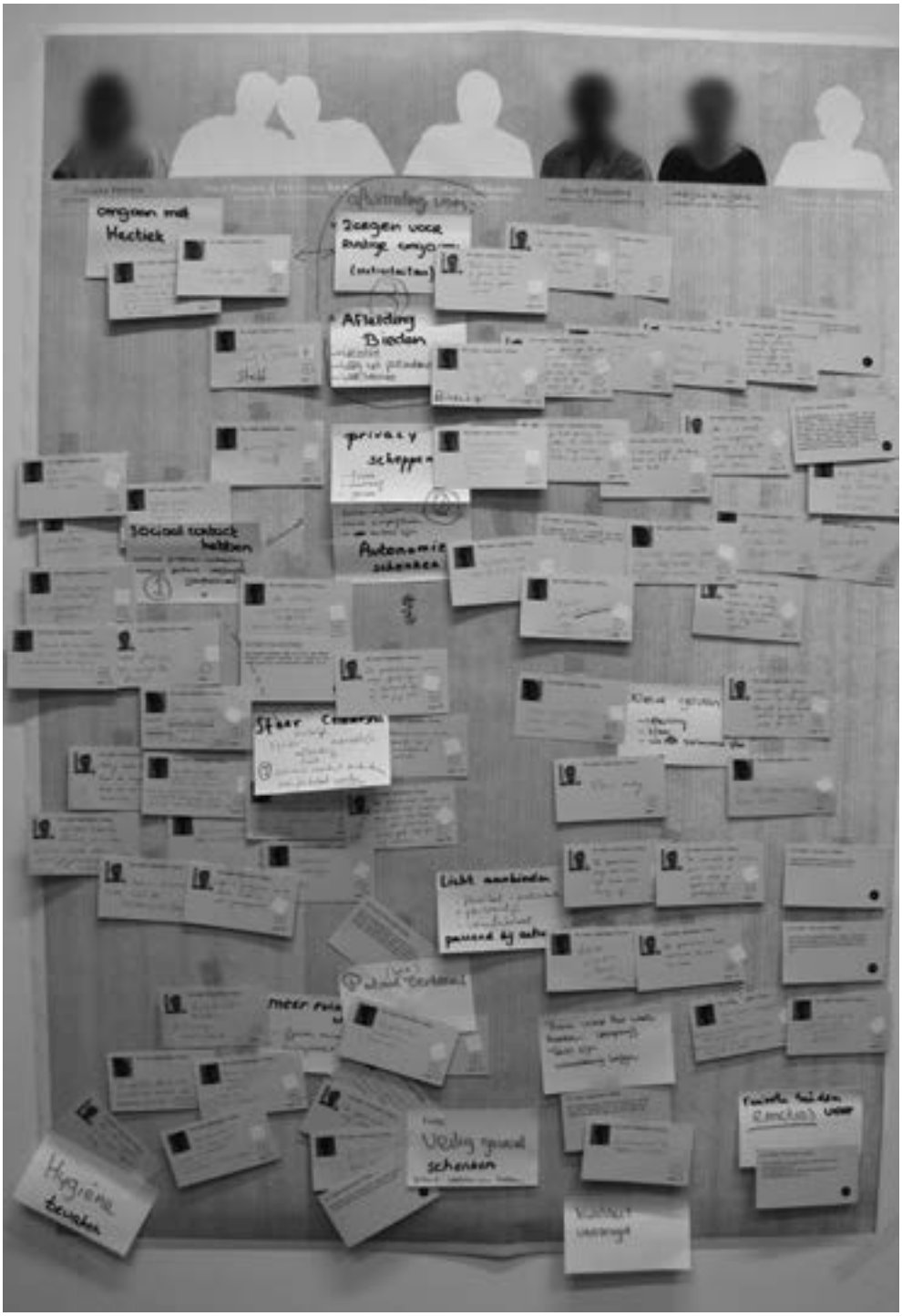


Figure 2.25

Insights session in the Hospital project

In the insights session, the designers shared and discussed their findings from working on the immersion kit (this photo), and identified themes in the data as a starting point for developing use case scenarios and user requirements (next page).


Hygiene
Dust


omgaan met Hectiek
Afleiding Bieden
privacy scheppen
Autonomie schenken
Licht aanbieden
Veilig gevoel schenken
Hygiëne bevaken

2.5 Outlook

This chapter explained how action research methodology was used as a framework for practicing a research through design approach in the research into Creating Socionas. First, parallels between action research and research through design were identified that justify appropriation of action research methodology in research through design. Then I elaborated on the cyclic research process by explaining how the research into Creating Socionas meets Susman and Evered's (1978) criteria of science as appropriate for action research. The third section explained how empathic design and Creating Socionas fit within the context of Philips. The last section introduced eight empirical cases at Philips in which ways of building creative understanding of user experience were explored by developing and evaluating instantiations of Creating Socionas. The cases generated knowledge and insights regarding ways of sensitizing designers toward the social in empathic design (e.g., what conceptual frameworks could serve as thinking tools of the social for design) as well as insights and findings regarding ways of building creative understanding in NPD practice, including the scope and breath of what is being shared, and the time and effort design teams need to invest. The following chapters explain the development of Creating Socionas. The chapters focus on the four conjectures that were created in developing instantiations of the approach in the NPD projects at Philips.

Chapter 3, *Challenges of doing Empathic Design: Experiences from industry*, reports our experiences with introducing and practicing empathic design at Philips Research. It discusses the challenges that practitioners may encounter when implementing and practicing empathic design in an industrial organization, and proposes possible cultural and methodological changes for addressing these challenges in the future.

In chapter 4, *Trialogue: Sharing rich user data in New Product Development practice,* Wright and McCarthy's (2005) concept of dialogue is used to develop that of "trialogue". Trialogue is a framework for describing the interaction between users, user researchers and designers in building creative understanding of user experience in NPD practice. In the chapter, we identify and discuss five implications of trialogue for sharing rich user data NPD practice.

In chapter 5, *Social theory as a thinking tool for Empathic Design*, we identify conceptual frameworks that design teams could use as thinking tools of "the social" in reading and interpreting user data for empathic design. We review a number of possible frameworks on the basis of literature and describe our experiences with applying candidate frameworks in NPD practice at Philips. The chapter concludes with "Activity Theory" as the best fit between design teams' needs and the frameworks offerings.

In chapter 6, *Stanislavsky's System: Practicing Activity Theory in Empathic Design*, we identify and discuss conceptual relations between Stanislavsky's (1961) approach to play-acting and Activity Theory (Vygotsky, 1962; Leont'ev, 1978), and we explain how Stanislavsky's approach was used to translate Activity Theory for building creative understanding in NPD practice.

Finally, chapter 7, *Creating Socionas step-by-step*, brings together the insights and theories from the previous chapters into "Creating Socionas", an approach to building creative understanding of user experience in the early stages of new product development.

3 Challenges of doing Empathic Design: Experiences from Industry*

User researchers and designers may experience several challenges when introducing and practicing empathic design in an industrial context. The research into Creating Socionas addresses two challenges that relate to the methodology of empathic design (chapter 1). But practitioners may also encounter challenges that stretch beyond the methodological level.

In the article "Exploring co-design on a larger scale", Sanders argues that design approaches need to be embedded on all levels of an organization to become successfully practiced (Sanders, 2009). She uses the diagram shown in figure 3.1 to explain that practicing design approaches involves more than just practicing the approaches' tools and techniques. She explains, "It's not just about tools and techniques, because these need to be practiced through methods which are organized, clustered and approached through methodologies." Most critical, she argues, is the mindset, "the established set of attitudes held by someone, one's frame of reference" through which the tools and techniques are used (Sanders, 2009, p.24). If the people in the organization do not share the design for experience attitude that is needed for doing empathic design, then the effort is likely to strand.

This chapter provides a broader perspective on the challenges of practicing empathic design. It reports my and my former colleagues' experiences with introducing and practicing empathic design at Philips Research. We** focus on the challenges that were encountered when introducing and practicing empathic design in this organization, and propose three cultural and methodological changes that we think are necessary to overcome these challenges. The chapter proceeds in two parts. The first part briefly explains how empathic design fits within the context of Philips Research and introduces a project illustrating this about baby care. The second part discusses the challenges encountered over the past years, as well as the three changes that we identified that need to be made for the future, with examples from the *Baby Care* project where appropriate. The reader is referred to chapter 1 for an introduction to empathic design and its four principles, and to chapter 2 for further reading about the context of Philips.

3.1 The case of Philips Research: From evaluative user research to generative user research

Philips Research is a research organization within Philips that provides technology options for innovations in the area of health and well-being, targeted at both developed and emerging markets. It serves the three Philips operating sectors (i.e., Lighting, Healthcare and Consumer Lifestyle) in introducing meaningful innovations that improve people's lives. Positioned

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* Based on: Postma, C.E., Zwartkruis-Pelgrim, E. Daemen, E. & Du, J. (2012) Challenges of doing Empathic Design: Experiences from industry. *International Journal of Design*, 6(1)

** In this chapter, "we" refers to the authors of the paper "Challenges of doing Empathic Design: Experiences from industry" (2012), i.e., C.E. Postma (Delft University of Technology), E. Zwartkruis-Pelgrim (Philips Research), E. Daemen (Philips Research) and J. Du (Philips Research).

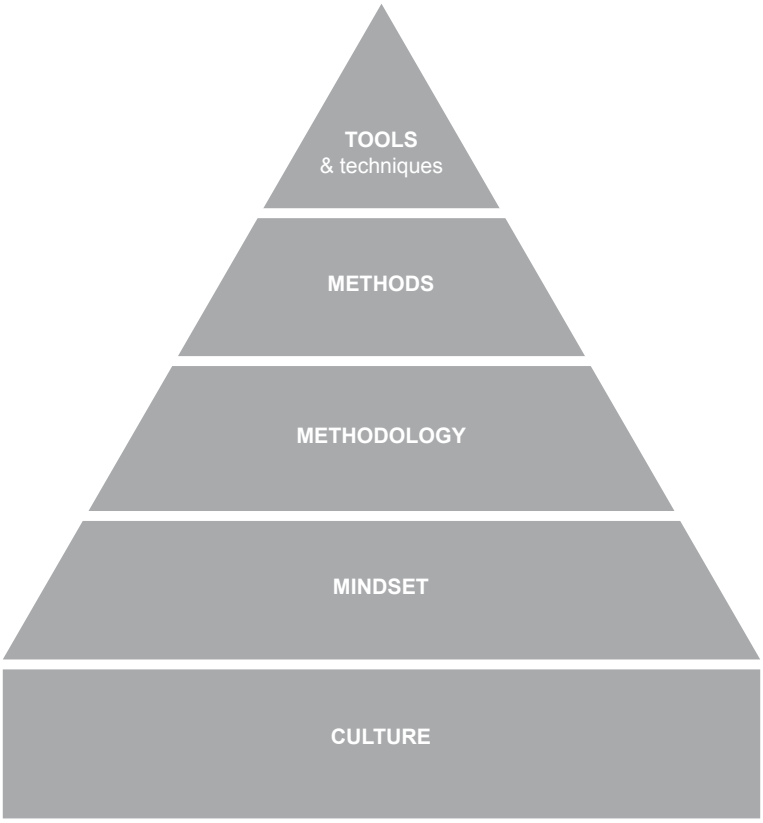


Figure 3.1

Embedding empathic design on different levels within the organization, adapted from (Sanders, 2009).

Empathic design needs to be adopted on all levels to become practiced within the organization.

at the front-end of the innovation process, Philips Research works on everything from spotting trends and ideation to proof of concept and, where needed, first-of-a-kind product development. Customer and user research play an important role in this regard.

When *Sense and Simplicity* was rolled out a few years ago, we (authors and colleagues) started to experiment with empathic design in a number of projects at Philips Research, because we expected that the approach would help us in exploring new growth areas and domains that are relatively open and unexplored. The empathic design efforts were often successful in that the project teams became more user- and customer- focused. But introducing and practicing empathic design within the organization was not always easy. Philips Research's focus on evaluative user research had indeed expanded to include more generative, or rather "pre-design" (Dandavate et al., 1996; Hanington, 2003) user research, and the people within the organization were generally open to the idea of trying empathic design. But with a rich history of almost 100 years of science-based technological innovation, the people within the organization did not necessarily share the mindset needed for doing empathic design as described in the literature, nor did the theoretical principles of empathic design seamlessly fit into their culture of doing research.

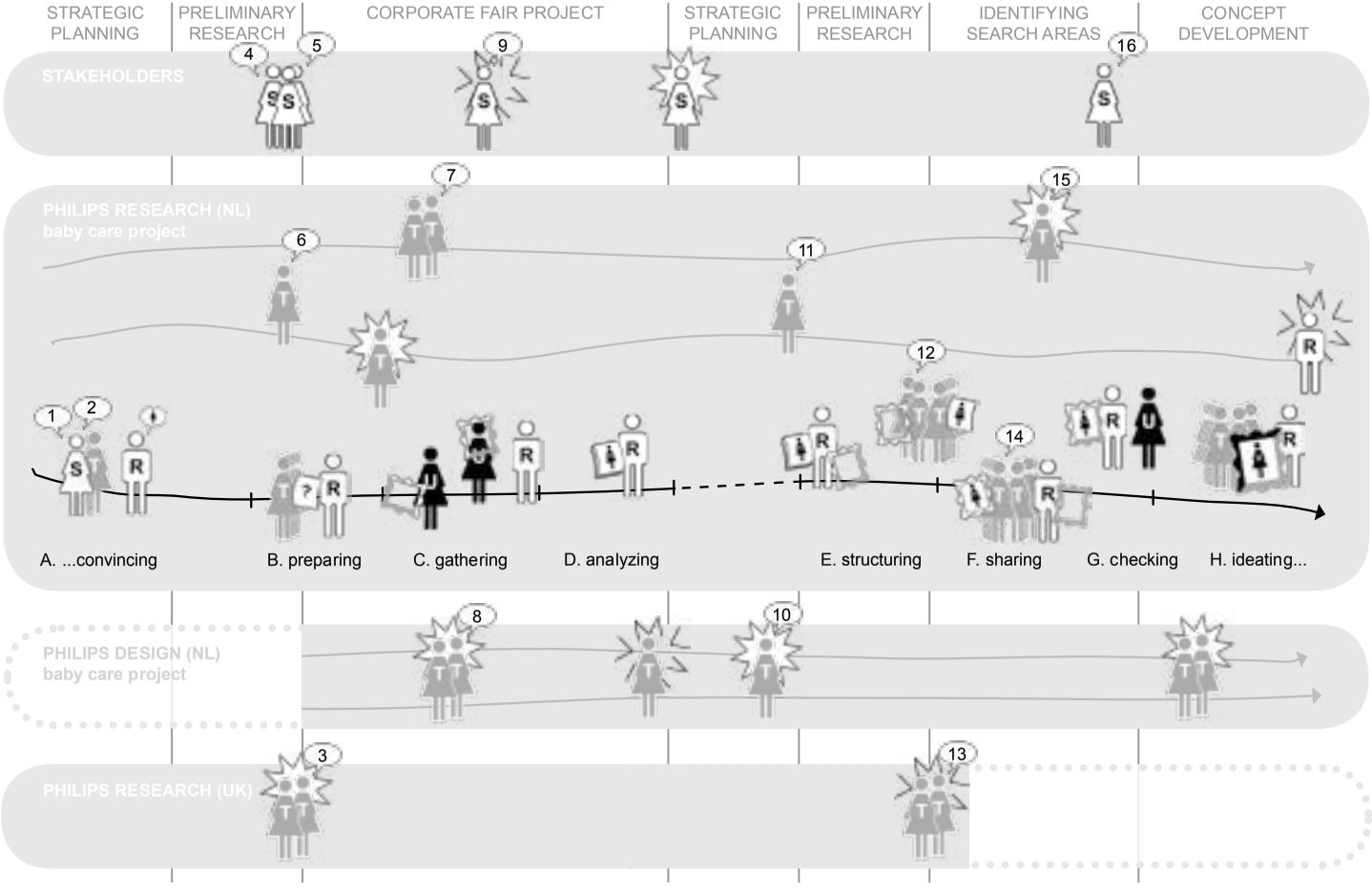
In addition, we experienced several challenges that relate to discrepancies between the theory of empathic design as described in literature with the application of empathic design in an industrial context in practice. We found that these challenges are largely unaddressed in the design research literature. The literature provides explanations of the theory of empathic design, but offers very limited guidance as to how practitioners can successfully introduce and practice empathic design within an industrial organization.

In this chapter we try to raise awareness of these challenges, and open up discussion of possible cultural and methodological changes needed to overcome them. The challenges discussed in this chapter reflect our own experiences and findings from doing empathic design in a variety of projects at Philips Research. In explaining the challenges, we draw examples from the *Baby Care* project. This project was already introduced in chapter 2 and is explained in more depth here.

3.1.1 The Baby Care project

The *Baby Care* project (2008) is an example of an NPD project at Philips Research in which empathic design was explored. The aim of the project was to identify and develop new technologies and product concepts for baby care, based on rich understanding of the lives of parents with babies. When the project started, the project team consisted of a project manager and five team members with backgrounds in electrical engineering, computer science, psychology, and industrial design. The stakeholders of the project were the members of the program board of Philips Research. The author and one design team member participated in the Baby Care project in the role of user researcher.

The project manager initiated the empathic design effort. She had received findings from earlier user research as input for generating platforms and end-user insights within the VPH framework, but because these findings were very abstract, she was looking for ways to enrich them. Having witnessed our approach in other projects, she believed empathic design could be valuable in this regard. The stakeholders of the project supported her initiative, as it fitted


STRATEGIC PLANNING
PRELIMINARY RESEARCH
CORPORATE FAIR PROJECT
STRATEGIC PLANNING
PRELIMINARY RESEARCH
IDENTIFYING SEARCH AREAS
CONCEPT DEVELOPMENT
STAKEHOLDERS
PHILIPS RESEARCH (NL)
baby care project
PHILIPS DESIGN (NL)
baby care project
PHILIPS RESEARCH (UK)
A. ...convincing
B. preparing
C. gathering
D. analyzing
E. structuring
F. sharing
G. checking
H. ideating...

1. “We need user insights.”
2. “I like the idea of empathic design! Let’s do it!”
3. “We are interested in learning about this target group too.”
4. “We want you to present your vision on this domain at the corporate fair by showing product concepts.”
5. “You should work closely together on this project with the design department.”
6. “I need to focus on the fair now, so I cannot help you with the user research.”
7. “We need your user insights for developing our vision for the fair.”
8. “We would like to focus on a slightly different target group.”
9. Project manager and advocate of empathic design leaves the project team.
10. “I like your approach, but isn’t this something we should be doing?”
11. “Are you finished yet? We need your user insights!”
12. “Is your data representative of our target group?”
13. “We can really use this information! This was a great session!”
14. “Our project has been paused, but we still like to be involved.”
15. “I need to trust that you did it in the right way...”
16. “How can we implement this approach in other projects?”

Figure 3.2

The empathic design process followed within the Baby Care project

The user researchers (puppet marked with “R”) organized and facilitated the empathic design process. They mediated the interaction between the users (“U”) and the design team (“T”) and the stakeholders (“S”), using representations (frames).

with the corporate ambition to become a truly customer- and user-centric organization. The members of the project team only had a vague idea of what doing empathic design actually means, but they were interested to learn about empathic design and wanted to give it a try.

Figure 3.2 presents an outline of the project's dynamics and the empathic design process that we followed during the first half-year of the project. The figure illustrates how (1) different parties (grey fields) are involved in different phases of the project (indicated on top), (2) the project planning changes over time, (3) different activities within the project (arrows), such as business planning, user research, and technology development, need to be time-aligned, and (4) how the NPD team changes over time: new members join the team (stars) and others leave the team (broken stars). An empathic design process was followed (black arrow) as part of the project. The user researchers (puppet marked by "R") gathered user experience data in dialogues with users ("U"), and representations (frames) were used in conveying the data to the NPD team ("T"), the project manager and the stakeholders ("S").

The project involved several user studies, of which an exploratory user study that we conducted in The Netherlands will serve as an example in this paper. The aim of this study was to develop rich understanding of the lives of parents with babies. The results of the study were not intended to be representative of a population, either national or global, but were meant to inspire technology- and concept ideation.

The Empathic Design process

After having convinced the project manager, the team and the stakeholders of the value of empathic design for the Baby Care project (A Convincing, in figure 3.2), the team went through seven steps, following the contextmapping procedure as explained by Sleeswijk Visser et al. (2005) and illustrated in figure 3.2. First, the team members and the user researchers jointly prepared the exploratory people study (B Preparing). Being actively engaged in preparing the people study prompted the team members to already consider parents' possible needs and aspirations. Also, the user researchers developed a better understanding of the project team's needs in working together with the project team.

The team members and the user researchers mapped their preconceptions about baby care, identified research questions, selected focal areas of the user research, recruited parents, and developed probes. Probes are packages of tools and playful exercises that invite participants to reflect on their routines and daily experiences (Mattelmäki, 2005). Six couples with babies aged between three and ten months old participated in the study. The parents worked on the probes individually during five days. Then (C Gathering) the couples participated in a generative session in their homes (Sanders, 2000). The sessions were facilitated either by the user researchers, or one user researcher and a team member. During a session, parents explained what they had created in their probes, they then jointly mapped their baby's bedtime ritual on a poster and showed us around their baby's bedroom. The dialogues with the parents resulted in rich user experience data in the form of video recordings, completed probes, posters and photos. From this, some data fragments and preliminary findings were presented to the team and the stakeholders in interim presentations to create involvement, as well as to inform design and research activities that were run in parallel.

When all generative sessions had taken place, the user researchers pre-structured and pre-analyzed the data (D Analyzing and E Structuring), and developed three different immersion

kits, each kit reflecting one parenting style, for sharing the user experience data with the project team. The kits contained small chunks of raw data, including quotes, photos, audio fragments, the researchers' initial findings, and five small exercises, which the team members asked to reflect on and compare their own situation to the parents' situations. For example, in one exercise the team members were asked to compare the things that used to help them fall asleep to the things that helped the baby fall asleep. The team members and the project manager worked on the immersion kits individually over five days (F Sharing). Then they participated in a joint insights session.

The aim of the session was to build shared understanding of baby care as a starting point for developing product propositions within the VPH framework. During the insights session, the team members first discussed their observations and findings from working on the immersion kits. Then they created maps of the parents' current situations by structuring raw data and observations and findings on posters. Clusters of findings were labeled with themes. Later in the NPD process, these themes would function as "platforms" within the VPH framework. Lastly, the team members envisioned parents' aspirations and dilemmas, and added a final layer to the posters with ideas about possible futures of baby care (figure 3.3). By the end of the session, the team had made three posters, one for each parenting style. Each poster connected raw user data with the team members' interpretations of the data and ideas about the future. After the session, the team used these posters (and findings from other user studies) in formulating end-user insights for proposition development within the VPH framework. An external market research agency confronted the end-user insights with parents in focus group sessions (G Checking). The team members processed the parents' feedback, and edited the end-user insights in between sessions. In the end, four end-user insights were selected for concept ideation. The selection of end-user insights was based on parents' responses as well as insights from business and technology perspectives (H Ideating).

The project dynamics

The Baby Care project exemplifies the complexity of NPD in large organizations. The project started as a relatively small-sized and straightforward project that involved only six team members and few stakeholders from Philips Research in Eindhoven. But soon the project team grew larger and the project became more complex; multiple design and research activities were run in parallel. Different parties and stakeholders from different parts of Philips were involved in different phases of the project. Sometimes new parties introduced new ideas and concerns that changed the project's strategic course of action. These project dynamics, which are quite common in an industrial context, challenged the empathic design effort in several ways (as is indicated in figure 3.2):

- *Redistribution of resources* (B Preparing) – During preparation, activities regarding a corporate fair were prioritized, and manpower of other project activities, including empathic design, was cut down. But the empathic design work group still needed to deliver input for the fair in time.
- *Redefinition of stakeholder roles* (C Gathering and D Analyzing) – When user experience data had been gathered and analyzed, strategic decisions, including target group and ways of working and collaborating, were reconsidered as part of a new collaboration set-up with Philips Design, the global, corporate design organization of Philips.

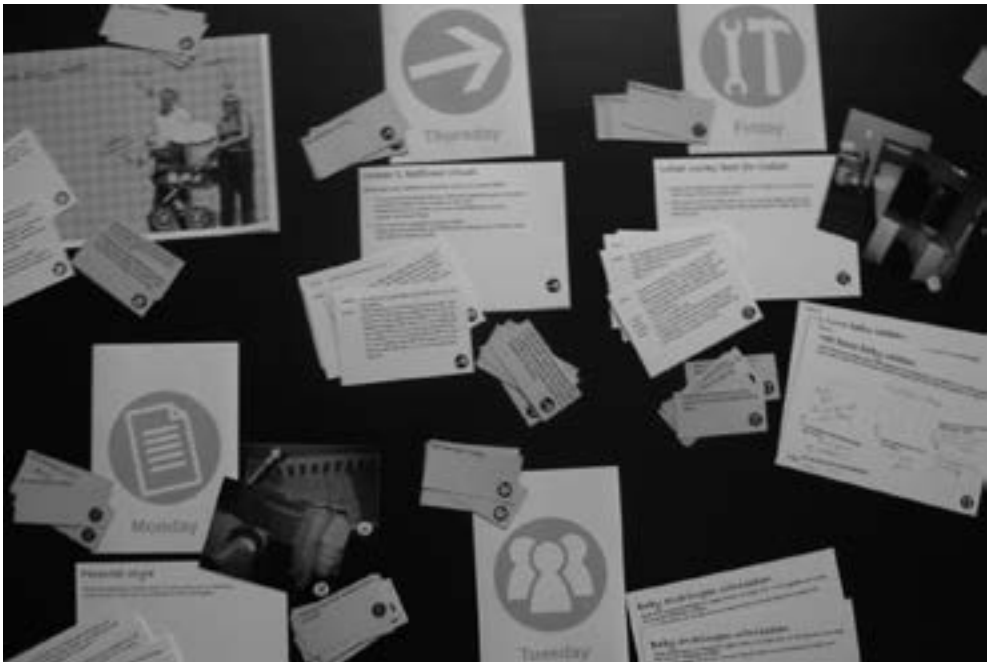

Monday
Tuesday





Figure 3.3

Sharing (phase F): The insights session

The project team members worked on immersion kits during five days (left). Then they participated in an insights session in which they shared their observations and findings, and created maps of parents' currents situations and possible futures on posters (right).

- *Out of sync schedules* (D Analyzing and E Structuring) – Due to these and other developments within the larger organization, business planning and empathic design activities were temporarily suspended. Technology development, however, continued and waited for the other work groups to share their results.
- *Changing project team* (H Ideating) – Finally, in ideation, two new team members and eight guest members joined the team. These people had not been part of the earlier empathic design process, and did not share the creative understanding that had shaped the project up to that point.

Sometimes relatively small changes of team composition affected the empathic design process significantly:

- *New project manager* (C Gathering) – Halfway through gathering user data, the project manager left the team and a new project manager was assigned to the project. This led to some uncertainty about the necessity and continuation of the empathic design activities, but eventually the decision was made to proceed as planned, with full support of the team members.
- *New team member* (F Ideation) – Halfway through sharing the data, the empathic design work group was reinforced by a new team member, who insisted to bring in user data that had been gathered in other studies.

3.2 Discussion: The future of Empathic Design in industry

In this section we discuss our experiences with introducing and practicing empathic design at Philips Research in terms of three cultural and methodological changes that we think are necessary for successfully practicing empathic design in a mainly technology-oriented industrial context:

- From focusing on rational approaches to include empathic approaches in NPD.
- From seeing users as informers of NPD to seeing users as partners in NPD.
- From being informed of user research to being engaged in user research.

The first two changes strongly resonate with the two dimensions that Sanders identified in her topography of user research in design, i.e., "research-led vs. design-led" and "expert mindset vs. participatory mindset" (Sanders, 2006). The third change is new, and slightly different from the first two in that it mainly requires further specification and development of the empathic design approach, rather than organizational or cultural changes within the organization. In this section we briefly explain each change and its corresponding challenges, drawing examples from the Baby Care project where appropriate.

3.2.1 Change 1: From rational approaches to including empathic approaches

The first change concerns the first two principles of empathic design, "balancing rationality and emotions in building understanding of users' experiences" and "making empathic inferences about users and their possible futures" (see chapter 1). These principles challenge the tradition of an industrial research lab that has been primarily reductionist and validation oriented (as opposed to exploration oriented). Doing empathic design, i.e., adopting an approach that has been introduced into practice from a design perspective as opposed to a research perspective (Sanders, 2006), requires people within the organization to take on a mindset towards (user) research and design that values holistic understanding of user

experience and personal insight and creativity. At Philips Research, the new brand promise, *Sense and Simplicity*, opened the door to generative approaches to research, such as empathic design, but there are still few challenges on cultural and mindset levels.

Challenge 1 – Evaluating Empathic Design from a traditional, reductionist research perspective

In our projects, team members and stakeholders often expected user research to point out specific market directions of product concepts; they called for solid evidence, like proof points, facts and hard claims, based on inquiries with large numbers of people. Empathic design does not provide this type of input, nor does it pretend to aim to. Its strength lies in raising awareness of what makes life rich, personal and meaningful. Stories about users and their experiences gathered in empathic design cannot easily be up-scaled, quantified or generalized. Nor are they conclusive. Team members (and stakeholders) need to read, interpret and explain users' stories, and envision possible futures based on their own interpretations and explanations.

In the Baby Care project, the team members were interested to learn about empathic design, but they also questioned its scientific rigor and the representativeness of its results. "How much do you actually cover now?" one team member asked, for example. New team members, who had not been part of the empathic design process, did not always understand and/or trust our approach, and were sometimes hesitant to use our data. In a group discussion, a new team member explained, "We had to believe you that you did it right, and I have no problem with that, I trust you, but there's still a bit of doubt that we could cover everything this way."

Challenge 2 – Using rational language for emotional understanding

Being inconclusive and unverified, creative understanding is not indiscriminately adopted as a deliverable as such within an industrial context like Philips Research. In our projects, creative understanding needed to be translated into deliverables that are approved by the organization, such as validated end-user insights, confronted product concepts, or voice of customer statements. The rich, personal and meaningful were often lost in the translation process, because the deliverables only capture abstracted findings from user research. They are valuable in discussing directions for product and technology development on a strategic level, but fall short in supporting NPD teams in building creative understanding of user experience, since they do not show the real people and the idiosyncrasies of everyday life that make findings from user research meaningful, or, as a team member explained, they do not "Make it concrete." The need for capturing and sharing what a marketing manager called "that feel for the user" is recognized within Philips. However, ways of conveying "that feeling" have not been established yet, and the theory of empathic design leaves this area unspecified.

Challenge 3 – Looking for straightforward implications for design

In empathic design, designers and researchers use their creative understanding of user experience in identifying product opportunities and in generating product concepts. This is not a logical process per se; individual team members may see opportunities and concepts

that others do not see. In our projects, we noticed that teams and stakeholders generally tend to focus on themes and findings that steer ideation into a specific product direction, rather than to focus on more open-ended themes and findings. We also noticed that teams and stakeholders often choose to generate solutions to small-scale problems and issues that have been brought up most explicitly by the user. In only few of our projects, team members chose to identify product opportunities by envisioning possible alternative futures. The two foci are partly driven by teams' and stakeholders' need to rationalize and validate insights and solutions, and partly infused by the organization's established methodology. For example, end-user insights by definition address a dilemma or aspiration of the user, and established brainstorming techniques within Philips Research used to be mainly directed towards the generation of intellectual property, focusing on innovative technical solutions, rather than design for experience.

In the Baby Care project, the team initially selected quite open-ended themes for ideation. Reflecting on the selection process, a team member explained, "We selected the clusters partly on rational and partly on emotional grounds - what clusters felt important. Instead of selecting the more 'obvious' themes, we picked those that triggered us. For example, two clusters we found more interesting because they addressed issues that are important on the long term." In the ideation phase (phase H), however, the team decided to focus on themes that they had considered "obvious", or that they even had discarded during the insights session (phase F).

3.2.2 Change 2: Moving from seeing users as informers to seeing users as partners in NPD

The second change relates to the third principle of empathic design, "involving users as partners in NPD". User research conducted within Philips Research used to be mostly evaluative, and often involved users as anonymous informers, who were asked to reflect on usability of concepts in experiments and focus group sessions.

Empathic design, which involves users as partners in NPD over longer periods of time, requires a drastically different way of thinking about the role of users and user research in NPD. It implies developing a broader mindset in which users are also seen as experts, which translates into a "participatory mindset" (Sanders, 2006), with user research as a fundamental quality of NPD. While empathic design is finding its way within the organization – we noticed that some designers and researchers regularly leave the office to observe and talk to users – both ideas are not fully grounded yet.

Challenge 4 – Empathic Design as a checkbox

Empathic design proposes that designers and researchers build creative understanding of user experience in the context of continual informal encounters with users. In our projects, however, user research was often thought of as a discrete activity within the NPD process that involves few experienced user researchers and is rounded up once conclusions have been drawn. In the Baby Care project, for example, the empathic design effort more or less already ended once end-user insights had been generated. A follow-up user study was conducted by a market research agency, and did not involve the parents who had participated in the exploratory people study.

Also project management and organization did not always accommodate user involvement over time. In business-to-business projects, for example, frequent informal encounters with users were not always feasible, simply because user contacts needed to be aligned with other parties within the organization first. Often time constraints did not permit having multiple encounters with users over time.

Challenge 5 – Empathic Design as subsidiary to technology development

In empathic design, creative understanding of user experience drives innovation. But in our projects, often emphasis was on technology development, and user research (including user research in empathic design) was generally considered as one of several activities that inform technology development. Consequently, the user research was expected to conform to project objectives and planning that had changed because new insights were obtained from design and research activities that were conducted in parallel. For example, in one project the target group was redefined as a result of new marketing insights. In another project, the project planning changed drastically as time to market was shortened. These kinds of changes, which are quite common in an industrial business context in which product development cycles are getting shorter and shorter, require great flexibility that empathic design is not always able to meet, being that it involves developing and checking creative understanding of user experience in dialogues with users over time. As a result, creative understanding of user experience was sometimes established too late, or turned out to be irrelevant for the project by the time product opportunities needed to be identified, or product concepts needed to be developed.

3.2.3 Change 3: From being informed to being engaged

The third change addresses the fourth principle of empathic design, "engaging the design team members as multi-disciplinary experts in user research". How to engage design teams in user research may be evident in academia and design consultancy, but raises several questions and challenges in large industrial organizations, such as Philips. In these organizations, people work in dynamic, multi-disciplinary and networked teams that involve different parties and stakeholders in different phases of the NPD process. Division of labor, the aligning of roles and responsibilities, is indispensable in such organizations.

Challenge 6 – Who should be engaged, and who should be informed?

Empathic design advises user researchers to engage the design team and/or designers in user research. However, it leaves unspecified who is part of the design team and who is a designer. Sleeswijk Visser (2009) discusses "people who ask for user information." She recommends engaging many people in user research, including people who did not specifically ask for user information, for example secretaries and colleagues who are not part of the project. In our experience, it is often not feasible to engage *everyone*, i.e., people from different positions and with different concerns, because people may not be available, they may not want to be engaged, or their superiors may not allow them to be engaged for whatever reason. Moreover, we found that engaging everyone may interfere with group dynamics in building shared understanding of user experience and in identifying product opportunities.

Generally, in our projects, project team members enjoyed and appreciated being engaged;

they highly valued hearing stories about users and their everyday lives. Stakeholders, on the other hand, usually preferred to be informed; they valued getting an "executive summary" in the form of a presentation in which the main conclusions are highlighted. But this distinction did not always hold true: In the Baby Care project, a project stakeholder actively participated in the insights session and was very enthusiastic, whereas a project team member questioned the necessity of being engaged saying, "I'm not part of the user insights group."

Challenge 7 – How to engage a team that does not exist yet?

Empathic design suggests engaging design teams in designing and conducting user research to ensure the user perspective is included in design. But the NPD process covers several stages, and it involves different parties and people over time. People who join, or take over the project in a later stage of the process need to be able to include the user perspective as well, without starting the empathic design process all over again. This means that the project team's creative understanding of user experience needs to be continually captured and shared. As we explained previously, the need to capture and share creative understanding is recognized by design practitioners, but goes by unaddressed in the empathic design literature, which seems to assume that the same group of people is involved throughout the NPD process.

In the Baby Care project, the user researchers managed to convey the rich user experience data to the initial project team in ways that enabled the team to build creative understanding of parents and baby care. But the user researchers and the initial project team did not succeed in passing on their creative understanding to new team members, because their creative understanding of parents and baby care was captured in their experiences with being engaged in the user research, and therefore was difficult to pass on to new team members.

Challenge 8 – How to engage people who are not user researchers or designers?

Not every team member is a user researcher or a designer, but being engaged in empathic design requires research skills as well as design skills. We found that less experienced (people) researchers may tend to overemphasize partial results, or focus on aspirations or dilemmas that are brought up by individual users, rather than patterns that underlie the user experience data. Less experienced designers, on the other hand, may have difficulties in translating their creative understanding of user experience into product ideas and concepts. In our projects, for example, we often witnessed that project team members "forgot" about the users and their everyday lives in ideation, because they struggled to join their understanding of the user perspective with their understanding of the designer perspective. We found that empathic design offers various tools and techniques that enable users, or non-designers to actively participate in NPD. But the approach offers hardly any tools and techniques that enable multi-disciplinary teams, including non-designers and non-researchers, to participate in empathic design. The immersion kit and insights session that we developed in the Baby Care project could be examples of such tools and techniques.

3.3 Conclusions

This chapter reported our experiences with introducing and practicing empathic design in an industrial context. We reported the challenges encountered due to discrepancies between the theory of empathic design as described in the literature on the one hand, and the application

of empathic design in an industrial context in practice on the other. Eight challenges were discussed in light of the four principles of empathic design that were explained in chapter 1. We then proposed three cultural and methodological changes for addressing the challenges in the future: (1) from focusing on rational approaches to including empathic approaches, (2) from users as informers to users as partners in NPD, and (3) from being informed of user research to being engaged in user research.

The first two changes are consistent with the two dimensions of Sanders' topography of user research in design (Sanders, 2008), which endorses our conviction that other industrial organizations face similar challenges when implementing empathic design. The third change is new, and slightly different from the first two in that it is primarily up to the design research community, not industrial organizations, to make this change happen. It highlights an area of empathic design that we think is largely unaddressed in the design research literature, but may be key in successfully embedding empathic design within an industrial organization. Future research addressing this area may find inspiration from the Baby Care project presented in this chapter. This project already demonstrates a challenging, but successful way of dealing with empathic design's principle of engagement in an industrial organization.

Having shared our experiences with introducing and practicing empathic design within the specific situation of Philips Research, we hope that others will feel invited to critically reflect on the use of empathic design in their contexts, and share their experiences and findings with the design research community. Only in this way can we dissolve the gap between the theory of empathic design as described in the literature and the application of empathic design in practice, and develop an approach that is effective and acceptable.

4 Trialogue: Sharing rich user data in new product development practice*

The design research literature provides several approaches that support the process of establishing creative understanding of user experience for design. Examples are critical design (Dunne & Raby, 2001), generative design research (Sanders, 2000), and empathic design (Koskinen, 2003). Many of these approaches suggest that designers take over the role of user researcher, and gain information, empathy and inspiration by directly interacting with users themselves. Wright and McCarthy call this form of interaction between users and designers – two parties – "dialogue" (Wright & McCarthy, 2005). In dialogue designers grow their creative understanding of user experience by responding creatively to users (e.g., by proposing a scenario of use), and attuning future creative responses as their creative responses do, or do not resonate with users (chapter 1).

In new product development (NPD) practice, direct interaction between users and designers is not always feasible as the user research is frequently sourced from a third party, e.g., an external consultancy or an internal user research team. Consequently, rich user data that is gathered in user research needs to be captured and shared with the design team. The "rich" and "personal" – qualities of user data that are required for building creative understanding (Fulton Suri, 2003b; Sleeswijk Visser et al., 2007; Wright & McCarthy, 2008) – are often lost in this process.

In this chapter, we** use Wright and McCarthy's concept of dialogue to develop that of trialogue for identifying successful ways of sharing rich user data in NPD practice. The chapter proceeds in three parts. First the concept of trialogue is introduced. Then we translate Wright and McCarthy's requirements for establishing creative understanding in dialogue to situations of trialogue. In the third part, the implications of trialogue for sharing rich user data in NPD practice are discussed.

4.1 The concept of trialogue

In our framework we propose two modes of trialogue as shown in figure 4.1. In both modes the user researcher mediates the interaction between users and design team, using tools that represent either the users or the design team. The first mode of trialogue focuses on gathering user experience data; it is what most people (including us) would call the "actual user research". Here the user researchers build creative understanding of user experience in direct interaction with users, and with tools that have been developed by or with the design team. These tools represent the designers' experience (e.g., cultural probes (Gaver et al., 1999), use case scenarios (Alexander & Maiden, 1999), prototypes).

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* Based on: Postma, C.E., Lauche, K. & Stappers, P.J. (2009) Trialogues: A framework for bridging the gap between people research and design. In *Proceedings of the 3rd Conference on Designing Pleasurable Products and Interfaces* [CD-ROM].

** In this chapter, "we" refers to the authors of the paper "Trialogues: A framework for bridging the gap between people research and design" (2009), i.e., C.E. Postma (Delft University of Technology), K. Lauche (Delft University of Technology), and P.J. Stappers (Delft University of Technology).

In this chapter, we focus on the second mode of trialogue. This mode involves sharing the gathered user data with the design team. In this mode, the designers build creative understanding of user experience in direct interaction with user researchers, and with tools that represent users' experiences (e.g., user stories (Gruen et al., 2002), personas (Pruitt & Adlin, 2006)). The interaction between the designers and the tools can be thought of in a similar way as Schön and Wiggins view sketching in their article, *Kinds of seeing and their functions in designing* (Schön & Wiggins, 1992), namely a reflective conversation between the designers and what the tools represent in which the designers read, interpret and rephrase the representations.

The two modes of trialogue alternate throughout the NPD process, and sometimes they run in parallel. For purposes of clarity, figure 4.1 shows an ideal situation of trialogue. In NPD practice, trialogue is usually more complicated as the roles of user researcher and designer may change over time, and different parties may be involved in different phases of the design process.

4.2 Four requirements for trialogue

Applying Mikhail Bakhtin's analysis of the polyphonic novel as metaphor, Wright and McCarthy identify three requirements for establishing creative understanding of user experience in dialogue, "outsideness", "surplus of meaning", and "addressive surplus" (Wright & McCarthy, 2005). We see these requirements as principles for trialogue that may help identify ways of successfully sharing rich user data in tri-partied interaction in NPD practice.

The first requirement is *outsideness*. According to Wright and McCarthy, the dialogical approach requires each person to engage from his/her own perspective, bringing his/her own sets of value and meaning. "In an empathic relationship the 'designer' does not relinquish his/her position to 'become the user', a position from which nothing new can be created, rather the designer responds to what they see as the user's world from their own perspective as designer," they claim (Wright & McCarthy, 2008, p.639). For trialogue the requirement of outsideness implies that user researchers and designers should retain their own perspectives in reading, interpreting and rephrasing representations of user experience. This requirement may seem at odds with user-centered design techniques, such as role-playing and experience prototyping, that aim to approximate the user's experience in order to obtain an understanding of the user's perspective (Boess et al., 2007; Buchenau & Fulton Suri, 2000). However, role-playing and experience prototyping may be viewed as reflective conversations between designers and their imagined user experience, in which the imagined user experience is a tool that represents user experience in a similar way as personas or use-case scenarios may represent user experience. In light of this view, the requirement of "outsideness" may be explained as reading, interpreting and rephrasing the imagined user experience from one's own individual perspective in the process of embodying and enacting a role.

The second requirement is *surplus of meaning*. "Surplus of meaning" is people's expertise in terms of knowledge and skills, but also in terms of their experiences from the past, and their ideas about the future. It is a relative notion, i.e., one has surplus of meaning *vis-à-vis* the other. When people exchange their expertise in dialogue or trialogue their surpluses of meaning decrease, and their potential surpluses of meaning increase; thus their expertise

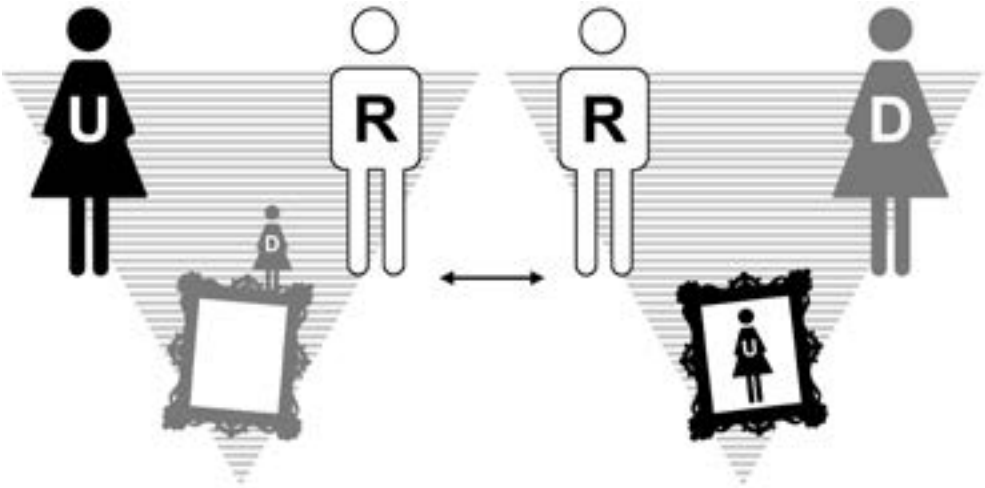

Figure 4.1

Model of trialogue

Left triangle: Mode 1, gathering user data. User researchers (R) build creative understanding of user experience in direct interaction with users (U) and with tools that have been developed by, or with the design team (grey frame). Right triangle: Mode 2, sharing user data. Designers (D) build creative understanding of user experience in interaction with user researchers (R) and with tools that represent users' experiences (black frame). The two modes alternate throughout the new product development process.

grows. Wright and McCarthy argue that establishing creative understanding requires each participant to have surplus of meaning. So, each participant, including the user, is his/her own expert in dialogue. For situations of trialogue, this requirement implies that representations of designers' experience should reflect designers' surplus of meaning, and representations of users' experience should reflect users' surplus of meaning. While this may sound obvious, all too often rich user data is shared in a ways that reflect user researchers' surplus of meaning, rather than users' surplus of meaning (e.g., Sleeswijk Visser et al., 2007).

The third and last requirement is *addressive surplus*. "Addressive surplus" is the attitude of a good listener towards another person. It motivates one to listen to-, and understand his/her conversational partners, and, in turn, stimulates the conversational partners to "give voice to creative response" (Wright & McCarthy, 2005, p.22). Wright and McCarthy claim that each participant in dialogue needs to take on addressive surplus to establish creative understanding. Participants should "enter into dialogue as differently placed equals with the expectation that they will learn and change their ideas as a result of the dialogue and thus experience genuine surprise," they explain (Wright & McCarthy, 2005, p.21). The requirement of addressive surplus implies that representations in trialogue should show addressive surplus too. Therefore, representations of designer experience (e.g., cultural probes, use case scenarios, concept designs) should encourage users to reflect on- and express their needs, feelings and experiences, and representations of user experience (e.g., user stories, personas) should encourage designers to respond creatively and to develop their own interpretations and explanations of user experience.

4.3 Implications of trialogue for NPD practice

The concept of trialogue may be used to identify ways of successfully sharing rich user data in NPD practice, and to evaluate the usefulness of existing communication guidelines, tools and techniques for building creative understanding in situations of trialogue. We identified five implications of trialogue for sharing rich user data in NPD in view of our experiences with tri-partied interaction at Philips Research. In this section, we explain each implication, drawing examples from the *Baby Care* project where appropriate. For an introduction to this project the reader is referred to chapter 2.

Implication 1 – Engage designers in interpreting user data for design

In dialogue, designers' creative understanding of user experience grows in direct interaction with users. When direct interaction with users is not feasible, as was the case in the Baby Care project, designers may build creative understanding in interaction with tools that represent users' experience instead. Trialogue describes this interaction as a reflective conversation in which the designers read, interpret and rephrase the representations. For NPD practice, this could imply that design teams are engaged in the process of interpreting the data that has been gathered in user research, like in the Baby Care project.

A review of the design research literature shows that the idea of inviting designers to actively participate in making sense of user experience for design accords with ideas and findings of several other design researchers. For example, Fulton Suri (2003a) argues that personal discovery of users' aspirations and dilemmas is the most effective way to ensure that the user perspective is included in design; Gaver et al. (2003) suggest that designers may

establish deeper and more personal relationships with users' experience when they interpret the data themselves; and Beyer and Holtzblatt (1998) and Sleeswijk Visser et al. (2007) claim that active engagement in data interpretation encourages designers to make the data their own and increases their acceptance and use of the data. In the Baby Care project, engaging designers in interpreting the gathered user data was found to be a successful approach in that the design team members became involved with the user data, and generated several ideas about possible futures of baby care that they had not identified before.

Implication 2 – Share the researchers' findings as well as the users' stories

Establishing creative understanding in dialogue requires each participant to have surplus of meaning. For situations of trialogue, this requirement implies that representations of user experience should reflect users' surplus of meaning. The user data that is gathered in user research generally reflects users' surplus of meaning rather well. However, sharing an extensive set of unstructured user data is usually not an option in NPD practice, as limited resources, including time and research skills, simply do not allow designers to study all the user data that has been gathered in user research. Nor would a situation in which the user researcher passes all the user data to the design team, and refrains the team from his/her expertise and experience, be a desirable one (e.g., Diggins & Tolmie, 2003; Koskinen, 2003).

In many industrial organizations, including Philips Research, the common practice is to share the results, conclusions and recommendations of user research by means of a report or presentation (Postma et al., 2012b; Sleeswijk Visser et al., 2007). Such reports and presentations generally present the user researchers' conceptualizations of the user data, and thus reflect the user researchers' surplus of meaning, rather than the users' surplus of meaning. As we just explained, the user researchers' surplus of meaning is valuable and needed in building creative understanding, but it cannot replace the users' surplus of meaning. So, user researchers need to navigate between the two extremes in sharing rich user data in situations of trialogue; they need to balance user data with conceptualizations of the data, and provide design teams with detail as well as overview.

Getting this balance right is a challenge that is well recognized and discussed by design researchers and practitioners in the literature. Three main influencing factors in sharing rich user data may be identified from their lines of argument. The first factor is the purpose of the user research. Establishing creative understanding involves gaining inspiration and empathy as well as information. However, the emphasis of the research effort may slightly shift between gaining empathy and inspiration for design on the one hand, and developing informed argumentation for decision-making on the other. The former situation implies a shift towards sharing the rich user data the way they were collected, whereas the latter situation implies a focus on sharing conceptualizations of the data (e.g., Koskinen, 2003; Sleeswijk Visser et al., 2007).

The second factor involves the expectations, needs and preferences of the design team members. Design teams' needs and preferences regarding user understanding may vary across different phases of NPD (e.g., Goodman et al., 2006), as well as across individual team members. Whereas some designers like to receive rich user data in a way that allows them the freedom to form their own concepts of user experience, others prefer to get the user researchers' interpretations of the data; e.g., because they feel that a particular focus is needed

to prevent the team from heading in the wrong direction (e.g., Goodman et al., 2006; Gruen et al., 2002). Likewise, some designers want to be actively engaged in user research, whereas others consider user research to be the responsibility of the user researcher. In the Baby Care project, for instance, we decided to tip the balance towards sharing unstructured user data, as most designers had an affinity for research and appreciated to engaged in the user research.

The third factor concerns the resources of the design team. Project resources, including time, budget and skills, may limit the degree of involvement of design team members in user research (e.g., Goodman et al., 2006; Sleeswijk Visser et al., 2007). When sharing rich user data in situations of trialogue, all three factors should be taken into consideration to rightly balance users' surplus of meaning and user researchers' surplus of meaning.

Implication 3 – Invite designers to connect their own personal situation to the user's situation

Establishing creative understanding in dialogue requires each person to engage from his/her own perspective, and to bring his/her own sets of value and meaning to dialogue. For situations of trialogue this requirement means that designers should use their own ideas and perspectives in interpreting user data for design. In the Baby Care project, we encouraged outsideness by inviting the design team members to reflect on- and compare their own, personal situation to the parents' situations in the immersion phase. The team members sometimes struggled to relate their own situation to the parents' situations when these situations were very different; however, the exercise succeeded in bringing the team members' individual ideas and perspectives on the table in trialogue, and facilitated discussion of user experience during the insights session significantly. This discussion was important for bringing the individual ideas and perspectives together in a shared understanding of user experience that would form the backbone of the concept design in the further NPD process.

Implication 4 – Develop tools for sharing user data that fit with the designers' practices and cultures

To establish creative understanding in dialogue, participants in dialogue need to show addressive surplus, and invite each other to respond creatively. For situations of trialogue this means that representations of user experience should invite the designers to read, interpret and rephrase user experience for design. One way to accomplish this is to develop tools and techniques for sharing rich user data that fit with the designers' practices and cultures, including their ways of communicating knowledge about users. The tools and techniques do not necessarily need to be the same as the ones that the designers are already familiar with; user researchers may also choose to slightly challenge established practices to raise the designers' curiosity and interest.

In Baby Care project, we challenged the design team's established practices with mixed success. The idea of an immersion kit was new to the team and motivated them to immerse themselves in the user data and to complete all five exercises in the kit; however, the large number of individual cards with data in the kit did not help them to get the full picture of the parents' experiences in immersion – all parts fell into place only when they started to share their observations and findings during the insights session.

Addressive surplus in trialogue may also be accomplished by creating representations of

user experience that are open-ended, as we will explain in the next section.

Implication 5 – Create representations of user experience that are open-ended

Another way of accomplishing addressive surplus in situations of trialogue is to create representations of user experience that are open-ended, as opposed to representations that are finalized. Representations that are finalized, or that appear to be finalized, may even have the opposite effect and close off reflective conversation, Wright and McCarthy (2005) caution. User researchers' may establish open-endedness in sharing the rich user data by presenting raw user data (in the way explained earlier), and by providing designers with different perspectives on the user data (e.g., Wright & McCarthy, 2005). For example, in the Baby Care project, we organized the user data around five themes (e.g., "bedtime ritual", "division of caring roles", "community of parenting"), thereby providing the designers with different frames of analysis in immersion. Alternatively, user researchers may choose to combine different sources of user data or different conceptualizations of the data in creating representations of user experience in trialogue.

In the design research literature, it is suggested that providing different perspectives on the user data may also benefit the quality of data interpretation. Diggins and Tolmie (2003), for example, suggest that providing multiple views may stimulate designers to look beyond the mere representation of the data and avoid fixation in identifying opportunities for concept design.

4.4 Conclusions

This chapter introduced the concept of trialogue as a framework for sharing rich user data in new product development practice. Five implications of trialogue for practice were identified and discussed in view of our experiences with NPD at Philips Research. These implications may be adopted in Philips Research and in similar organizations. Design researchers and practitioners may also use trialogue to identify successful ways of sharing rich user data in their own NPD practices. Used in this way, trialogue is different from many other communication guidelines in the design research literature that are evaluative rather than generative.

5 Social theory as a thinking tool for Empathic Design*

Recent societal issues and socio-technological developments, including the mass adoption of real-time social media services (Contagious, 2009), have made "the social" (i.e., the relationality inherent in human existence) an essential topic for design. Despite the fundamentally social nature of life, most existing frameworks intended to generate perspectives of users in design still focus on the individual. To support user researchers and designers in empathic design, we** set out to find a possible conceptual framework that could serve as a "thinking tool" of the social – a model that sensitizes designers towards both relationality and individuality in building creative understanding of user experience for design. In this chapter, we review a number of possible frameworks and describe our experiences in applying these frameworks in new product development (NPD) practice.

The chapter proceeds in three parts. First, we explain the context of our search to new readers, and identify search criteria. Second, we review five types of existing frameworks: "special effect theories", "relational frameworks", "catalogues", "metaphors", and "scaffolds of context". In the third part, we focus on Activity Theory as having the best fit with design teams' needs, and show how we used it within the *Baby Care* project at Philips Research (chapter 2).

5.1 Criteria for assessing frameworks for Empathic Design in practice

Empathic design is a relatively new branch of user-centered design approaches that support design teams in building creative understanding of users and their everyday lives for NPD (e.g., Fulton Suri, 2003a; Koskinen & Battarbee, 2003; Sanders & Dandavate, 1999). The approach is considered most valuable in the fuzzy front end of NPD, when product opportunities need to be identified and product concepts developed (Koskinen and Battarbee, 2003). Empathic design uses a variety of methods and techniques, including design probes (Mattelmäki, 2006), generative techniques (Sanders, 2000), contextmapping (Sleeswijk Visser et al., 2005), and experience prototyping (Buchenau & Fulton Suri, 2000). These methods and techniques are typically design-led (as opposed to research-led) in that they focus on understanding and transforming users' experiences (Battarbee, 2004; Steen, 2008). The idea is not to find the ultimate truth about people and their environment, but to build an understanding that enables designers to propose possible new futures (Kurvinen, 2007).

Based on a literature review, Postma, Zwartkruis-Pelgrim, Daemen, and Du identified four principles of empathic design (Postma et al., 2012b):

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* Based on: Postma, C.E., Lauche, K. & Stappers, P.J. (2012) Social theory as a thinking tool for empathic design. *Design Studies*, 28(1), 30-49.

** In this chapter, "we" refers to the authors of the paper "Social theory as a thinking tool for empathic design" (2012), i.e., C.E. Postma (Delft University of Technology), K. Lauche (Delft University of Technology), and P.J. Stappers (Delft University of Technology).

- Addressing people's rationality and their emotions in product use in a balanced way by combining observations of people's actions with interpretations of their thoughts, feelings, and dreams.
- Making empathic inferences about prospective users, their thoughts, feelings, and dreams, and their possible futures of product use.
- Involving users as partners in NPD, so that researchers and designers can continually develop and check their creative understanding in dialogue with users.
- Engaging the design team members as multi-disciplinary experts in user research, thus encouraging researchers and designers to join forces in designing and conducting user research to ensure that the users' perspectives are included in NPD.

The first two principals have implications for the qualities of the intended thinking tool of the social. The third and fourth principles determine the context in which the thinking tool of the social will be used. In new product development (NPD) practice, direct interaction between users and designers is not always feasible as the user research is frequently sourced from a third party, e.g., an external consultancy or an internal user research team. Consequently, rich user data that is gathered in user research needs to be captured and shared with the design team. The richness and basis for building creative understanding of user experience is often lost in this process (Postma et al., 2012b; Sleeswijk Visser, 2007).

Chapter 4 explained that a possible solution is to engage the design team in reading and interpreting the data after they have been pre-structured and pre-analyzed by the user researchers. By reading and interpreting the data, team members make the data their own and build creative understanding of user experience (Postma et al., 2009). To facilitate this process for designers, we dove into social theory, aiming not to develop a new model of the social, but to find a theoretical framework that design teams in practice could use as a thinking tool of the social in reading and interpreting user experience data.

Five criteria formed the starting point of our search. The first criterion was informed by empathic design's objective that understanding users' experiences should drive the development of people-centered products and services. Sensitizing design teams to the social is not enough, however; designers also need to obtain a sense of how their designs relate to the social in envisioning possible futures of product use and in developing products and services that fit into people's social lives. Therefore, the framework needs to address the social in relation to the materiality of product use.

The second criterion was informed by the constraints of empathic design in NPD practice, in which not every design team member is experienced in user research. Because we potentially want to engage all team members in interpreting user data, the framework should provide experienced user researchers with (new) perspectives of the social, while also offering designers "handles" for the social. Such "handles" include Beyer & Holtzblatt's work models in the contextual design approach (Beyer and Holtzblatt, 1998). They provide a limited set of concrete themes or perspectives along which findings from user research can be organized. However, their models fall short as a thinking tool of the social in empathic design because contextual design mainly focuses on examining the rational domain (Jääskö & Mattelmäki, 2003; Sleeswijk Visser, 2009). Moreover, contextual design does not offer a theoretical framework that designers (and researchers) may use as a thinking tool in interpreting and explaining social practices.

Three further criteria were taken from Bederson and Shneiderman's classification of theories and frameworks (Bederson & Shneiderman, 2003; Shneiderman, 2006). They identify five categories: (1) descriptive frameworks that identify key concepts; (2) explanatory frameworks that explain relationships and processes; (3) predictive frameworks that help predict performance of people, organizations, or economies; (4) prescriptive frameworks that provide guidelines based on best practice; and (5) generative frameworks that support generating new ideas by providing ways of seeing what is missing and what needs to be done. The thinking tool we propose requires a framework that is descriptive of the social and material, explanatory of relationships and processes, and generative in terms of facilitating the identification of patterns and trends in user data and of opportunities for NPD. The framework also might be prescriptive in that it suggests ways of studying user experience data; however, these ways should not interfere with designers' established practices and cultures to such a degree that they keep designers from using the framework (Postma et al., 2009; Sleeswijk Visser, 2009).

5.2 Examination of possible frameworks

On the basis of the criteria identified, we examined frameworks in the literature and tried out candidate frameworks in NPD projects in industry. We began our search in social psychology and environmental psychology literature and then expanded the search to the human-computer interaction (HCI) and computer-supported cooperative work (CSCW) literature, where social frameworks are commonly used in studying collaborative work. Frameworks that, in terms of the criteria, appeared to be useful as a thinking tool of the social in empathic design were tried out together with multi-disciplinary design teams in industry. The researchers' and the teams' experiences in applying these frameworks led to new criteria, which in turn focused the search process.

The frameworks included in our study can be categorized into five groups: (1) special effect theories, (2) relational frameworks, (3) catalogues of the social, (4) metaphors of the social, and (5) scaffolds of context. An overview of the groups and our findings in terms of new search criteria is presented in table 5.1 and discussed in the following paragraphs. The sequence in which the groups are discussed more or less delineates our search process.

5.2.1 Special effect theories

The first category covers *special effect theories* that highlight one or a few concepts regarding behaviour in social or material contexts. We found many of these theories in environmental psychology and in social psychology, ranging from mini-theories, which apply to specific phenomena, to more general theories, which apply to classes of behaviour (Hogg & Vaughan, 2005). An example of a mini-theory is the Ringelmann effect, which holds that an individual's effort in a task decreases when group size increases (Hogg & Vaughan, 2005). Two examples of more general theories are proxemics and social identity theory. Both theories are further explained in box 5.1.

In HCI and design, special effect theories have been successfully used to envision how products and services might affect social practices and to confirm findings from user research (Benyon et al., 2005). In a design project about teens' cliques, for example, the user researchers consulted literature about group structures to determine whether they had

Table 5.1. Examples of Empathic Design in an industrial context

Group	*List of Criteria*
	1. The framework needs to address the social in relation to the material.
	2. The framework needs to provide experienced people researchers with (new) perspectives of the social, and offer designers handles to the social in reading and interpreting user experience data.
Relational frameworks	2.1. The framework needs to provide handles of the social in terms of variables or ingredients that design teams may use as anchor points in reading and interpreting user data.
	3. The framework needs to point out key concepts of the social and material that design teams need to pay attention to in building creative understanding of users' experiences.
Special effect theories	3.1. The framework needs to be holistic in scope to support design teams in building broad understanding of users' experiences in the early phases of NPD.
	4. The framework needs to offer design teams ways of interpreting and explaining user experience data by revealing relationships and processes of the social and material.
	5. The framework needs to facilitate seeing patterns and trends in user data, supporting design teams in generating user insights and identifying opportunities for design.
Metaphors of the social	5.1. The framework needs to support teams in taking user experience data to a higher level of understanding for identifying themes, patterns and trends in the data.
	6. The framework needs to offer multiple levels of description and explanation to support analysis of user experience data in different phases of an empathic design process.
Catalogues of the social	7. The framework needs to be generally applicable to support design teams in transforming as well as understanding users' experiences.
Metaphors of the social	8. The framework should allow for use in a half-day session

overlooked roles in teens' cliques (Postma & Stappers, 2006). In a project about baby care, the user researchers used literature about parenting styles to develop criteria for segmentation of families. However, we found that special effects theories were not particularly helpful thinking tools of the social in developing a broad understanding of user experience as a starting point for identifying opportunities for product and service development, because they only address part of human behaviour in context. This finding led to a new search criterion: *The framework should be holistic in scope to support design teams in building broad understanding of user experience in the early phases of NPD* (criterion 3.1).

5.2.2 Relational frameworks

Relational frameworks describe the nature of the relationships between people and their environment. They are generic frameworks in the sense of conceptual approaches or theoretical perspectives. Three examples of relational frameworks are presented in box 5.2; situated action (Suchman, 1987), behavior settings theory (Barker, 1968), and Gibson's theory of affordances (Gibson, 1979). In addition, actor network theory (Latour, 2005) and Battarbee and Koskinen's framework of co-experience (Battarbee & Koskinen, 2005) may be seen as falling into this category.

For social scientists, relational frameworks have provided new perspectives on studying and interpreting human behaviour. Stressing the improvisational nature of human action, situated action invited researchers to study the moment-by-moment organization of an activity in real settings. Behavior settings theory introduced the idea of environmental units that direct human behaviour and prompted researchers to identify and study relations between extra-individual patterns of behaviour and settings that are specified in time and place. The concept of affordances provided a lens to look at relations between properties of an environment and individuals' history, abilities, and intentions.

For designers, however, these relational frameworks are generally more difficult to apply because they typically do not offer "handles" of the social. They provide only very limited guidance as to what aspects of behaviour and environment should be considered in studying social phenomena because the frameworks do not specify variables or ingredients of the social. That designers seek this guidance is nicely illustrated by the shift of meaning of Gibson's concept of affordances in HCI and design, where an operational redefinition has evolved that sees affordances as "opportunities for action suggested by an object," which is far removed from its original meaning. We therefore concluded that *the thinking tool of the social should provide "handles" of the social, which are the variables or ingredients that design teams may use as anchors in reading and interpreting user data* (criterion 2.1).

5.2.3 Catalogues of the social

Catalogues in this case means the maps of people's behaviour in their social and material contexts. Such maps often are developed on the basis of personal experience and/or empirical research. Seminal work in this regard is the concept of pattern language proposed by Alexander, Ishikawa, and Silverstein (1977). The book offers a typology of solutions that architects might incorporate in the development of towns and buildings. The typology is presented as a system of patterns that describe relationships between people and their surroundings and that were developed based on years of experience with building and planning. Each pattern,

Box 5.1. Special effect theories

Hall (1966) introduced the term "proxemics" to refer to the study of how people unconsciously structure their immediate surroundings. One type of spatial organization is "informal space," or "interpersonal distance." Interpersonal distance is one way people use to establish and maintain a desired level of involvement in social interaction, e.g., in greeting, caressing or conversing. Hall distinguished four distance zones, ranging from very close to the individual to further away: An intimate zone, a personal zone, a social zone, and a public zone. Which zone people adopt depends on the context of the social encounter; the setting, social relationship and environmental conditions. In some situations, people are not able to adopt their preferred social distance, for example, in an elevator or crowded train, which may lead to discomfort (Aiello, 1987; Bechtel, 1997).

Tajfel and Turner (1979) introduced *Social Identity Theory*, a theory of social change that has been very influential in social psychology. The theory focuses on how social context affects self-concept and social behaviour. People describe themselves differently and sometimes also behave differently in different social contexts, for example, in front of colleagues at work, or with family at home. Social identity theorists distinguish two different classes of identity: personal identity and social identity. Personal identity is the individual's self-concept derived from his/her attitudes, memories, behaviours and emotions. Social identity is the individual's self-concept derived from perceived membership of social groups. People have as many personal identities as they have interpersonal relationships that they feel engaged in. And they have as many social identities as groups they feel they belong to. The personal or social identity that is most salient at a given time shapes our concept of self and corresponding behaviour (Hogg & Vaughan, 2005).

Box 5.2. Relational frameworks

Situated action studies the relation between acting individuals and their changing environment. The term "situ¬ated action" was first introduced by Lucy Suchman in her book "Plans and Situated Actions" (1987) to stress the emergent, improvisatory character of people's activi¬ties. The book is a critical response to the information-processing paradigm, which models people as cognitive systems that pursue action after having set goals and having developed plans. Suchman, taking an ethnomethodological stance, argued that the structure of activity is not planned, but evolves in response to real-world situations that are inherently dynamic. Suchman does recognize the existence of plans, but merely as one of several resources within the situa¬tion that may shape an activity. Goals, she argues, are defined in retrospect. Suchman uses the example of canoe¬ing in explaining the idea of Situated Action: "In planning a series of rapids in a canoe, one is very likely to sit above the falls and plan one's descent. (…) But, however detailed, the plan stops short of the actual business of getting your canoe through the falls. When it really comes down to the details of responding to currents and handling a canoe, you effectively abandon the plan and fall back on whatever embodied skills are available to you." (Suchman, 1987, p.52; Nardi, 1996b).

Behavior Settings theory focuses on the relationship between extra-individual

behaviour and environmental units. From detailed field observations Barker (1968) found that human behaviour is not randomly distributed across time and space; "the inhabitants of identical ecological units exhibit a characteristic overall extra-individual pattern of behavior," he argued (Barker, 1968, p.10). In a school class, for example, teacher and students behave "school class." In the supermarket people, including the teacher of the school class, behave "supermarket." And during a meeting of the teachers of the school, the teachers behave "staff meeting." Barker called the physical-behavioural units "behavior settings." Behavior settings are "stable, extra-individual units with great coercive power over the behavior that occurs within them" (Barker, 1968, p.17).

Gibson proposed an ecological approach to perception. In his book "The Ecological Approach to Perception" (1979), he described a new paradigm for understanding human activity in context, focusing not on the actor and (part of) his/her environment as independent things, but rather on the relations between actor and environment. He introduced the term "affordances" to mean the full set of potential actions that an environment holds in store for a particular actor. For example, a ladder affords an adult to climb up and down, but it does not afford a baby to climb up and down. Information about affordances is available to the actor's senses. The actor's attunement to particular affordances is determined by his/her needs and intentions, personal history and context (Gibson, 1979; Smets, 1986).

Several people have elaborated on Gibson's concept of *affordances* for understanding the social. Gaver, for example, introduced the term "Affordances for Sociality" to refer to the possibilities offered by the physical environment for social activity. An example of affordance of sociality is the table setting presented in figure 1.5 (Gaver, 1996). Valenti and Good used Gibson's ecological approach to perception as a framework for studying social interaction. They introduced the term "Social Affordances," meaning the possibilities for action that people offer one another, and the role of other people in pointing out new affordances. People may, for example, afford one another comforting, fighting, or play (Valenti & Good, 1991).

in essence, reports a problem, the context in which the problem occurs, and a solution to the problem. For example, in the context of designing a family home, Alexander et al. suggest that architects may address the problem of creating quiet and private spaces for parents by designing the family home in such a way that the continuum of spaces where children live and play does not include the parents' realm (Alexander et al., 1977).

In HCI and CSCW, social scientists have seized the idea of a pattern language as a way to structure and document ethnographic field data and to produce guidelines for design that transcend the particularities of the data, but that are still grounded in the real world (Hughes et al., 2000). Crabtree, Hemmings and Rodden, for example, have developed a framework for identifying patterns of social action and technology use in domestic settings (Crabtree et al., 2002). Martin, Rodden, Rouncefield, Summerville and Viller have used patterns from ethnographic user research to inform the development of computer systems (Martin et al., 2001; Martin et al., 2002).

For our goal of developing patterns for considering the social in empathic design, we had neither decades of experience from practice nor extensive field data to rely on. In addition, because patterns are context-specific, they might not be helpful in envisioning radically new situations of product and service use in empathic design. A framework for the social in empathic design needs to be generally applicable to various situations of product and service use, including situations that do not yet exist.

A possible solution to both issues is to take a "top-down" approach, rather than a "bottom-up" approach in developing patterns. Kelley, Holmes, Kerr, Reis, Rusbult and Van Lange's "An atlas of interpersonal situations" is a good example of a pattern language that was developed using a top-down approach (Kelley et al, 2003). They developed patterns by describing and analyzing common social situations using one theoretical framework: interdependence theory. The resulting atlas presents both the framework and the patterns. Kelley et al.'s atlas does not address the social in relation to the material, but the idea of combining both a framework and patterns is interesting because it provides both the perspectives and the handles to the social that we are looking for: It offers a thinking tool of the social that enables design teams to envision radically new situations of product and service use that go beyond the scope of the context-specific patterns, as well as concrete examples of the social in terms of patterns that help design teams think about the framework. Such patterns could be developed once a suitable framework has been found.

As a new search criterion, we conclude that *the framework needs to be generally applicable to support design teams in both understanding and transforming users' experiences (criterion 7)*.

5.2.4 Metaphors of the social: The theatrical metaphor

The third category is "metaphors". Metaphors are used for understanding one concept in terms of another. In the field of design, two important uses of metaphor may be distinguished: (1) metaphor as an expressive tool, of which the desktop metaphor in computing is a well-known example (e.g., Van Rompay, 2005); and (2) metaphor as a generative instrument, which means transferring the structure of one concept to the other to develop new ways of seeing both concepts (Casakin, 2006; Schön, 1963).

The latter sense of metaphorical thinking is also used in social sciences in interpreting and

explaining social phenomena. Taylor and Harper (2003), for example, used Mauss' metaphor of gift-giving to interpret their observations of teenagers' text messaging practices (Taylor & Harper, 2003). Other examples of metaphors used as generative instruments in social sciences are game metaphors, such as the prisoner's dilemma and the theatrical metaphor (Rigney, 2001). For us, Goffman's use of the theatrical metaphor is of particular interest.

Goffman, a sociologist and important contributor to symbolic interactionism, is renowned for his dramaturgical analysis of social encounters (Charon, 2004). In "The presentation of Self in everyday life", he used the theatrical metaphor as a framework in analyzing and explaining the structure of social encounters, viewing the world as a stage, people as actors, and social interaction as drama (Goffman, 1959). The metaphor prompts questions such as: Who is the performer, and who is the audience? What is front stage, and what is back stage? What does the décor look, hear, smell, and feel like? What are the plot outline and the run time of the performance? Which tools of expression are used in the performance, and for which goal? What are the (social) roles of the performers? What are the performers' motivations, emotions, beliefs, and attitudes in relation to the performance? How are the performers' behaviours on stage different from their behaviours backstage? The framework is explained in more detail in box 5.3.

Examining metaphors on the basis of literature suggests that Goffman's framework would be an excellent thinking tool of the social for empathic design: The framework is holistic in scope; identifies key concepts and ingredients of the social and material (e.g., "front stage-back stage" and "tools of expression"); and reveals relationships and processes (e.g., "performance" and "script"). It is already widely used as generative instrument in social sciences, and we thought it might be used as generative instrument in design thinking as well. However, when we tried out the metaphor as thinking tool of the social in projects in industry, we found otherwise.

We applied the theatrical metaphor as thinking tool of the social in user insight sessions in three different NPD projects in industry. The aim of the sessions was to build creative understanding of user experience as a starting point for developing opportunities for design. In the first project, the team members used the metaphor to structure their observations and findings from user research (figure 5.1). In the second project, the team members used the metaphor in reviewing their interpretations of user experience data. In the third project, the team used the metaphor in developing scenarios based on their analysis of user experience data.

Our experience with the theatrical metaphor as thinking tool showed that it raised interesting discussions of the social, but it was not a helpful thinking tool in the early, exploratory phases of NPD. Three important findings from the cases informed our further search. First, the metaphor did not support broad exploration of users' needs and contexts. The NPD teams were concerned with drawing the big picture, which contains many performances, before choosing a particular focus for their projects. However, the theatrical metaphor already required the teams to focus on one specific performance or action in the user data and to analyze this performance in detail, leaving off the radar other potentially interesting parts of the user data.

Second, the metaphor did not support the need to identify patterns and trends in the data. The teams needed to develop a higher-level, a more general understanding of the user data to

Box 5.3. The theatrical metaphor

Erving Goffman is considered to be an important contributor to Social Interactionism, a major sociological perspective that focuses on the process of meaning making in social interaction (Charon, 2004). In "The presentation of Self in everyday life", Goffman uses the metaphor of theoretical performance as a framework in explaining and analyzing the structure of social encounters between people. He views the world as a stage, people as actors and social interaction as drama. "The world is not, of course, a stage, but the crucial ways in which it isn't are not easy to specify," Goffman maintains (Goffman, 1959, p.72). Key factor in this structure, Goffman argues, is the process of developing and maintaining a shared understanding of a situation, including Self (i.e., "impression management"). "Each person in everyday social intercourse presents himself and his activity to others, attempts to guide and control the impressions they form of him, and employs certain techniques in order to sustain his performance, just as an actor presents a character to an audience," he explains (Goffman, 1959). Important concepts of the metaphor include:

(i) Performance. In their performance, the performers consciously or unconsciously project their roles and their definition of the situation to the audience. The audience observes the performance and makes inferences about the performers (e.g., their motives, emotions, beliefs, attitudes) and the performers' definition of the situation. The roles of performer and audience may switch continuously.

(ii) Location. Front stage is where the performance takes place and both performers and audience are present. Back stage is where the performers are present, but the audience is not. Here the performers can relax and behave out of character. The waiter of a restaurant (i.e., performer), for example, may be very polite and charming in front of the customer who complains about the food (i.e., audience). But once back in the kitchen (i.e., back stage), the waiter and his colleague may imitate the customer and make fun of him. Note that the back stage in one performance could be the front stage in another performance. In the example, the waiter and his colleague in the kitchen also perform in front of each other.

(iii) Script. Prescribes the performance: What happens to whom, when, where, how and why? How is tension built up? When does the scenery change?

(iv) Tools of expression. Vehicles for conveying signs that the performers, either or not consciously, use in their performance. There are three types of tools: appearance tools, e.g., clothing, posture, age; behaviour tools, e.g., facial expressions, attitude and gestures; and setting tools, e.g., stage props, physical lay-out and scenery.

(v) Social role. Each performer has a particular social role, e.g., the role of 'father', 'manager', or 'teacher'. Social roles involve one or more parts, or 'routines'. A part is a pre-established pattern of action that is unfolded during a performance. The performer may play the same part on different occasions.

generate user insights and develop opportunities for design. But the theatrical metaphor led the teams to delve into the complexity of the social within the boundaries of one case.

Third, the theatrical metaphor required too much time to understand and apply in the context of a user insights session. The team members of the third project indicated that they preferred not to use the metaphor because they thought it was too difficult to grasp within the time frame of an insights session. Similarly, in the first project, the metaphor often put team members out of their depth in a way that paralyzed the creative process. Three new criteria were drawn from these findings:

- The framework needs to offer multiple levels of description and explanation to support analysis of user experience data in different phases of an empathic design process (criterion 6).
- The framework should support teams in taking user experience data to a higher level of understanding for identifying themes, patterns, and trends in the data (criterion 5.1).
- The framework should be applicable within a limited time, such as a half-day session (criterion 8).

5.2.5 Scaffolds of Context: Activity Theory

Our search concluded with Activity Theory (AT). AT is a framework for describing and explaining the structure, development, and social-cultural context of people's activities. The framework points out concepts of the social and the material that we need to take into account in developing an understanding of the what, how, and why of people's behaviour in their social-cultural context (Kuutti, 1996). It spurs questions such as: What is the activity? Who are the people involved in the activity? Why do they do the activity (i.e., what is their objective)? What actions and operations do they do in pursuing the objective? What tools do the people use in achieving the objective? How do these tools mediate their activity? What roles do the people have in pursuing the objective? How do the people work together in the activity; what are their rules, norms, and procedures? How does the activity develop over time?

Activity Theory in a nutshell

Although called a theory, AT is best described as paradigm of human activity (Benyon et al., 2005). AT has its roots in early twentieth century Russia, where its first foundations were laid by Lev Vygotsky in developing his cultural-historical psychology (Vygotsky, 1962). AT was further developed into a conceptual framework by his colleague, Alexei Leont'ev (Leont'ev, 1978). Only in the early 1980s, after seminal work on AT had been published in English, did the conceptual framework become known internationally. In 1987, Yrjö Engeström presented a framework of human activity in a social-cultural context that builds on Leont'ev's AT (Engeström, 1987; Engeström, 2001; Kaptelinin and Nardi, 2006; Kuutti, 2009).

Two fundamental ideas lie at the heart of AT: (1) "Unity of consciousness and activity", which is the idea that the human mind can only be understood in the context of people's interaction with the world; and (2) "social nature of the human mind", which means that human interaction, or "activity", is situated in and shaped by social and cultural context (Kaptelinin & Nardi, 2006; Kaptelinin et al., 1999). AT thus transcends dichotomies between mind and world and between individual and social.



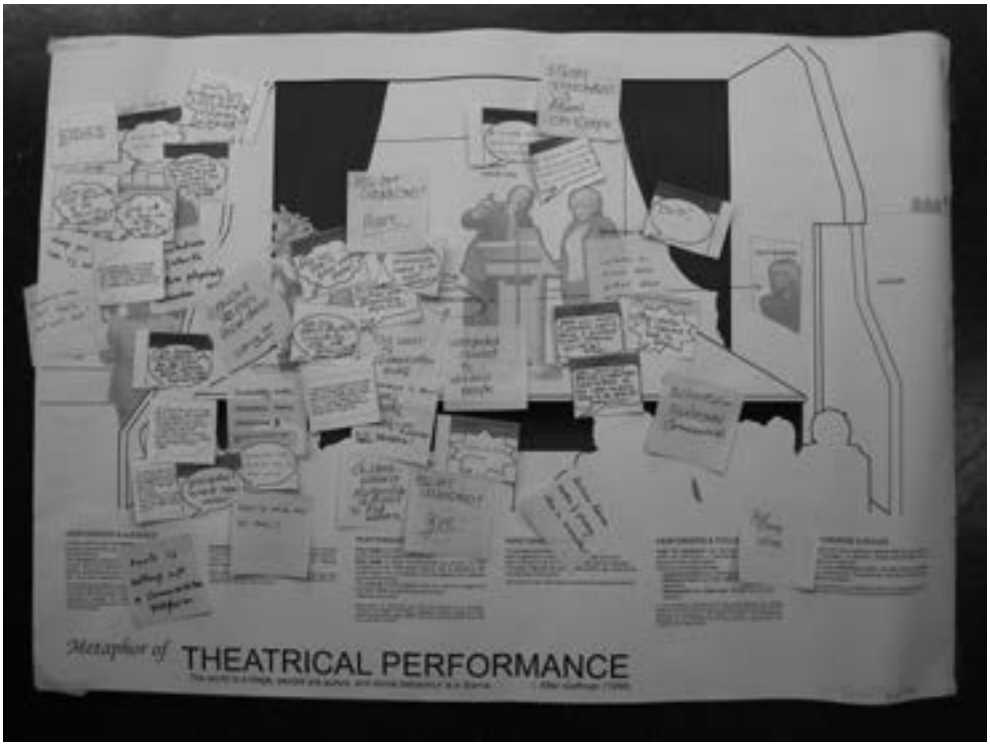

Figure 5.1

Insights session in the Social Presence project

In a user insights session about social presence, Goffman's (1959) theatrical metaphor was used to structure observations and findings from user research. The metaphor raised interesting discussions about the scope of the project. But did not support the design team in building broad understanding of user experience, as the designers' observations and findings from the user research did not deliver the kind of detail required by the metaphor.

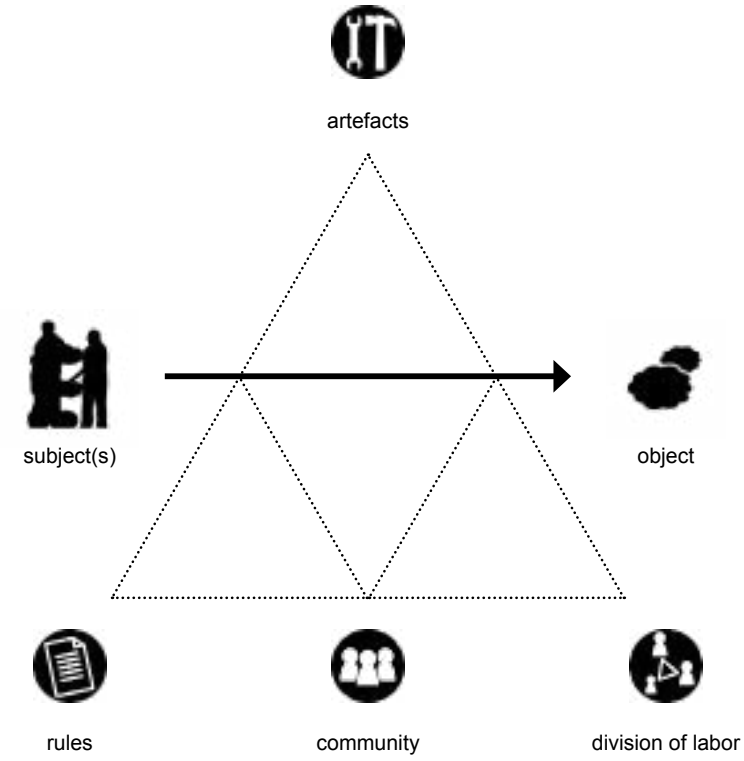

Figure 5.2

Engeström's model of an activity system, adapted from (Engeström, 2001)

Figure 5.2 shows Engeström's model of an activity system (Engeström, 2001). The activity system is the basic unit of analysis in AT. The model includes six components: subject (an individual or group); object (or objective); mediating artifacts; rules; community; and division of labor. The upper half of the triangle basically represents the material context of an activity and the lower half the social context. The horizontal arrow in the center of the model symbolizes human activity. The activity system is framed by five basic concepts: "object-orientedness", "activity hierarchy", "internalization and externalization", "mediation", and "historicity and development". The concepts each address one part of the activity system. AT argues that all five concepts need to be considered in developing understanding of an activity system. We use the example of baby care to explain the five concepts in greater depth. In this example, the subjects (i.e., the people engaged in the activity) are first-time parents Mark and Laura, and the activity is caring for their baby, Roos.*

The first concept is *object-orientedness*. Human activity is always directed towards an "object." Objects motivate and direct activities; they appeal to the subjects' needs and desires. Originating from its German and Russian roots, the term "object" incorporates two meanings—namely the (physical) object one is seeking to transform in the activity (e.g., the stone that a sculptor is shaping) and the objective that one is aiming to achieve (e.g., the sculpture that the artist has in mind while shaping it) (Engeström & Blackler, 2005; Kaptelinin, 2005). Mark and Laura's object of baby care is a healthy and happy baby Roos. Mark and Laura's community of baby care includes their parents, their close friends Bram and Marije, the daycare center, and the child health center. The concept of object-orientedness helps us to develop understanding of the ultimate "why" of their actions in caring for baby Roos.

Note that from an AT perspective, exploratory design research should not be about uncovering people's latent needs, but about following objects that motivate people's activities. This perspective may shed a different light on the development of tools and techniques that are frequently used in empathic design, such as design probes (Mattelmäki, 2006), generative techniques (Sanders, 2000), and experience prototyping (Buchenau & Fulton Suri, 2000).

The second concept is *activity hierarchy*. An activity can be deconstructed into actions and lower-level operations. Actions (similar to "tasks" in HCI) are directed towards goals (e.g., constructing a sentence to convey a message). Actions and goals are conscious. Operations, meanwhile, are routinized or automated behavioural routines and are typically unconscious (e.g., typing, or switching gears when driving). Caring for baby Roos involves both actions and operations, including singing a lullaby, changing her diapers, taking her to the health center, and getting up at night to feed her.

The levels of an activity are not fixed. Actions may become automatic operations, and operations may become conscious actions. In the case of Mark and Laura, for example, changing diapers used to be a conscious action, but then it gradually turned into a routine operation with practice. At one point, the operation of changing diapers had become a conscious action again when Mark had mistakenly bought diapers that are fastened in a different way.

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* The names in this example are fictitious, but the example is based on a real case.

The third concept is *internalization and externalization*. AT distinguishes between internal, mental activities and external activities and argues that one cannot be understood without the other because they transform and influence one another (Vygotsky, 1962). External activities become internalized when people learn to do an activity in the head without using any physical aids. To illustrate, Mark and Laura initially needed to figure out what made Roos cry. After a few weeks, they started to recognize and distinguish her cries and immediately knew what action to take. Internal activities are externalized when an activity is too difficult to do without physical aids, when the activity does not turn out right, or when people need to coordinate the activities in working together. For example, Roos was ill and wouldn't stop crying, despite all efforts to comfort her. At first, Mark and Laura did not understand what was wrong; they again needed to figure out why Roos was crying and what action to take.

The fourth concept is *mediation*. People's activities are mediated by artifacts, the division of labor and rules. All three form more durable structures that persist across activities, time, and place. The durable structures shape activities and at the same time are developed and transformed in activities. They reflect the experiences of others who have pursued similar objectives or goals. Artifacts, or "tools," are thinking tools as well as physical tools that the subject uses in pursuing his/her object. Mark and Laura's tools of baby care include a comforting lullaby, Roos' bedroom, her favorite teddy bear, and a playpen. Rules refer to implicit and explicit norms and conventions that govern the relationship between the subjects and their community. For example, the child health care center, which is part of Mark and Laura's community of baby care, advised Mark and Laura to build up a strict day routine for the baby that follows a sequence of four actions: feeding, playing, sleeping, and taking time for yourself. Mark and Laura are now trying to develop and adhere to such a routine. Division of labor is the organization of the subjects and their community in terms of roles and responsibilities. Laura usually brings Roos to bed. She tries to establish a bedtime routine by feeding Roos upstairs just before bedtime. Mark thinks it is too much trouble to feed Roos upstairs, so he leaves this up to Laura. In the meantime he does some household activities.

The fifth concept is *historicity and development*. Activities change and develop over long periods of time, and understanding an activity requires tracing how the activity has developed in the past. Contradictions (or "tensions") within or between activity systems are sources of change and development (e.g., Engeström, 2001; Kaptelinin & Nardi, 2006; Kaptelinin et al., 1999; Kuutti, 1996; Nardi, 1996b). In Mark and Laura's case, a contradiction between subjects and community led to a change of action: Mark and Laura changed Roos' sleeping routine after friends pointed out that Roos may get used to sleeping in her parents' bedroom and may not learn to sleep on her own.

AT as thinking tool of the social for Empathic Design

Prominent researchers in HCI and CSCW, including Suzanne Bødker, Kari Kuutti, Victor Kaptelinin, and Bonnie Nardi, have propagated AT as a framework for HCI research and interaction design (Bødker, 1996; Kuutti, 1996; Nardi, 1996a). AT has been used in a number of cases to analyze ethnographic data and formulate design requirements for social computing (e.g., Collins et al., 2002; Fjeld et al., 2002; Lauche, 2005). Some colleagues of Engeström have also used AT to study design practice and the effect of products on people (e.g., Hasu, 2001; Hyysalo, 2004). In both design research and design practice, however, AT

is still relatively unknown. Yet our examination of the literature suggests that AT could be a very powerful thinking tool of the social for doing empathic design in NPD practice:

- AT addresses the social in relation to the material (criterion 1). Unlike most theories in psychology, the framework accounts for artifacts. And unlike many approaches in the human factors discipline, the framework addresses social practice, as well as individual behaviour (Blackler, 1995; Engeström, 2000). Using AT could therefore help design teams to get a sense of how the products they design relate to people's social practices.
- The framework identifies components of the social and the material (e.g., division of labor and rules) that design teams can use as anchors in reading and interpreting user experience data (criterion 2.1). As studies in HCI and CSCW have demonstrated, AT also provides experienced user researchers with (new) perspectives of the social in analyzing and structuring user data (e.g., Bødker, 1996; Collins et al., 2002; Turner et al., 1999) (criterion 2).
- AT provides a comprehensive framework that emphasizes key concepts of the social and the material that design teams need to pay attention to in interpreting user experience data for design (e.g., mediation and object-orientedness) (criteria 3 and 3.1).
- The framework offers design teams ways of interpreting and explaining user experience data by revealing relationships and processes, such as the dynamic levels of an activity, historicity and development, and internalization and externalization (criterion 4).
- AT supports design teams' efforts to take user experience data to a higher level of understanding and to identify themes, patterns, and trends in the data. The idea of contradictions can also help to identify opportunities for product and service design (criteria 5 and 5.1).
- AT offers three levels of description and explanation (i.e., activity level, action level, operation level), supporting design teams in building broad understanding of user experience in the early phases of NPD, as well as more in-depth understanding in later phases of NPD (criterion 6).
- Design teams can apply AT in building creative understanding of various activities and contexts, including future situations of product and service use (criterion 7).

The only criterion that AT does not meet is that of allowing for use under the time constraint of a half-day session (criterion 8). AT is often considered hard to learn and difficult to put into practice (Benyon et al., 2005; Nardi, 1996a). Given this reputation, we cannot expect design teams in practice to understand and use AT in a way that social scientists do. Thus, the framework needs to be translated into more intuitive ways of building creative understanding of user experience for design. In the next section, we present an example of how we applied AT in an NPD project.

5.3 Activity Theory as a thinking tool of the social in an NPD project

We translated and applied AT as a thinking tool of the social in the *Baby Care* project. Figure 5.3 presents an outline of the empathic design process that we followed in the Baby Care project. This process was briefly described in chapter 2. The next subsection describes phases C (i.e., analyzing the data), D (i.e., immersing the design team), and E (i.e., insights session) of the process in more detail. In these phases, AT was used in building creative understanding

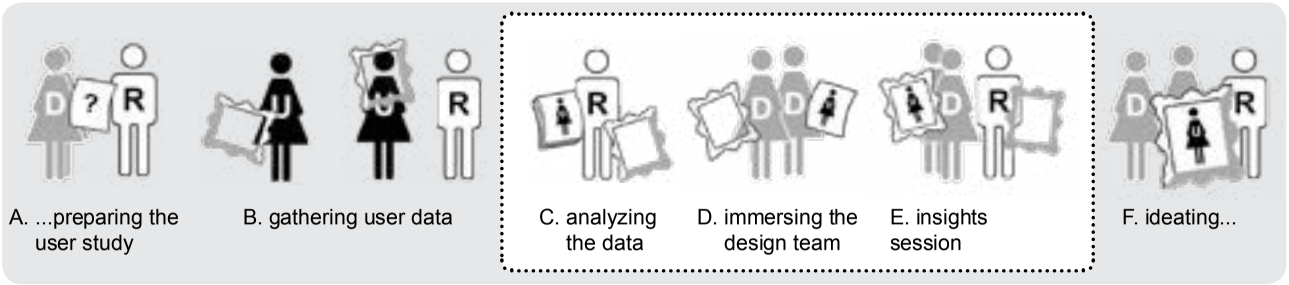

Figure 5.3

The empathic design process that we followed in the Baby Care project

The user researcher (puppet marked by "R") gathered user experience data in dialogues with parents ("U") during the first half of the process. In the second half of the process the user researchers prepared the user data for sharing with the design team. The user researchers facilitated the process with the help of representations (frames), such as probes, generative tools and immersion kits.

of parents and baby care.

5.3.1 Use of Activity Theory in the Baby Care project

In the analysis phase (phase C in figure 5.3), we (i.e., the user researchers) used AT as a thinking tool in structuring and analyzing user data. Initially we had followed an affinity diagramming approach in structuring and interpreting the user data: We annotated the data with observations and comments, put the annotated data on cards, and grouped the cards to identify themes (Holtzblatt et al., 2005; Nayak et al., 1994). When groupings started to overlap in multiple ways, we decided to use the AT framework instead.

First, we formulated high-level activities (e.g., establishing a routine for the baby) and lower level actions (e.g., getting the baby to sleep) on the basis of the previous groupings. Then, we developed models of the activity and actions for each family by sorting the annotated data using Engeström's model of an activity system (Engeström, 1987), as shown in figure 5.4. Patterns and contradictions were identified within and between activity systems.

Finally, a preliminary typology of families was developed based on the parents' rules of baby care (i.e., "parenting styles"). Theories of parenting styles helped us to further specify the criteria for segmentation.

In the communication phase (phases D and E), we used the AT framework as a thinking tool for sharing the user data with the designers, who in turn implicitly used the framework in reading and interpreting the user data. We developed three different immersion kits for sharing the user data with the design team. Each kit reflected one parenting style (figure 5.5). The kits contained small chunks of raw data (i.e., quotes, photos, and audio fragments), our initial research findings, and five exercises. Yellow cards invited the designers to collect their observations and findings from working on the immersion kits.

AT was incorporated into the immersion kit in three ways: (1) by composing a set of raw data that covered all components of the activity systems; (2) by adding preliminary findings that hinted at patterns and contradictions within and between the activity systems (e.g., "Nadia and Friso have different opinions about baby care" or "Jolanda only puts baby Eric to bed when he's tired"); and (3) by developing exercises that addressed concepts and components of the activity system. For example, in one exercise about mediation, the designers were asked to compare the things (or "artifacts") that used to help them fall asleep when they were young with the things that helped the baby fall asleep. Each of the five exercises in the kit addressed different concepts and components of AT.

The designers worked on the immersion kits individually for five days (phase D). A week later, the team members participated in a collective insights session aimed at developing shared understanding of baby care as a starting point for identifying opportunities for technology and concept development. During the session, the designers first discussed their observations and findings from working on the immersion kits. Then they created maps of parents' current situations by structuring their observations and findings on posters, and labeling groups of findings with themes. Finally, they used the maps in generating ideas about possible futures of baby care.

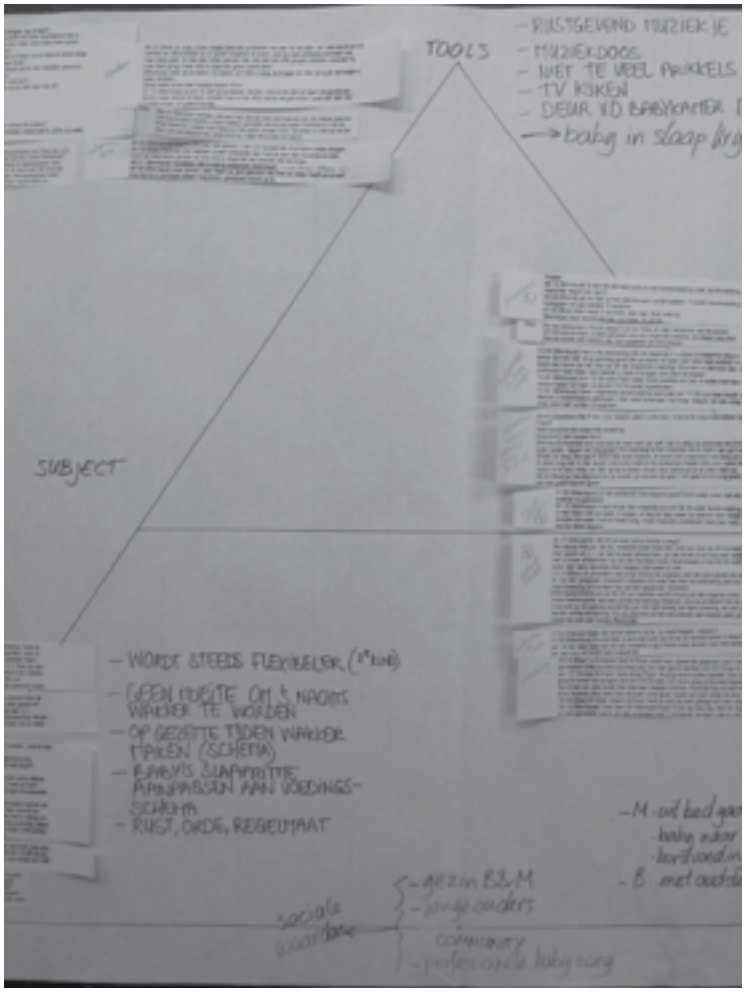

Figure 5.4

Preparing the user data for sharing in the Baby Care project

The user researchers developed models of the parents' activity and actions by sorting the annotated user data using Engeström's model of an activity system.

5.3.2 Findings from using Activity Theory in the Baby Care project

Trying out AT as a thinking tool of the social in the Baby Care project revealed four important findings. In this section we discuss these findings and the implications for future projects.

Finding 1 – AT gave the designers, as well as the user researchers, a platform for structuring, discussing, and sharing the rich user experience data

In the analysis phase, using AT as a thinking tool in structuring and analyzing the user data did not lead to many new or different insights from the affinity diagramming approach. However, we in the user researcher role felt that the framework greatly enhanced the analysis process. We identified three advantages of using AT: First, the basic concepts of the framework provided fresh perspectives on how the data could be structured and interpreted. For example, the concept of activity hierarchy raised questions of where baby care and the actions involved in it begin and end. The concept of object-orientedness required considering the parents' long-term objectives of caring for their babies. And the idea of contradictions prompted us to discuss the essence of the dilemmas of baby care that parents face in everyday life. Second, the framework provided a structured approach to organizing the user data. Having structured the data using Engeström's model of an activity system facilitated identifying patterns and trends in the user data, and sharing the user data with the design team. And third, AT offered a structure for bringing in special effect theories, enabling us to specify findings and insights.

In the communication phase, the design team implicitly used AT as a thinking tool in reading and interpreting the user data. The first success was that nearly all the designers worked on the immersion kit. During the insights session, the components of the activity system model were frequently used as anchor points in discussing and structuring observations and findings. Components were reflected in themes that were generated by the design team, such as "Rituals help us to handle things, we don't like schedules" (artifacts). And in discussing the themes, team members noticed, for instance, how parents' communities could play a central role in positioning their future product.

Finding 2 – It was difficult to implement and use AT in an integral way

We agree with Kaptelinin that the strength of AT is in its integration of concepts and components (Kaptelinin, 1996): When a design team uses only part of the framework (e.g., the components of AT) and simply ignores the rest, the team's chances of overlooking opportunities and constraints for design are likely to increase. But implementing and using AT in an integrated way was difficult in the Baby Care project.

In the analysis phase, one concept was not used, and one principle was used differently. As user researchers, we did not use the concept of internalization and externalization. Internalization and externalization processes were touched upon in parents' stories about baby care, but detailed analyses of these processes were not needed at this stage for understanding the overall "what" and "why" of baby care, and thus were omitted to save time. We expect the concept of externalization and internalization to be more useful in later stages of NPD, when product or service concepts are developed.

The concept of historicity and development was used differently. Rather than conducting a longitudinal field study, which would not have been possible given the constraints of the project, changes of activity systems were traced through how people experienced them.







Figure 5.5

Insights session in the Baby Care project

The user researchers developed immersion kits for sharing the user experience data with the design team (left top). The designers worked on the immersion kits individually, and then participated in a joint insights session in which they shared their observations and findings from working on the kits (left bottom), and created maps of parents' current situations on posters (right).

However, the design team was able to learn about development of baby care in later phases of the project, when people studies were conducted that involved the same parents who had participated in the exploratory people study.

In the communication phase, only one of five concepts of AT surfaced in the designers' observations and findings—namely, the idea of contradictions within and between activity systems. One designer observed that a couple had different parenting styles (or rules): "Gert is rational. He reads books about baby care. Jolanda is more intuitive, non-scientific," he explained. And, looking at the division of labor, another designer noted, "Laura has difficulties sharing tasks with Mark." The other four concepts, however, were not explicitly addressed in the designers' findings and discussions. Either the designers did not use these concepts in generating findings, or they used them implicitly.

In future projects, designers and user researchers could collaborate in a similar way as in the Baby Care project to ensure that the concepts and components of AT are integrally used in building creative understanding. However, the risk of this approach is that designers might start using only part of the framework (e.g., the components of the framework) in the belief that this one part *is* the framework. A more profound approach would be to introduce the components and the concepts of AT as inseparable parts of a whole. This means that AT needs to be translated as an integrated system for design, and not as a set of individual components and concepts, as done here. The challenge is to find such a translation of AT for design.

Finding 3 – The structure of the immersion kit did not support drawing "the big picture"

In evaluating the insights session, the team applauded the overall process followed in sharing the user experience data. The team members were happily surprised by both the quality and number of themes they had generated, in comparison to their normal professional practice. They thought the themes were "concrete" in that the themes provided clear starting points for ideation. Most of the critical comments concerned the immersion kit. The team members explained that the components of the activity system had been useful in organizing the raw data in the kit, but that it had been difficult to "get the full picture" of the families and baby care because the components had been revealed over time. The "full picture" had emerged only in discussing and structuring observations and findings during the insights session. In future projects, the team members would prefer an overview of the families and baby care as an introduction to the immersion kit.

Finding 4 – Emotions are at the forefront of empathic design but are rather obscured in AT

A more general concern that as user researchers we noticed was the framework's lack of attention to the emotional domain. Empathic design stresses that rationality and emotions both need to be addressed in building creative understanding, but in AT, emotions are only implicitly addressed in the concept of object-orientedness (Kaptelinin and Nardi, 1996). When introducing AT as a thinking tool in future projects, the role of emotions in object-orientedness must be further explicated to ensure that they are sufficiently addressed in the analysis and communication of user data.

5.4 Conclusions

This chapter reported our search for a theoretical framework that user researchers and designers could use as a thinking tool of the social in reading and interpreting user experience data in empathic design practice. We examined a variety of frameworks on the basis of existing literature and then experimented with candidate frameworks in NPD practice.

We identified eight criteria for assessing the usefulness of frameworks for empathic design practice. Although the list of criteria is not exhaustive, it does help us to draw attention to aspects that researchers and designers need to consider when selecting a framework for interpreting user experience data.

The search process yielded five groups of frameworks: special effect theories, relational frameworks, catalogues, metaphors, and scaffolds of context. We found Activity Theory, as a scaffold of context, to be the best fit between design teams' needs and the frameworks' offerings. AT is different from many other frameworks we studied in that it transcends dichotomies between mind and world, and between individual and social. Moreover, AT provides "handles" of the social, as well as perspectives of the social, enabling designers and experienced user researchers to join forces in interpreting user experience data for design.

Testing AT as a thinking tool of the social in NPD practice, we found that it provides designers, as well as user researchers, with a platform for structuring, discussing, and sharing user experience data. The study also revealed two findings that pose important challenges for future research. First, AT addresses emotions merely implicitly, whereas emotions are at the forefront of empathic design. Thus, the role of emotions in AT needs to be further explicated when using AT as a thinking tool in future empathic design projects. And second, we translated AT for design in terms of a set of individual concepts and components, but the actual strength of AT is in its integration of concepts and components. In future projects, the framework needs to be translated as an integrated system so that designers can use the framework to its full potential.

6 Stanislavsky's System: Practicing Activity Theory in Empathic Design

This chapter introduces Stanislavsky's System as an intuitive approach to practicing Activity Theory in empathic design. Chapter 5 reported the search for a conceptual framework that designers could use as a thinking tool in making sense of user experience for design. The chapter concluded with Activity Theory (AT) as the best fit between designers' needs and the frameworks' offerings. AT provides a comprehensive framework for structuring and analyzing empirical data, and has been successfully used for these purposes in the fields of human-computer interaction (HCI) and computer supported cooperative work (CSCW). One of the advantages that AT brings is that it addresses both the individual's experience and social context. However, the framework is rather theoretical and requires considerable reading to master – it even has a reputation of being "hard to learn" and "difficult to put into practice" (Benyon et al., 2005; Nardi, 1996a). Given this reputation, we cannot expect design teams to adopt AT in a way social scientists do. Thus more intuitive ways are needed for designers to grapple with AT in interpreting user data for design (Postma et al., 2012a). We [*]found that Stanislavsky's System provides these intuitive ways.

Stanislavsky's System (ST) is an approach to acting that was developed in the 1920s by Konstantin Stanislavsky, a Russian theatre director, to support actors in the process of embodying and enacting a role (Stanislavsky, 1961). The approach has been very influential in theatre (the famous Method Acting approach was partly based on ST), and has been widely adopted in theatre education. Stanislavsky's approach is of practical interest to empathic design because of the analogy between actors embodying a role in theatre, and designers building creative understanding of user experience in empathic design. In the design research literature, this analogy is well recognized and has been successfully employed in the development of design tools and techniques, including experience prototyping (Buchenau & Fulton Suri, 2000), focus troupes (Sato & Salvador, 1999) and personas (Cooper, 1999). We found that Stanislavsky's approach may also be of theoretical interest for empathic design, because there are remarkable similarities between ST and AT on a conceptual level that could help translate AT for empathic design.

In this chapter, we explore the conceptual relations between ST and AT, and we show how Stanislavsky's approach was used to translate AT for empathic design in the *Hospital* project at Philips Lighting (figure 6.1). The chapter proceeds in four parts. First we explain Activity Theory and its five basic concepts. Then we introduce Stanislavsky's System, and explain how we think the concepts of ST relate to AT. Next, a method in Stanislavsky's System called "Active Analysis" is brought forward as an intuitive way for designers to use AT in interpreting user data for design. In the fourth part, we show how we applied Active Analysis in the Hospital project, aiming to involve the designers with the user data, and to enable them to build creative understanding of user experience from an AT perspective.

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* In this chapter, "we" refers to the authors of the paper "Stanislavsky's System: Doing Activity Theory in user-centred practice" (submitted), i.e., C.E. Postma (Delft University of Technology), K. Lauche (Delft University of Technology), and P.J. Stappers (Delft University of Technology).

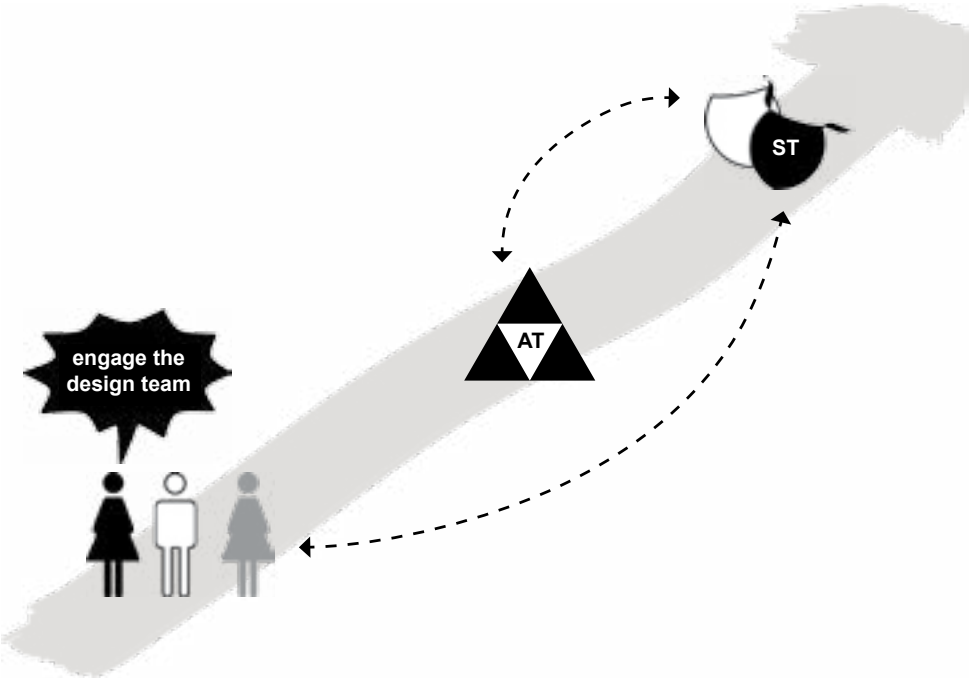

Figure 6.1

Stanislavsky's System for practicing Activity Theory in empathic design

The grey arrow represents the path that we followed in developing our approach to building creative understanding of user experience in NPD practice. Stanislavsky's System (ST) may be used to translate Activity Theory (AT) for empathic design (puppets), because there are conceptual links (dashed arrow) between ST and AT, and practical links (dashed arrow) between ST and empathic design (puppets).

6.1 A brief introduction to Activity Theory

Activity Theory is a framework for describing and explaining the structure, development and social-cultural context of human activity. It points out key concepts of social- and material context that one needs to consider in developing understanding of the what, how and why of people's behaviour in social-cultural context (Kuutti, 1996). The framework was initiated by Lev Vygotsky (Vygotsky, 1978) in early 20th century Russia, and then further developed by his student and colleague Alexei Leont'ev (Leont'ev, 1978). It became known internationally only in the early 1980s, after seminal work had been published in English.

In 1987, Yrjö Engeström presented a framework of human activity in social-cultural context that builds on Leont'ev's Activity Theory (Engeström, 1987). In the early 1990s, leading researchers, including Suzanne Bødker, Victor Kaptelinin, Kari Kuutti and Bonnie Nardi, introduced and popularized the AT framework within the fields of HCI and CSCW (Bødker, 1996; Kaptelinin & Nardi, 2006; Kuutti, 1996). Today, AT is successfully used by social scientists in structuring and analyzing empirical data in HCI and CSCW (e.g., Collins et al., 2002; Fjeld et al., 2002; Turner et al., 1999). Our introduction to Activity Theory is mainly based on Kaptelinin and Nardi's (1996a) and Kuutti's (1996) explanations of AT in HCI and CSCW.

In Activity Theory the unit of analysis is an activity in its social and material context. Figure 6.2 shows Engeström's model of the structure of an activity, the "activity system". The activity system consists of six components: a subject (an individual or a group of people), an object, artefacts, a community, the division of labour, and socio-cultural rules. The horizontal arrow in the centre of the model represents the activity. The upper half of the model may be described as the material context of the activity, and the lower half as the social context of the activity. Activity Theory argues that researchers need to study all components of the activity system for developing meaningful understanding of human activity. This argument is based on two fundamental ideas, "unity of consciousness and activity" and "social nature of the human mind". *Unity of consciousness and activity* means that the human mind exists and develops in the context of human interaction (or "activity") with the world, and that the human mind can only be understood within the context of human activity. *Social nature of the human mind* means that human activity is shaped by its social- and cultural context. These two fundamental ideas are reflected in five basic concepts: "object-orientedness", "activity hierarchy", "internalization and externalization", "mediation" and "historicity and development". Each of the five concepts address one part of the activity system. AT argues that one needs to consider all five concepts in developing understanding of human activity. We use the example of staying in hospital to explain the five concepts in greater depth. In this example, the subject is Jan Donkers, a 53 year-old patient who is recovering from heart surgery.* The activity is recovering in hospital.

The first concept is *object-orientedness*. Human activity is always directed to an object. Objects motivate and direct activities; they appeal to the subjects' needs and desires, and make their activities meaningful. The term "object" incorporates two meanings in AT, namely *object* in the sense of the objective that one is aiming to achieve, and *object* as the

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* The names in this example are fictitious, but the example is based on a real case.

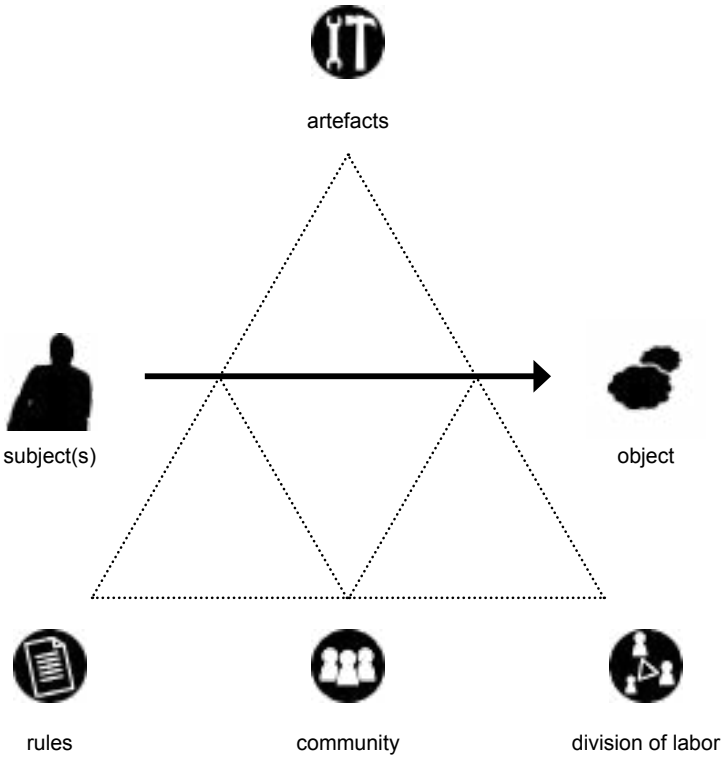

Figure 6.2

Engeström's model of an activity system, adapted from (Engeström, 2001)

(physical) object that one is seeking to transform in the activity. Jan's object is his recovery. His community of recovering in hospital includes Jan's wife Nellie, his two daughters, Jan's colleagues who visit Jan regularly, the nurses, Jan's doctor, his physiotherapist, and his fellow patient and roommate Teun. They share Jan's object of recovery. The concept of object-orientedness helps us to develop understanding of the ultimate "why" of their actions in Jan's recovery.

The second concept is *activity hierarchy*. Activities can be deconstructed into actions and lower-level operations. Actions (similar to "tasks" in HCI) are directed towards goals. Actions and goals are conscious. Operations, meanwhile, are automated behavioural routines. They are shaped by the situation at hand and are typically unconscious. Jan undertakes many actions and operations in pursuing his object, e.g., getting his temperature taken, playing cards with Teun, reading the newspaper, taking his medicine, resting in bed, getting a phone call from his daughter.

The different levels of an activity are not fixed. Actions may become automated operations, and operations may become conscious actions. For example, getting dressed used to be an automatic operation for Jan. But since he had surgery, Jan has to mind that he does not pull his drain tubes, and therefore getting dressed has become an action for Jan.

The third concept is *externalization and internalization*. Activity Theory distinguishes between internal, mental activities and external activities, and argues that one cannot be understood without the other, because they transform and influence one another. External activities become internalized when people learn to do an activity in the head without using any physical aids. Internal activities are externalized when the activity is too difficult to do without physical aids, when the activity does not turn out right, or when people need to coordinate the activity in working together. An example of externalization is Jan's medicine box. Every morning Jan's nurse prepares a medicine box for Jan. The medicine box is an externalization of knowing what medicine Jan needs to take and when.

The fourth concept is *mediation*. People's activities are mediated by artefacts, the division of labour, and socio-cultural rules. All three form more durable structures that persist over across activities, time and place. The durables structures shape activities, and at the same time are developed and transformed in activities. They carry in them the experiences of others who have pursued similar objectives or goals.

Artefacts, or "tools", are physical tools (e.g., a can opener) as well as thinking tools (e.g., a calendar) that the subject uses in pursuing his/her object. Jan's tools in recovery include a thermometer, his room in hospital, his exercise instructions, Jan's mobile phone, and the flowers that were send to him by his colleagues. Division of labour is the organization of the subjects and their communities in terms of roles and responsibilities. Jan's daughter takes care of the dog while Jan is in hospital, and his wife brings plates of food from home, because Jan does not like the meals that are served in hospital. Socio-cultural rules are implicit and explicit norms and conventions that govern the relationship between the subjects and their communities. Jan and Teun (his roommate) implicitly agreed to switch off the lights and television at 10 pm, and Jan's colleagues together decided on a visit schedule to make sure that visiting hours are not too tiring for Jan.

The fifth and last concept is *historicity and development*. Activities change and develop over long periods of time. AT holds that understanding of an activity requires tracing how the

activity has developed in the past. Contradictions (or "tensions") within or between activity systems are sources of change and development. In Jan's case, a contradiction between subject and community led to a change of action: After the doctor had strongly advised Jan to change his diet, Jan's wife needed to adopt a new, healthier style of cooking, and started to bring meals to hospital that Jan did not like very much.

In HCI and CSCW, Activity Theory has been used in a number of cases to analyze empirical data and to formulate design requirements for social computing (e.g., Collins et al., 2002; Fjeld et al., 2002; Lauche, 2005). In design research and design practice, however, AT is relatively unknown. A possible explanation for this might be that AT is rather theoretical and requires considerable reading to master. We found that Stanislavsky's System provides more intuitive ways for designers to practice AT in design.

6.2 Linking Activity Theory to Stanislavsky's System

Lev Vygotsky was impressed with the work of Konstantin Stanislavsky. Stanislavsky was director of the Moscow Art Theatre and a contemporary of Vygotsky – they both lived and worked in early 20th century Moscow, during the Russian Revolution and the early Soviet regime. Stanislavsky had developed an approach to support actors in the process of embodying and enacting a role, which he called the "System". Vygotsky found inspiration in the System, and he referred to Stanislavsky's ideas in his own work (Bruner, 2004; Vygotsky, 1962). Given this historical context, we decided to further explore connections between Stanislavky's System and Activity Theory. We compared ST and AT on a conceptual level, and found that there are striking parallels between the two constructs: Both constructs study human activity in social- and cultural context, they both consider human mind in relation to human activity, and ST and AT both treat human activity as the basic unit of analysis.

In the next section, we discuss the concepts of ST in greater depth, and explain how we think these concepts relate to AT. Our explanation of ST is based on Elizabeth Reynold Hapgood's translation of Stanislavsky's writings (Stanislavski, 1961), Sharon Marie Carnicke's cultural-historical account of Stanislavsky's work (Carnicke, 2009), and Bella Merlin's account of the System in terms of a toolkit (Merlin, 2007).

6.2.1 Stanislavsky's System in view of Activity Theory

Stanislavsky's System aims to support actors in establishing "creative inner state". Creative inner state resembles the idea of "creative understanding" in empathic design (Postma et al., 2009; Wright & McCarthy, 2005). It is the sensation of being fully present in the dramatic moment, and enables actors to infuse life into a part and to act "truthfully" (Stanislavski, 1961). "Truthful acting" means that the actors foster a belief in the play through their imagination, and respond to the circumstances as if they were true (Merlin, 2007). The actors do not actually believe the circumstances to be real, nor do they believe themselves to actually be the characters in the play; rather, they believe in their imaginative creation of emotions and actions on stage. They believe in their answers to the question, "What would I do if I found myself in these circumstances?" Stanislavsky argues that the actors' creative effort has been successful once characters emerge that reflect the individual actors as well as the playwright's conception of the roles. "You never lose yourself on stage. You always act in your own person as artist," Stanislavsky explains (Carnicke, 2009, p.133).

We identify five important concepts in Stanislavsky's System that correspond with Activity Theory. The first concept is *psycho-physicality*. The idea of "psycho-physicality" lies at the foundation of the System, and is consistent with the idea of "unity of consciousness and activity" in Activity Theory. Psycho-physicality refers to the direct connection between psyche and body. It implies that body and psyche are interdependent, in that people's internal experiences are expressed through their physical actions, and their physical actions affect their internal experiences. Stanislavsky argued that actors' inner experiences and outer actions need to flow in accordance, just as in real life, to establish inner creative state on stage. He developed two important methods in which actors' psycho-physicality is trained, "Affective Memory" and "Active Analysis". The former method was adopted by his former students and introduced in America, where it gradually transformed into what became widely known as "Method Acting". In this chapter, we will focus on the latter method, *Active Analysis*.* In Active Analysis actors establish creative inner state through an iterative process of brief textual analyses and improvisations. The method is explained in section 6.3.

The second concept is *given circumstances*. "Given circumstances" are all the conditions that influence characters' behaviours in a play; e.g., plot outline, time and place of action, characters' social situations, their language, the set of the production. They are partly detailed by the playwright, and partly inferred from the context of the play. Stanislavsky argued that actors should study and prepare the "given circumstances" for a part, so they could use the given circumstances to prompt their imagination in the process of establishing creative inner state (Carnicke, 2009, p.218). This idea resonates with the idea that human activity is situated and shaped by social- and cultural context in Activity Theory.

Stanislavsky's "magic-if" is a well-known technique for prompting imagination using the given circumstances. In this technique, actors are encouraged to connect their own inner experiences to the given circumstances of a play by asking themselves, "What would I do if I found myself in these circumstances?"

The third concept involves *studying pasts and futures*. Stanislavsky argued that in life on stage as well as in real life, there is no present without past and prospect of the future. "*The past and the dreams about the future make up the present*," he explains (Stanislavski, 1961, p.16). This idea accords with the concept of "historicity and development" in Activity Theory. Stanislavsky required his students to develop perspectives on their characters' pasts and futures by studying the given circumstances of the play, and by reading documents and literature about the time and place of the play.

The fourth concept is *purposeful action*. Stanislavsky claimed that real life consists of an uninterrupted series of "objectives"** that drive action and make action purposeful. He argued that purposeful action is key to truthful acting – when actors do not understand and

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* Over the years, two accounts of the approach have emerged, one labelled "Active Analysis", the other "Method of Physical Actions". In theatre literature, it is debated whether or not the two accounts of the approach are in fact one and the same. In this chapter, "Active Analysis" is used to refer to Maria Knebel's account of Stanislavsky's approach (Carnicke, 2009, p.100).

** "Objective" is Hapgood's (1961) translation of the Russian term "zadacha" that Stanislavsky used in his writings (Stanislavski, 1961). In theatre literature, it is argued that "zadacha" is better translated as "task" or "problem". That is why we put the term between quotes in this chapter.

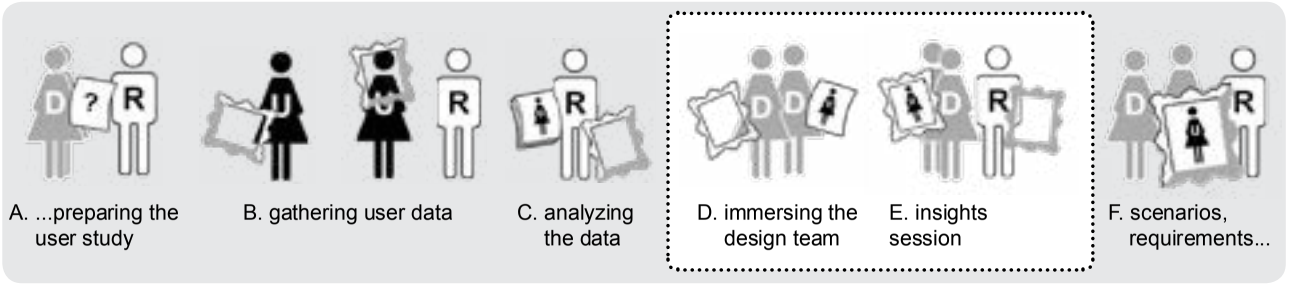


Figure 6.3

The empathic design process that we followed in the Hospital project

The user researchers (puppet marked by "R") gathered user experience data in dialogues with patients and nurses ("U"), after which they analyzed and structured the user data, and shared the data with the design team. The user researchers facilitated the process with the help of representations (frames), such as probes, generative tools and immersion kits.

feel the why of their actions, they can only mimic actions and will not be able to convey a sense of truth on stage. The concept of purposeful action is similar to the concept of "object-orientedness" in Activity Theory. However, discussion of these concepts in their respective contexts is different in focus and emphasis; e.g., while emotional attachment to objects is hardly discussed in AT (Kaptelinin & Nardi, 2006), emotional attachment to "objectives" is of crucial importance in ST. Stanislavsky argued that an "objective" should arouse the actor's emotions; if there is no emotional attachment, the actor "cannot live, or experience his part, [the actor] can only give a report on it," (Stanislavski, 1961, p.51). Therefore, his System requires actors to find "objectives" that engender their desires for establishing creative inner state. Stanislavsky refers to these "objectives" as "creative objectives". Actors are encouraged to formulate their "objectives" and creative objectives as active verbs to facilitate the flow between their desires (i.e., inner experiences) and their physical actions (i.e., outer actions); thus to facilitate psycho-physicality.

The fifth concept involves *deconstructing a play*. Like Activity Theory, the System distinguishes different levels of activity. Actions are directed towards "objectives" that can be small or large, and conscious or unconscious. The fulfilment an "objective" involves a series of minor actions and their corresponding "objectives". Stanislavsky argued that these series of actions and "objectives" should be logic and consecutive to establish creative inner state and to convey a sense of truth. In his System, actors are required to deconstruct a play into "bits" of action to understand the characters' "objectives" in the play. A "bit" is a segment of the play that holds one (major) "objective" for the actor; usually one bit starts and another ends whenever there is a shift of action in the play. The actors need to test logic and consecutiveness of the series of identified actions and "objectives" in improvisations.

As these five concepts illustrate, there are remarkable similarities between Activity Theory and Stanislavsky's System on a conceptual level, but whereas AT remains on this conceptual level, ST also offers hands-on methods and techniques for practicing the concepts. These methods and techniques may be used to translate AT for building creative understanding of user experience in empathic design. The question remains, however, how these methods and techniques are relevant to empathic design.

6.3 Linking Stanislavsky's System to Empathic Design

Stanislavsky's System is of practical interest to empathic design because of the analogy between actors establishing creative inner state in theatre on the one hand, and designers building creative understanding of user experience in empathic design on the other: In Stanislavsky's System as well as in empathic design, understanding of people and their experiences drives the creation of something new; and in both approaches, this understanding draws on information about people and their lives, and includes inspiration and empathy. Moreover, the System and empathic design generally both involve a third party (a director and a user researcher, respectively) who facilitates the process of establishing inner creative state or building creative understanding (Postma et al., 2009). In view of this analogy, and the conceptual links between ST and AT that were discussed in the previous section, the methods and techniques in Stanislavsky's System may be used to translate Activity Theory's theoretical framework for building creative understanding of user experience in empathic design.

In our research, we chose to use Stanislavsky's rehearsal method called "Active Analysis" to make this translation, because the principles that underlie this method partly overlap with those in empathic design (chapter 3). The first principle of Active Analysis that we identified is the engagement of actors as creative artists in the rehearsal process. This principle accords empathic design's principle of engagement of designers as multi-disciplinary experts in user research (Postma et al., 2012b). In his early days as a director at the Moscow Art Theatre, Stanislavsky tried to control every detail of his actors' performances. He changed his style of directing, when he realized that establishing inner creative state requires actors to develop a personal understanding of their roles. "An actor can subject himself to the wishes and indications of a playwright or a director and execute them mechanically, but to experience his role he must use his own living desires, engendered and worked over by himself, and he must exercise his own will, not that of another," Stanislavsky explained (Stanislavski, 1961, p.50).

The second principle is the simultaneous exploration of inner experiences and outer action. Initially, Stanislavsky engaged his actors in lengthy periods of analysis, before rehearsing the play physically. The long analyses not only paralyzed the actors' creativity, but also undermined their psycho-physicality. "The actor comes on stage with a stuffed head and an empty heart, and can act nothing," Stanislavsky complained (Carnicke, 2009, p.195). In his later work, Stanislavsky realizes that establishing inner creative state requires actors to explore their roles physically as soon as possible. He decides to bring back analysis of the play to a minimum, and to alternate brief analyses with improvisations on actions.

The third principle involves drawing on secondary emotions in internalizing the part. Stanislavsky considered artistic imagination to be vital in the process of establishing creative inner state. He therefore encouraged actors to continually nourish and practice their imaginations by collecting and calling upon secondary emotions, memories and experiences. "The more an actor has observed and known, the greater his experience, his accumulation of live impressions and memories, the more subtly will he think and feel, and the broader, more varied, and substantial will be the life of his imagination, the deeper his comprehension of facts and events, the clearer his perception of the inner and outer circumstances of the life in the play and his part," Stanislavsky wrote (Stanislavski, 1961, p.40). This idea is similar to the idea of growing designers' "empathic horizon" in empathic design (McDonagh-Philips & Denton, 2000).

The fourth and last principle of Active Analysis that we identified is the shift of focus from factual understanding to affective understanding. Stanislavsky argued that analyses of the play should focus on the "externals of the play" (i.e., the theatrical facts), before studying the "innermost, profoundest spiritual levels". "At the start of my analysis, I am not interested in feelings – they are intangible and difficult to define – but in the circumstances, suggested by the playwright, that give rise to feelings," he argued (Stanislavski, 1961, p.12).

In Active Analysis, the four principles are practiced in an iterative process of brief textual analyses and improvisations. In this process, actors immediately embody their interpretation of their part in improvisation, and through improvisation grow understanding of their part. The process consists of three iterative steps. In the first step, the actors read a scene and briefly discuss the given circumstances and the characters' actions and "objectives". The actors get responsibility for the interpretation of the play; they take the initiative in creating characters and are accountable for their creations. The director merely orchestrates the

interpretation process (principle 1). In the second step, the actors improvise the scene from their own perspectives, using Stanislavsky's magic-if technique to gradually merge with their role (principle 2). This exercise requires them to use their imagination in exploring their characters' behaviours and circumstances (principle 3). Early improvisations mainly focus on factual understanding of the play; they are based on rough outlines of the given circumstances. In later improvisations, the focus gradually shifts towards affective understanding, and the actors identify and study creative objectives (principle 4). In the third step, the actors compare their improvisations on actions to their characters' behaviours in the script to check if their understanding of the play is developing in line with the script.

The next section discusses how Active Analysis was applied in an NPD project in industry to help the design team establish creative understanding of user experience from an Activity Theory perspective.

6.4 Active Analysis for building creative understanding in NPD

Stanislavsky's Active Analysis was introduced in the *Hospital* project at Philips Lighting. Figure 6.3 presents an outline of the empathic design process that we followed in the Hospital project. The process was briefly explained in chapter 2. This chapter discusses the immersion phase (phase D) and the insights session (phase E) in more detail. In these phases, Active Analysis was used to translate Activity Theory for empathic design. The next subsection describes how Active Analysis and Activity Theory were integrated in these phases of the process. In section 6.4.2, we share our experiences with using Active Analysis for building creative understanding in the Hospital project.

6.4.1 Use of Active Analysis in the Hospital project

The user researchers had obtained rich user experience data in the form of audio recordings, completed probes and photos in studies with patients and nurses. They pre-structured and pre-analyzed the user data using Activity Theory, after which they developed an immersion kit for sharing the user experience data with the design team.

The kit contained the researchers' initial findings, five small exercises, and "context maps" that illustrated patients' and nurses' experiences in hospital with stories and photos (figure 6.4). Each context map addressed one component of Engeström's (2001) activity system, i.e., "subject", "object", "artefacts", "community", "division of labour", "roles". A seventh map, titled "feelings and dreams", was created to stress the role of emotions in object-orientedness.

The five exercises in the immersion kit guided the designers in reading and interpreting the context maps from an Activity Theory perspective. They were developed based on Stanislavsky's Active Analysis and discussed concepts of Activity Theory. For example, in one exercise, the designers were asked to list the given circumstances, asking themselves questions such as, "*What does nurse Sonja's day look like?*" and "*Who is part of Sonja's social world in hospital?*" and "*What does Sonja's department look, hear, feel and smell like?*" In another exercise, the designers needed to make empathic inferences about the patients' and nurses' objects (or "objectives"); for instance, they were asked to image what is important to Mrs. Pessers when the doctor visits her, and to formulate Mrs. Pessers' object of the doctor's visit as an active verb.

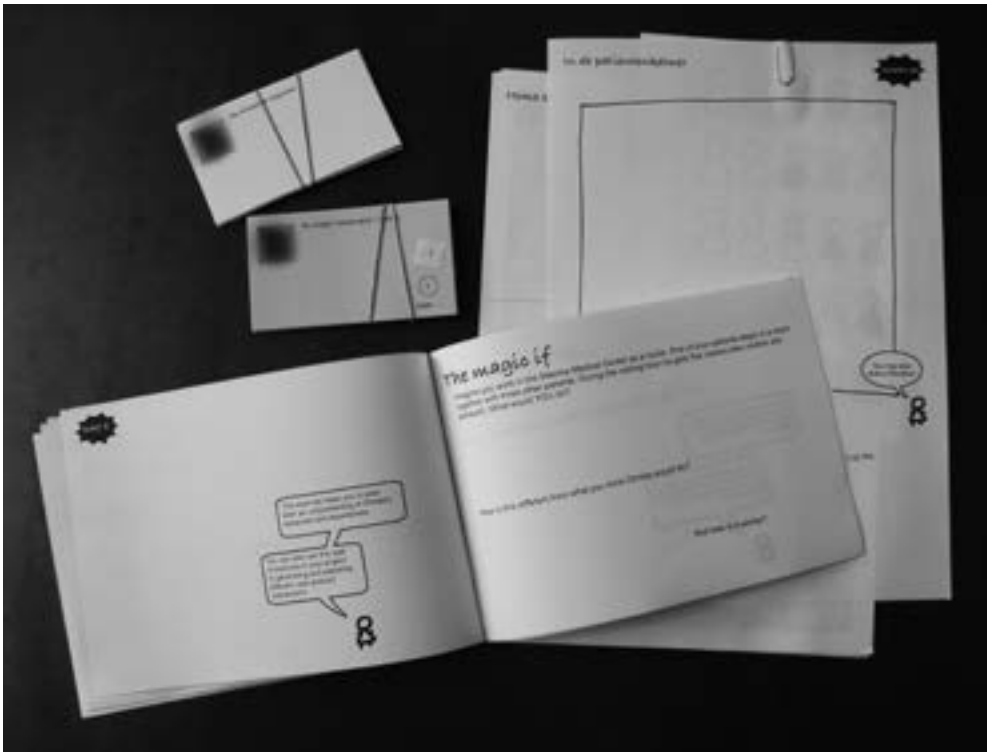
The sequence of the exercises was based on the three iterative steps in Active Analysis. First



Figure 6.4

The immersion kit in the Hospital project

The user researchers developed an immersion kit for sharing the user experience data with the design team (left). The kit included context maps (right top), and five exercises that guided the designers in reading and interpreting the maps (right bottom).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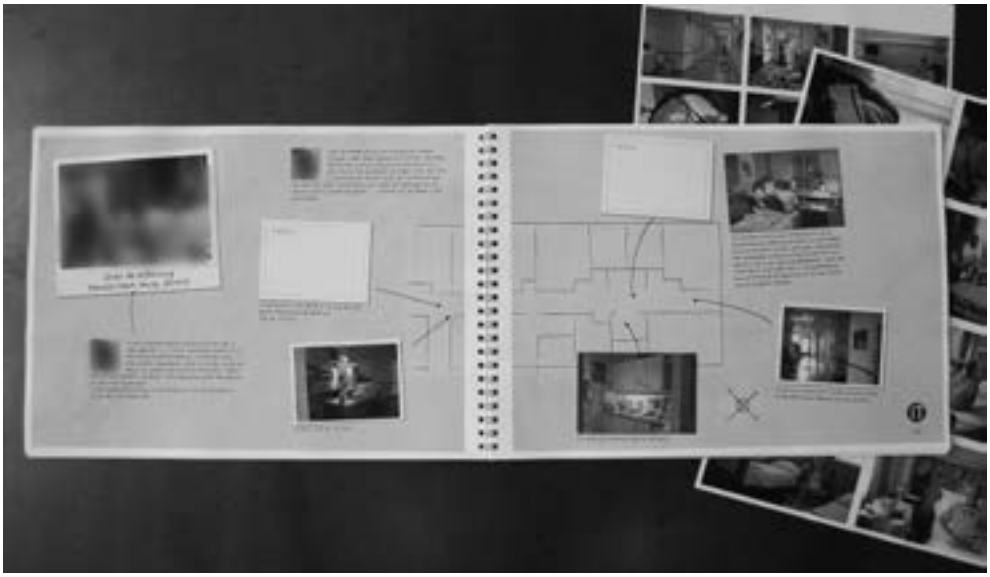






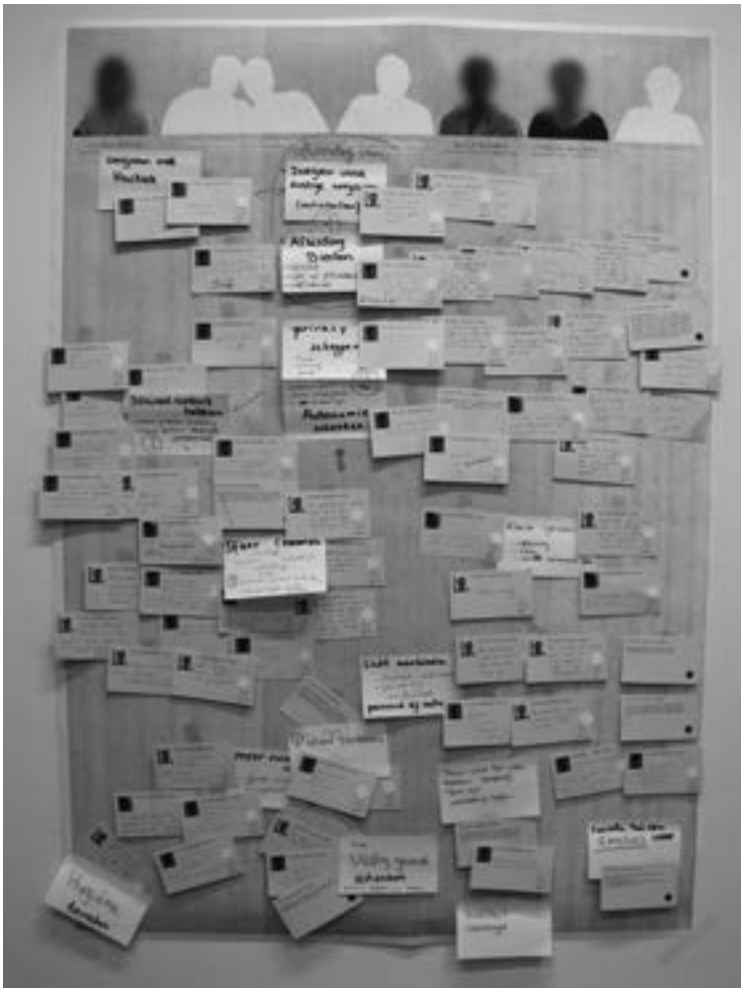


Figure 6.5

The insights session in the Hospital project

During the insights session, the designers introduced themselves in the role of patients and nurses, after which they shared their observations and findings from working on the immersion kits (left top), structured their observations and findings on a poster, and identified themes (left bottom, right).

the designers needed to briefly analyze the data in the context maps. Then they were asked to imagine the patients' and nurses' situations from their own perspectives, using Stanislavsky's magic-if technique; e.g., they needed to ask themselves, "What would I do if I were allowed to go out of bed for only 45 minutes a day?" The second step initially focused on developing understanding of the patients' and nurses' factual circumstances. In later exercises, the focus shifted towards developing understanding of patients' and nurses' motives and feelings. In the third step, the designers were asked to compare their imagined actions with the patients' and nurses' actions as described in the context maps; e.g., one exercise questioned, "How is what you would do different from what Jan would do?"

The project manager and the design team members worked on the immersion kits individually during five days. Then they participated in a half-day insights session that was organized and facilitated by the user researchers (figure 6.5). The aim of the session was to develop a shared understanding of patients' and nurses' experiences for concept development. First, each team member introduced him/herself in the role of one of the patients or nurses in the context maps. Then they shared their observations and findings from working on the immersion kit. The observations and findings were structured on a poster and labelled with themes. The designers selected three themes that were important in view of patients' and nurses' experiences, and three themes that they considered important in light of the project objectives. The identified themes informed the development of use case scenarios and user requirements.

6.4.2 Our experiences with using Active Analysis in the Hospital project

Trying out Stanislavsky's Active Analysis for building creative understanding in the Hospital project revealed four important findings. The four findings are discussed in this section.

Finding 1 – The designers actively participated in analyzing the user experience data

Nearly all design team members had completed the immersion kit. From the level of detail of the designers' introductions of the patients and nurses at the start of the insights session, it became clear that the designers had carefully studied the context maps. Several designers even quoted patients or nurses in their introductions.

In evaluating the process, the designers remarked that working on the immersion kit had been fun, informative, and refreshing, but also time consuming and sometimes challenging. One designer, for example, indicated that she had struggled to complete an exercise that was based on Stanislavsky's magic-if technique. In this exercise she was asked to connect her own experiences to the given circumstances of her part, which required her to think about nurses' experiences in a very different way from what she was used to. Another designer valued this different way of thinking, "It's nice that you need to think from your own perspective first. Like, 'What if I were in hospital?' That really sets you thinking," she said.

One designer indicated that she preferred working on the immersion kit to getting a presentation, like she was used to. She felt that working on the immersion kit was much more effective for building creative understanding: "It's not like a presentation. Like you tell us how things are. Then you perhaps remember twenty percent of the story. But now you are much more immersed," she explained.

Finding 2 – The designers were able to build creative understanding from an Activity Theory perspective

The designers completed the exercises that were based on concepts of AT without real problems; they did not perceive the exercises to be too theoretical or difficult to grasp.

The AT perspective surfaced in the broad range of findings and themes that were generated by the designers. The findings and themes covered aspects of material context as well as aspects of social-cultural context. Examples are, "being in touch with home is important", "accepting the rules of the hospital uncomplainingly", and "getting dinner served offers diversion too". The designers indicated that they had not paid attention to these social-cultural aspects before. In previous projects, they had mainly focused on individual people, and the interactions between individual users and products. In evaluating the Hospital project, the project manager stressed that taking a more holistic perspective that includes "the social" had been an eye-opener for her, the design team and the people in her department. "It is interesting that you need to look broader. That you don't only look at the patient room, but also social things," she explained.

Finding 3 – The empathic design approach inspired the designers of the Hospital project and other people within the organization in several ways

First, the context maps inspired the designers to develop use case scenarios in visuals, rather than in text – like they usually did. They photo copied the context maps, and then sketched the scenarios on top of the maps. Second, the stakeholders of the project, who had been skeptical about conducting the empathic design effort at first – "We know enough about context. We can make that up," one client had said –, became ambassadors of the approach. They decided to use the Hospital project as a company showcase, and to present the approach to higher management, including the chief executive officer of the organization. Third, people within the organization adopted parts of the empathic design approach in other projects; e.g., one designer decided to develop context maps for sharing user data with his team members and clients, and a user researcher chose to use AT to structure market data together with her team members in another project.

Finding 4 – The designers built creative understanding, but hardly used their creative understanding in the Hospital project

In evaluating the process, the designers articulated that the immersion kit and the insights session had brought them closer to the "voice of the user". "I noticed that I started to think from the nurse's perspective," one designer said. "I started to project myself in the nurse's role more and more," another designer noted. One designer felt that she had not established sufficient understanding of the patients' experiences; she said that she would have liked to receive more detailed information about the patients in the context maps. The designers' creative understanding most explicitly surfaced when they were asked to select themes that are important from the patients' and nurses' perspectives, and themes that are important in view of the project objectives. In discussing the themes, the designers came to the conclusion that they needed to make three different selections of themes, one for each perspective, to cater to the needs of the patients and the nurses as well as the needs of the project.

The designers successfully used their creative understanding of patients' and nurses'

experiences in developing use case scenarios for controlling the light solution, but they struggled with translating their understanding into "platforms" and "end-user insights" – deliverables that are approved by the organization (chapter 3). A possible explanation for this might be that these deliverables had been introduced recently, and most designers did not have any experience with creating these deliverables yet. They did not have a clear understanding of what "platforms" and "end-user insights" are, or should be. Another explanation is that the organization's procedure required the designers to generate "platforms" and "end-user insights" that are aligned with a product proposition that had been written from a customer perspective (i.e., hospital management), not a user perspective (i.e., patients and nurses). However, the designers had developed a way of thinking that is close to patients and nurses, and that does not necessarily match the customer's perspective. "I think this is incredibly difficult," one designer complained. "These two processes [i.e., the process of building creative understanding, and the organization's procedure for formulating platforms and end-user insights, ed.] don't come together. When only based on our themes, I would be able to write them down immediately," she added. A third explanation is that translating a broad understanding of patients' and nurses' experiences into platforms and end-user insights was too big a step for the design team. Making this step required the designers to simultaneously envision possible futures of product use, and draw implications for concept design. The designers were not used to making this step. "You need to make several interpretations and translations. I thought that was difficult," one designer explained.

6.5 Conclusions

In this chapter, we introduced Stanislavsky's System as an intuitive approach for designers to build creative understanding of user experience from an Activity Theory perspective. We discussed the conceptual links between ST and AT that form the foundation of this approach, and showed how we applied the System in building creative understanding of users' experiences in an NPD project in industry. Our approach in this project was successful in that the designers became involved with the user experience data, and built creative understanding of users' experiences from an AT perspective, without perceiving the approach as too theoretical or difficult to grasp. But the designers' creative understanding did not last. Our intention was to continue the process, and to have the designers translate their creative understanding of users into concept design. But the process stopped as the designers struggled to use their creative understanding within the organization's established procedures and practices of NPD. Future research may address this problem by investigating ways of implementing the approach in NPD practice.

7 Creating Socionas step-by-step

The insights and theories from the previous chapters are consolidated in *Creating Socionas*, a five-step approach for building creative understanding of people and their social lives in the early stages of new product development. *Socionas* is new jargon for a design approach that includes understanding the social, and that, like Cooper's personas (Cooper, 1999), supports user-centeric innovation in industrial organizations where designers and user researchers are not necessarily the same people. The approach builds on empathic design, but (parts of) the approach may also be applied in the context of other design approaches such as critical design, user-centered design and generative design research.

This chapter explains how user researchers and designers in Philips and in similar organizations might implement and practice Creating Socionas. The chapter may also serve as an inspirational read for those who want to create their own approach to building creative understanding of user experience in NPD, and mix parts of Creating Socionas with other methods and techniques.

Creating Socionas step-by-step is divided in three parts. The first part briefly introduces the approach, and summarises its foundations to new readers. In the second part, the different phases of Creating Socionas are described and illustrated with examples from NPD projects at Philips. The third part offers indications for use of the approach. Note that the chapter assumes the reader is familiar with empathic design, and has some prior knowledge of Activity Theory and Stanislavky's System. Those who are not familiar with empathic design best consult Koskinen, Battarbee, and Mattelmäki's book titled, "Empathic Design: User experience in product design" (2003) to learn more about its principles and ideas first. They may also a look into IDEO's article, "Human-centered design toolkit" (2009), which exemplifies an empathic design mindset. User researchers and designers who are interested in trying out Creating Socionas and who are new to Activity Theory and Stanislavsky's System may benefit from reading chapters 5 and 6 of this thesis as an introduction.

7.1 Creating Socionas in a nutshell

Creating Socionas was developed for building creative understanding of user experience in the early stages of new product development, when a range of options for design is still open. Creative understanding can be a valuable source of inspiration and information in these stages; it is the combination of a rich understanding of the other (in this case the user), and the ability to translate this understanding into products and services that delight users (chapter 1).

The literature presents a variety of approaches to building creative understanding of user experience for NPD. Many of these approaches suggest that members of a design team (or "designers") adopt the role of user researcher, and directly interact with users to ensure that the user perspective is included in NPD; however, in NPD practice, the designers and the user researchers are usually not the same people, as user research is frequently sourced from a third party, e.g., an external consultancy or an internal research group. This means that user researchers face the challenge of sharing rich user data with designers in ways that enable the designers to build creative understanding of user experience for NPD. Creating Socionas intends to address this challenge by providing input to two questions: "What do design teams need to understand about user experience to develop products and services that delight

users?" and "How can they build this understanding under the constraints of NPD practice?" The approach builds on empathic design – an approach to designing for user experience that is characterized by an attitude of respecting users, being committed to understanding users' needs and desires, building holistic understanding of users' activities, and relying on personal insight and creativity (Mattelmäki, 2006) –, and is firmly rooted in NPD practices at Philips.

In the current research, three frameworks were developed that form the theoretical foundations of Creating Socionas. The first framework is "trialogue" and was introduced in chapter 4. It describes the interactions between user researchers, users, and designers in building creative understanding in NPD practice. Applying trialogue to practices at Philips revealed that a possible solution to sharing rich user data with design teams is to actively engage the teams in reading and interpreting the data for NPD. The process of reading and interpreting the user data enables the designers make the data their own and to build creative understanding of user experience.

The second framework is "Activity Theory". *Activity Theory* is a comprehensive framework for describing and explaining the structure, development and social-cultural context of people's activities (Engeström, 1987; Leont'ev, 1978; Vygotsky, 1978). Chapter 5 explained that Activity Theory could be a powerful thinking tool for design teams in interpreting rich user data for NPD, because the framework points out key concepts of social-cultural context that need to be considered in developing an understanding of user experience.

The third and last framework is "Stanislavsky's System". The *System* is an approach to embodying and enacting a role in theatre (Stanislavsky, 1961). Chapter 6 showed that there are remarkable similarities between Stanislavsky's System and Activity Theory on a conceptual level that could help translate Activity Theory, a framework that is rather theoretical and sometimes difficult to put into practice, for NPD. Trying out Stanislavsky's approach in NPD practice, we found that the approach offers intuitive ways for design teams to build creative understanding of user experience from an Activity Theory perspective.

7.2 The process of Creating Socionas

The process of Creating Socionas consists of five steps: (1) gathering user experience data, (2) preparing the data for sharing, (3) immersing the design team, (4) facilitating an insights session, and (5) reality checking. An overview of the process is shown in figure 7.1. The process should be guided and facilitated, ideally by somebody with experience in both product development and user research. If such as skill set is not available, user researchers should take the lead. Therefore this section explains the five phases from a user researcher's perspective. The descriptions draw on examples from a number of NPD projects at Philips Research and Philips Lighting. An overview of these projects can be found in chapter 2. By "we", I refer to the two or three design team members, including myself, who participated in these projects in the role of user researcher. The grey-coloured speech balloons offer extra suggestions, examples and references.

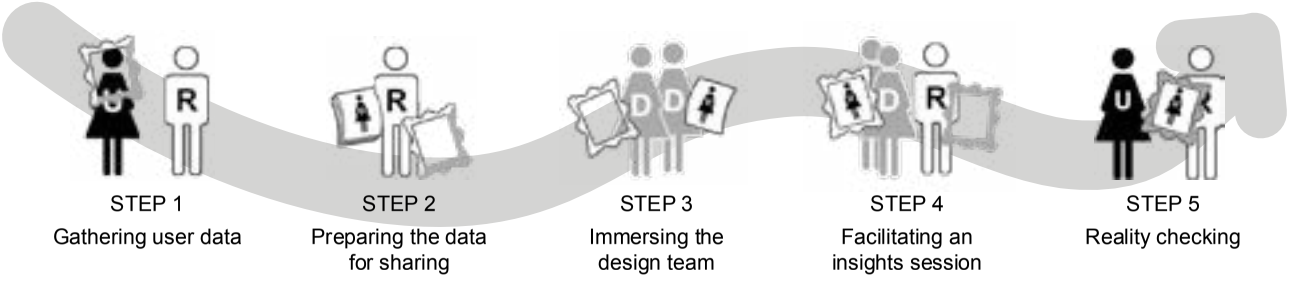


Figure 7.1

The Creating Socionas process

The process involves five steps: First, the user researcher (puppet marked by "R") gathers user data in dialogue with users ("U"), and prepares the data for sharing with the design team ("D"). In the second half of the process, the designers interpret the prepared user data for NPD, after which the user researcher checks the designers' findings and/or ideas with users.

The user researchers facilitate the Creating Socionas process with the help of representations (frames), such as probes, immersion kits and storyboards. In planning the Creating Socionas effort, user researchers should be aware that facilitation of the Creating Socionas process requires time and needs to be planned.

▶ **STEP 1: Gathering user experience data**

In the Baby Care project, parents worked on probes individually over five days. Then each couple was visited for a generative session. During the session the parents explained what they had created in their probes, jointly mapped their baby's bedtime ritual on a poster and showed the researchers around in their baby's bedroom.



Tip 7.1

Engaging designers in user research might help you to better understand their need for information (chapter 3).

Tip 7.2

E-mailing updates can work for engaging designers. However, in the current research, I found that e-mailing updates did not work for engaging managers and clients, because they often only scanned the contents of their overloaded mailboxes.

Tip 7.3

When it is not possible to have the whole design team witness interviews or group sessions, you might choose to invite individual designers to join interviews or sessions in turns. In my experience, this form of engagement works, provided that the designers are assigned a clear role and responsibility in the research (e.g., recording the interview), and are debriefed immediately after having participated in the research.

7.2.1 Gathering user experience data

A variety of methechniques exist for gathering data about users and their experiences. Creating Socionas best fits with ethnography-inspired methods and techniques that are used within design-led approaches, such as critical design, generative design research, participatory design, and empathic design (chapter 1). These methods and techniques typically try to raise awareness of what makes people's lives rich, personal and meaningful, and generate data about users' experiences that is rich in form and content, multi-layered, and open to interpretation.

In our projects at Philips, we adopted an empathic design approach (Fulton Suri, 2003a; Koskinen & Battarbee, 2003; Sanders & Dandavate, 1999), and used methods and techniques such as probes (Gaver et al., 1999; Mattelmäki, 2006), generative techniques (Sanders, 2000), and contextmapping (Sleeswijk Visser et al., 2005) for gathering user experience data. These methods and techniques focus on eliciting stories from users, from which researchers and designers can gain insight into users' activities, life contexts, expectations and dreams. Examples of user research involving these methods and techniques can be found in chapter 2. For explanations of the methods and techniques I refer to the respective literature. Two aspects that need special attention in planning user research in Creating Socionas are:

- The role of the design team in the user research; and
- The focus and scope of the user research.

Inviting designers to actively participate in the user research

Empathic design suggests that user researchers and designers join forces in performing the user research to make sure that the user perspective is included in NPD. This is usually not feasible in organizations where user research is frequently subcontracted to external agencies, or sourced from internal user research teams. Alternatively, designers may be invited to actively participate in (part of) the user research. In the design research literature, engaging designers in user research is strongly recommended, as it may increase designers' acceptance, understanding and use of the studies' results (chapter 4).

At Philips, we engaged the design teams in our user research in four different ways. First, we asked the design team's input and feedback in designing the study (tip 7.1). For example, in the Baby Care project, the designers and the user researchers jointly mapped their preconceptions about baby care, identified questions, selected focal areas of the user research, recruited parents, and developed probes. Second, we gave brief updates about the research progress and results to the design team and to project stakeholders. In the Hospital project, we updated the design team about our progress and results during biweekly project meetings and through e-mail (tip 7.2). Third, we invited designers to join interviews and group sessions (tip 7.3). And fourth, we encouraged the designers to read and interpret the user data that had been gathered in user research. In the Designed around Seniors project, we pre-structured and pre-analyzed the user experience data, after which we invited the designers to read and interpret the prepared data for NPD. Creating Socionas largely builds on this latter form of engagement, as will be explained in the following sections.

Box 7.1. Activity Theory questions

The Activity Theory questions were developed from applying Activity Theory in projects at Philips. The list of questions is not exhaustive, but may provide guidance in setting the focus and scope of the user research.

- Activity
  - What actions are involved in doing this activity?
  - What is the plot outline of the activity; i.e., when do the actions occur in time?
- People
  - Who is involved in doing the activity?
  - What are their needs, feelings, beliefs and attitudes regarding the activity?
  - What are their experiences with doing the activity?
- Motivations
  - Why do the people do the activity? What are their motives?
  - What is their desired outcome of the activity?
  - What are their intermediate goals in achieving the desired outcome?
- Tools
  - What tools do the people use in doing the activity; e.g., products, the environment, language, or behaviours?
  - What roles do these tools play in achieving the desired outcome of the activity?
- Roles
  - What are the people's roles in doing the activity?
  - What are the rights and duties attached to these roles?
- Rules
  - What rules, norms and procedures do the people have regarding the activity?
  - How do these rules, norms and procedures shape the activity?

Setting the focus and scope of the user research

Everything in and about users' daily lives is potentially relevant for understanding user experience. This may make it difficult to define the focus and scope of the user research – "What do design teams need to understand about users and their social lives to develop products and services that delight users?" In design, a diversity of user experience frameworks exist that may sensitize designers and user researchers to the various aspects that they need to consider when studying users and their experiences. However, most of these frameworks focus on individual users, and leave design teams unclear about social aspects of user experience.

In chapter 5 it was argued that a theoretical framework is needed to sensitize design teams towards "the social" (i.e., the relationality inherent in human existence) in designing for user experience. In this chapter we searched for a theoretical framework that user researchers and design teams may use as a thinking tool of the social in empathic design. Of the numerous frameworks of human behavior that we examined, we found "Activity Theory" to have the best fit with design teams' needs. Activity Theory is a framework for describing and explaining the structure, development, and social-cultural context of people's activities. It emphasizes key concepts of social- and cultural context that user researchers and designers need to pay attention to in building creative understanding of user experience for NPD (chapter 5). The concepts (five in total) are explained in chapter 5. In applying the concepts of Activity Theory in user research at Philips, I identified fifteen questions that could help design teams to determine the focus and scope of the user research. The questions are presented in box 7.1.

The first question, "What is the activity that you want to learn about?", concerns the focus of the user research. The focus of the study is defined in terms of an activity; e.g., "caring for my baby", "staying in hospital", or "keeping in touch with friends and family". The activity can be described on different levels, ranging from a higher-level activity (e.g., "caring for my baby") to a lower-level action (e.g., "heating the baby bottle"). The scope of the user research determines the level of description; a higher-level activity implies a broader scope of research than a lower-level action. User research in the early stages of NPD typically focuses on higher-level activities. User research in later stages of NPD generally focuses on lower-level actions.

The other fourteen questions refer to the scope of the research. These questions highlight key concepts of the social- and cultural context of the activity that need to be addressed to develop a comprehensive understanding of the activity. Examples are the tools that people use in the activity, the roles that they adopt in the activity, and the rules, norms and procedures they have regarding the activity.

▶ **STEP 2: Preparing the user data for sharing**

Pre-structuring and pre-analyzing user experience data in the Hospital project



Tip 7.4

Conduct the four preparation steps together with other user researchers to make sure that the research findings are not only based on your view on the data, and what is important for NPD.

Tip 7.5

From our experience, it is not advisable to skip this step, because it speeds up analysis and makes it easier to identify quotes for sharing. You might choose to outsource the transcription work. However, it is advisable to do part of the transcription work yourself in order to develop a feel for the data.

Tip 7.6

Preparation of the user data can provide a head start on conducting a detailed analysis of the data. Examples of how you might do such an analysis with Activity Theory can be found in (Collins et al., 2002; Fjeld et al., 2002; Lauche, 2005).

7.2.2 Preparing the user experience data for sharing

In NPD practice, the researchers who perform the user research and the designers who manage concept design are not necessarily the same people. This means that the user data that has been gathered in user research needs to be shared with designers. The richness and basis for building creative understanding is often lost in this process (chapter 3). A possible solution is to actively engage designers in reading and interpreting the user experience data (chapter 4) – in reading and interpreting the user data, the designers make the data their own and build creative understanding of user experience. However, sharing an extensive set of unstructured user data is usually not an option in NPD practice, as limited resources, including time and research skills, simply do not allow designers to study all the user data that has been gathered in user research. Therefore, the gathered data need to be prepared before they can be shared with the design team (chapter 4). In the Baby Care project and in the Hospital project, we successfully used Activity Theory as a framework for preparing the user experience data for sharing (chapter 5; chapter 6). Preparation of the user data involved:

- Pre-structuring and pre-analyzing the user experience data;
- Representing the user experience data.

Pre-structuring and pre-analyzing the user experience data

In design research as well as design practice, Activity Theory is relatively unknown. In human-computer interaction and in computer supported cooperative work, however, Activity Theory has been used in a number of cases to analyze ethnographic data and formulate design requirements for social computing (e.g., Collins et al., 2002; Fjeld et al., 2002; Lauche, 2005). Based on these cases, I identified four iterative phases for pre-structuring and pre-analyzing user experience data in Creating Socionas (tip 7.4).

The first phase involves reading and annotating the user data. The user researchers read through the user data to familiarize themselves with the data, and they annotate the data by writing their observations, comments and concerns on the texts. An important prerequisite for this analysis is that any audio and video recordings are transcribed beforehand (tip 7.5). In the second phase, the user data is sorted in activity systems. For each participant, or group of participants, the user researchers develop models of the activity (section 7.2.1) by sorting the annotated data in Engeström's model of an activity system (Engeström, 1987). The activity system is the basic unit of analysis in Activity Theory. The model includes six components: "subject", "object", "mediating artifacts", "rules", "community" and "division of labor" (chapter 5) (tip 7.6). The third phase involves identifying patterns and contradictions in the data; patterns and contradictions are identified within-, and between the activity systems, after which preliminary findings are formulated by defining the patterns and contradictions. In the fourth and last phase, the user researchers select user data for sharing with the design team; they need to consider which data is vital for building creative understanding of user experience, and which data can be left out. This may be a difficult exercise when being fully immersed in the data. In the Baby Care project, we found that making the selection is relatively easy once the user data has been sorted using the activity system model. In this project, we selected user stories that best illustrated our preliminary research findings, after which we added user stories to ensure that all six components of the activity system were sufficiently covered (tip 7.7).

Tip 7.7

The way a user tells his/her story might convey a particular "feel" for the user. Try to preserve this feel for the user when translating user stories for sharing within an international organization. In the Baby Care project, time did not permit hiring a professional translator. So, we decided to develop two-sided cards that showed English translations of user stories on one side, and the original user stories in Dutch on the other. This way at least half of the team was able to develop a feel for the user based on use of language.

Tip 7.8

Several guidelines for representing user experience data are presented in chapter 4, more guidelines can be found in the design research literature (e.g., Goodman et al., 2006; Pruitt & Adlin, 2006).

Tip 7.9

It may not always be possible to show real users because of privacy issues. Several solutions for presenting real users without compromising their privacy can be found in (Sleeswijk Visser & Stappers, 2007b).

Representing the user experience data

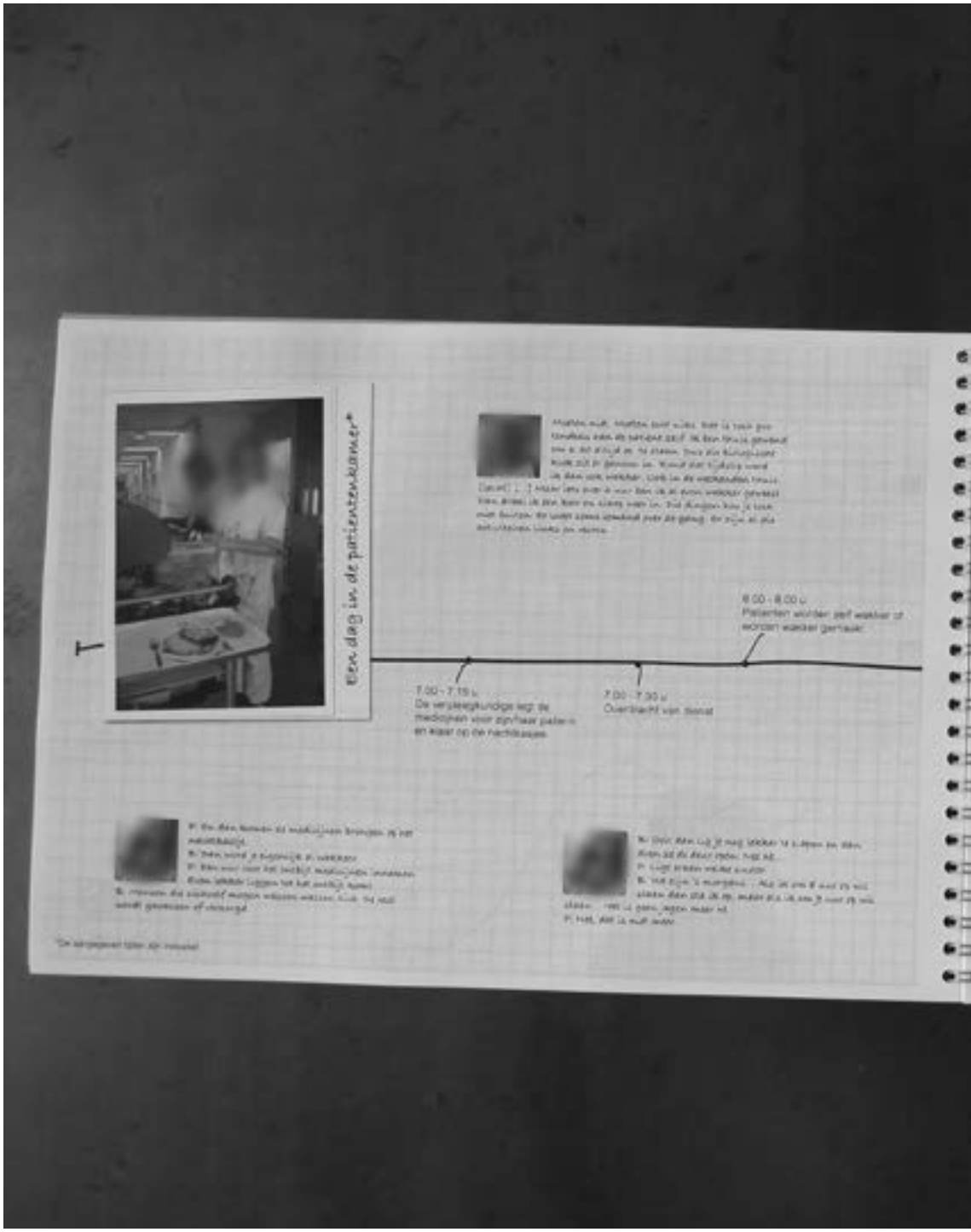
Various good ways of representing user experience data can be found in the design research literature, including personas (Cooper, 1999; Pruitt & Adlin, 2006), design documentaries (Raijmakers et al., 2006), and the personal card set (Sleeswijk Visser et al., 2007). Some of these techniques focus on presenting raw user experience data; e.g., the personal card set, which shows people and their unedited, personal stories. Others focus on presenting conceptualizations of the data; e.g., Cooper's personas present fictional characters and stories that are based (in part) on data about real users (tip 7.8).

In chapter 4, I explained that user researchers should balance raw user data with conceptualizations of the data in developing representations, because both are needed in building creative understanding of user experience for NPD. Conceptualizations of the data support informed argumentation and decision-making, and unedited user stories help designers relate to the user perspective. Where this balance lies depends on the purpose of the communication effort, the expectations, needs and preferences of the design team, and the resources of the design team (tip 7.9). In the Baby Care project, for example, we chose to show a combination of unedited user stories and the researchers' preliminary findings, because the design team consisted of experienced researchers who valued the freedom to draw their own concepts of the data. In the Hospital project, we developed "context maps" that presented the patients' and nurses' personal stories and the user researcher' initial findings in the form of maps (figure 7.2).

▶ **Figure 7.2**

Context maps in the Hospital project

The maps showed patients' and nurses' personal stories in the form of quotes, photos and returned probe materials. Each map addressed one component of Engeström's model of an activity system.



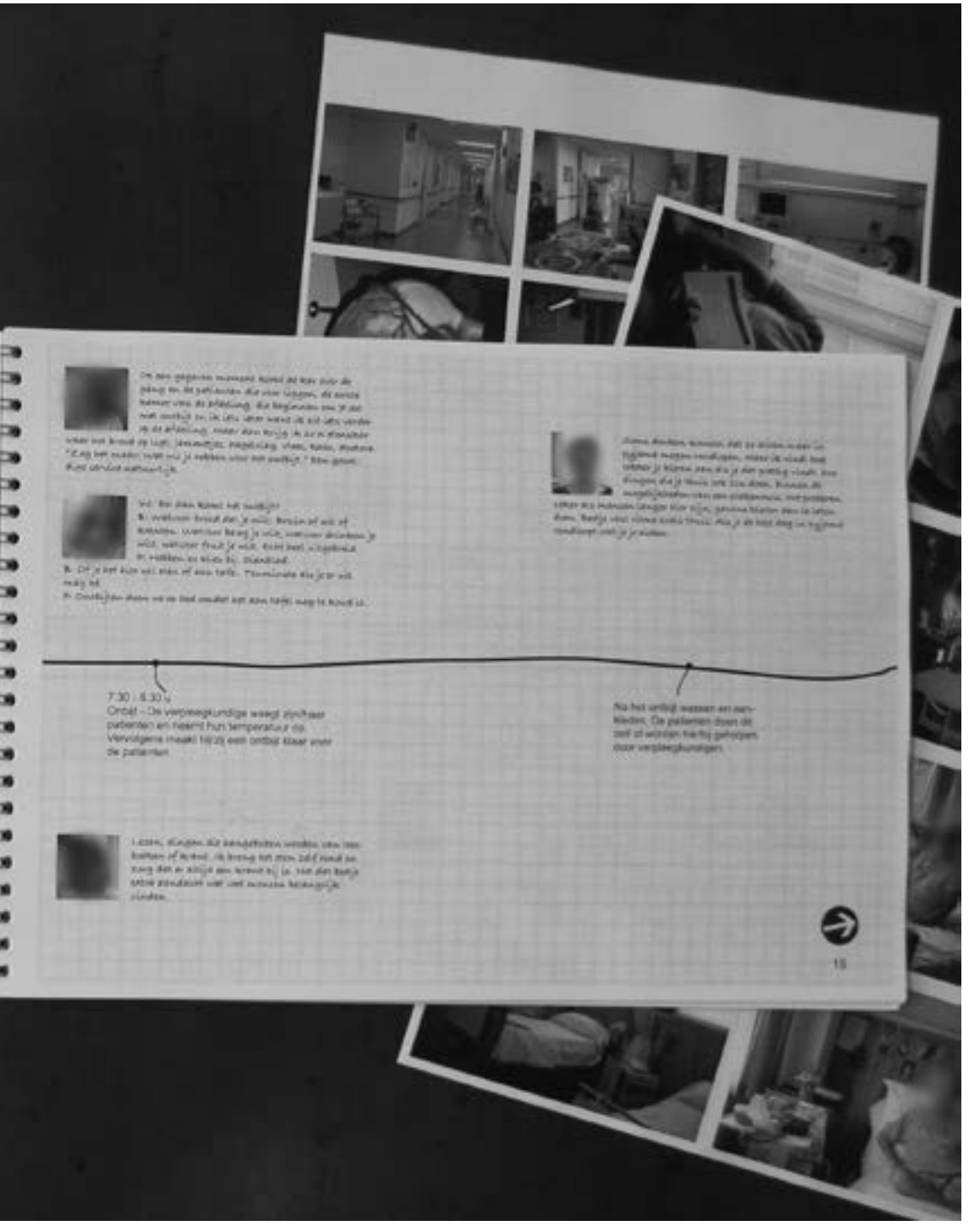
Een dag in de patientenkamer*

7.00 - 7.15 u.
De verpleegkundige legt de medicijnen voor zijn/haar patiën-ten klaar op de nachtkastjes.

7.00 - 7.30 u
Overdracht van dienst

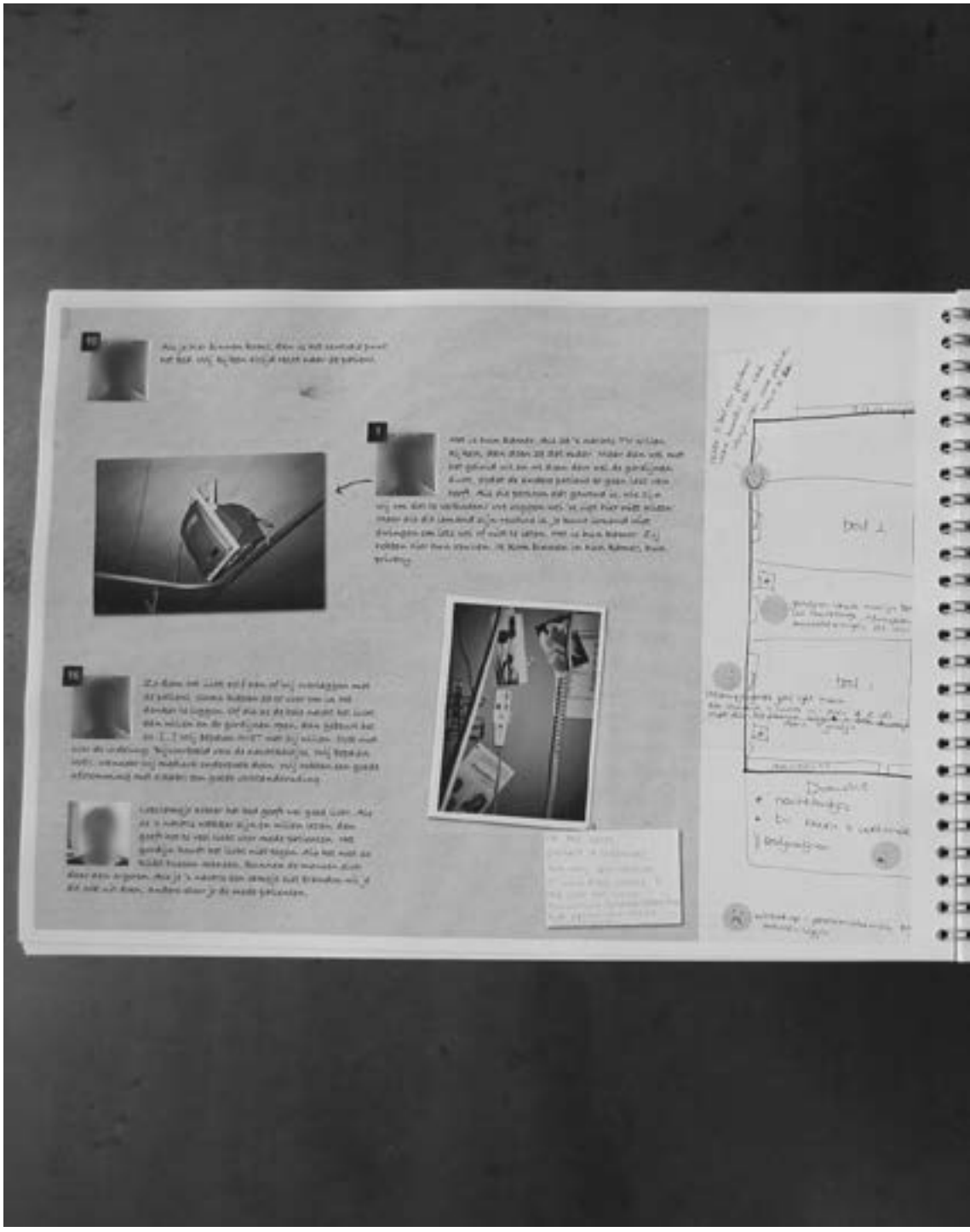
8.00 - 8.00 u
Patienten worden zelf wakker of worden wakker gemaakt.

*De aangegeven tijden zijn indicatief



7.30 | 8.30 u
Ontbijt – De verpleegkundige weegt zijn/haar patiënten en neemt hun temperatuur op. Vervolgens maakt hij/zij een ontbijt klaar voor de patiënten.

Na het ontbijt wassen en aankleden. De patiënten doen dit zelf of worden hierbij geholpen door verpleegkundigen.




bed 1
bed 4
toilet

▶ **STEP 3: Immersing the design team**

Immersion kit for sharing the rich user data with the design team in the Hospital project


Hi Bram, meet...
Daan van Beusekom (42)

Tip 7.10

In the Kitchen project, the design team acquired a user perspective through interviewing users themselves. Time simply did not permit conducting a full-fledged user research, so we asked each designer to interview one or two people about their cooking experiences, and to bring their findings and insights from interviewing to an insights session.

Tip 7.11

Ask designers to write down their observations and findings from working on an immersion kit, to ensure that their valuable insights don't get lost on the way.

Tip 7.12

Building creative understanding of more than one user at a time can be difficult. That is why in the Hospital project, we decided to pair up each designer with one user or character in the data, like an actor is coupled to a particular role in a play. This user or character provided a particular focus for the designer in reading the data and in working on the exercises. In a later phase of the process, the designers enacted their roles in creating use case scenarios.

7.2.3 Immersing the design team

In NPD practice, findings from user research are often shared by handing over a report, or by giving a presentation. In my experience, and that of several prominent design researchers and practitioners (e.g., Fulton Suri, 2003a; Gaver et al., 2003; Koskinen, 2003), a more effective way of ensuring that the user perspective is included in NPD is for design teams to interpret (part of) the user experience data for themselves. By inviting designers to grapple with the data themselves, they are encouraged to immerse themselves in the data, and to make the data and findings their own (chapter 4) (tip 7.10).

Since not every designer is a user researcher, I have been looking for ways that guide designers in reading and interpreting user experience data. Activity Theory provides a comprehensive framework for structuring and analyzing user experience data for NPD, however; the framework is generally considered "hard to learn" and "difficult to put into practice" (chapter 5). In chapter 6, we argued that more intuitive ways are needed for designers to use Activity Theory in interpreting user data for NPD, and found that Stanislavsky's System to provide these intuitive ways. Stanislavsky's System is an approach to acting that supports actors in the process of embodying and enacting a role. The approach has been very influential in theatre and has been widely adopted in theatre education. Stanislavsky's System is of practical interest to empathic design, because of the analogy between actors embodying a role in theatre and designers building creative understanding of user experience in empathic design. But the approach is also of theoretical interest, as there are striking parallels between the concepts of Stanislavsky's approach and the five key concepts of Activity Theory on the other – roughly speaking, when one follows Stanislavsky's approach, one implicitly applies Activity Theory.

In the Hospital project, we successfully used Stanislavsky's approach to guide the design team in reading and interpreting user experience data for NPD. In this project, immersion kits were developed for sharing the rich user data with the design team. The kits included representations of the user experience data and five exercises that invited the designers to read and reflect on the data. The exercises were based on Stanislavsky's three-phase approach (chapter 6): The first phase involves reading and discussing the user experience data. The designers read a scene or story in the data and briefly reflect on the users' situations, actions and objectives (tip 7.11). Initial discussions should focus on users' factual circumstances, because motives and feelings are difficult to define in the early stages of immersion; designers first need to establish an understanding of the users' factual circumstances from which they can make empathic inferences about users' motives and feelings (chapter 6). In the Hospital project, we invited the designers to reflect on the patients' and nurses' "given circumstances" first (chapter 6). For example, in one exercise, the designers were asked to list the given circumstances, asking themselves questions such as, "*What does nurse Sonja's day look like?*" and "*Who is part of Sonja's social world in hospital?*" and "*What does Sonja's department look, hear, feel and smell like?*" In later discussions of the user data, we asked them to consider patients' and nurses' objectives; e.g., the designers were asked to image what is important to Mrs. Pessers when the doctor visits her, and to formulate Mrs. Pessers' object of the doctor's visit (tip 7.12; figure 7.3).

In the second phase the designers "improvise" the discussed scene or story (tip 7.13). Improvising encourages designers to connect their own feelings and motives to the users'

Tip 7.13

Improvising does not necessarily mean "play-acting"; team members may also do improvisations verbally, or on paper. Choose a technique that fits the design team's culture and practices. When designers feel uncomfortable about play-acting, a play-acting exercise might reduce their motivation to participate in immersion (chapter 4).

Tip 7.14

When the design team finds it difficult to relate to the user's situation, you might ask them to compare the user's situation to the situation of a person they know well (e.g., a relative, friend, or neighbour) instead.

Tip 7.15

It requires time to take in and digest user experience data; however, a very long immersion process might paralyze the designers' creativity (chapter 5; chapter 6). In projects at Philips, the immersion process was typically spread over two to five consecutive days.

Tip 7.16

Working on an immersion kit should take no longer than 15 to 20 minutes a day, which I found was usually sufficient for team members to become immersed with the data, yet acceptable in terms of time.

situation, thereby building empathic understanding of users' experiences and generating new insight (chapter 4; chapter 6) (tip 7.14). Stanislavsky's magic-if technique can be a useful technique in this regard. In this technique, the designer continually needs to ask him/herself, "What would I do if I were in the user's situation?" (chapter 6).

In the third phase, the designers reflect on the improvisations. The designers discern similarities and differences between their improvisations and the users' stories to ensure that their growing understanding of user experience is consistent with the user experience data. In the Hospital project, the designers were asked to compare their improvised actions with the patients' and nurses' actions as described in the context maps; e.g., one exercise questioned, "How is what you would do different from what Jan would do?"

The design team in the Hospital project worked on the immersion kits during five days – doing the immersion all at once would imply little room for reflection, and probably would have created only limited understanding of user experience (chapter 6) (tip 7.15; tip 7.16). We as user researchers facilitated and coordinated the immersion process. In coordinating the process, the following two questions needed to be answered:

- Who will be involved in the immersion process, and who will be informed?

Who is involved, and who is informed?

In large industrial organizations, design teams are often multi-layered. This may make it difficult to determine who should be involved in the immersion process, and who should be informed (chapter 3). Usually it is not possible to engage "everyone", because not everyone is available, wants to be engaged, or is allowed to be engaged by their supervisors (tip 7.17). Moreover, engaging people from different positions and with different concerns might interfere with group dynamics in the process of building creative understanding of user experience.

Since success of the Creating ocionas effort partly depends on active participation of the individual team members, I suggest only involving people who are willing and able to invest time and effort in the immersion process. When limited availability prevents people (e.g., managers, or clients) from actively participating in the process, it might be better to inform them about the approach and its results instead. At Philips, we usually involved all design team members and the project manager in the immersion process. Sometimes clients, and people who worked on parallel, or similar projects were involved too. Project stakeholders were usually informed about the immersion process and its results in a presentation.

Motivating the design team

Designers need to actively participate in the immersion process for the process to be successful. At Philips, we stimulated design teams to invest time and effort in immersion in four different ways. First, we explained the Creating Socionas approach and its objectives. Creating Socionas needs to be explained at the very outset of the project (tip 7.18). In the Designed around Seniors project, we organized a kick-off meeting was in which we discussed the approach with the design team, and answered questions, such as, "Why is it important to build creative understanding of users and their experiences in our project?" and "How will it help the project?" and "What does it deliver?" and "What can we expect in terms of required time and effort?" After the kick-off meeting, the designers knew what to expect, and were

Tip 7.17

Design team members can do the immersion process either individually, or as a team. At Philips, we decided to involve designers individually, because they were distributed within the organization, and/or geographically distributed. The individual approach enabled them to work on the immersion kit when-, and wherever they felt was convenient within the time frame that we allotted for immersion.

Tip 7.18

Explain the purpose of the immersion exercises. In the Hospital project, each exercise in the immersion kit was introduced with a one-sentence explanation. Writing the explanations prompted us to consider which exercises were really needed for immersion, and which ones were redundant, and resulted a more concise immersion kit.

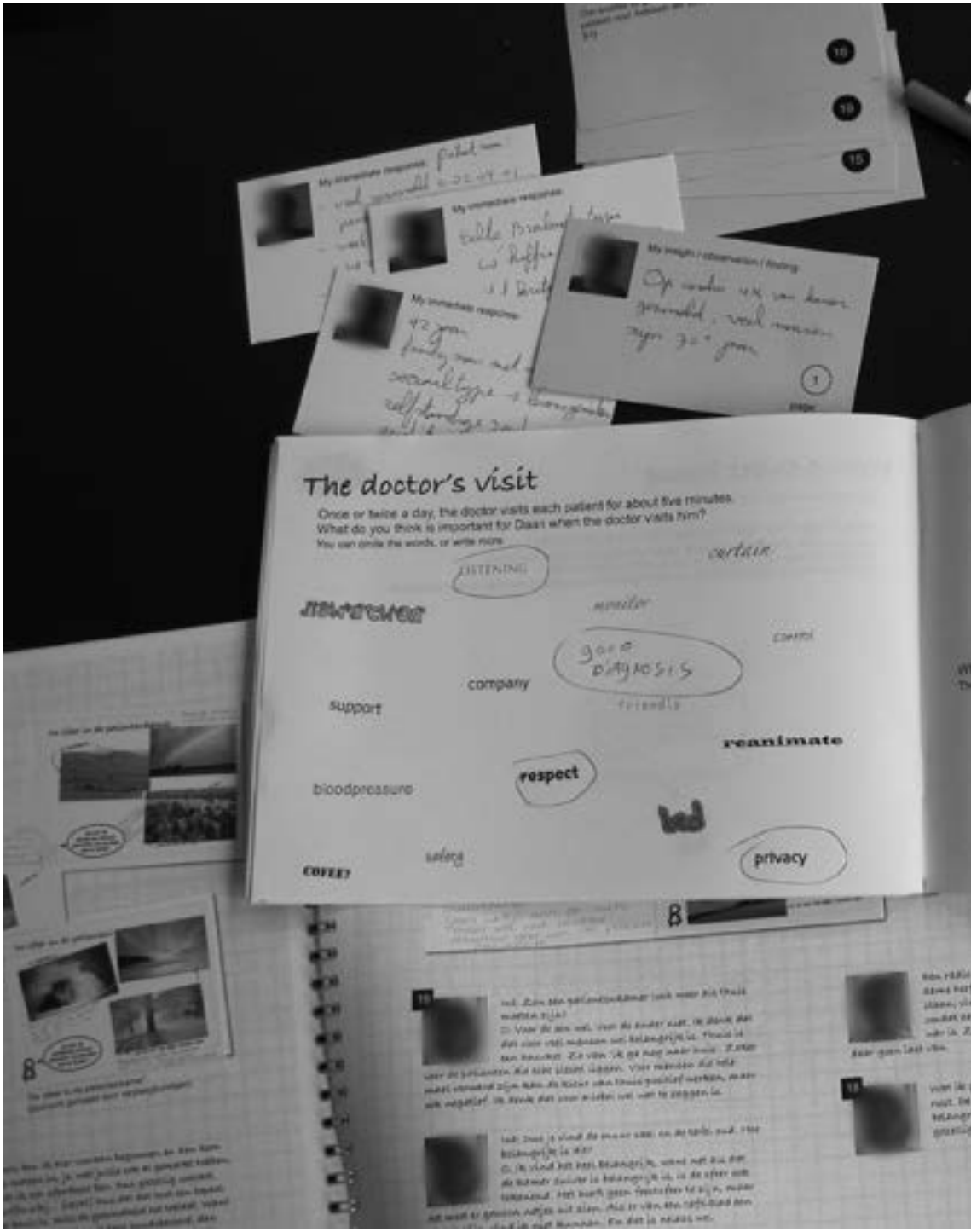
more committed towards the approach.

Second, we made individual designers responsible for part of the immersion process. In the Hospital project, each designer was made responsible for the interpretation of data that concerned one particular user. We explained to the designers that they would need to represent "their" users in the remainder of the project, and that their findings from reading and interpreting the user data would be needed for developing opportunities for NPD. Third, we addressed the designers personally. We designed immersion kits that were personalized, and we handed them out in person if possible. Fourth, we developed immersion kits that raised designers' interest and curiosity, and that fit with designers' practices and cultures (chapter 4). In the Baby Care project, we learned that design teams needed to have an overview of the user data before diving studying the data in detail. Therefore, in the Hospital project, we presented the user data in the form of a sticker book. The sticker book invited the designers to browse the data as they pasted stickers. This way they obtained an overview of the data as a starting point for immersion.

▶ **Figure 7.3**

Completed immersion kit in the Hospital project

In one exercise, the designers needed to make empathic inferences about the patients' and nurses' objectives. The designer who worked on the kit in the photo was asked to image what is important to patient Daan when the doctor visits him, and to formulate Daan's object of the doctor's visit as an active verb.


The doctor's visit
Once or twice a day, the doctor visits each patient for about five minutes.
What do you think is important for Daan when the doctor visits him?
You can circle the words, or write more.
LISTENING
certain
company
support
reanimate
respect
bloodpressure
privacy
COFFEE?


I want to get a professional diagnosis and explanation of what I can expect to happen.
DAAN
How is Daan's situation in the patient room different when at 14.15h. the nurse comes in to measure his bloodpressure?

▶ **STEP 4: Facilitating an insights session**

Creating thematic maps by structuring user observations and findings in the Baby Care project

Tip 7.19

Have designers discuss their observations, findings and insights in groups of three to five members. Such groups are generally small enough for all members to actively participate, and large enough for bringing together different interpretations of the user data.

Tip 7.20

In design-led approaches, the amount of data that supports an insight or finding is not necessarily indicative of its relevance for NPD. Sometimes opportunities and ideas for products and services can be inspired by a single user story only.

Tip 7.21

Broad themes (e.g., “communication”, “privacy”, or “feeling”) may not give sufficient direction to opportunity development. In our projects, we usually asked designers to formulate themes that include both a noun and a verb. This exercise required the designers to make their interpretations of the user experience data explicit, and resulted themes that provided more guidance in later phases of the project.

7.2.4 Facilitating an insights session

After immersion, the designers need to draw implications of the user research for NPD: "What did they see, find and learn?" and "What do these observations, findings and insights mean for their project?" At Philips, we facilitated this process by organizing insights sessions for translating creative understanding of user experience into opportunities and criteria for technology and concept development. The insights sessions proceeded in three parts. In the first part, the designers discussed their observations and findings from immersion to develop a shared understanding of the user data (tip 7.19; figure 7.4). Developing a shared understanding of user experience in the team is important for collaboration and decision-making in later phases of the project (chapter 4). Often new insights were generated in discussing the observations and findings. The design team was encouraged to back-up all observations and findings with user data. This facilitated discussion of findings in the insights session as well as in later phases of the project (tip 7.20).

In the second part of the session, the designers created thematic maps by structuring their observations and findings, and labeling each cluster of findings with a theme (tip 7.21). Links between the user data and the findings were preserved in creating the maps, so others were able to understand how the themes and findings emerged. Figure 7.5 presents an example of a thematic map.

In the third part of the session, the designers identified opportunities and/or criteria for product- or service development. Opportunities and criteria can be identified from problems and issues that have been brought up most explicitly by users, and from envisioning possible alternative futures. The latter approach relies more heavily on designers' personal insight and creativity, and is more likely to produce radically new ideas. The insights session was closed with a presentation- and discussion round, in which the designers shared themes and ideas that they thought were most interesting, and discussed follow-up actions.

After the insights session, the designers used the generated findings, themes and opportunities as a basis for developing technology- and/or product concepts. To explain the rationale of their concepts to stakeholders, they created a presentation that explicated their user-centric approach in developing the concepts, and that showed findings from the user research that underpinned the concepts. In the Hospital project, a welcome document was developed for sharing the Creating Socionas approach and its results with new team members and stakeholders (see figure 7.6).

▶ **Figure 7.4**

Sharing and discussing observations and findings in the Hospital project



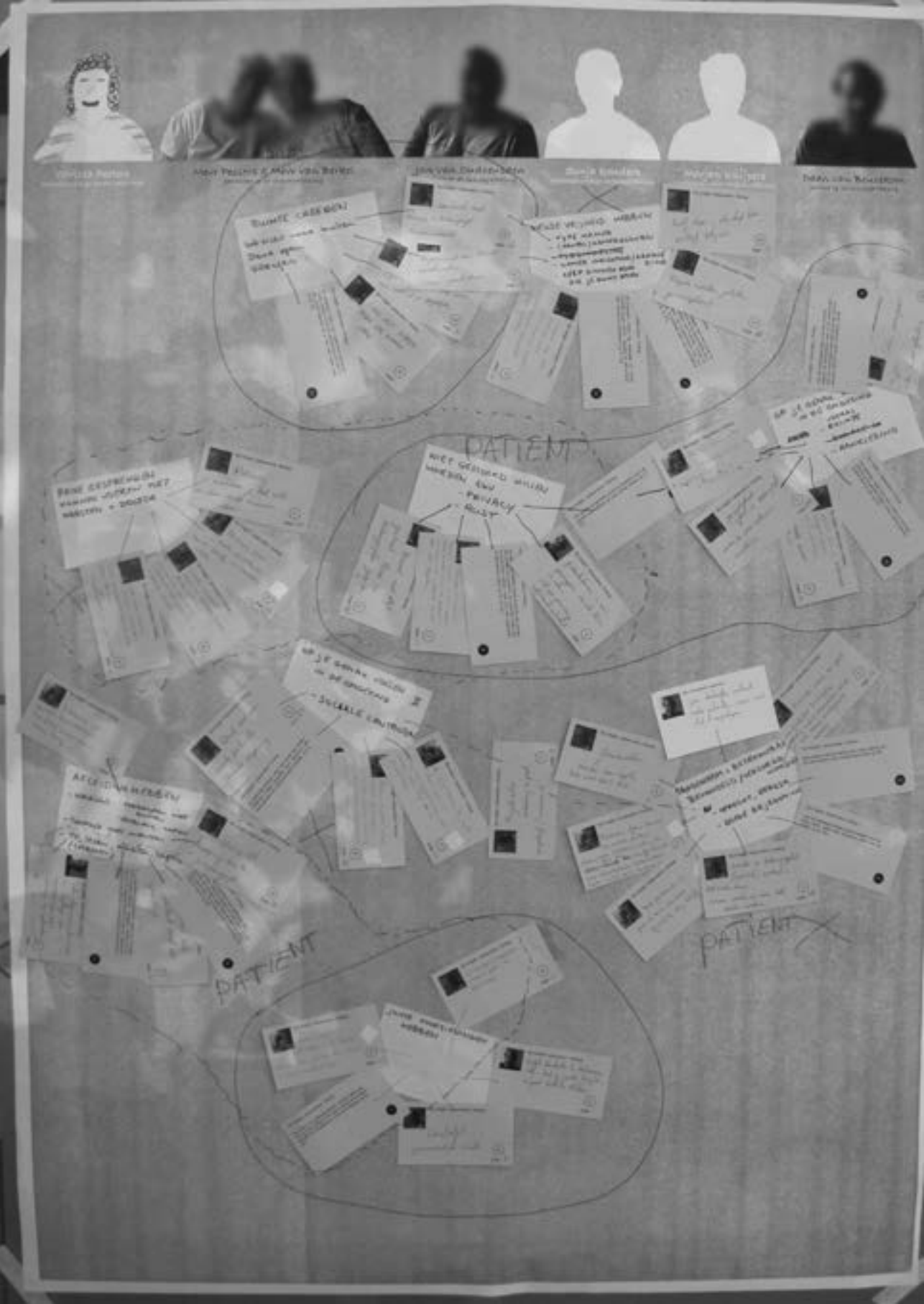




Figure 7.5

Thematic map in the Hospital project

The thematic map combines three layers of information, (1) the users' personal stories, (2) the designers' findings and themes, and (3) the identified opportunities. The three layers of information enable others to understand how findings and opportunities have emerged.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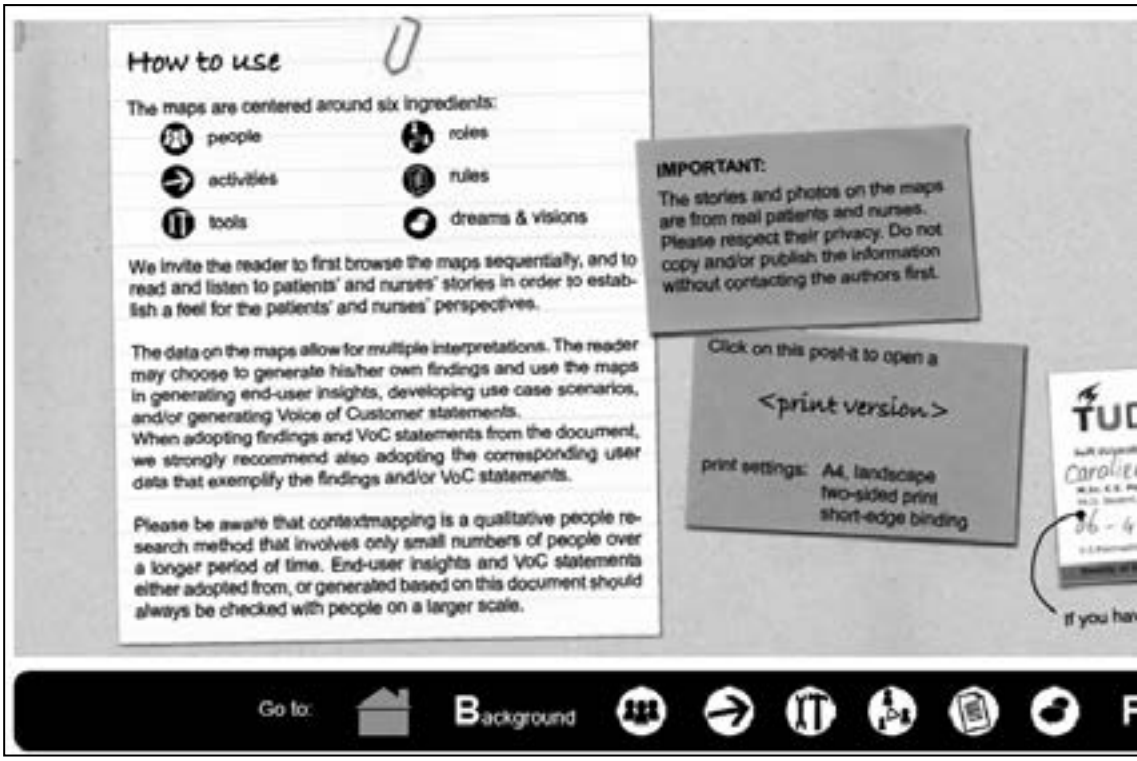
How to use
The maps are centered around six ingredients:
people
roles
activities
rules
tools
dreams & visions
We invite the reader to first browse the maps sequentially, and to read and listen to patients' and nurses' stories in order to establish a feel for the patients' and nurses' perspectives.
The data on the maps allow for multiple interpretations. The reader may choose to generate his/her own findings and use the maps in generating end-user insights, developing use case scenarios, and/or generating Voice of Customer statements.
When adopting findings and VoC statements from the document, we strongly recommend also adopting the corresponding user data that exemplify the findings and/or VoC statements.
Please be aware that contextmapping is a qualitative people research method that involves only small numbers of people over a longer period of time. End-user insights and VoC statements either adopted from, or generated based on this document should always be checked with people on a larger scale.
IMPORTANT:
The stories and photos on the maps are from real patients and nurses. Please respect their privacy. Do not copy and/or publish the information without contacting the authors first.
Click on this post-it to open a
<print version>
print settings: A4, landscape
two-sided print
short-edge binding
TUD
If you hav
Go to:
Background
F

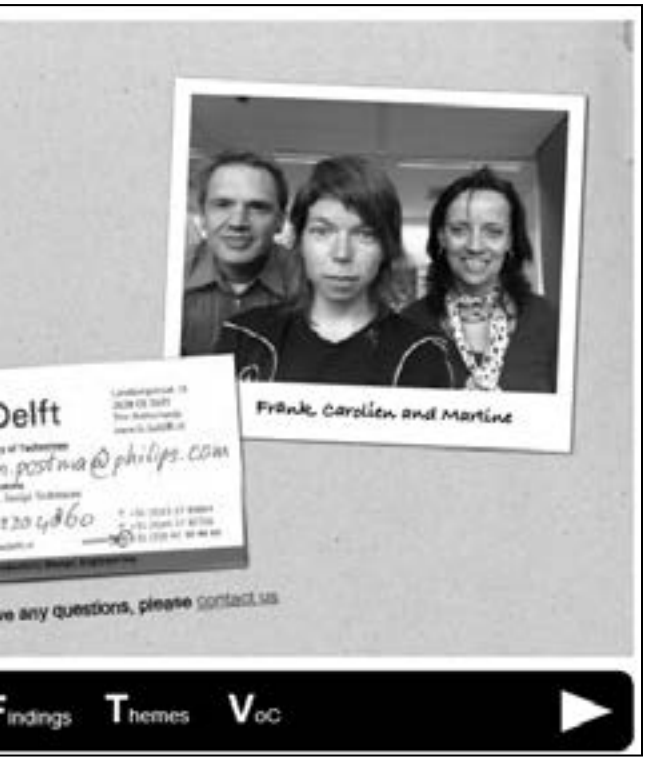

Figure 7.6

Welcome document in the Hospital project

In the Hospital project, a welcome document was developed for sharing the approach and its results with new team members and stakeholders. The document was divided into three parts. The first part briefly explained the approach, and how its results might be used in NPD (this photo). The second part presented the insights and themes that were generated by the design team. The third part listed the identified opportunities and criteria.

The welcome document was distributed via e-mail (an established communication channel within the organization) and on doctor-shaped USB sticks that the project manager handed out as gifts to new team members and stakeholders. The team members and stakeholder used the gift as decoration in their work space, where it reminded them of the patients' and nurses' perspectives (next page).




PHILIPS
DELL
9

▶ **STEP 5: Reality checking**

The insights and concepts that were generated in the Baby Care project were contronted with users in focus group sessions.

Tip 7.22

You might ask users to respond to the collected user stories to find out if the stories resonate on a larger scale, or to learn more about the details of the stories. Examples can be found in (Raymakers et al., 2006).

7.2.5 Reality checking

The findings, themes and opportunities that were generated in the previous phases need to be checked with reality to ensure that the design team is not heading in the wrong direction. It is recommendable to first check the findings, themes, and opportunities with the users who participated in the user research before checking with users on a larger scale (tip 7.22).

A common procedure for reality checking at Philips is to formulate "end-user insights", and to confront these with users in interviews or focus group sessions (chapter 3). End-user insights are abstracted findings from user research in the form of brief textual descriptions of users' dilemmas and aspirations. In my experience, end-user insights are often difficult for users to judge, because the insights do not describe the idiosyncrasies of everyday life that make the dilemmas and aspirations meaningful and concrete. Moreover, I found that capturing design teams' rich creative understanding in brief textual descriptions of dilemmas and aspirations can be a true challenge (chapter 3). Alternatively, user researchers (and designers) might use techniques such as play-acting (Sato & Salvador, 1999), storyboarding and building scenarios (Alexander & Maiden, 1999; Gruen et al. 2002) as a means of communicating their creative understanding with users (figure 7.7). These techniques focus on creating stories about people, their activities and experiences, which might help users to understand, and relate to insights from user research.

▶ **Figure 7.7**

Developing scenarios in the Hospital project

In the Hospital project, play-acting techniques were used to develop concepts into scenarios. The context maps provided an outline of the 'script'.







7.3 Indication for use

Creating Socionas has been developed for building creative understanding of user experience for new product development in organizations where user research is performed by internal or external user research experts, while designers manage the concept design. The approach is most valuable in the early stages of NPD, when a range of options for design are still open and the design team needs to identify and select opportunities for product or service development; at Philips, for instance, we used the approach in exploring new growth areas and domains that were relatively open and unexplored. Because Creating Socionas was optimized for NPD practices at Philips, user researchers and designers who are interested in trying out (parts of) the approach first need to check if and how Creating Socionas can be applied to their own organization, or client organization. The following actions may be useful in this regard; they help to judge whether or not Creating Socionas fits the organization's needs, and prepare the ground for introducing the approach in the organization to make the effort successful:

- Map the organization's needs and problems of designing for users' experiences to find out if and how Creating Socionas fits with the organization. In The Personas Lifecycle, Pruitt and Adlin refer to this action as "organizational introspection" (Pruitt & Adlin, 2006). They offer a set of questions and points of attention for observing and reflecting on the culture and practices of one's own organization that I found useful for practitioners in planning a Creating Socionas effort, and that may help students as well as practitioners to get to know their organization's culture.
- Make people within the organization enthusiastic about doing Creating Socionas. Explain how Creating Socionas adds value to established approaches within the organization; what needs are addressed by the approach and how. Showing examples of previous efforts and their outcomes can help people understand what Creating Socionas is about, and to convince them of the value of the approach.
- If the idea is to roll out the approach within the larger organization, then management and stakeholders should be convinced at an early stage too. Their support may be crucial in promoting Creating Socionas in the organization and in making the effort successful – especially when implementation of the approach requires a change of mindset within the organization.
- Find people within the organization who can be ambassadors of the approach. Ambassadors are people who believe doing Creating Socionas makes sense, and who are willing to support the effort, even when challenged by unforeseen difficulties and scepticism of others. Students best find an intern coach who is (or becomes) ambassador of Creating Socionas and can help to get the effort off the ground.
- Start with a small Creating Socionas effort in a project that has relatively low stakes, so little harm is done when the effort does not work out as planned. If the effort is successful, enthusiastic team members and managers may become ambassadors of the approach and support its implementation on a larger scale. In my experience, a successful student project can already be enough to get several people within the organization on board.
- Adjust the approach based on previous learnings and experiences to make it fit with the project's needs. Practitioners who have limited experience with designing for experience may find inspiration from the various approaches and theories that have been developed

in the fields of design and human-computer interaction, as well as the human factors discipline and social sciences. An overview of approaches to designing for experience in the field of design can be found in chapter 1.

8 Discussion

This thesis presented the research into *Creating Socionas*, an approach to building creative understanding of people and their social lives in the early stages of new product development (NPD). Creating Socionas seeks to address two questions: What do design teams need to understand about "the social" to develop products and services that delight users? And how can design teams build this understanding under the constraints of NPD practice?

The previous chapter already explained how practitioners might introduce and practice Creating Socionas in their own organizations. In this final chapter, I look back on the current research, and draw implications for education and future research. The chapter has been divided into four parts. In the first two parts, I reflect on the research approach and specify its contributions. The third part offers recommendations for Creating Socionas in education. The last part discusses three areas for further research into the approach.

8.1 Contributions of the research into Creating Socionas

Creating Socionas builds on empathic design – an approach to designing for experience that is characterized by a design attitude of respecting users, being committed to understanding users' needs and desires, building holistic understanding of users' activities, and relying on personal insight and creativity (Mattelmäki, 2006) –, and is firmly rooted in design practice. The research proceeded through cycles of developing and evaluating the approach in ongoing NPD projects at Philips. Practice, theory and method were closely integrated in this cyclic process of action and reflection, and this is where the strength of the research into Creating Socionas lies.

The research delivered a threefold contribution to the practice and the study of user-centered innovation. First, the research generated empirical understanding of the problem of building creative understanding in NPD practice, and the value of theories and methods in this regard. Chapter 3, for example, provided a critical reflection on the use of user-centered design approaches in industry, and the differences between industry and academic research settings. It reported our experiences with introducing and practicing empathic design in the specific situation of Philips Research, focusing on the challenges encountered due to discrepancies between the theory of empathic design as described in the literature on the one hand, and the application of empathic design in an industrial context on the other; for instance, the discrepancy between empathic design's advise to engage design team members as multi-disciplinary experts in user research on the one hand, and the common practice of sourcing user research from external consultancies or internal user research teams on the other, which raised questions of who, when and how to engage design team members in user research (chapter 3). This and seven other challenges were identified and discussed, after which three cultural and methodological changes were proposed for addressing the challenges that we encountered in the future: (1) From focusing on rational approaches to including empathic approaches, (2) from users as informed to users as partners in NPD, (3) from being informed of user research to being engaged in user research. The latter change is new and marks off an area of empathic design that is largely unaddressed in the literature, but that may be key to successfully practicing empathic design in an industrial organization. The former two changes are consistent with those previously proposed by Sanders (2006), which

suggests that others face similar challenges when practicing empathic design in an industrial organization.

What makes chapter 3 interesting is that it closes the loop between empathic design in theory and empathic design in practice. The design research community needs reflections of this kind to increase relevance of its contributions for practice, and to allow for design approaches to become successfully practiced on a larger scale. So far, however, there has been little discussion of the use of design approaches in industry, and the differences between industry and academic research settings. Chapter 3 may play an important role in opening up this discussion.

Second, the research generated theory of building creative understanding of users and their social experiences that is grounded in action. Firstly "trialogue" was introduced in chapter 4; a framework for sharing rich user data in NPD practice that was developed by using Wright and McCarthy's (2005) theoretical concept of dialogue as a lens to explore the tri-partied interaction between users, user researchers and designers in NPD projects at Philips. User-centered approaches, such as empathic design, often suggest designers adopt the role of user researcher and build creative understanding of user experience in direct interaction with users, or "dialogue". As explained previously, we found that the situation is usually more complex in NPD practice as the interaction between users and designers is often mediated by a third party performing the user research, e.g., a market consultancy or a research team in the organization. In chapter 4, we discussed how Wright and McCarthy's requirements for successfully building creative understanding in dialogue could work for the perhaps more common situation of trialogue in NPD practice, drawing examples from an NPD project at Philips. This exercise resulted a framework that researchers and practitioners may apply to their own practices to identify ways of successfully building creative understanding of user experience in NPD. Applying the framework to practices at Philips, for instance, revealed that the earlier identified discrepancy between empathic design's advise to engage design teams in user research on the one hand, and the practice of sourcing user research from external consultancies or internal research teams on the other, may be resolved by actively engaging design teams in the process of reading and interpreting the gathered user data for design instead. This is what distinguishes the framework from many other communication guidelines and models presented in the design research literature that are evaluative rather than generative.

Then chapter 5 reported our search for a framework that design teams can use as a thinking tool of the social in empathic design. Recent societal issues and socio-technological developments have made "the social", i.e., the relationality inherent in human existence, an essential topic for design. Despite the fundamentally social nature of life, most existing frameworks intended to generate perspectives of user experience in design still focus on the individual, leaving design teams rather ill-informed (chapter 1; chapter 5).

Building on the idea of engaging design teams in reading and interpreting user data for design, we set out to find a conceptual framework that multi-disciplinary teams could use as thinking tool of the social in making sense of the data. In chapter 5, we reviewed a variety of possible frameworks on the basis of literature and described our experiences in applying candidate frameworks in NPD practices at Philips. The search yielded a set of criteria for assessing the usefulness of frameworks for empathic design, and five groups of frameworks:

special effect theories, relational frameworks, catalogues, metaphors, and scaffolds of context. We found Activity Theory (AT), as a scaffold of context, to be the best fit between design teams' needs in empathic design and the frameworks' offerings.

Activity Theory (Vygotsky, 1978), rooted in early 20th century Russian psychology, is a comprehensive framework for describing and explaining the structure, development, and social-cultural context of human activity, and has been successfully used for these purposes in the fields of human-computer interaction and computer supported cooperative work. One of the advantages of the framework over the other frameworks that we reviewed is that it addresses both the individual's experience and social context. Another great advantage of AT is that it points out concepts of social-cultural context that need to be considered in developing an understanding of people and their social lives. Taken together, these advantages make AT a potentially powerful thinking tool for empathic design. In fact, Activity Theory might be exactly what design teams need to understand to develop products and services that delight users.

Finally chapter 6 presented Stanislavsky's approach to play-acting as an intuitive way for design teams to build creative understanding based on Activity Theory. While AT has been successfully used by social scientists as a framework for analyzing and structuring empirical data in human-computer interaction, the framework is relatively unknown within the field of design. A possible explanation is that the framework is often perceived as hard to learn and difficult to put into practice. Having this reputation one cannot expect design teams to adopt Activity Theory in a way social scientists do; thus more intuitive ways are needed for design teams to use AT as a thinking tool in empathic design. We found that Stanislavsky's System provides these intuitive ways.

Stanislavsky's System is an approach to play-acting that was developed in the 1920s by Konstantin Stanislavsky to support actors in the process of embodying and enacting a role (Stanislavski, 1961). The approach is of practical interest for empathic design because of the analogy between actors embodying a role in theatre and designers building creative understanding of user experience in empathic design. This analogy is well recognized in design research, and has been successfully employed in the development of tools and techniques, such as experience prototyping and personas. What is interesting and new is that Stanislavsky's approach may also be of theoretical interest for empathic design, as in chapter 6 we found striking parallels between Stanislavsky's System and Activity Theory on a conceptual level that could help translate AT for empathic design. Our first explorations of Stanislavsky's approach in an NPD project at Philips turned out promising in that the approach helped the designers establish creative understanding from an AT perspective, without perceiving the approach as too theoretical or difficult to grasp.

The third contribution of the research is actionable knowledge about building creative understanding of user experience in situations of trialogue, and was consolidated in Creating Socionas as a five-step approach in chapter 7. The approach is unique from most other approaches to understanding user experience for design in three respects.

One is that Creating Socionas sensitizes design teams towards the individual's experience *and* social context in building understanding of people for design. Prominent design researchers and practitioners have argued that a holistic approach to understanding people that includes the social is needed to develop products and services that are pleasurable and

easy for people to use. However, most approaches to understanding user experience for design build on frameworks of user experience that focus on the individual and leave design teams unequipped for understanding the social. Creating Socionas fills this gap by offering conceptual tools that help designers to think about the social in design without having to become social scientists.

Another distinct feature of the approach is that it addresses situations of trialogue. Existing approaches to understanding user experience for NPD often assume that design team members adopt the role of user researcher, and build creative understanding of user experience in direct interaction with users; whereas user research is often sourced from a third party, e.g., an external consultancy or an internal research team, in larger organizations like Philips. Creating Socionas explains how design teams can build creative understanding of user experience in NPD when the designers and the user researchers are not the same people.

The third important feature is that Creating Socionas combines a conceptual framework with a hands-on approach. Most other approaches to understanding user experience for design offer either a conceptual framework, like Battarbee and Koskinen's framework of co-experience (Battarbee & Koskinen, 2005); or a best practice-based approach, such as Beyer and Holtzblatt's Contextual Design (Beyer & Holtzblatt, 1998). Combining the two, Creating Socionas helps designers and user researchers to make sense of user experience for design, *and* guides them through the process of building this understanding under the constraints of NPD practice.

Creating Socionas was tried and tested in NPD projects at Philips and found to be successful in that the approach helped design teams build creative understanding of people and their social lives under the constraints of NPD practice, and created a breeding ground for user-centered design approaches in the organization (chapter 5; chapter 6). The fact that parts of the approach were adopted in other NPD projects at Philips too, for instance, the idea of using Activity Theory as thinking tool in structuring user data (chapter 6), raised our confidence that Creating Socionas is an actionable and relevant approach for these types of NPD practices.

8.2 Reflection on the research

The research approach in this thesis was described as *research through design*, meaning "generating new knowledge or understanding through cycles of developing and evaluating experiential artefacts and process prototypes" (chapter 2). A research through design approach was chosen, because the research into Creating Socionas focuses on the future, and aims to address problems that are indeterminate, or "wicked" (Rittel & Webber, 1973) in the sense that the problems are not framed by definitive conditions or limits that impose a particular view on the problem and way of resolving the problem (Buchanan, 1992). Research through design perfectly lends itself to addressing indeterminate problems, because the approach allows the researcher to study the object of research holistically, and to position and reposition the problem and the preferred state as understanding of the problem increases (Zimmerman et al., 2010).

Because the research through design approach is not formalized yet, and its methodology is rather undeveloped, action research methodology was used as a framework for practicing the

approach in the research into Creating Socionas (chapter 2). Action research is different from more traditional research approaches, which hold that research must be objective and value-free in order to be credible. Susman and Evered (1978) use the term "positivist science" to refer to the latter class of approaches. They explain the epistemological and methodological differences between action research and positivist science, and propose five alternative criteria of science as appropriate for action research: "generating principles of action", "coproducing solutions", "creating conjectures", and "being engaged in the situation under study" (Susman & Evered, 1978). In chapter 2, I discussed the methodology of research in Creating Socionas by pointing out how the research meets these criteria. In this section, I use the same criteria in discussing the strengths and limitations of my research approach.

First is generating principles of action. My primary research objective was to better understand how design teams could build creative understanding of user experience in NPD practice. This object of research is not invariant, or free of context, rather it depends upon the designers, their culture, norms and values, practices, and the objectives that make these practices meaningful. Therefore, I decided to develop Creating Socionas from an empathic understanding of the problem of building creative understanding in NPD practices at Philips Research and Philips Lighting, rather than an external understanding. The resulting approach, Creating Socionas, can be seen as a set of principles of action in that the approach explains what user researchers and designers can do when faced with the problem of building creative understanding of user experience in organizations like Philips Research and Philips Lighting, rather than what is usually or always done. The cyclic research process, in which instantiations of Creating Socionas were developed and evaluated in NPD projects at Philips Research and Philips Lighting, raised confidence in Creating Socionas as an approach that reliably applies to these settings; and design teams' positive evaluations of the approach in the Baby Care project and in the Hospital project – "You really identify with the user" (project manager Hospital project), "It helped me to internalize the data" (designer Hospital project), "It helped me to come up with new things" (supply chain manager, Baby Care project) – strengthened the idea that Creating Socionas is aligned with designers' needs and competences.

A limitation of the approach is its transferability, or "generalizability" (Lincoln & Guba, 1985). Since Creating Socionas was developed and evaluated in NPD practices at Philips Research and Philips Lighting, the approach only reliably applies to these and similar settings. In chapter 2, Philips Research and Philips Lighting were characterized as large organizations; with a high division of labor and specialization; dynamic, multi-disciplinary and networked teams; and – in the case of Creating Socionas – with a fairly low percentage of professional designers as part of the teams; that have historically been mostly technology oriented; and that have the ambition to become truly customer-, and user-centric. I expect that Creating Socionas generalizes to organizations that share these characteristics; though the approach will need to be adjusted to fit with the specific needs and practices of such organizations. Creating Socionas will be less relevant to organizations that do not aspire to be customer-, or user-centric, and to organizations with more integrated work processes in which the roles of designer and user researcher largely overlap.

Further research in which the approach is evaluated and tested together with user researchers and designers in organizations other than Philips is needed to assess the degree of transferability of Creating Socionas. The results of such research may raise confidence in

the success factor of the approach, and persuade managers and/or stakeholders to implement and invest in the approach in their own organizations.

The second attribute is producing solutions in collaboration with practitioners. The research into Creating Socionas aimed to address a problem that directly concerns practitioners, and that requires a solution that is relevant to practitioners. To increase relevance of the research for design practice, Creating Socionas was developed through collaborative action between the researcher and design teams at Philips, and determined by the needs and competences of both the researcher and the design teams. This collaborative approach was of crucial importance for developing an empathic understanding of the problem of building creative understanding in NPD practices at Philips Research and Philips Lighting, and for establishing commitment towards the research into the approach. For example, in co-developing immersion kits in the Baby Care project, it was decided not to show the triangular model of Activity Theory to the design team, because the user researcher, affiliated with Philips Research, expected that the model would invite the team members to use Activity Theory mere as a structuring tool, rather than a thinking tool of the social, and thus would not help the team develop creative understanding of users' social experiences.

The collaborative approach challenged my position as an objective and detached observer, and, from a more traditional, scientific research perspective, may be understood to have compromised the confirmability, or "objectivity" of the research. However, the collaborative approach may also be understood to contribute to the trustworthiness of the research in that the approach required me to clarify my objectives and position with respect to the research, thereby providing criteria along which others, i.e., the members of the supervisory team and the user researchers at Philips, could assess development and evaluation of instantiations of Creating Socionas (Susman & Evered, 1978; Lincoln & Guba, 1985).

The third attribute is creating conjectures about the problematic situation and possible solutions. The research into Creating Socionas is future focused, and aimed to address a problem that is indeterminate in the sense that is are not framed by definitive conditions or limits that impose a particular view on the problem and way of resolving the problem. Therefore, knowledge about building creative understanding was generated by "conjecturing", rather than deduction or induction. Conjecturing enabled the researcher to appropriate and connect theories and practices from a variety of fields and disciplines, resulting new ways of framing the problem and its solution that helped to structure and guide the research into Creating Socionas. Wright and McCarthy's (2005) concept of dialogue, for example, offered a framework for exploring the tri-partied interaction between users, user researchers, and design teams in NPD practice at Philips, which led to the concept of trialogue, one of three fundamentals for Creating Socionas, in chapter 4.

The relevance of some of the conjectures made, I believe, could stretch beyond the research into Creating Socionas; they could provide new views in other contexts too. For example, the conceptual relationships that were established between Activity Theory and Stanislavsky's System (chapter 6), which I believe have not been established before, might offer new perspectives on their much-debated translations and interpretations from the Russian language.

The fourth attribute is being engaged in the situation under study. To develop an empathic understanding of the problem of building creative understanding and NPD practices at

Philips, I actively engaged in NPD practices at Philips Research at Philips Lighting. Prolonged engagement in these practices enabled me to develop detailed understanding of the organizations' members, culture, language, norms and practices, which in turn shaped my understanding of the problem of building creative understanding in NPD practice (as delineated in chapter 2), and framed the solution space for Creating Socionas (Lincoln & Guba, 1985). For example, engagement in NPD projects at Philips Research revealed that the NPD process generally involves different parties and people over time, and that the approach therefore needs to facilitate the capturing and sharing of design teams' creative understanding throughout a project.

Moreover, engagement in the field helped to establish the organizations' members' trust, and sometimes provided access to more critical views and experiences, both regarding the organizations' NPD practices and regarding Creating Socionas, that may not have been accessible otherwise. In the Social Presence project, for example, design team members critically reviewed the approach; they explained that Goffman's (1959) dramaturgical theory had not been useful for structuring user insights, and that they preferred to do the structuring in their own intuitive ways (chapter 2).

Being engaged in NPD practices at Philips Research and Philips Lighting also implied that I needed to comply with the organizations' policies regarding privacy and confidentiality. Consequently, I could not provide the thick description of the organizations' members, culture, language, norms and practices that the reader may have wished to see in this thesis. For example, I could not give detailed descriptions of the people at Philips Research and Philips Lighting who participated in the Creating Socionas efforts. In this particular case, I decided to create pen portraits of fictitious participants to provide the reader with an understanding of who these people are (chapter 2). In other cases, it was decided to describe the research setting in more general terms in order to provide the reader with sufficient detail to understand the actions taken and the findings that were found.

The fifth and last attribute is building knowledge and understanding through acting. The research into Creating Socionas proceeded through a spiral of cycles of developing and evaluating instantiations of Creating Socionas in NPD practice. This way I could learn about consequences of doing Creating Socionas that, I think, could not have been fully known through mere contemplation, and increase relevance of the approach for the problem being addressed. Practicing Creating Socionas in the Social Presence project, for example, revealed that Goffman's dramaturgical theory, which based on a literature review seemed to be an excellent thinking tool of the social for empathic design, does not support design teams' need for broad exploration of users' needs and contexts in the early phases of NPD (chapter 5). This finding then prompted me to revise my conjectures, and to look further for theoretical frameworks that would fulfil design teams' need for exploration.

Not all findings were acted upon: Findings that required action beyond the development of Creating Socionas were only reported and not followed up in subsequent cycles. For example, in chapter 3, it was found that both methodological and cultural changes would be needed for Creating Socionas and empathic design to become successfully practiced within the organization. But establishing cultural change was not part of the objective of the research as agreed upon with the organization, and would require a type of expertise and experience that I did not possess. Therefore, it was decided to not to act upon this finding, but instead

explain the changes I think would be needed. These recommended changes may form the basis for future research in the areas of empathic design and cultural change.

8.3 Recommendations for education and for research

Chapter 7 already provided recommendations for Creating Socionas in NPD practice. This section offers recommendations for Creating Socionas in design education and proposes directions for future research.

8.3.1 Recommendations for Creating Socionas in design education

The basic concepts of "trialogue" and "designing for the social" in Creating Socionas are broadly relevant to design and, I think, should be covered in design education to well prepare students for a career as designer or user researcher.

Trialogue is about sharing user knowledge and understanding when there is a sharp division of labour between design team members, as was the case in our NPD projects at Philips in which the user research was conducted by user researchers, while designers managed the concept design. Division of labour is often indispensable in design practices in larger organizations, such as Philips, where people work in dynamic, multi-disciplinary and networked teams; and since design students are likely to work for such organizations in their future careers as designers or user researchers, design education needs to prepare them to successfully perform these roles in situations of trialogue. One reasonable approach to training students for these practices would be to have the students experience and reflect on division of labour in project work that is done in multi-disciplinary students teams, rather than designer teams; like the World Solar Challenge in which students with different backgrounds, including mechanical engineering, industrial design and aerospace engineering, actively work together as a team in designing and building a solar energy operated vehicle to win the biennial solar world championship of solar racing (De Geus, 2007). Such an approach could help students develop collaboration and communication skills for implementing and practicing user-centered design approaches, and for building user knowledge and understanding in situations of trialogue. An alternative and perhaps more practical approach would be to prepare students for situations of trialogue through a number of internships in industry or consultancies. This approach would have the additional advantage of students experiencing NPD practice and developing understanding of organizations' needs for user-centered design, and how design methods and techniques align, or could align with these needs.

By "designing for the social", I mean including the social in developing understanding of people and their experiences for design. In the late 90s, prominent design researchers and practitioners already suggested that understanding of the social is needed to develop products and services that delight users. Now that design practice is increasingly faced with the design of complex integrated systems, or "services" that affect people beyond the individual artefact, and service design is increasingly recognized as a real discipline, understanding of the social seems to grow ever more important for design. In light of these developments, design education should offer its students ways of thinking about and dealing with the social in design; for instance by introducing students to social theory and methodology in a similar way as is done in education in the fields of human-computer interaction and computer supported cooperative work, which is concerned with understanding the social in the context

of collaborative group and communication processes, and the development of technological systems that support these processes (Koch, 2006). Once students have established a basic understanding of designing for the social, and are able to find their way through the various social theories and methodologies that are available in social sciences and human-computer interaction, they should be encouraged to build on social theory and methodology in research and design projects, rather than to develop their own theories and methods from scratch. This training in using social theory and methodology in designing for the social may not only prepare students for future design practice, but also bring student work to a higher level.

Creating Socionas as an approach is perhaps too specific to the discipline of user research to be presented in a bachelor or master's programme of design, and may be introduced as one of several approaches to building creative understanding within the context of a specialization in this particular area instead.

8.3.2 Directions for further research into Creating Socionas

The research into Creating Socionas revealed three important areas for further research, each of which is briefly explained in this section. The first area of research deals with the implementation of Creating Socionas in an industrial context. Chapter 3 discussed the challenges that practitioners may experience when practicing user-centered design approaches, such as empathic design, in an industrial context. In this chapter, we agreed with Sanders (2009) and argued that user-centered design approaches need to be embedded on the methodological, mindset and cultural levels in an organization to become successfully practiced. The current research aimed to develop a hands-on approach for building creative understanding in NPD practice, rather than to establish cultural or organizational change at Philips, and thus mainly focused on the methodological level. Because the success of Creating Socionas also hinges upon its acceptance on the cultural and mindset levels in an organization, it is recommended that future research concentrates on how the approach can be implemented on these levels. The third chapter's discussion of possible cultural and methodological changes for addressing the challenges of practicing empathic design in industry may provide a stepping stone in this regard.

The second is about increasing efficiency of Creating Socionas. Being engaged in NPD practices at Philips, I learned that the process of building creative understanding should fit organizations' need for "lean product development", and thus not add significant product development time or cost to be useful and accepted (chapter 3). In the current research, the focus has been on making the process of building creative understanding efficient for the designer, not necessarily the user researcher. This may be explained by the fact that I was the primary user researcher who organized and facilitated the Creating Socionas effort at Philips. Unlike the user researchers who co-joined these efforts, I was fully dedicated to development of the approach, and thus hardly bound by time and cost. The user researchers who were affiliated with Philips usually worked to a much tighter schedule, in which they ran different people studies and/or projects in parallel. For them, Creating Socionas as described in chapter 7 may be too time intensive to be acceptable and useful in their daily practices. Future research should therefore focus on making the process of building creative understanding efficient for user researchers too, investigating how efficiency of the approach can be increased while maintaining its effectiveness. Researchers may find inspiration in

Holtzblatt, Burns Wendell and Wood's (2005) and Adlin and Pruitt's (2010) efforts to distil the key elements of Beyer and Holtzblatt's approach to contextual design (1998) and Pruitt and Adlin's approach to personas (2006), respectively, in how-to guides for practitioners.

The third area of research addresses designers' use of creative understanding in NPD. When introducing Creating Socionas in industry, managers and designers often asked for evidence of the value and benefit of the approach in terms of, for instance, newly identified market directions, number of generated product concepts, or level of user satisfaction; creative understanding in the form of user insights and personas was generally not recognized as an important deliverable as such (chapter 3). However, the research into Creating Socionas focused on the process of building creative understanding of user experience, rather than drawing implications from creative understanding for NPD; and since design teams often struggled to translate their creative understanding into deliverables that were approved by the organization (chapter 3; chapter 6), managers and designers' need for evidence of the value and benefit of Creating Socionas could not always be answered. Knowing that it is the actual output of the approach that eventually counts in industrial organizations like Philips, it is recommended that further research focuses on how design teams can translate creative understanding of user experience for NPD. The research could, for instance, look into how Creating Socionas is combined with design methods and techniques, such as scenario building (Alexander & Maiden, 2004), role-play (Boess, Saakes & Hummels, 2007) and experience prototyping (Buchenau & Fulton Suri, 2000). Once the approach is successfully integrated in NPD and generates the desired output, further research may investigate the benefits of implementing and practicing Creating Socionas, either by asking its practitioners to reflect on their experiences with using the approach, like Vredenburg et al. (2002) did for user-centered design methods in general, or by evaluating user experience and satisfaction of generated product or service concepts. Hopefully the outcome of such research provides the ammunition needed to persuade organizations to practice Creating Socionas and develop products and services that delight users.

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Summary

This work presents the research into Creating Socionas, a step-by-step approach to building creative understanding of user experience in the early stages of new product development (NPD). Creative understanding is the combination of a rich, cognitive and affective understanding of the other, and the ability to translate this understanding into products and services that are pleasurable and easy to use (Wright and McCarthy, 2005). It draws on information about the user and his/her everyday life, and it includes inspiration for design and empathy or "a feel" for the user. Several approaches to building creative understanding of user experience have been developed over the past years, including critical design, generative design research and empathic design (Sanders, 2006). They have been successfully used by their creators in projects for and with clients in the industry. Despite these successful efforts, designers and user researchers may experience two important challenges when trying to implement and practice the approaches in an industrial organization. The first challenge is to make sense of users' experiences for design. Recent societal issues and socio-technological developments, including the mass adoption of real-time social media services, have made "the social" an essential topic for design. *The social* denotes the idea that human activity is fundamentally social, as opposed to individual. In the design research literature, it has been suggested that holistic approaches to understanding user experience that include the social are needed to develop products and services that delight users. However, most existing approaches to understanding user experience for design build on frameworks of user experience that focus on the individual, and leave design teams unequipped for understanding the social.

The second challenge is to build creative understanding of user experience in the context of NPD practice. Existing approaches to understanding user experience often suggest that members of a design team adopt the role of user researcher, and directly interact with users to ensure that the user perspective is included in design. In NPD practice this interaction is not always feasible as the user research is frequently sourced from a third party, e.g., an external consultancy or an internal user research team. Thus the users researchers who perform the user research and the design team members who manage the concept design are usually not the same people in NPD practice. This means that the user data that has been gathered in user research needs to be shared with the design team. The richness and basis for building creative understanding is often lost in this process.

The current research seeks to address these two challenges; it investigates what design teams need to understand about user experience to develop products that delight users, and how they can build this understanding under the constraints of NPD practice (chapter 1). "Creating Socionas" is proposed as a possible solution.

Creating Socionas is an approach to building creative understanding that addresses the two challenges by offering a conceptual framework that helps designers and user researchers to make sense of user experience for design, plus five steps that guide them through the process of building this understanding under the constraints of NPD practice. The approach builds on empathic design – an approach to designing for experience that is characterized by a design attitude of respecting users, being committed to understanding users' needs and desires, building holistic understanding of users' activities, and relying on personal insight

and creativity (Mattelmäki, 2006).

The research into Creating Socionas proceeded through cycles of developing and evaluating the approach in ongoing NPD projects at Philips. Design practice and design theory were closely integrated in the research process.

In chapter 2, the research approach is described as *research through design*, by which I mean, "generating new knowledge or understanding through cycles of developing and evaluating experiential artefacts and process prototypes". The chapter explains how action research methodology was used as a framework for practicing a research through design approach in addressing the research questions, after which it introduces eight empirical cases at Philips in which instantiations of Creating Socionas were developed and evaluated. The following four chapters explain the development of Creating Socionas and the knowledge and insights that were generated in the projects at Philips.

Chapter 3 provides a critical reflection on the use of user-centered design approaches in industry, and the differences between industry and academic research settings. In this chapter, we review the literature of empathic design, and discuss our own experiences with introducing and practicing empathic design in several NPD projects at Philips Research over the past years. Having experimented with empathic design in an industrial context, we experienced success but also encountered eight challenges that relate to discrepancies between the theory of empathic design as described in literature on the one hand, and the application of empathic design in an industrial context on the other. An example is the earlier described discrepancy between empathic design's advise to engage design team members as multi-disciplinary experts in user research on the one hand, and the common practice of sourcing user research from external consultancies or internal user research teams on the other, which raised questions of who, when and how to engage design team members in user research. Three cultural and methodological changes are proposed for addressing these challenges in the future. These include changing focus (a) from rational approaches to including empathic approaches, (b) from users as informers to users as partners in new product development (NPD) practice, and (c) from being informed of user research to being engaged in user research. The first two changes are consistent with those proposed by Sanders (2006), which endorses our conviction that other industrial organizations face similar challenges when introducing and practicing empathic design. The third dimension is new. It highlights an area of empathic design that is still largely unaddressed in the literature, but may be key in successfully embedding empathic design within an industrial organization.

Chapter 4 introduces the concept of "trialogue". *Trialogue* is a framework for sharing rich user data in NPD practice that was developed by using Wright and McCarthy's (2005) concept of dialogue between designer and user to explore the tri-partied interaction between users, user researchers and design teams in NPD practice. Existing approaches to understanding user experience for NPD often assume that designers build creative understanding in direct interaction with users. In NPD practice, the interaction between users and the designers is often mediated by a third party performing the user research. In these cases, the rich user data gathered in user research needs to be shared with designers in ways that enable them to build creative understanding of user experience for design.

In chapter 4, we identify and discuss four requirements for successfully building creative understanding in situations of trialogue, after which we discuss five implications of trialogue

for sharing user data in NPD practice. One important implication is the active engagement of design teams in reading and interpreting user data for NPD, rather than in gathering user data, as is suggested for situations of dialogue. Creating Socionas builds on this implication.

Chapter 5 reports our search for a conceptual framework that design teams could use as thinking tool of the social in empathic design. Despite the fundamentally social nature of life, most existing frameworks intended to generate perspectives of user experience in design still focus on the individual. Therefore, a conceptual framework is needed to sensitize design teams towards both relationality and individuality in designing for user experience. Building on the idea of engaging design teams in reading and interpreting user data for design, we set out to find a conceptual framework that design teams could use as thinking tool of the social in making sense of rich user data. In chapter 5, we review a number of possible frameworks on the basis of literature and describe our experiences in applying candidate frameworks in NPD practice at Philips. A set of criteria for assessing the usefulness of frameworks for empathic design and five groups of frameworks are identified, "special effect theories", "relational frameworks", "catalogues", "metaphors", and "scaffolds of context". Activity Theory (AT) (Vygotsky, 1978; Leont'ev, 1978), as a scaffold of context, is found to have the best fit between design teams' needs in empathic design and the frameworks' offerings. An important advantage that AT brings is that it addresses the individual's experience *and* social context. Having experimented with AT as thinking tool of the social in NPD practice, we found that AT is a potentially powerful framework for structuring, discussing and sharing rich user data in empathic design.

Chapter 6 proposes Stanislavsky's approach to play-acting as an intuitive way for practicing Activity Theory in empathic design. Activity Theory provides a comprehensive framework for analyzing user experience data for design, but is generally considered to be "hard to learn" and "difficult to put into practice". More intuitive ways are needed for design teams to grapple with AT in interpreting user data for NPD. We found Stanislavsky's System, an approach to acting that supports actors in the process of embodying and enacting a role (Stanislavsky, 1961), to provide these intuitive ways. In chapter 6, we discuss the conceptual relations between Stanislavsky's System and Activity Theory, and show how Stanislavsky's System was used to translate Activity Theory for empathic design in an NPD project at Philips. Our approach in this project was successful in that the design team built creative understanding of user experience from an AT perspective, without perceiving the approach as "too theoretical" or "difficult to grasp".

Chapter 7 consolidates the knowledge and insights from the previous chapters into a five-step approach to building creative understanding of user experience, *Creating Socionas*. In this chapter, I explain how user researchers and designers in Philips and in similar organizations might implement and practice Creating Socionas, using examples from NPD projects at Philips to illustrate the approach.

Looking back on the research into Creating Socionas in chapter 8, I find that Creating Socionas is unique from most other approaches to understanding user experience for design in that the approach (1) sensitizes design teams towards the individual's experience *and* social context in building understanding of user experience, (2) explains how design teams can build creative understanding of user experience in situations of trialogue, and (3) combines a conceptual framework that helps design teams to make sense of user experience

for design, with a hands-on approach that guides them through the process of building this understanding under the constraints of NPD practice. A limitation of the approach is its transferability; Creating Socionas reliably applies to NPD practices similar to those at Philips only, and practitioners will need to adjust the approach to fit with their own contexts of NPD. Therefore, it is recommended that further research investigates the transferability of the approach. The results of such research may raise confidence in the success factor of Creating Socionas, and may persuade managers and other stakeholders to implement and invest in the approach in their organizations, and thereby develop products and services that resonate with users' social lives.

Samenvatting

Dit werk presenteert het onderzoek naar *Creating Socionas*, een stapsgewijze aanpak voor het ontwikkelen van creatief begrip van gebruikerservaringen in een vroeg stadium van productontwikkeling. Creatief begrip is de combinatie van een rijk, cognitief en emotioneel inzicht in een ander en het vermogen om dit inzicht te vertalen naar gebruiksvriendelijke producten en diensten (Wright and McCarthy, 2005). Het is gebaseerd op informatie over de gebruiker en zijn/haar dagelijks leven en omvat zowel inspiratie voor het ontwerpen als empathie– ofwel *'n gevoel* voor de gebruiker. De afgelopen jaren zijn verschillende benaderingen ontwikkeld voor het vormen van creatief begrip van gebruikerservaringen. Voorbeelden zijn *critical design*, *generative design research* en *empathic design* (Sanders, 2006). De bedenkers van deze benaderingen hebben deze veelal met succes toegepast in projecten in de industrie. Desondanks worden ontwerpers en onderzoekers vaak voor grote uitdagingen gesteld wanneer zij de benaderingen in de industrie proberen toe te passen.

Het onderzoek naar Creating Socionas richt zich op twee grote uitdagingen. De eerste uitdaging is om gebruikerservaringen te interpreteren voor productontwikkeling. Recente maatschappelijke problemen en socio-technische ontwikkelingen, zoals de massale opkomst van social media, hebben ervoor gezorgd dat "het sociale" een wezenlijk onderwerp voor productontwikkeling is geworden. *Het sociale* verwijst naar het idee dat menselijk handelen (en beleven) in principe tussen mensen geschiedt, en niet een zuiver individueel gebeuren is. Voor het ontwikkelen van producten en diensten waar mensen enthousiast van worden is een holistische benadering nodig waarin ook het sociale aan de orde gesteld wordt, zo wordt beweerd in de design research literatuur. De huidige benaderingen voor het vormen van creatief begrip in productontwikkeling bouwen echter veelal voort op modellen van waarneming en ervaring waarin de individu centraal staat en helpen derhalve niet om inzicht te krijgen in het sociale.

De tweede uitdaging is om creatief begrip te vormen binnen de kaders van productontwikkeling in de praktijk. Voor het ontwikkelen van producten en diensten vanuit een gebruikersperspectief, oftewel "mensgericht ontwerpen", is creatief begrip van gebruikerservaringen nodig. Bestaande benaderingen voor het vormen van creatief begrip gaan er vaak van uit dat ontwerpers de rol van onderzoeker op zich nemen en dit begrip in direct contact met gebruikers vormen. In de industriële praktijk is direct contact tussen ontwerpers en gebruikers vaak niet mogelijk, omdat het gebruikersonderzoek wordt uitbesteed aan een derde partij, bijvoorbeeld een extern consultancy of een intern onderzoeksteam: de ontwerpers die het product of de dienst ontwikkelen zijn meestal niet de onderzoekers die het gebruikersonderzoek verrichten. Dat betekent dat de onderzoekers de data over gebruikerservaringen met de ontwerpers moeten delen. De rijkheid van de data en de basis die nodig is voor het vormen van creatief begrip van gebruikerservaringen gaan vaak verloren in dit proces.

Het onderzoek naar Creating Socionas heeft als doel deze twee uitdagingen aan te pakken (hoofdstuk 1). Het richt zich op twee vragen: (1) Wat moeten ontwerpteams begrijpen over gebruikerservaringen om producten te kunnen ontwikkelen waar gebruikers enthousiast van worden? (2) Hoe kunnen zij dit inzicht vergaren binnen de kaders van productontwikkeling in de industriële praktijk? In dit proefschrift wordt "Creating Socionas" als mogelijke oplossing

aangedragen.

Creating Socionas is een aanpak voor het vormen van creatief begrip van gebruikerservaringen die voortbouwt op *empathic design* – een benadering voor mensgericht ontwerpen waarin respect voor gebruikers, inzicht in behoeften en wensen van gebruikers en persoonlijk inzicht en creativiteit centraal staan (Mattelmäki, 2006). De aanpak omvat een model dat ontwerpers en onderzoekers helpt om gebruikerservaringen te interpreteren voor productontwikkeling, evenals vijf stappen die hen in staat stellen om dit inzicht te vormen binnen de kaders van de ontwerppraktijk.

Creating Socionas is ontwikkeld en geëvalueerd in een reeks lopende productontwikkelingsprojecten bij Philips. Praktijk en theorie werden nauw verweven in het onderzoeksproces. In hoofdstuk 2 wordt de onderzoeksbenadering beschreven als *research through design*, oftewel "nieuwe kennis genereren in een cyclisch proces van ontwerp en evaluatie van empirische objecten en prototypes". In dit hoofdstuk wordt de onderzoeksbenadering in Creating Socionas uiteengezet en worden de acht productontwikkelingsprojecten waarin de aanpak werd ontwikkeld geïntroduceerd. De ontwikkeling van Creating Socionas en de kennis en inzichten die zijn opgedaan in de projecten bij Philips worden uiteengezet in de vier hoofdstukken die volgen.

In hoofdstuk 3 wordt de wijze waarop empathic design in de praktijk wordt toegepast aan een kritische evaluatie onderworpen en worden verschillen tussen de theorie en de praktijk van het mensgericht ontwerpen aangekaart. In dit hoofdstuk bespreken we de literatuur over empathic design en delen we onze ervaringen met het toepassen van empathic design in verscheidene productontwikkelingsprojecten bij Philips Research. De afgelopen jaren zijn er grote successen geboekt met het toepassen van empathic design binnen Philips Research, een industriële organisatie. Maar het was niet altijd even makkelijk om deze benadering in de praktijk te brengen, omdat de theorie van empathic design zoals beschreven in de literatuur vaak niet overeenkomt met de praktijk van empathic design in een industriële context. Zo wierp de eerder beschreven situatie waarin gebruikersonderzoek uitbesteed wordt aan derden veel vragen op die niet of nauwelijks werden beantwoord in de literatuur, zoals wie, wanneer en hoe ontwerpers te betrekken in gebruikersonderzoek. In hoofdstuk 3 worden drie culturele- en methodologische veranderingen voorgesteld om dergelijke uitdagingen het hoofd te kunnen bieden in de toekomst: (a) Van een rationele benadering naar een meer empatische benadering, (b) van gebruikers als informanten naar gebruikers als partners in productontwikkeling, en (c) van geïnformeerd worden over gebruikersonderzoek naar betrokken zijn bij gebruikersonderzoek. De eerste twee veranderingen komen overeen met de veranderingen die eerder al zijn voorgesteld door Sanders (2006), hetgeen onze overtuiging dat andere organisaties met vergelijkbare vraagstukken worstelen versterkt. De derde verandering is nieuw. Het vestigt de aandacht op een aspect van empathic design dat nog steeds onderbelicht is in de literatuur, maar dat mogelijk de sleutel is tot het succesvol implementeren van empathic design in een industriële organisatie.

In hoofdstuk 4 wordt het idee van "trialogue" (Nederlands: 'trialoog') geïntroduceerd. *Trialogue* duidt op de interacties tussen drie partijen: gebruikers, onderzoekers en ontwerpers in de praktijk en biedt een kader voor het delen van rijke gebruikersinformatie. Het model is ontwikkeld door de interacties tussen gebruikers, onderzoekers en ontwerpers bij Philips te bestuderen vanuit Wright en McCarthy's (2005) idee van dialoog tussen ontwerper en

gebruiker). In bestaande benaderingen voor mensgericht ontwerpen wordt vaak uitgegaan van een situatie waarin ontwerpers creatief begrip ontwikkelen in direct contact met gebruikers. Wright en McCarthy (2005) noemen deze vorm van interactie tussen gebruikers en ontwerpers "dialoog". In industriële organisaties wordt het contact tussen gebruikers en ontwerpers echter vaak gefaciliteerd door een derde partij en is er dus sprake van "trialoog". Rijke data over gebruikerservaringen moet in deze situatie met ontwerpers gedeeld te worden op een manier die hen in staat stelt creatief begrip te vormen voor productontwikkeling. In hoofdstuk 4 worden vier voorwaarden voor het succesvol ontwikkelen van creatief begrip van situaties van trialoog geïdentificeerd, waarna de implicaties van deze voorwaarden voor het delen van rijke gebruikersdata in de praktijk worden besproken. Een belangrijke implicatie is het actief betrekken van ontwerpteams bij het lezen en interpreteren van gebruikersdata, in plaats van bij het verrichten van het gebruikersonderzoek, zoals in dialoog. Dit idee vormt de basis voor Creating Socionas.

Hoofdstuk 5 gaat in op de vorm waarin de te delen inhoud gegoten moet worden. Het introduceert Activity Theory als "thinking tool of the social" voor empathic design. Het hoofdstuk beschrijft de zoektocht die we gedaan hebben om een model te vinden dat ontwerpers helpt inzicht te krijgen in het sociale. Hoewel menselijk handelen in principe sociaal is, wordt in modellen van gebruikerservaring vaak de individu centraal gesteld. Er is daarom behoefte aan een conceptueel model dat ontwerpers ook inzicht geeft in de interacties tussen gebruikers (en andere bij het gebruik betrokkenen) in het mensgericht ontwerpen. Voortbouwend op het idee om ontwerpers actief te betrekken bij het lezen en interpreteren van gebruikersdata voor productontwikkeling, zijn we op zoek gegaan naar een *thinking tool of the social* dat ontwerpers hierbij zou kunnen helpen. In hoofdstuk 5 bespreken we een aantal kansrijk ogende modellen uit de sociale wetenschappen en beschrijven we onze ervaringen met deze toe te passen als *thinking tools of the social* in productontwikkelingsprojecten bij Philips. De studie resulteert in een reeks criteria voor het beoordelen van de bruikbaarheid van modellen voor empathic design en vijf categorieën van modellen: "special effect theories", "relational frameworks", "catalogues", "metaphors" en "scaffolds of context". Onze conclusie is dat Activity Theory (AT) (Vygotsky, 1978; Leont'ev, 1978), als zijnde een *scaffold of context*, het beste aansluit bij de behoeften van ontwerpteams in empathic design. Een belangrijk pluspunt van AT is dat het model inzicht geeft in de ervaringen van het individu alsook de sociale context. We hebben AT als thinking tool of the social in de praktijk uitgeprobeerd en ondervonden dat AT een krachtig hulpmiddel bij het structureren, bespreken en delen van rijke gebruikersdata in empathic design kan zijn.

In hoofdstuk 6 wordt Stanislavsky's System uit de theateropleiding naar voren gebracht als een manier om Activity Theory toe te passen in empathic design. AT biedt een tamelijk compleet model voor het analyseren van gebruikerservaringen voor productontwikkeling, maar wordt over het algemeen als "moeilijk" en "theoretisch" ervaren. Voor productontwikkeling in de praktijk moet een thinking tool op intiuitievere wijze kunnen worden gebruikt. Stanislavsky's System zou zo'n intuïtieve manier kunnen zijn. Stanislavsky's System is een acteerbenadering die ontwikkeld is om acteurs te ondersteunen bij het creëeren van een geloofwaardig karakter op het toneel. De benadering omvat theorie die inzicht geeft in dit creatieproces plus methoden en technieken waarmee de theorie in de praktijk wordt gebracht. In hoofdstuk 6, bespreken we de conceptuele relaties tussen Stanislavsky's System en Activity Theory en leggen we

uit hoe we Stanislavsky's methoden en technieken gebruikt hebben om Activity Theory te vertalen voor empathic design in een productontwikkelingsproject bij Philips. Onze aanpak in dit project was succesvol omdat het ontwerpteam creatief begrip van gebruikerservaringen ontwikkelde vanuit een Activity Theory perspectief, zonder de aanpak als "theoretisch" of "moeilijk" te ervaren.

In hoofdstuk 7 worden de kennis en inzichten die in de voorgaande hoofstukken zijn opgedaan samengebracht in een stapsgewijze aanpak voor het vormen van creatief begrip van gebruikerservaringen, *Creating Socionas*. Aan de hand van voorbeelden uit productontwikkelingsprojecten bij Philips wordt uitgelegd hoe ontwerpers en onderzoekers creatief begrip van gebruikerservaringen voor productontwikkeling kunnen vormen binnen de kaders van de ontwerppraktijk bij Philips en vergelijkbare organisaties.

Terugkijkend op het onderzoek naar Creating Socionas in hoofdstuk 8, beargumenteer ik dat Creating Socionas als aanpak voor mensgericht ontwerpen vernieuwend en waardevol is, (1) omdat de aanpak ontwerpers en onderzoekers inzicht geeft in de sociale én de individuele aspecten van gebruikerservaringen voor productontwikkeling; (2) omdat de aanpak beschrijft hoe ontwerpteams creatief begrip van gebruikerservaringen kunnen vormen in situaties van trialoog; en (3) omdat de aanpak zowel een conceptueel model biedt dat ontwerpers en onderzoekers helpt om inzicht te krijgen in gebruikerservaringen voor productontwikkeling, als een stapsgewijze aanpak om dit inzicht te vormen binnen de kaders van de ontwerppraktijk. De aanpak zoals deze er nu ligt is ontwikkeld voor de ontwerppraktijk bij Philips en dient aangepast te worden voor implementatie in andere organisaties. Het wordt aanbevolen om het onderzoek naar Creating Socionas in de toekomst te richten op het generaliseren van de aanpak naar de praktijk in andere bedrijven. De resultaten van een dergelijk onderzoek zouden vertrouwen kunnen geven in de succesfactor van Creating Socionas en zouden tevens kunnen helpen om projectmanagers en andere belanghebbenden ervan te overtuigen om de aanpak te implementeren in hun organisatie, en op die manier producten en diensten te ontwikkelen die ook op het sociale vlak goed functioneren tussen de gebruikers.

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Carolien Postma, Augustus 2012.

Curriculum Vitae

Caroline Els Postma was born in Drachten (Smallingerland), The Netherlands, on October 6, 1982. After receiving her "VWO" diploma from the C.S.G. Liudger College in Drachten in 2000, she started her studies of industrial design engineering at Delft University of Technology in Delft, The Netherlands. She did her graduation project at ID-Studiolab, where she applied user-centered design- and research methods in developing a museum activity for teenagers. Teenagers' social interactions were used as motivator and mechanism in creating the activity. Caroline received her M.Sc. degree with honours in 2005.

Having developed an enthusiasm for design research and for user-centric innovation, she then joined the ID-Studiolab and started her Ph.D. research on approaches to building creative understanding of people's experiences in the early stages of new product development. She participated in a variety of new product development projects at Philips Research and Philips Lighting as part of the research. These projects involved conducting user research, and organizing and facilitating sessions in which user insights were shared with project teams and developed into opportunities for concept- and technology development.

After her contract with the university ended early 2011, she started to work as a product researcher at Philips Consumer Lifestyle, where she supported user-centric product development from product ideation to launch. In June 2012, Caroline has joined AVG Technologies as user researcher. At AVG Technologies, she specializes in user-centric innovation in the early stages of new product development.







