INFRASTRUCTURING DESIGN

An Ethnographic Study of Welfare Technologies and Design in a Public-Private and User Driven Innovation Project

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Preface

This PhD thesis is based on one and a half years of participation and ethnographic observations within the innovation project Lev Vel. Lev Vel was a Danish innovation initiative aiming to develop new and innovative welfare technologies[1] for elderly people in Denmark. The project followed an approach based on user driven innovation and public-private partnership alliances.

My entry in the project was based on an interest in welfare technology, user driven design approaches, and specifically design approaches with elderly users in the foreground. During my years as a master student at the IT University I had studied and been enrolled in another project similar to Lev Vel, project Senior Interaction. During this time and upon writing my master's thesis I was intrigued by the way in which design participants kept articulating 'the elderly' as a particularly difficult user group. In their words, they experienced that the elderly people they encountered as users, refused to 'see themselves as elderly'. This, to me, made out a seeming paradox; that the user driven design initiatives kept insisting on orienting design towards categories of the elderly, while the 'actual' elderly seemed to refuse the very premises of those categories. Among other things, it was tensions like these, such as between simple, singularizing categories on one hand, and messy, complex, and multiple social realities on the other, which intrigued me about these collaborative design endeavors, and specifically the design for elderly.

My own academic background is highly multidisciplinary. During my Bachelors years I studied humanities, and with major in communication and psychology. As a master student I was enrolled in what was then called the 'digital design and communication' education at the IT University in Copenhagen. This education was a hodgepodge of practical, technical, methodological, and some theoretical courses focusing in different ways on design and digital communication.

[1] Welfare technology is a term that has been developed in Denmark to refer to technologies that provide or assist citizens with public or private welfare services and products. It is an umbrella term that is often seen as related to Ambient Assisted Living, Telemedicine, and Pervasive Healthcare. In Denmark it has been widely applied to the elder area, and seen as a promising solution to problems related to elder care.

My own interest in design mainly had to do with the unresolvable dilemmas, concerns, and tensions within design, having to do with users and questions of representation and the role of users in design. As a design student, coming from a humanistic background, I was particular fond of those classes where the lecturers had the courage to experiment with theoretical and methodological approaches that favored complexity regarding the relations between users and technology. However interesting this was, there was always a point in the process where the recognition of complexity was overruled by demands of designing a *thing,* and being able to demonstrate how the design of a finished and coherent thing fulfilled the needs of an equally fixed and homogenous 'user'. Where the design research seemed very occupied with relations between technology and users, I was more occupied with the internal dilemmas in design between on the one hand seeking ways of understanding complexity while on the other hand pushing towards separation, fixation and simplification of 'the technical' and 'the social'.

During the PhD I started to read work within STS and found this body of literature to respond to the lack of means for thinking about complexity and relationality, which I was missing in the design literature offered in courses like interaction design, co-design, and usability. But the STS perspectives that I gradually acquired in many ways seemed very far away from the reality of being a PhD student in an Interaction design group, and a participant in a large innovation project. For those reasons, my PhD 'journey' has been as much a learning process in academic research practice – such as getting to know the empirical field, acquiring and embodying whole new theoretical and methodological apparatuses, as well as academic writing practices - as it has been about considerations to do with relations between my research project and the practices and rationalities of the innovation and design project. I wanted to write stories about welfare technology and design in ways that could both be relevant and accountable to the design practices and participants, and to academic audience in the intersection of design and sts. Thinking about what sort of accounts could potentially be seen as useful or thought provoking for project participants and my design colleagues has thus been a major aspect of my own research project.

It is based on that background and initial motivation that I set out to explore welfare technologies and design practices of project Lev Vel in this PhD dissertation.

Introduction

This dissertation examines certain attempts at making innovations in Danish healthcare and eldercare. More specifically, the thesis focuses on various episodes in a Danish innovation project that aimed to design welfare technologies for what they referred to as the 'active elderly'. Welfare technology is a term that has been developed in Denmark to refer to technologies that provide or assist citizens with public or private welfare services and products. It is an umbrella term that is often seen as related to Ambient Assisted Living, Telemedicine, and Pervasive Healthcare. In Denmark it has been widely applied to the elder area, and seen as a promising solution to problems related to elder care.

The empirical field

The particular Innovation project that I studied was called Lev Vel; Live Well in English. To set the stage for what follows, I begin by introducing the project, the topics it addressed, and its aims and form of organization. In particular, I aim to bring out three main features of the project, each of which has been central for how I came to frame the thesis. The first is that the project took shape around the formulation of three interrelated sets of ideas and visions 1) about users and user driven innovation; 2) about public-private innovation and partnerships, and 3) about active ageing.

The second feature was the pervasive role of activities of crafting sites and occasions for communication, networking, and knowledge sharing. This emphasis troubled me for a long time because I thought I was studying a design project, and expected to follow design activities. Even so, developing project specific communication technologies turned out to be central to the project. This realization turned out to be central for my understanding of the project and the way I deal analytically with the project in the following chapters. The third and final feature I would like to highlight concerns the vague and fuzzy shape of the

project; its fluid boundaries, which made it difficult both to grasp as well as to study.

Project Lev Vel started in 2011. It contained three different sub-projects: "the meeting place," "preventive self-monitoring," and "patient directed add-ons to the medicine card" (See lvvl.dk). Two of the three subprojects received funding for three years, but 'the meeting place' was terminated after just one and a half year. My studies were carried out within this sub-project. In the following I refer to the project as Lev Vel, even though my empirical data was all generated within the particular Lev Vel sub-project 'the meeting place'.

The meeting place focused on the development of new social meeting places for the socalled 'self-sufficient elderly people'. The meeting places to be developed could either be digital or located in the physical world. The aim was to strengthen the physical, mental and social fitness of elderly people through experiences and play. This was conceived as a way to maintain and stimulate their self-sufficiency for as long as possible and prevent chronic health conditions and chronic dependence on care services.

All sub-projects had received funding for 1.5 year from the Danish government, but with the prospect of an extension to three years. However, after the first period, the decision was taken to not extend the grant for the meeting place, which thus ended in 2012 instead of 2013, as initially proposed.

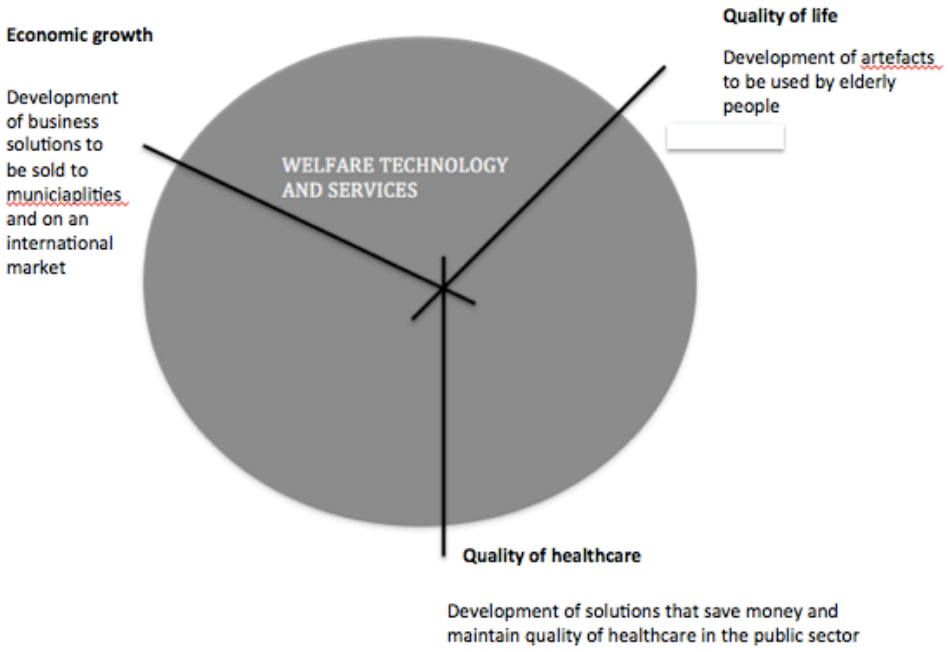
The general problem addressed by Lev Vel was that Denmark, as many other countries around the world, are undergoing dramatic changes in demography. Because the 'baby boom generations,' born in the period between the 1940s and 60s are expected to live longer than previous generations, the population of elderly people is increasing rapidly. During the last couple of decades, many countries have witnessed a simultaneous tendency for fertility rates to go down, which means that the population of younger people is decreasing. This demographic transformation, which some refer to as 'the grey tsunami', is viewed by politicians and financial experts as posing one of the greatest challenges of our times (e.g. Tony Blair, Hampton Court summit, 2005); a challenge that ties together financial and welfare crises. Not least, it is feared that changing demographic patterns will make more elderly people dependent on

healthcare at a time where this sector is already experiencing difficulties fulfilling increasing demands.

Given these concerns, a variety of activities and initiatives have been taken, nationally as internationally, in order to sustain current standards of healthcare. One model seeks to identify and prevent situations that cause intensive needs for care among elderly people: such situations include chronic illness, loneliness, accidents and health conditions related to unhealthy lifestyles. Another model aims to find ways for elderly people to manage parts of their illnesses themselves, thus relieving the healthcare system from taking charge of these tasks. Project Lev Vel took inspiration from both of these models, as can be seen in a key formulation in the project, explaining that the aim is: 'making more elderly people self-sufficient by stimulating their mental, physical and social well-being' (project application, See appendix 1). Hence, the main aim of the project was to develop welfare technologies and solutions for enhancing the fitness and well-being of elderly citizens. However, things turn out to be more complex than that. For tied in with this goal are a number of other, quite variable aims. These secondary, but nevertheless important aims include the establishment of lasting alliances between public and private organizations, the creation of value and new business opportunities in the private sector, and relieving the public sector for resources used on care for the elderly.

These project aims are attached to at least three different groups of stakeholders; 1) The elderly, for whom the solutions are expected to increase the quality of life; 2) Private companies that expect economic potentials related to the development of commercial business solutions; 3) And, finally, the healthcare sector, which will gain access to new solutions, services and technologies in support of managing tasks previously carried out by paid personnel. From the perspective of the latter, the expectation is not only to save money on healthcare, but doing so without compromising the quality of care. Even so, development of technological and service solutions is not the only aim of the project either. For the establishment of the project as a public-private partnership is itself both a means and an end. The project is based on a vision about establishing partnership relations between public, private, and research organizations and institutions in a way that will lead to lasting value creation

even after the project has ended. The formation of partnerships around a common interest in the development of technological and service solutions in response to public issues is thus also seen as a way to deal with social problems more generally. All in all, the project has many intertwined agendas all of which must be woven together in the form of envisioned solutions and innovations, from which benefits will accrue to all stakeholders.



The different purposes, stakeholders, and stakes involved in the development of welfare technologies and services

As this makes clear, the project was justified through the attachment to a range of issues and a variety of matters of public interest: a financial crisis; a stagnating national economy; an overburdened healthcare sector, and a population of elderly experiencing loss of mental, physical and social abilities and poor quality of life. In conjunction, these phenomena were seen posing a general challenge to the welfare society. Yet, by way of innovation, welfare might nevertheless get a fresh purchase on life. We might say that the overall vision of the project - developing welfare technologies and services - was sufficiently broad and

flexible to make it possible for an array of interested people to gather around it. However, achieving this assembly of interest in practice turned out to be more difficult than expected by most involved. The central point of interest for this dissertation is precisely the actual, practical and difficult processes of design and collaboration.

A small reflexive interlude may be in order.
Above, I have presented the overall framing of the Lev Vel project. My initial questions concerning this problem were framed in a way that deliberately refused to take for granted the existence of an already constituted, self-evident problem 'out there', leading, as if naturally, to a technological solution that would somehow integrate all interests. Among other things, Lev Vel appears to me to contain its own tacit assumptions about such entities as 'the elderly', 'care', 'welfare', 'technology' and 'partnerships'. To prevent myself from too quickly buying into these ready-made entities, I began with a broad interest in exploring welfare technology and its relations with 'the elderly users'. What, I asked, is welfare technology and how can it be studied? How, I wondered, is it imagined, designed, and developed? Who or what are driving the design processes and how? And who are the elderly users imagined to be the target group for welfare technology, and where are they?

Asking all of these questions, I was interested in the processes and arrangements through which welfare technologies are generated. I wanted to explore visions and ideas about welfare technology and how they were enacted in the social and material practices of the innovation project. Thus, I started out with a broad interest in the objects and subjects of the innovation project, the welfare technologies and the elderly users. Initially, my fieldwork therefore did not focus explicitly on the partners, design materials and techniques, or the physical locations where project activities took place. Rather, it centered on the ways in which users and technologies were presented, articulated, and performed within the social and technical arrangements of project activities. However, I gradually became aware of the difficulty of seeing either technologies or users as separate from the technical and social arrangements in which they appeared. Conjointly

with the performance of users, other things were being performed too; things such as the partnership, the project processes, and the technological solutions. Studying either one of these things - technologies, users, and the social and technical arrangements and processes - without studying the others seemed increasingly pointless. This realization was partly empirically made, partly made possible due to my growing interest in work in STS. The notion of 'enactment' (Annemarie Mol 1999; Annemarie Mol 2003; A. Mol and J. Law 2004) captured well this sense of relationality and interdependence. I came to realize that a performative approach might be particularly useful in order to capture the situation. Hence, this thesis describes and analyzes the *relations* between welfare technology, elderly users, and the social and material arrangements that they emerge within.

Below, I introduce the innovation project and elaborate some of its core ideas, central to the way in which it was funded and structured. I also outline my own research interests and questions in relation to relevant theoretical topics and concerns. Lastly, I outline the chapters of the thesis.

The organization of Lev Vel

Project Lev Vel was organized as a consortium. The Alexandra institute - a private non-profit company with the mission to assist public and private companies to develop IT based products and services – were the initial organizers, and they wrote the project application. The project was funded with 22,5 million Danish kroner, which is approximately 3 million Euro. The funding was granted by what at that time was called the ministry of science and innovation in collaboration with the Danish Council for Technology and Innovation.

The management of Lev Vel was divided into three instances; the board, general management, and project management. The board was responsible for strategic management, general management was responsible for the innovation level and

daily management across the sub-projects, and project-related management took charge of each of the sub-projects. These managerial levels were constituted to ensure that all the different interests of the various partners would be represented. The board, for example, was meant to be representative of research on ageing and technology, user-organizations, small and large Danish companies, municipalities, hospitals and doctors from the capital region. General management was chosen based on criteria relating to coverage of the areas of user-driven innovation, living labs and experiences with public-private-innovation (PPI), alliances within public health, research based innovation, technological development, and knowledge dissemination within healthcare. Finally, the role of the project managers was to build synergy in the partnership, monitor the progress of sub-projects as they went from one phase to another, and make choices regarding fundraising within the specific projects.

The general idea behind this organization of management was to stimulate *synergy* and *innovative breakthroughs* (See Project application in Appendix 1). Synergy across organizational and professional boundaries was seen as imperative in order for the crucial breakthroughs within innovative societal solutions to happen. Accordingly, the project was organized on the basis of ideas about the innovative potential of gathering different disciplines and interests under the same roof. Having 'the right capacities' on board and nourishing synergy across emerging multidisciplinary partnerships, was seen as a way of making innovative breakthroughs in healthcare, industry, and, eventually, in society in general.

The core focus areas of the project had to do with establishing activities and strategies for facilitating such synergy. Hence, the project was premised on criteria of organizational diversity, with a special emphasis on creating sites and occasions for knowledge sharing and networking among project partners. This also meant that project processes were coordinated in a way supposed to encourage and facilitate the establishment of partner-alliances across organizational boundaries. A main feature of the public and collaborative occasions of project activities was therefore an orientation towards knowledge sharing activities and network establishment.

> We focus on knowledge as the driving force in our regional landscape and are working in a goal oriented manner towards creating breakthrough encounters between research, industry, and public services….In front of us we see a city region tied together by strategic partnerships between the corporate world, public actors, and educational institutions (From project application)

The effort to establish solid partnerships was tied to ideas of knowledge as the driving force in 'the regional landscape'. In practice, the importance of knowledge sharing among partners was clear as almost all activities in the project had a character of either making partners visible to each-other, sharing knowledge held by certain partner organizations, developed by certain partners during the course of the project, or facilitating match-making between partners. For this reason, the project comprised a vast number of presentations, workshops, and matchmaking events. Thus, workshops were organized as occasions for networking, presentation and knowledge sharing. Books, videos, and reports for internal and external communication were crafted throughout the project, along with communication encounters between the project and the intended users. Crafting sites and occasions for project communication was a crucial part of project activities. In turn, this observation became crucial for my understanding of the project. In particular, I argue that the crafting of 'project workshops', 'project user engagements', and 'project communication materials' such as reports, book, and video, are central for dealing analytically with the project. This point will be developed further in the following, as it helped me develop a framework for the empirical chapters.

Studying what? Ethnography of an innovation project

I entered the project Lev Vel as a PhD student with a background in design research and humanities more broadly, and positioned in a design environment at the university. My PhD was partly funded by Lev Vel, partly by the university. More than being enrolled in the project as a researcher and doing studies for the

purpose of my PhD, I was expected to participate actively in the project in ways that would contribute directly to the design endeavors. I had a double role as both researcher and *composer* of project Lev Vel (Jensen 2012). More specifically, my role in the project was to develop user studies of 'the elderly users' that would inform the task of designing new welfare technologies and services. General within the project and in the research group was the notion that correct representation of 'the users' (Akrich 1992; Cooper and Bowers 1995; Woolgar 1990) was a key aspect of developing successful solutions. However, as the project progressed, I encountered different challenges in living up to this role, and I began to notice how other factors than the adequate understanding of users, seemed to be driving the project. User studies were certainly both produced and presented, but they never appeared to have that much effect on how the design process progressed, as envisioned.

As my PhD research progressed, I went back and forth between project activities and academic engagements. In these movements between the field and the desk I became increasingly aware of the difficulty of separating the 'users' from how they were being enacted in and by the technical and material arrangements of the project: in project workshops, project user engagements, and project communication materials. Such entanglements of social and material phenomena have been thoroughly analyzed within the field of Science and Technology Studies (STS), most famously by researchers working within the framework of actor network theory (Callon and Latour 1981; Callon and Law 1982; Latour and Woolgar 1979). Early STS studies of the making of scientific facts drew attention to the intimate relations between scientific knowledge and laboratory settings; that is, between facts and the social and material networks from which they emerge (Knorr-Cetina 1981; Latour and Woolgar 1979). Later work within STS has developed a conceptual repertoire for understanding the ways in which the social and the material are mutually shaped. Notions such as 'configuration' (Suchman 2007; Woolgar 1990), 'collective practices' (Fujimura 1996; Fujimura and Clarke 1992), and 'enactment' (Mol 2002) all seek to capture this sense of interrelation and interdependence between the realms of the social, including discourses, texts and symbols, and the realm of the material and the technical.

Hence, I came to see that the project and its activities and processes could not be understood as a passive framework within which knowledge about users was developed, and new solutions to their problems were discovered and developed. Rather, within the project, categories such as the elderly users, the partnership itself, tools and methods for design, and design concepts seemed to blend and transform, and to impact each other in unforeseen ways. Increasingly, the idea of studying either one of these entities without studying its relationship to the others ceased to make sense. Instead of focusing solely on users, as prescribed by my delegated role as 'user expert', I decided to focus more broadly on the way in which the project was enacted through the categories it deployed. I became interested in learning more about the processes and conditions that made new objects, such as welfare technologies, come into being. I also became interested in the relations and commitments that went into the design of these objects. In brief, I began unpacking the project, with the aim of learning more about the ways in which it *assembled* welfare technologies. This led me to formulate several guiding questions: What constituted the project? What were the relations between its various actors and aims? How were actors from such different backgrounds as public institutions, private companies, and research institutions, each representing a diversity of interests, able to collaborate on developing concrete solutions together? Indeed, what were the boundaries between 'the research project ' and 'design services delivery'? In some sense this boundary seemed very important. However, it also appeared very fuzzy, so why did it matter so much? At the time, the vague edges of the project made it difficult to determine how to focus the ethnography.

Studying the project was not a straightforward task, for one thing, because in many ways it did not behave in the way that 'it was supposed to do:' at least according to how the process was envisioned and depicted in project documents and in the innovation model. There, the project was presented as unfolding as a procedural progression, which moved from an identified problem towards the discovery and development of a solution for certain intended users.

Figure: The innovation model. Phase 0-2 involves user studies towards the identification of innovation tracks. Phase 3-5 involves ideation, testing and scaling of prototypes.

However this vision of a linear trajectory, premised on a series of successive advancements each of which was clearly linked to a set of activities - from identification of a problem to the development of a solution - was difficult to trace in practice. Instead, the problems and purposes of the project seemed to be matters of negotiation and dispute. The development of welfare technologies, that is, appeared to concern many other entities than those technologies themselves: entities including the elderly, care, and health. And it entailed disputes about just what these entities were and required. In brief, therefore, the project appeared as a 'multiple' (Wintherik 2010). It was a project multiple in the sense that the pre-set goals and entities of the project were each transformed as they blended with the specific arrangements of situations and activities, through which the project was performed in practice. The very entities assumed to be *basic* to the project; namely the users and the technologies, increasingly appeared diffuse, unstable, and hard to keep fixed (Jensen 2010, 19-31).

Most of the time they had neither a physical form nor an agreed upon set of characteristics. Obviously, this made them difficult to locate empirically. Within the project, it also made it difficult to reach consensus about what they actually were. In addition this meant that the articulation of the project *as* a coherent whole, with a common foundation of shared aims and goals, was not reflected in project practices. Instead, I found myself in the midst of a vague and diffuse project, and this was nowhere more obvious than when the partners met to collaborate. To the partners themselves, these collaborative occasions were often accompanied by a general sense of confusion over what the project was, what the aim of project activities were, and what the role of the partners were.
While I kept trying to narrow down my research questions, I constantly experienced that this was also a way of reducing the complexity of the project,

which invariably ended up relying on pre-formed assumptions about what the project and the entities in it *really were*. Rather than reducing the project to its formal definition, I wanted to take seriously the project's empirical vagueness and complexity.

To avoid reduction, I eventually made the deliberate choice to retain quite broad questions. Indeed, Casper Bruun Jensen (2010, 19-31) has argued that this is prerequisite when dealing with unstable and vaguely defined innovation projects; or, more broadly, with emerging, not-yet quite existing technologies, exactly because it prevents the analyst from knowing in advance what the objects of study *are,* and how they should be studied. Jensen suggests that researchers of developing technologies ought to study how technologies are constructed and transformed *in practice.* In line with the work of Annemarie Mol (2002), this entails the possibility that such technologies may exist in a variety of modes. As Mol and Winthereik both emphasize, they may be multiple (Mol 2002; Winthereik 2010). Accordingly, it opens up for explorations of the consequences such multiplicity might have for different practices and actors. In other words, studying technologies while they are in a process of becoming requires that the researcher suspend with a priori ideas about what 'in specific' is being studied. What is needed is rather a *careful* tracing of the many practical and material events, which various actors take to somehow relate to the technology (Jensen 2010). The specific advantage of vague questions is precisely that they facilitate very flexible inquiries that allow the researcher to tune in on what emerges in practice.

The decision to not take for granted what the project was, how it worked, what it produced or why, meant that I in turn had to mimic this diffuseness in my research approach. I did so by formulating my research questions in very open and broad terms, thus seeking to suspend with commonsense ideas of what 'a design project', 'a user', 'a partnership', or 'a welfare technology' consist of. Instead, I broadly outlined my curiosity about public private innovation, user driven innovation, design, and welfare technology. Not least, I was curious about who the so-called 'elderly users' were – and where they might be found. I asked the same question about the welfare technologies to be developed: what were *they*? Moreover, I wondered: how did they come into being – or not? And what

did or didn't they do, either as materialized technologies or visions for the future? Based on these broad interests and questions I formulate three empirical tasks that have been guiding my studies and the analysis of the empirical material. The explorations of welfare technology are pursued in relation to these tasks; 1) To gain an understanding of the social, material, and technical set-ups that design takes place within; 2) To explore welfare technology through the appearances of emergent figures such as 'the elderly', 'the partnership' and 'prototypes' within the project; 3) To discuss the consequences of these emergent figures and the lessons learned for the theories and practices of user driven design approaches.

In summary, then, I was interested in the social, technical, material and discursive arrangement of the project; its visions and ideas about design, collaboration and technological innovation, and in how these visions were carried out and done in practice.

In the following I describe three central ideas and policies that have been shaping the visions and concrete organization of project Lev Vel. These are ideas about partnerships, user driven innovation, and active ageing.

Strategic partnerships, user involvement, active ageing

Three strands of ideas, embedded in policy programs, were central for the way project Lev Vel was arranged. In different ways, I deal with these ideas and their underlying assumptions in the analytical chapters. Here I offer a brief description of the main features of each of these ideas, and how they connect with questions and concerns raised in each of the analytical chapters.

Strategic Partnerships

Lev Vel was organized as a public-private partnership. This meant that it consisted of actors from public and private sectors along with actors from research environments. These actors were selected on the basis of certain criteria of relevance, and put together to collaborate on solutions meant to be at once beneficial and profitable to both public and private organizations. The public-private Innovation (PPI) model is not unique to project Lev Vel, since most government funded innovation projects in Denmark today are formed around those principles, which are supported by the government's general innovation strategy.

Figure: Overview of the different partner groups in the strategic partnership (Figure found in Lassen, Bønnelycke, and Otto 2015)

From the beginning, the project involved around 100 private companies, 20 national and international research and innovation institutions, seven municipalities, two hospitals, and nine organizations. During the project this composition changed, as some dropped out and others entered the partnership. *Within* the partnership, these partners had different assigned roles. Private partners were seen as *drivers* for the commercial potential of the innovative solutions. They contributed with *know how,* concrete innovations and commercialization of the solutions, development of design and service design. National and international research and innovation institutions were expected to

secure the '*innovation height'*[2] of project Lev Vel. Their contributing was seen as delivering state of the art knowledge, facilitating identification of the 'gaps' that the technical solutions would close, offering a pool of experience and knowledge, and a systematizing 'methods box' to ensure value-creation and synergy in the project. Finally, public partners (such as hospitals and municipalities) were invited to provide access to users, and to make sure that solutions would be directed towards users' unacknowledged needs, while also delivering know how about the fields of health care practice. Their role, in brief, was to ensure that the innovations would have societal value, such as releasing public resources and maintaining or improving users' experiences of the service level (project application, See Appendix 1).

The PPI model is based on the idea that by gathering partners from public, private and research environments, it will be more feasible to make innovative solutions, and those that are developed will have better chances of responding to real social demands (project application, See appendix 1). In other words, the assumption is that when the competences of companies and researchers are united with inputs from the users and public personnel, the solutions these partners are able to come up with are more likely to fit with concrete social and business needs and interests.

The project defines strategic partnerships as;

> Close and reciprocal innovation collaboration between public and private partners and research, with the aim of creating new solutions for society, with potentials for commercialization. What is unique is that the relation between the partners cannot be characterized as a customer-supplier relation regarding the delivery of an already known solution. Rather, the partners are development partners, who collaboratively explore new innovative solutions to commonly defined problems (Project application, appendix 1)

[2] A term used in Lev Vel project documents referring to the innovative capacity of the specific project organization.

The partnership model thus builds on the assumption that partners participate on equal terms and explore commonly defined problems as a collective. Instead of relying upon the traditional understanding that there are boundaries between public and private interests, the partner-based innovation alliance assumes that benefits accrue from gathering various knowledge and interests under the same roof. Not least, such collaborations are assumed to lead to innovative solutions that are also *commercially viable*. An important and explicit criterion for success is therefore that the solutions developed can be sold as products on a market.

In recent years public-private partnerships has been recognized in Denmark as best practice for innovation initiatives. Of course, in practice the model does not always manage to live up to the high expectations, as illustrated in anthropological studies of public private innovation (N. Vaaben and Lund 2013; Vaaben 2015). However, the expectation that positive synergy will arise from public-private partnerships, leading to a series of distributed benefits, remains. Indeed, this particular innovation model has been adopted in government polices and by funding bodies.

Moreover, the peculiar fact that within the logic of PPI's the establishment of partnerships is both a means and an end in itself, invests the model with considerable power. Indeed, as part of a bigger vision about how to create closer ties between public and private sectors, it has become *the* model to pursue in order to receive government funding for Danish innovation projects.

Project Lev Vel was funded by a grant from a program for innovative societal solutions in strategic partnerships in 2009. This program was established under the Ministry of Science and Innovation[3] in collaboration with the Danish Council for Technology and Innovation.[4] The program was specifically established in order to boost innovation and establish new strategic alliances between the public sector, private companies and research.[5] Its overall targets were to

[3] Today that ministry has evolved into what is called the ministry for higher education and science.
[4] The council was shut down in April 2014 and its functions have since been managed by the Danish innovation fund and the ministry of higher education and science.
[5] See document;
(http://www.regionmidtjylland.dk/files/Regional%20udvikling/Vækstforum/dagsordensbilag/2009%20maj/Punkt_11_Bilag_1.pdf).

stimulate synergy between public institutions, private companies, and research institutions in order to generate innovation and growth in the corporate world and to contribute to solve central social challenges.

> It is in the fracture surfaces between cultures, organizations, and disciplinary traditions that the pivotal breakthroughs take place
> (quote in the project application, see appendix 1, from the ministry of higher education and innovation)

The idea underlying the ministry's program is thus that innovative breakthroughs happen in 'fracture surfaces.' The notion that innovation is something that happens 'in between' organizational boundaries, in partnerships, was also adopted by project Lev Vel.

In contrast to this base assumption, in the following I begin from the presupposition that partnerships are performed in project practices. What this means is that they come into being in the process of doing projects.
In chapter two I flesh out this argument by examining practices of doing partnership, focusing specifically on how partnerships emerge in relation to the material and technical conditions of project activities. Akin to the argument made by Casper Bruun Jensen and Brit Ross Winthereik in their monograph *Monitoring Movements* (Jensen and Winthereik 2013), this entails a *recursive* understanding of partnerships and the sociotechnical arrangements out of which they emerge. My study of how partnership is established and made to work therefore begins with examining the technical and material conditions for project activities.

User Involvement

In conjunction with ideas about the innovative potential of public-private partnerships, project Lev Vel was organized according to principles of user driven innovation (von Hippel 1976, 2005), which implies an emphasis on the

role of users in innovation. In 2003, the ministries of Economic and Business Affairs and Science, Innovation and Higher Education established a program for user driven innovation (UDI). The program was a response to concerns with enhancing the competitiveness and innovativeness of Danish businesses in the global market (Jensen 2012). The UDI program argued for the need for a national effort to develop research and education in user-driven innovation. According to Torben Elgaard Jensen (Jensen 2012), three distinct conceptions of 'the user' were in play in the UDI program: 'the user with unacknowledged needs', 'the lead user', and 'the participating user.' These conceptions were rooted in different ideas about science and innovation. The user with unacknowledged needs was depicted as 'lying out there as an underground resource that could be harnessed by a sufficiently determined nation […] a passive resource' (Ibid). The concept of the lead user, originally developed by Eric Von Hippel (von Hippel 1976, 2005), promoted a form of innovation that would 'tap into' the creativity of users. Users were thus characterized as having certain creative potentials and needs. The final type of user identified by Torben Elgaard Jensen was the participating user, which was envisioned within the frame of the participatory design movement and built upon a normative political ideal about empowerment of users through direct participation in processes of technological development and implementation (Jensen 2012).

In the Lev Vel project application, the 'user with unacknowledged needs' was explicitly articulated as a necessary resource for the development of innovative solutions. In practice, other conceptions might have been at stake too. Communication materials developed at the end of the project emphasized the necessity of an intimate, affectionate and equal relation between partners and users in order to support the elderly:

> In order to support the elderly it is necessary that we understand them. In the innovation projects of Lev Vel, the starting point is therefore a deep insight into the everyday lives of the elderly, and their worries, dreams and hopes. In our projects, we talk, laugh, challenge and listen to elderly people in order to be able to develop the right solutions for them
> (From the Lev Vel book[6])

This affective concern with an elderly population perceived as vulnerable, and the imperative to support them, is a key element in the ethos of empowerment found in the participatory design movement (Ertner, Kragelund, and Malmborg 2010). Hence, it was central to the project to develop empathic relations with elderly people. Doing so would enable the project to understand their situations and make explicit their unacknowledged needs. For this reason it was salient to somehow ensure *correct* involvement of elderly users.

In the project, ethnographic user studies were central approaches for involving 'the elderly user'. In chapter five, I examine some of the difficulties this entailed; among other things, they had to do with the challenge of figuring out just who 'the elderly' were. For, in fact, in the course of conducting ethnographic user studies, 'the elderly' turned out to be quite fickle objects of study; a group, which did not easily lend itself to the sort of analysis required by visions for user driven innovation. Moreover, I discovered that the elderly 'in the flesh' could only with difficulty be separated from the practical conditions of the study itself. In that sense, the chapter addresses some of the performative effects and problems of user driven design.

Active Ageing

The first headline of the project application was 'ageing is no hindrance.' The text states that the project wishes to instigate a discursive shift from viewing the elderly as a burden, to a perspective centering on the *resources* of elderly people.

[6] Find the Lev Vel book here: http://lvvl.dk/file/217559/Lev Velbog.pdf

Accordingly, the main aim of project Lev Vel was thus to strengthen the resources and the *self-sufficiency* of elderly people in Denmark. This emphasis on the self-sufficient elderly people, along with the shift in focus away from 'fragility' to 'resources,' has a lot in common with current policy discourse on 'active ageing.'

In recent years, national and international policy on the elder area has increasingly turned to a discourse on active ageing (Lassen et al. 2015), and corresponding efforts to develop concrete initiatives that would make elderly people more *active*. The obvious contrast is with a present state in which the practices of this group are perceived as predominantly *passive*. In Denmark, a range of initiatives under the banner of 'active ageing' has thus emerged.

Around the same time as Lev Vel was starting up, a radical policy shift was undertaken within the domain of Danish elder care. Aiming to instigate a transition from so-called 'passive care' to 'active care,' this new care program was called 'Active and Secure Throughout Life.'[7] In brief, the program sought to replace care practices that imply doing care *for* the elderly with practices that would motivate the elderly to care *for themselves* to the degree possible. In particular, the discourse on active ageing has been tied to technological developments of *welfare technologies* for elderly.

> In collaboration with the municipalities, the government will look into the opportunities of increasing the dissemination of welfare technology (…) The government will consider opportunities for giving elderly people the right to digital solutions as a part of their welfare (…)
> (The Danish Government platform 2011[8])

Thus, recent government platform policies concerning ageing mainly revolve around the development and dissolution of welfare technologies. Digital solutions are seen not only as a way of making access to services easier, but as empowering in and by themselves.

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[7] http://www.k-p-l.dk/main/wp-content/uploads/Aktiv-og-tryg-hele-livet.pdf

[8] http://www.stm.dk/publikationer/Et_Danmark_der_staar_sammen_11/Regeringsgrundlag_okt_2011.pdf

Around the same time as Lev Vel was starting up, EU launched its year on active ageing,[9] with the aim to encourage member countries to promote initiatives for activating the elderly.

Ideas about active ageing played a profound role for Lev Vel's articulation of the self-sufficient elderly and for the ideas the project generated about new technological and service solutions. Even though digital technology has occasionally been criticized for its pacifying effects on users (See e.g. Morelli 2007), the project viewed technologies as profoundly *activating*. By adopting core elements from the discourse on active ageing, and thus turning what was previously seen as a burden into resources, care was framed in relation to particular ideas about prevention and self-management. Within this specific constellation, technologies appeared as natural solutions to problems related to ageing and eldercare. Among other things, the project envisioned how welfare technologies could work as meeting places generating and stimulating social communities and exercise communities. The idea was that this would stimulate and motivate to social and physical activity of elderly people and, in turn, improve their self-sufficiency and quality of life.

Together, the three strands, 'strategic partnerships', 'user involvement', and 'active ageing' profoundly shaped the constitution of the Lev Vel. In conjunction, ideas about the positive synergy gained by bringing together actors from different milieus together in partnership, about the innovative potential of users and user involvement in design, and about the enhancing and activating capacities of technology were embedded in the discursive, practical, and technical framing of the project.

Chapter outline

As noted, my research started out with an interest in the objects and subjects of the innovation project, the welfare technologies and the elderly users. For this

[9] http://ec.europa.eu/social/main.jsp?catId=89&langId=en&newsId=860

reason, my fieldwork did not initially focus on the partners, design materials and techniques, or on the physical locations where project activities took place, but rather on the ways that users and technologies were presented, articulated, and performed within the project. However, I gradually became aware of the difficulty of seeing either technologies or users as separate from the technical and social arrangements in which they appeared. Conjointly with the performance of users, other things were performed too, such as the partnership, the project processes, and the technological solutions. Because studying either of these things in separation from the others turned out to be impossible, this thesis analyzes the relations between them.

In conversation with work in STS, **chapter one** outlines a theoretical framework for understanding and studying vague and diffuse technical objects premised on tracing their interrelations with other objects and subjects.

More specifically, the chapter engages modes of conceptualization, that see objects in terms of multiple enactments (Mol 2002) and partial existence (C. Jensen 2004; Latour 2000) and rendering them as fundamentally lively (Law, John, Evelyn Ruppert 2011; Michael 2012; Verran 2011). Recognizing the liveliness of objects, in turn, helps to challenge taken for granted views and fixed categories, and to open up alternative versions of reality.

The STS conceptualization of objects as multiple and emergent has implications for how they may be studied. It also has implications for the role of the researcher. Reviewing the STS literature on ethnographic methods, the chapter identifies a set of issues and themes relevant to the empirical context of the dissertation and central to the problems engaged by it. Specifically, the method pursued aligns with previous work in STS, which thematizes situations in which ethnographers are invited into complex field sites, such as innovation, characterized by fluid scopes and multiple audiences and commitments. My own ongoing concerns with how to combine aspirations of doing non-reductionist research, and at the same time wanting to change understandings and practices of innovation and welfare technology, are brought in dialogue with STS conceptions of intervention and generative critique.

Chapter two continues to explore the infrastructures and agencies of design based on empirical situations of collaboration within Lev Vel. More specifically, the chapter asks what drives design in the realm of public private and user driven innovation. Instead of pointing to individual actors such as users, partners, or other influential stakeholders, or to singular technical frameworks, methods or techniques, the chapter argues that in the context of Lev Vel, design is propelled by the ongoing crafting of a technical infrastructure for communication and knowledge sharing. I refer to this technical infrastructure, which organizes occasions of project communication, as an infrastructure of *project communication technologies*. Crafting occasions of project communication, specifically 'project workshops', 'project user engagements', and 'project communication materials,' I argue, is a core structuring activity among project participants. The infrastructural crafting I have in mind is at once material, technical and epistemic. It works conjointly to frame 'users', 'partnerships' and the 'technological solutions.' The chapter argues that project communication technologies both enable project processes, and limit the scope of possible inventions.

Chapter three explores the emergence and 'life' of new welfare technologies by inspecting them as they appear in project workshops, in project user engagements, and in project communication materials. More than mere 'pre-states' of finished welfare technologies, these prototypes offer perspicuous illustrations of their hybrid and relational existence, as they emerge through continued practices of articulation, negotiation and transformation. The chapter shows that an adequate description of the 'liveliness' of prototypes implies re-thinking the common notion of prototypes as 'mediators' of multiple perspectives. They are more, that is, than the natural end result of a singular trajectory of aligning different needs, desires, and interests into one coherent, material form. Instead, the chapter argues that prototypes are oddly hybrid entities, not-yet objects, that are continually constituted and re-constituted through its relations to other emergent entities, including 'project processes', 'design teams', and 'elderly users.' The design of prototypes thus involves the proper arrangements of a wide array of elements into more or less coherent

forms. The assembly of these heterogeneous elements is negotiated in terms of the construction of a coherent plot that defines problems and solutions. In practice, however, the 'lifecycle' of prototypes are far from linear. Prototypes can gain, lose and re-gain reality through processes of enchantment, disenchantment, attachment, and detachment.

Yet, more than prototypes are transformed through processes of technological development; so too are the problems they seek to solve, and the people who are believed to have them, the putative users. This chapter thus highlights how the life of prototypes are interlinked with other lives, such as the life of elderly users, designers, and PhD students. Analyzing the liveliness of prototypes opens up to see how attachments and relations, or detachments, with other actors are established along the course of their coming into being.

Chapter four explores the vague category 'the elderly user' and examines how it comes to be generalized within the frames of a project user study. Analytically, the chapter experiments with how to do user studies in non-reductive ways that are generative for the projects that depend on them, and for the people and practices they are about. This chapter therefore deals with the common dilemma of re-presenting 'users' in a way that, on the one hand, avoids (re-)producing stereotypes and, on the other hand, refrains from deconstructive analysis that stand in stark opposition to project ideas and agendas. Based on Helen Verran's non-foundational approach, I explore differences in the ways 'the elderly' become generalized. In particular, the chapter compares forms of generalization within the user study and in the context of a fitness class for elderly people. Doing so, it shows how the framework of the user study is inscribed with a particular way of enacting 'the elderly' as a singular group. I compare this enactment with ethnographic material from the fitness class, in which miscommunication between elderly informants and the ethnographer instigated what Verran has called a 'moment of disconcertment.' That moment elicited a contrasting way of doing the elderly as a 'vague whole'.

The chapter highlights the specific ways in which the technology of user studies afford certain ways of generalizing 'the user.' It also shows that paying attention to moments of disconcertment, rather than detecting unarticulated

needs, may be a way to avoid singularizing conceptions of the elderly that unintentionally render them as ‘passive’ and as ‘bodies in decay’.

CHAPTER ONE

Theoretical and methodological framework

This thesis offers an ethnographic study of an innovation project, and the welfare technologies that it seeks to develop. The process of writing a thesis about this innovation project has been as much a process of figuring out what the project and the welfare technologies each *were*, as it has been about dealing with questions of how to study them. For this reason, this chapter outlines a theoretical framework based on what can be called a *performative* approach to the study of *diffuse* and *vague* ontologies. Based on concepts and methods from science and technology studies (STS), the chapter also outlines the methods and methodologies I have used to study the Project Lev Vel and its emerging welfare technologies.

I have already presented the project as an entity with vague boundaries. Because it was far from self-evident what constituted the project, it was correspondingly difficult to define it. Moreover, it was quite difficult to locate the welfare technologies being developed, and to trace the processes through which they were made. These difficulties both had to do with the fact that the objects seemed quite 'private;' that a lot of their processes of coming into being seemed to happen almost by magic, by which I mean that they happened largely outside the public practices of the project. More over, what the welfare technologies to be developed were, was not a settled matter. Instead, questions such as what to develop, for what purposes, and for who seemed highly debatable and changing. In turn, what these not yet existing welfare technologies were seemed equally contingent. This instability and vague ontological status of both the welfare technologies and their imagined users was so profound that sometimes it was not even possible to capture them nominally. However, this left me in a difficult position. After all, in order to find out how to do a *good* ethnography, I needed to have *some* sense of what the project *was* and thus what the relevant questions to explore are.

Despite the diffuse nature of welfare technologies in project Lev Vel, these technologies were nevertheless slowly beginning both to take form and transform. Doing so, they were changing practices, people, and issues, and form

new assemblages around them (Jensen 2010). So my question was how to get a grasp on these objects, the form of which was not fixed, and which sometimes seemed to have no form at all?

In order to get closer to the not-yet existing welfare technologies and the project of designing them, I came to outline three empirical focal points, which seemed as central aspects of the project: design, prototypes, and elderly users. Based on these focal points, and inspired by STS literature, I came to specify three empirical tasks; 1) To gain an understanding of the social, material, and technical set-ups that design takes place within; or, in other words, the socio-material *arrangements* that drive or frame design processes within project Lev Vel; a public-private and user driven innovation project; 2) To explore welfare technology through the occasions and ways that prototypes are made to appear within the project; 3) To explore the figure of 'the elderly user' and how it is done within a user driven design project, and how it could be done differently.

Positioning this thesis thematically within a field of research has been difficult. The thesis is about welfare technology, but it is also about many other things, such as design, relations between users and design, and about becoming technologies. It is about concerns with how to write accounts that talk to different audiences and agendas and may have capacity to 'intervene' and be useful for the people it is about. It is also about care and ageing. And it is about how to study 'things' and processes that are complex, entangled, vague and not yet existing. And it is about many other things, too. I found that the thesis connects, but only partially, with a variety of themes explored within STS. In the following, I review relevant work in STS that thematically connects with my empirical case, and other work, which deals theoretically with the messy, unruly and complex technologies of the sort I also studied. This review of related work and relevant conceptions in STS outlines a theoretical framework that provides a general lens for the following empirical chapters.

Technology of care

Because my research centers on the welfare technologies that the project wanted to develop, and the elderly users that they wanted to develop these solutions for, I initially found inspiration in a body of research that can be grouped as studies of 'technology of care' (Pols and Moser 2009; Milligan, Roberts, and Mort 2011; Finken and Mörtberg 2011; Winthereik and Vikkelsø 2005; Mol 2010). This body of research studies the development, implementation, and use of technologies in healthcare. Thus, for example, Jeanette Pols and Ingunn Moser (Pols and Moser 2009) analyze the social and affective relations established in interactions between medical technologies and their users. Based on questions about what norms and normativities (Singleton 2007) are enacted by medical technologies, how they structure interaction (Suchman 2007), and shape ways of living with disease, they question the common dichotomy between 'cold' technology and 'warm' care. Instead, they show how sometimes, only with some technologies and for some people, relations between users and technologies can be 'warm', caring, affective, and profoundly social. The authors call for more inquiries into the values, social, and affective relations enabled by healthcare technologies.

Christine Milligan, Celia Roberts, and Maggie Mort (2011) also emphasize the social nature of healthcare technologies. They argue that the sociality of such technologies has to do with the way they are 'conceived, produced and marketed within complex social arrangements and are materializations of these arrangements and practices' (Ibid). More specifically, they study the implementation and use of telecare technologies in the homes of elderly people in need of care. Their particular interest concerns the elderly users' perceptions of care technologies and the way these technologies may contribute to re-shape the nature and place of care and care work. The authors raise the critical question: "whether telecare is able to make the home a better place to live than alternative options, or whether the spaces and functions of the home - and the power relationships within it - change such that they may no longer be recognisable or desirable places to live" (Milligan, Roberts, and Mort 2011: 352).

My study is motivated by similar concerns about the transformations brought about by these new technologies, and about the forms of sociality such technologies enact. It connects with the studies above, in the sense that it seeks to engage with the sociality of healthcare technologies, especially about questions of what social relations are formed within and around these technologies. Although both Pols and Moser, and Milligan *et al*. call for more studies of the design, development and use of care technologies, it is worth noting that not much work within STS focuses on the *design* of healthcare technologies. The studies mentioned above all deal with 'finished' technological artifacts that are already in use, and elderly users 'in the flesh.' In contrast, my case focuses on developing technologies. In design, welfare technologies and elderly users are being produced in documents, reports and a multitude of materialities describing who and what they are. This means that both the welfare technologies and the elderly still exist mainly in the realm of imaginaries and discourse, which means that their identities and relations are still open, uncertain, and slowly taking form through processes of articulation and negotiation.

The studies outlined above, which I refer to as studies in technologies of care (Milligan et al. 2011, Singleton 2007, Pols & Moser 2009, Finken & Mörtberg 2011), tend to focus on encounters between users and technologies in use practices, or on the effects of more or less black boxed objects on actual users. In contrast to this body of literature, my study goes beyond the human-computer interface. Working with a more diffuse analytical unit, I am broadly concerned with *various occasions of appearance of welfare technology and users within project processes*. What counts as 'welfare technology', what counts as 'elderly user', and how to understand the settings that they emerge within, appears more uncertain when these categories are crafted and negotiated in the realm of design and innovation. One benefit of studying welfare technologies as they come into being is that it makes easier analytical suspension of conventional a priori separations between technologies, users, and the socio-technical arrangements out of which they emerge. For this reason, I argue, studying welfare technologies in processes of design gives a more radical sense of their

multiplicity and hybridity. Studying welfare technologies during their processes of design, thus also open up for exploration of how relations and imaginaries are negotiated and inscribed into the material texture of these technologies - and how it could be otherwise.

Focusing on the becoming of technologies and on their relations to project Lev Vel - a multiple project with diverse purposes, interests and aims - might be seen to raise the question of whether the case is even about care. Of course, the project is concerned with how to care for the elderly by developing solutions to enhance their fitness and quality of life. Yet other interests, too, are at stake, such as the commercial interests of business partners, and resource savings for the public partners. So was the project actually about care, or economic growth or public resources, or all of these at once? I do not address this question directly in the thesis. However, I suggest, by focusing on processes of innovation and technological development, that it becomes apparent how welfare technology or 'technology of care' may also be about many other things than care. And what 'care' itself is may turn out to be something different than expected.

Innovation studies and becoming technologies

A body of research in STS and innovation studies have studied the becoming of technologies (Jensen 2004; Jensen 2010; Latour 1996; Danholt 2008; Law 2002 to name a few). My understanding of project Lev Vel, and the approach to study it, is inspired by this work.

As noted, the sub-project Mødestedet was stopped after one and a half year instead of the three years originally intended. Thus, the technologies and services that it had aimed to implement in real life contexts were never realized.

It is thus possible to add Mødestedet to the long list of failed innovation projects[10]. For one and a half year I participated in the project, both as an observer and as part of the struggle to fulfill the guiding vision about productive collaborations ending out in innovative solutions. Why did things not go smoothly? With all capacities and resources on board, why did the collaboration not blossom into concrete results? In Bruno Latour's (Latour 1996) famous book about Aramis, a guided transportation system in Paris, we follow various narrators' stories about the failed attempts at realizing this grand technological innovation project. Aramis is a somewhat monstrous creature, engaged in a constant struggle to make heterogeneous parts cohere. Aramis started out as a technological dream, but as the support and commitments of those who created Aramis began to falter, the project died. Latour is interested in why the project failed and what happened *in between* the great technological visions and expectations, and the fragile reality of a highly complex technology. The story about Aramis is not a narrative about a chronological process of technological development, with a passive, gradually becoming object in the center of an innovation project. Aramis gains and loses liveliness in relation to events and actors. In particular, shifting degrees of support from the people that gave it life in the first place makes Aramis flicker between 'real' and 'not real'. What we learn from the story about Aramis is that technology is not just soulless, passive matter: technologies want to exist and they need the love of humans. For objects to become *real* they depend on other actors, human and non-human. The story about Aramis is inspiring because it re-presents the train as lively, relational and struggling to exist. This depiction fits well with the kinds of tensions, controversies and complexities of the Lev Vel innovation project. The entwinement of Aramis and its intricate innovation project, replete with changing actors and changing conditions of existence, well illustrates the profound connections between objects and their conditions of emergence. Gaining *life* requires more than a physical form, but depends upon a solid network of dedicated and affectively committed actors.

[10] The question of whether or not the project failed could undoubtedly be a disputed matter, and I don't refuse the possibility that something generative evolved from the project. However, in so far as the project sets as its primary goal to develop solutions that can be 'bought by municipalities' and create value on different levels, but does not achieve this, it is fair to say that it has failed to deliver the promised results.

John Law's *Aircraft Stories* is about the making of a military aircraft, the T.S.R:2, to be specific. However, it is also about narrating technological innovation in a way that does not reduce complexity (Law 2002). For John Law, technological innovation does not happen in smooth, chronological processes through which singular, coherent and whole objects come into being. This is the case with the T.S.R.2, which appears as *different things* in different situations of appearance. In a folder about this airplane different images and sketches depicted the object in different ways; here it is illustrated as a weapons system, there a communication system, there a fuel system and so forth. According to Law, these images *perform* the T.S.R.2. Since they perform it in different ways, this means that what the airplane *is*, is not one thing, but multiple. This is the central view of the performative approach pursued by Law and others within STS; that objects and subjects are performed and performative of each other. The performative lens inspired my approach to study the emerging welfare technologies in project Lev Vel, and I will elaborate it in the following.

John Law's problem is how to tell stories about technologies that recognize their own performative effects and simultaneously evade singularity and plurality. Law proposes what he calls a 'fractional' way of knowing and writing about the world. His stories about the airplane are also about relations: relations between the airplane and those who work to make it, but also between the airplane and his own text. If objects are performed, multiple, and emergent, then texts about them also participate in their making. Taking this view seriously requires the writing of stories about technology and innovation that escape the bias of narrative continuity. To tell stories about technologies that are relational requires a different form of narrative, one that does not start out with a singular, centered object, which can be understood in terms of a linear lifecycle of coming into being.

These accounts of transformational objects and innovation projects have inspired my view of project Lev Vel and its welfare technologies. The performative approach to study objects: the understanding of objects as emergent in practice, and thus interrelated with the socio-material conditions of their enactment, takes as a premise that objects never act on their own.

In the thesis, the starting point is that objects are hybrid, relational, and performed. This allows for exploration of some of the Lev Vel project's core problems. The first of these was that the project struggled to make prototypes 'gain life' outside the project. As noted, the development of 'business solutions' did not succeed. Moreover, despite several attempts to involve and represent users, such involvement and representation remained difficult. At least, as we shall see, it proved very hard to get the 'users' to embrace the new prototypes and recognize them as useful 'solutions'. *Something*, apparently was more complex, or 'different', than what the project was able to capture through the process of designing welfare technologies.

Inspired by STS studies, my aim in this thesis is not to help design develop 'better' welfare technologies, or even 'better' design methods. Instead, the notions of reality as hybrid, relational, and performed in practice, support my endeavor to 'unpack' and *redescribe* some of the complexities of design and the development of welfare technologies. As I have emphasized above, I begin with the acknowledgement that both the design project and welfare technology are highly diffuse and intricate entities. So how to deal methodologically and analytically with such complex objects? Three concepts in particular help me frame the following analysis: objects as 'partially existing', 'multiple', and 'lively'.

How to study diffuse objects and projects?

A performative approach

> Objects come into being – and disappear – with the practices in which they are manipulated. And since the object of manipulation tends to differ from one practice to another, reality multiplies (Mol 2002: p. 5).

When objects are studied in practice, Annemarie Mol argues, reality multiplies. To trace how objects are made in situated practices, and how this accomplishes a multiplication of reality, is a key interest of researchers taking a performative approach. Famously, the philosopher Annemarie Mol has described how a

seemingly self-evident object, atheroschlerosis, appears multiple if studied as something that is *done* in practice. Her study of atherosclerosis and its relation to bodies, medical technology and health care institutions is helpful for my attempt to understand the emergence and transformation of welfare technologies as an effect of their relation to other entities. Mol's approach is also helpful for understanding what it means for multiple objects like prototypes to exist, to work, to 'fail', and to succeed or disappear. Like Mol who asked "what is disease?" and "what is a body?" I ask the deliberately naïve question "what is welfare technology?". But how to answer such an open question concerning the 'being' – the ontological status – of things?

> what *is* a body in the conditions of possibility at the beginning of the twenty-first century? To phrase it in this way is risky. The danger is that the answer will simply repeat what has already been said by biomedical experts and/or patients: hardly a real contribution. Seeking to add to or correct the knowledge of experts or patients with only the techniques of ethnography at our disposal would be equally futile. No, we don't 'know better'. Asking the question 'what *is* a body' is worthwhile in quite a different way. It is a way of *shifting the grounds* on which questions about the reality of bodies may be posed. (Mol and Law 2004: p. 4)

In posing the question 'what is welfare technology,' I do not intend to give an exhaustive description, or a definition, of what welfare technology is. Instead, through my ethnographic description, I seek to *shift the grounds* on which questions pertaining to welfare technology and the design of them may be asked. This allows for a different characterization of their role in innovation projects. I do not presume to know *more* or more *correctly* what a prototype is than, for example, the designers in the project. Instead, I try to know what a prototype is differently. To open up to new understandings of what welfare technology is and what design is may also, I suggest, offer clues about the nature of the difficulties the project experienced in the process of design. And it might generate suggestions about how things could be done differently.

Engaging with the practical ontologies (Jensen 2004) of bodies and disease involves paying attention to how diverse elements of a situation - such as microscopes, doctors, patients, and understandings - participate in doing the body and doing disease in specific ways. This is important, for as I have argued above, objects never exist by themselves but depend upon everyone and everything that is active while they are being practiced. When we begin to recognize how various elements of a situation are parts of the objects being done in practice, objects emerge as multiple (Mol 2002), and as hybrids (Callon and Law 1995; Latour 2012)

To get this process into view, it is necessary to pay attention to the techniques that make things visible, audible, tangible, or knowable. For a disease such as atherosclerosis to exist, for example, heterogeneous elements must be made to fit together: patients with stories about pain and doctors with microscopes and medical concepts.

With an interest in discerning the complexity and instability of seemingly singular objects like technology, Casper Bruun Jensen follows the peculiar ontology of the electronic patient record (EPR) as it is being developed. In his studies of the electronic patient record, Jensen depicts his struggles with following this technology. Because the EPR did not behave as a 'proper' object, singular and attached to one place, its ontological status seemed vague and uncertain. Instead, Jensen argues, the EPR was distributed, negotiable and contingent. To capture these qualities, Jensen deployed Latour's concept of partially existing objects (Latour 2000).

For Latour, partial existence is essentially about digging out the way in which technological and scientific objects never escape their conditions of production (Latour 2000). For an object to gain realness, to achieve durability, it has to extend itself in time and place. Latour argues that this extension, the adding of reality to an object, scientific or technological, is a labor-intensive task of associating, modifying and exchanging elements into a durable whole.

According to Casper Bruun Jensen, studying partially existing objects demands a certain methodological attitude:

> With this approach it cannot be a requirement to be able to define a precise area of investigation (say, a technological object or a social context) prior to investigation. Rather it is crucial to empirically track down how technologies are constructed and transformed in multiple situations and networks and to analyze the specific consequences such constructions have for different practices and actors. This interest in active construction extends to the researcher of partially existing objects, who is also involved in defining and constructing the object through his or her work. " (Jensen 2010: p. 21)

Jensen proposes that a strategic 'simple-mindedness' and accompanying theoretical and methodological flexibility and attentiveness turn into analytical strengths when studying 'partially existing' objects. Jensen's rendition of the electronic patient record as a partially existing object resembles the way in which the welfare technologies of my study tend to slip away from view. Thinking about this slippery object as partially existing implies a shift in focus from a centered object attached to a specific site, to a broader focus on project processes and their materiality. The field of study is no longer confounded to a single object or a bounded site but opened up to the various actors involved in its production. Studying partially existing objects implies letting go of a priori conceptions of what technologies are and what they ought to turn in to and instead follow the multiple associations created between things, humans, discourses and organizations. In the following analyses I therefore attend to material and social practices at once: I consider what materials, tools, techniques, and forms of knowledge are required for innovation objects to be made visible, tangible or knowable.

The two concepts just introduced, aim to characterize the world and its objects as *multiple* and *partial* rather than static and singular. A third related metaphor, and writing strategy, which I will briefly describe, depicts objects as 'lively'. In recent years, a range of researchers have used the notion of liveliness to offer new descriptions of the relational and contingent nature of objects. Helen Verran discerns the liveliness of measures and values (Verran 2011), John Law talks

about the double social life of methods (Law, John, Evelyn Ruppert 2011), and Mike Michael writes about the lively transformations of his audio recorder when it encounters other entities in an interview situation (Michael 2012). These authors have used the ascription of liveliness as a strategy for uncovering the relational, contingent, and emergent nature of objects.

Earlier terms of wide currency in STS, including mutual shaping (Bijker and Law n.d.), co-construction (Fujimura and Clarke 1992; Oudshoorn and Pinch 2005), configuration (Suchman 2007; Woolgar 1991), and enactment (Mol 2002) also seek to grasp and express the way in which the human and the non-human is relationally entwined. The difference is largely to do with the degree to which they admit human and nonhuman entanglement, ranging from recognition of a certain mutual influence to a radical disruption of conventional boundaries, creating an image of mutual becoming as situated, collective emergence. For me, the notion of life and liveliness is a tool that enables viewing and writing about entities in ways that refrain from making them static in the text. Seeing objects as lively is not only about showing how the human and the non-human is related, but also about exploring the possibility of multiple worlds of welfare technology, and the implications of that for the writing strategies of research. *The performative aspiration of the present thesis is thus to write in a manner that brings this multiplicity to life.*

This is important, for if objects are relational and multiple, they are also political. This places on the shoulders of the researchers the responsibility for writing for particular realities rather than claiming to represent them from a wholly external perspective. The difficult question is which realities to write for and how to write for them well. The concepts of multiple, lively and partially existing object are all part of the same ontological claim: that practical ontologies (Jensen 2010) are not given in the order of things, but brought into being in the situated events of everyday social and material practices.

Similar concerns with active construction and emergence have made some researchers talk about a 'turn to ontology' in STS and anthropology. In short, dealing with matters of ontology implies the recognition of the possibility of multiple worlds (Gad, Jensen, and Winthereik 2014); that reality can be done differently, and therefore is multiple. The implication for the qualitative

researcher is that there is not just one reality to re-present, but multiple ones, and that by enacting reality in certain ways, the researcher is also engaged in what Mol has termed 'ontological politics' (Mol 1999).

According to John Law and Marianne Lien, the ontological turn is "a method of drawing attention to 'a penumbra of not quite realized realities' (Law and Lien 2012), the failed, unseen or not-yet-real possibilities hinted at by ordering practices" (Woolgar and Lezaun: p. 323). Aligning with this view, Woolgar and Lezaun (Woolgar and Lezaun 2013) have argued that the point is not to arrive at "better formulations of the reality of the world, or of the ways in which the world is real, but to interfere with the assumptions of a singular, ordered world, and to do so by re-specifying hefty meta-physical questions in mundane settings and in relation to apparently stabilized objects" (p. 323).

In anthropology, the ontological turn has been described as *experimental* in the sense of being a "heuristic analytical device", "which allows anthropologists to make sense of their ethnographic material in new and experiential ways" (Pedersen 2012), and which opens up (rather than answers) the question of how particular objects come to be invested with normative and political capacities (Marres 2012; Woolgar and Lezaun 2013). In general terms, the point is to "adopt a highly self-reflexive stance towards what ethnographic data might be, what concepts they might evince, as well as what such data and their conceptual yield might do to common sense of what reality is"(Pedersen 2012). Turning to ontology, is thus not a way of getting closer to an external reality and it is not necessarily about making better (scientifically or morally) descriptions, but to open up to new possibilities through stories that give new views on and new versions of reality.

In alignment with the interest in opening up for the possibility of multiple worlds, my "normative" project, as noted, is not to make 'better formulations' of welfare technology or design. Instead, I seek to 'unpack' welfare technology and design in ways that can provide different understandings of what it is, and what it does. Different understandings that may have the capacity to intervene in taken for granted ideas about welfare technology and design.

STS and ethnographic methods

In light of these theoretical twists and turns towards greater emphasis on the world as emergent and multiple, questions arise concerning the claims of authority that ethnography might make about its descriptions, and the role in which it sees itself. Presently, many ethnographers find themselves invited into projects and spheres of 'soft capitalism' (Jespersen et al. 2011; Thrift 1997, 2006). This situation requires a re-specification of the role of the ethnographer, and a new sense of reflexivity regarding what and whose 'worlds' and interests ethnography commits to performing.

Following Nigel Thrift (2006), Lev Vel might be seen as an example of 'soft capitalism'. Thrift characterizes soft capitalism by three features: a mobilization of affective knowledge in order to create new encounters with increasingly empathetic commodities; an increased focus on co-creation, bringing the consumer closer to these empathetic commodities; and the creation of new active spaces for thinking, relating, inventing and consuming (Thrift 2006; in Jespersen et al. 2011). In this context, ethnography is often seen as one more tool used to gain access to the everyday lives of consumers, and encouraging them to commit (Jespersen et al. 2011). In Lev Vel, too, ethnography was applied as a means to gain access to the everyday lives of intended users. The aim was to facilitate design of 'better' welfare technologies that would meet the needs of the intended users, and solve their problems. I was involved in the project as an ethnographer doing user studies for the design project.

Within STS this kind of situation has raised questions about method and methodology. The traditional virtue of ethnography centering on 'thick descriptions,' for example, may fade, finding itself replaced with compressed, to-the-point depictions of everyday life (Jespersen et al. 2011, see also Vikkelsø 2009). So how to avoid reducing ethnographically based cultural analysis to a simple matter of instruments? How to avoid so-called hit-and-run ethnography, and accounts that remain purely 'descriptive' all the while enforcing their own implicit commonsense analytic? Jespersen et al. posit that the situation that STS researchers are increasingly finding audiences within soft capitalism demands that the STS ethnographer seeks ways to strategically engage with compressed,

to-the-point depictions of everyday life while simultaneously appreciating it "as an activity interlinking a multiplicity of practices, theoretical perspectives, analytical movements, emotional processes, and representational forms" (Jespersen et al. 2011; O'Dell and Willim 2011).

Approaches such as 'para-ethnography' or 'double cultural analysis' seek to simultaneously analyze users, consumers and citizens *and* the corporations, businesses, and organizations involved in projects (Jespersen et al. 2012). These approaches recognize that "in analyzing the effects and implications of implementing innovations, it is not enough to focus on the everyday life of the users. In order to render the cultural-analytical insights sustainable, one must also reflect upon the practices and rationales of the stakeholders and organizations involved (Jespersen et al, 2012).

Being hired in as project partner doing user studies and at the same time being a PhD student interested in STS and ethnography, meant that I had similar concerns about how to do user studies that could be relevant for my project partners, but avoid reducing my empirical experiences to work-able categories.

I started to read work within STS during my PhD. Quickly I found this body of literature to respond to the lack of means for thinking about complexity and relationality, which I had been missing in my time as a design student. However, I quickly learned that my fascination with STS was not always popular within the design community, where I experienced that some designers felt that they were being criticized, or that the complexity offered by STS analyses was not relevant for design. Also in the project Lev Vel I found it difficult to make the STS approach applicable to the immediate concerns of project partners and the agenda of the project. It was simply very difficult to make the STS lens and analyses do work within the design project. During this process of participating as an ethnographer in Lev Vel and experiencing challenges of trying to bring STS and the design endeavors into dialogue, I became aware of the difficulties of making analyses that merely render the world 'more complex' travel within the design project. I experienced that my 'nuanced' ethnographic accounts about 'the elderly' did not transgress boundaries between research and design, but rather added to their fixity and separation.

Within innovation projects, ethnography finds itself located between different logics. Not least, the understanding of the world as ontologically contingent, which is at the heart of STS ethnography, is at odds with the still prevailing logics of linearity, instrumentalism, and progress within design and innovation. For some researchers, the recognition of this dilemma requires that the ethnographer make a choice about which position to favor. That did not seem satisfying to me. I started to take an interest in STS literature that deals with questions of intervention. In the following, I will review literature that recognizes this sort of double role of the ethnographer, and seeks to develop ways to deal with the peculiar role of being a sort of 'middle-management' mediating between users and projects (Jensen 2012). The literature I draw on aim at making accounts that are both accountable to their academic constituencies and at the same time able to speak to audiences within projects. Based on the following review of literature about STS ethnographic approaches, the ethnographic method I seek to develop is characterized by an attitude that both seeks ways for intervention and generative critique, but without creating separations and oppositional views.

Ethnography as intervention

According to David Hess, the history of ethnography in STS can be divided into two different generations. The first generation was driven by a central research concept of knowledge as socially shaped or constructed, and with a key interest in examining how claims to evidence and consistency were interwoven with situational events; local decision-making processes, negotiations, interpretive flexibility of evidence, and other social or non-technical factors shaping what comes to be seen as the accepted knowledge and methods in a field (Hess 2001). Along the way, this tradition also turned to technology (Woolgar 1991), and concerns with the co-shaping of knowledge, technology and society became central to the first generation of empirical STS studies. Some critics problematized the lack of attention to politics in the first generation (Star 1990), and the failure to make distinctions between different claims and technologies.

This failure, they argued, meant that STS had no basis from which to intervene in decision-making processes such as policy making.

The second generation of STS ethnographies, according to Hess, turned to a focus on politics and addressed notions such as intervention and partiality. A 'good ethnography' in this sense, would have to simultaneously exhibit competence (demonstrating that the ethnographer had immersed herself in the field, is able to understand the content and language of the field, and can analyze it competently), interpret complexity, interrogate the taken-for-granted, and make an explicit empirical or theoretical contribution to a literature (Hess 2001). Moreover, some researchers hold that a good ethnography should also be able to intervene in its field site and make its competence applicable to policy problems. Whether the capacity of ethnography to talk back to policy problems is a 'good' or if the ideal of intervention sacrifices scientific virtues at the expense of politics is a topic for ongoing discussion. Hess argues, that a good second generation ethnography is post-constructivist in the sense that it no longer needs to show how knowledge and technology are socially constructed, but examines the ways in which they might be *better* constructed.

In being concerned with matters of intervention, this thesis belongs to the second generation of STS empirical work. The specific conditions under which this PhD process and the thesis has been conceived has made questions of intervention central. Participating as an ethnographer and 'composer' (Jensen 2012) of project Lev Vel, along with being a PhD Student committed to the task of doing research, required an ability to navigate in various complex arenas, where different logics, interests and agendas have different implications for what a 'good ethnography' might be.

The focus on intervention in the second generation of STS ethnography can be seen as exactly responding to the tensions and challenges of that intermediary role of the ethnographer. Christine Hine calls this the tensions of 'the middle range', and suggests that the ethnographer in this kind of project embodies the tensions of a middle range, which attempts to remain relevant to diverse audiences whilst faithful to a complex and ultimately methodologically elusive experienced world (Hine 2007, p. 653)

The challenge of ethnography today is that it needs to embody tensions between engaging in the world experienced by the researcher and engaging in policy debate. Hine argues that a fruitful STS ethnography is exactly characterized by an ability to do both.

According to Hine, multi-sited ethnography (Marcus 1995) has a particular capacity for embodying the tensions of trying to mediate between different settings and audiences. Following researchers like Mol and De Laet (De Laet and Mol 2000) and Jensen (C. Jensen 2004), Hine highlights the innovative qualities of the multi-sited approach, which encourages what she calls a 'moving around'. This moving around across sites allows the researcher to explore and embrace complexity and ambivalence. At best, it takes the ethnographer to new theoretical places and new policy locations, she proposes. One advantage is that multi-sited approaches entail a willingness to pursue connections rather than accepting conventional field boundaries. What is the empirical 'site' is more diffuse and contingent, and studying it requires elements of experimentation. The attitude of experimentation and methodical groping requires openness to what there is and 'keeps alive' the question of what adequacy means for the various audiences involved. On the same note, there is no fixed answer to how an adequate ethnography intervenes.

> "being multi-sited is a way to engage with scientific and technical practice in complex allegiances that go beyond description and critique" (Hine 2007).

Going beyond critique does not suggest an ethnography that doesn't interfere. On a contrary, ethnography may seek to interfere in taken for granted views by incorporating an ability to surprise, challenge old conceptions and offer new ones, and find audiences for whom they are news (Ibid).

Generative critique

For the philosopher of science and STS scholar Helen Verran, what is a central criteria for doing 'generative' ethnography, is the capacity of the ethnographic story to intervene in ways that enable a build-up of useful relations between

different knowledge traditions rather than create further separations (Verran 2013). According to Verran doing 'non-foundationist' analysis is a necessary starting point for an ethnography that seeks to enable the negotiation of useful links instead of forging further oppositions;

> it is about learning to manage knowing along with doubt; weaning oneself from certainty that is allowed by working within just one metaphysical frame. It implies recognizing that reality can be done this way or that, through this series of gestures, words, and material arrangements, or an alternative set (Verran 2007: p. 34)

To learn how to see things differently requires that one stays alert to situations where something is done in ways that are different from what was assumed, or expected by the ethnographer or others. Verran urges the ethnographer to go *deeper* into situations, the 'here-now' where difference is being done (Verran 2001, 2013; Winthereik and Verran 2012). Verran has developed the notion of 'moments of disconcertment', which is a signifier of epistemic disaggregation. Attending to these moments allow the analysts to dive deeper into the situation, to reveal how different forms of 'epistemic rightness' is at play. Verran argues that we should stay alert to such small empirical moments, to expand disconcertment and keep the tension of different understandings alive instead of resorting to meta positions, which tend to explain epistemic difference away. Inspired by Donna Haraway (Haraway 1991), Winthereik and Verran further suggests that moments of epistemic disconcertment may enable a double vision where both 'seeing and seeing through' becomes possible (Winthereik and Verran 2012). The task is to see both interruptions and connections, because that allows us to make analyses that refrain from taking sides, but foster ways of going on together (Verran 2013). For me, a central aspiration was exactly to make an account that did not make itself relevant by pointing out the 'flawed' views of the people involved in the design and innovation practices. Indeed, I wanted my studies to be able to interfere with the imaginaries of design practitioners, innovators and policy makers about design and welfare technology. I wished to make accounts that would enable greater appreciation of

the complexity of these techno-social initiatives, but without rendering them obsolete. Verran's notion of generative critique requires that the researcher dives into moments of disconcertment. This approach and sensitivity to difference appeared as a helpful heuristic for the specific situation I was in; where the aim of intervening went hand in hand with a wish to make sense across disciplinary boundaries.

Verran recognizes disconcertment as a sort of 'existential panic' (Verran 2013: p. 5), a moment of collective awkwardness (Verran 2001). According to Verran, the researcher must strive to develop sensitivity to these 'fleeting moments of bodily felt tension' (Helen Verran 2001: p. 5), feelings of existential panic, or unease. Small, seemingly insignificant, empirical moments of disconcertment alert us to epistemic rightness and taking them seriously is necessary if we want to recognize our own metaphysical commitments and avoid doing violence to other possible versions of the world. In her studies of "African thought," Verran shows how the interpretive frame of so-called Western knowledge traditions systematically deletes its own metaphysical commitments and fails to acknowledge alternative ways of "doing number." This has led to a body of scientific literature, which, Verran argues, continues colonial ideas about an indigenous and primitive African knowledge tradition.

In my view, this reflective approach to difference is also relevant to cases closer to home. It is certainly relevant to the case of contemporary multi-stakeholder innovation projects, where epistemic differences are likely to exist. Similarly, it seems relevant to the endeavors of designing welfare technology where the possible re-production of cultural myths and ideas about 'the elderly' may obscure possibilities of producing 'new' knowledge and developing solutions that are actually innovative and considered representative for the people they are designed for. Here, ideas about 'the elderly' as fragile, or particularly lonely, or in need of technology, or frightened by it, may hinder opportunities for developing new and non-stereotypical insights about elderly people.

The role of the ethnographer in contexts like these is to learn to recognize and render visible those epistemic commitments and unintentional habits of thought and open up to different versions of the world.

The aim of ethnography is not to show the true nature of 'the elderly' or find the most suitable categories to describe them, but to tell stories that 'foster ways of going on together doing difference, by doing difference *before* coming to concepts' (Verran 2013: p. 5 & 9)

For Verran, doing generative critique is about staying alert to the possibility of double vision. Acknowledging the partiality of the worlds (re-)created through ethnographic endeavors, means that other stories about the world could be possible. Therefore re-presenting the world in ways that are generative goes hand in hand with a willingness to contemplate the possible effects of the ethnographic account on the worldly phenomena they re-present and the actors that are involved. This means that the ethnographer must make strategic choices about what entities and realities to re-present and how.

According to this view, the STS ethnographic method is not necessarily about moving around and uncovering the full complexity of a thing or an issue, but a more deliberate and strategic move towards foregrounding the empirical 'here-nows' that allow to switch between different views.

In his call for a 'live sociology,' the sociologist Mike Michael argues that 'the object' is not only an 'object of study', but also a part of the empirical process of engagement. Attending to objects interfering in the course of ethnographic inquiry, Michael views them as "processual, emergent, relational but also, in principle at least, 'idiotic' – possessed of an incommensurable Difference" enables us to 'slow down' and reflect on 'what we are busy doing'" (Michael 2012: p.3). Seeing objects as lively allow for an analysis of spontaneous 'becoming-withness' (Ibid: p. 8) and co-emergence of objects- and actors-in-events. The analytical unit is therefore shifted from 'what is', understood as given matter of fact entities or phenomena, to 'matters of process'. Engaging with matters of process can help us re-think what the 'fact' or 'the problem' might be.

This is exactly the point of an ethnography that is 'alive' to the objects, relations and issues that it studies; it refrains from making accounts that settle on 'what is'.

Moving around: Where I went, and what I did

This dissertation builds on empirical material drawing on a range of different research methods. I have participated both as observer and active participant in the innovation project Lev Vel. I participated in discussions, group work, design experiments and practical planning and in facilitation of project activities. I also observed the activities of project partners and the conditions (material and social) under which these activities occurred. I joined meetings to plan project activities and coordinate the engagements of participating colleagues, myself included. I have also attended workshops and presentations, and participated in discussions and group work while simultaneously observing the interactions of other partners. In particular, I have studied how the partners talk about their activities: what they considered important, problematic, challenging, providing opportunities or problems. I have spoken to partners about their professional conflicts with other partners, listened to disputes over design methodological approaches, and occasional utterances of discontent, skepticism or excitement about the methods and methodologies, contributions and outputs of other partners. I have also observed partners carry out user tests of design concepts and prototypes and conducted interviews with various partners. Furthermore, I have participated in formal conferences and seminars within the auspices of project Lev Vel in order to explore what themes, issues, questions and results were discussed and made public to a broader audience of stakeholders. And, as part of my own commitments to the project, I have carried out user studies, observed 'active elderly' in different locations. Under this purview, I did ethnographic studies, interviews and focus groups in a fitness center, in a care home, and in senior housing. I have presented analyses of these settings to the rest of the project group, at conferences, and at academic seminars.

Finally, in order to connect the local activities and emergent entities that I studied in project Mødestedet with events, agendas, facts and artifacts at stake in different places and times, I examined project documents (both official and unofficial), policy documents on active ageing and welfare technological

initiatives nationally and beyond, news articles and blogs, attended conferences on active ageing and welfare technology.

The dissertation is based on more than two years of ethnographic fieldwork in different places. A lot of this material does not figure in the dissertation. In that sense, this is not 'An ethnography' of project Lev Vel, welfare technology, or 'the elderly'. Instead, these engagements with people, things, and places have influenced the themes and issues that I address in the thesis, and the way I address them. The thesis presents small stories from situations, here-nows, which I saw as occasions for knowing something in a slightly different way - and in ways that I could see as responding to problems that the project had, and in ways that were accountable to my encounters with elderly intended users. In chapter two I wanted to show the immense, but largely unrecognized, influence of 'project communication technologies' for what can been known and made in the design project – I wanted to show how technical and material infrastructures for design are actively shaping things like 'partnerships', 'users', and the design processes. In chapter three I wanted to illustrate the liveliness of prototypes, in order to highlight their entwinement with designers and users, and draw attention to affective dimensions of design. In chapter four, I wanted to address the project's problems regarding how to understand and re-present the elderly users. I wanted to develop an account of 'the elderly' that did not reproduce commonly assumed boundaries between 'us' and 'them'.

A Note: From objects to infrastructure

When I began writing the dissertation, I thought that it would be about objects: the welfare technologies being developed. In the process of going back and forth between empirical material and analytical work trying to trace these objects, I became increasingly aware of the importance of *infrastructure* and practices of *infrastructuring.* Gradually, I became interested in the project as a system of material and technical arrangements, in which welfare technologies could hardly be separated out. Processes of *infrastructuring* project activities thus turned into

a salient analytical focus: the emergent infrastructures were deeply entangled with the objects that the project sought to develop.

As Brian Larkin has noted, the peculiar thing about the ontology of infrastructures, is that they are both things and the relation between things (Larkin 2013: p. 3). Larkin defines infrastructure as 'built networks that facilitate the flow of goods, people, or ideas and allow for their exchange over space' (Ibid: p. 1). But infrastructure does more than merely transport, they are 'concrete semiotic and aesthetic vehicles oriented to adressees' (Ibid: p. 3). In other words, they exert world-making effects, working with – and against – human designs (Blok, Winthereik forthcoming). In their studies of development aid, Casper Bruun Jensen and Brit Ross Winthereik find that infrastructure and partnerships are recursively shaped. In that sense, infrastructures are interesting and important objects of study because they 'reveal forms of political rationality that underlie technological projects and which give rise to an "apparatus of governmentality" (Foucault 2010 in Larkin 2013: p. 3).

In a forthcoming special issue of Science as Culture, Anders Blok, Moe Nakazora and Brit Ross Winthereik propose to view 'infrastructuring' as a conceptual tool that;

> [infrastructure]suggests a lens for bringing together a number of heterogeneous elements. Thus, attending to how environments get infrastructured means attending to contested landscapes of technology, knowledge, processes, and effects. It involves attending to how 'the environment' is managed and known, through what material and conceptual means, and to what effects. (Blok, Moe, and Winthereik Forthcoming: p. 3).

Similarly, I found that thinking through design as processes of infrastructuring provided a helpful way of attending to entangled landscapes of 'technology, knowledge, processes, and effects'. Moreover, this approach provided a lens for examining the material and conceptual means through which 'the elderly', 'welfare technology', and 'innovation' was managed, organized, and known, and

for understanding the effects of these processes. Infrastructuring thus became a central empirical concept guiding my analysis.

Finding 'infrastructure' empirically, opened up for a view of design not simply as an open space where the needs of various actors' meet and fuse in innovative ways, but also as enabling and limiting possibilities for action and invention. When I refer to processes of infrastructuring design, I have in mind this ongoing crafting of occasions and conditions for project activities, this making of sites, where the technical and the social are mutually performed. Indeed, my main finding concerns the notion of design as a process of infrastructuring: Innovation and design needs infrastructure in order to be productive.

I coined the term 'project communication technologies' due to the observation that crafting infrastructures for design in a multidisciplinary partnership consists to a significant degree in making technologies for project communication. I develop the typology, 'project workshops', 'project user engagements', and 'project communication material' in order to characterize this infrastructure of project communication technologies. As with any other good infrastructure, project communication technologies tend to 'fade into the woodwork' (Star & Bowker in Lievrouw 2006) of innovation, they form the naturalized and thus invisible framework for design and collaboration. Hence, innovators are often unaware of the (re-)productive capacities of their technical and material sites for design and project activity. The limits and constraints of infrastructures go unnoticed, and innovation projects struggle blindly to escape the inertia of common, but outdated, innovation models and associated ideas. The stickiness of these old ideas about users and technology and their relations prevent contemporary innovation projects from developing solutions that the involved partners find inspiring, motivating, and truly innovative. In this dissertation I suggest that in order to instigate a paradigm shift in design (Morelli 2007) or find an 'alternative design' (Latour 2010) a focus on infrastructure, specifically project communication technologies in cases of collaborative design, is salient.

Summing up

My approach to the emergent welfare technologies in project Lev Vel is inspired by STS conceptions of the world as multiple, emergent and relational, and the corresponding view of ethnographic knowledge production as situated and partial. The dissertation does not aim to deliver explanations or give a 'bigger perspective' on welfare technology or design. Instead, it is concerned with particular situations, Verran's here-now's, that open up to know welfare technology and related figures, such as 'the elderly', in ways that are surprising, or which enable a 'slowing down' of reasoning. My aim has thus been to write stories about innovation, technology and design that have capacity of intervening in common views, expectations and beliefs about their potential to change, improve and solve social problems. This form of teleological belief and fetishism imply a range of assumptions about 'the elderly user' and about the process of design and the nature of innovation.

By approaching welfare technology and innovation *in practice* and as processes of *infrastructuring,* I tell different stories about what design and innovation is made of. These stories are meant to work as 'loosening agents', unmooring settled categories and certainties by unraveling situational complexity, which too often goes unnoticed in approaches that aim to solve intricate social problems through technology. It is my hope that such stories can be generative for the different actors and practices that they are about, that they may allow for transgressing boundaries between different actors and knowledges.

CHAPTER TWO

Infrastructures and the Agencies of Design - Introducing Project Communication Technologies

This chapter explores the infrastructures and agencies of design in a public private innovation project. It aims to understand the structures and dynamics of design; the practices that design proceeds along, and the methods, tools, and techniques used to develop new technological and business solutions in the context of public-private and user driven innovation.

The standard way of understanding these issues; one, which one often meets in method books for design and innovation, and which is incorporated into innovation models and programs, is that innovation is driven by users' needs as extracted by experts (See e.g. Rogers, Sharp, and Preece 2011; Goodman, Kuniavsky, and Moed 2012). This view juxtaposes the 'actual' world (of e.g. users and experts) with particular theories about the world and methods for studying it. The consequence is a framing of the tools, methods and materials for design as *mere* techniques: as instrumental means or passive tools that assist in learning about the users' needs.

In this chapter, rather than considering design methods as 'servants' of users' knowledge of and experience with lived reality, I explore the infrastructures of design. Instead of conceiving tools and methods as fixed and final instruments, in what follows I analyze these entities as emergent elements in a socio-technical arrangement, which is at once socially constituted and constitutive of the social. This implies a view on design materials as precisely 'infrastructures'; that is, as sites where the technical and the social become profoundly entangled and in which they are mutually generative. Since the technical and the social are interrelated, the analysis involves a shift in focus from questions of what method is the 'right' tool for a particular job (Fujimura and Clarke 1992), to an interest in how methods and other technical and material arrangements contribute to performing the social phenomena and constellations that they are ostensibly used to work for.

In a public private innovation project it is not always clear what is 'design' and what is 'other stuff'. Design activities are often mixed up with communication activities like research presentations, networking events,

communication of project activities, and the presentation of findings to internal and external partners. Throughout my engagement with Lev Vel, I observed that design, research and communication seemed to often melt together.

During my participation in workshops, user trials, planning meetings, seminars, report writings, I was regularly struck by just how vaguely defined the different activities were. This in turn made 'design' emerge as sporadic and coincidental. In a sense, of course, this was quite troubling as the project was framed *as* a design project: indeed one that would deliver innovative solutions for one of the biggest challenges in present day Western societies. Yet from within the project, the execution of these various events and activities seemed at once fairly random and quite insignificant. Even though a lot of time and effort was invested in orchestrating and crafting various activities, then, it was difficult to see precisely how they contributed to the overall purpose of designing welfare technologies. Workshops, user trials and the making of communication materials seemed like singular and separate activities that apparently did not produce any concrete outcomes.

However, I came to realize that crafting project workshops, project user engagements and project communication material was in fact *core activities* within the project. Despite my own sense, shared with other participants with whom I spoke, of the *vagueness* of these collaborative occasions of project processes, certainly as compared with the important outcomes they were meant to generate, the project *did* progress and it did produce things like prototypes and service designs. So how, then, did design happen?

Agencies in the design project

Initially, my difficulties in locating the significant events where the collaborative process of design occurred, and identifying the underlying mechanics or core ideas driving the innovation project, made me think of the project in terms of a magic trick, or a sleight of hand; a process aimed at disguising or blurring the actually missing connections between the working practices and the end results. Other project participants, doing anthropological research within the project,

exhibited a similar skepticism. In a research paper for an anthropology journal they wrote;

> We find that user focused health and welfare innovation projects balance between realizing the ideals for democratic engagement and responsiveness towards user needs and practices, and merely enforcing of a veiled way of pursuing different interests than those espoused by the users (Lassen, Bønnelycke, and Otto 2015: p. 17)

These authors argue that instead of emphasizing the needs of users, the project centered on the competences and expertise of partners. They further suggested that ethnography would be an appropriate method for improving user involvement and mediation between the project and its users (Ibid).

As noted, their criticism resonated with my own confusion regarding the relations between project processes and final outcomes; or between the prototypes developed and their supposed users. These difficulties made it tempting to conclude that the project processes, and the efforts invested in crafting their material and technical set up, somehow veiled an underlying pursuit of interests quite different from the users'. However, when publically communicating about the project, Lev Vel was presented as a successful case of user driven, public-private innovation, leading to the creation of new solutions satisfying for users as well as partners. In what follows, I would like to take seriously these claims, instead of dismissing the project processes as mere veils for underlying interests. Thus, I use my observations as a motivation for exploring the 'practices and technologies of design' further.

Let's have a closer look at the 'battlefield' of design. On one hand, we have a critical analysis of the innovation project, made by anthropologists studying the project Lev Vel. They view the material and technical conditions of project processes as a veil, the only effect of which is blurring the *actual* agencies and enhancing pre-existing agendas. On the other hand, we find what might be called the 'plaster saint' version of design, found in communication material presenting the project and describing the process of design and the invention and development of welfare technologies. These accounts present the material and

technical conditions of project processes as the passive foundation upon which collaboration unfolded. The two accounts generate two very different versions of innovation: one deconstructing the project and the design of welfare technologies, the other praising it uncritically.

I seek to evade choosing either of these dichotomist positions. My aim in the following is not to pass judgment. I do not intend to praise or blame the project or foreground any singular actors and their interests as being more or less 'right' for the project. Instead, I am interested in producing an account that neither uncritically accepts the virtues of innovation, nor deflates the possibility of engagement in generative conversations between 'innovators' and social analysts by dismissing the design process as a matter of interest politics.

In fact, though superficially opposed, the two accounts I have sketched above are not so different. Their similarity is that both rely on ideas of singular actors having pre-existing needs and interests, which drives the process of innovation. This maintains the idea of innovation processes as being 'controlled' by specific actors, while also assuming that the moral and innovative capacity of design depends upon the choice of methods and their ability to represent the 'right' people and their needs *correctly*. Buying into these premises narrows the possibilities for generating novel perspectives on design, since it structures the conversation around the question of whether peoples' interests are correctly or incorrectly represented by the chosen methods. In this way, both of the opposed arguments can be said to embed a form of 'methods fetishism' (Wastell 2008); the illusion of an all-powerful method that "provides practitioners with a feeling of security and efficiency at the expense of real engagement with the task at hand", and which allows them "to deny their feelings of impotence in the face of the daunting technical and political challenges of systems development" (Ibid: p. 25). The project Lev Vel was organized in relation to ideas about the innovative capacity of methods and approaches that enable multidisciplinary collaboration and user involvement. To follow so-called systematic and sound procedures was seen as a way to secure the development of innovative solutions and prevent failures of achieving the envisioned goals.

However, despite the pervasive belief in a systematic methodological approach among project initiators, and evident in the organization of the project,

methods as such did not appear as the structuring units at the core of the collaborative processes. In this chapter, I suggest that 'project communication technology' is a more suitable concept for understanding the operations of this collaborative environment.

Analytical approach

By focusing on the *practices* of design in the realm of public-private innovation, I aim to open up the question of what characterizes design and how new technological solutions come into existence in project Lev Vel specifically, and in the realm of public-private innovation more generally. According to Annemarie Mol (Mol 2003), a focus on practices entails a re-definition of agency, which implies that no person or thing acts on its own. Instead, Mol argues, people and things mutually *enact* one another (See Chapter One 'Theoretical and Methodological Framework').

The challenge of studying practices of design and technological development is thus to avoid resorting to the ideal of fixed actors and a priori ideas about what the object of study *is.* Instead, the challenge is to tell the story 'in a subtle way,' in terms of 'processes contingently formed by a multiplicity of actors, none of whom have been fully in control of themselves or other participants' (Jensen 2005: p. 241). At the same time, the challenge of writing about innovation is to evade the easy resort to a teleological belief in the development of better (or worse) technologies and the related belief in powerful methods and techniques that ensure excellent results.

The notion of infrastructure exactly opens up to explore design as a process where the social and the material are profoundly entangled and mutually generative (See Chapter 1 'Theoretical and Methodological Framework).

In their studies of science, David Ribes and Jessica Polk (2015) propose an 'infrastructural inversion' (Bowker 1994) to explore the *resources* and *services* that *make research possible*. They investigate the material and organizational infrastructures of science by looking at seemingly mundane activities such as the

support of coordination and collaboration. In other words, they focus on how researchers *organize* their material environments and practical expertise, by focusing on the design of what they call 'the kernel of a research infrastructure.' In their study of an infrastructure for AIDS research, the kernel consists in sites of data collection (subjects), data and specimen archive, instruments, and experts. That kernel is defined as the resources and sites that members of the research team construct, and which becomes available as an *infrastructure* for the research process. They show how the specific arrangement of these resources shape the research project in terms of what can and cannot be known. As an example, they show how constructing the kernel around particular decisions about research design and cohort, afforded the research program to study AIDS as a phenomenon related only to gay or bisexual persons. Consequently, heterosexual infection was no longer an object of investigation that could be crafted from this specific infrastructural kernel. Ribes and Polk conclude that the objects of investigation supported by infrastructure are deeply entangled with the set of resources and services that it makes available for research. The value of inspecting infrastructure through its kernel is thus that it enables a concrete analysis of what scientists can or cannot investigate.

Similarly, inspecting the 'kernel' of the design infrastructure in project Lev Vel may offer clues about the range and limits of possible 'inventions' within the specific socio-technical arrangement of the project.

As I will show, the construction of resources and sites for the design process to happen were central activities in project Lev Vel. Since the construction of these sites and resources supported coordination, collaboration and communication, this ongoing work was the core, organizing feature of the collective activities of the project. The crafting of these sites and resources for project communication can be seen as related to scientists' activities of working over a kernel of a research infrastructure.

Historian of science, Hans-Jörg Rheinberger, has also been occupied with studies of the interrelations of the technical and material conditions for science and the knowledge, or facts, produced within and by what he refers to as scientists experimental systems. In short, his project is to develop a historical account of the emergence of scientific 'things', what he terms 'epistemic objects'

(Rheinberger 1992, 1997). To analytically differentiate between knowledge and technical elements of the research process, and in order to trace their relations, he develops the terms 'technical object' and 'epistemic object'. Inspired by Rheinberger's concept of technical objects, I develop the notion of *project communication technologies*, which I see as the basic technical objects structuring the design processes in project Lev Vel. The project communication technologies that I focus on are; project workshops, project user engagements, and project communication materials. As these project communication technologies frame the core resources and conditions for project processes, they can also be seen as the technical objects that constitute the kernel of the design infrastructure.

Borrowing from Michel Foucault, Rheinberger sees epistemic objects as discourse-objects: things embodying concepts (Rheinberger 1992: Part IV). They are the entities that constitute the objects of inquiry (Rheinberger 1997: p. 28). However, rather than focusing on disembodied ideas and concepts, he is concerned with the material culture of the sciences and the technical arrangements that science takes place within. Following the intricacies of a research trajectory, and the gradual coming into being of epistemic objects, Rheinberger comes to characterize the sciences as working complexes of socio-material practices that systematically reshape the agenda of their own action (Rheinberger 1997). What we conventionally think of as drivers of scientific innovation, for example research agendas and theoretical knowledge, are not determinants of epistemic objects. Instead knowledge is shaped and transformed in relation to technical objects. For this reason, the analyst of scientific practices and objects must focus on the specific technical arrangements that science takes place within.

The process of making new scientific discoveries entails a recursive process of operational redefinition (Jensen 2005); epistemic objects turn into the technical conditions of the experimental situation while technical conditions limit and restrain the realm of possible representations of epistemic objects. The technical and the epistemic are thus inextricably interlinked and co-emergent.

The notion of *project communication technologies* aims to make visible how the technical setup for collaboration in Lev Vel helped to orchestrate

knowledge production and communication about it at the same time. My following efforts to articulate project communication technologies in terms of their experimental, infrastructural dimensions, supports my more general endeavor to open up and explore the assumptions inherent in the project.

Focusing on the project communication technologies, rather than the outcomes of design, can be seen as a form of 'infrastructural inversion,' aiming to make visible the resources that make design possible (Ribes and Polk 2015). Not least, the work of crafting the resources and technical conditions for collaborative design is often overlooked in academic accounts of collaborative design, such as produced within the participatory design and co-design more broadly (i.e. Schuler and Namioka 1993; Simonsen and Robertson 2013; Lee 2008; Kensing and Blomberg 1998), which tend to focus on the development of approaches, methods, tools, and techniques.

Project communication technology is at once an empirical concept that emerged from my participation in and studies of Lev Vel, and my analytical answer to make sense of the practices of design and project communication. In that sense, I understand the concept as an illustration of what Jensen and Winthereik (C. B. Jensen and Winthereik 2013: p. 147) call an "integrated empirical-conceptual package" with its own limited performative aspirations.

In this case, one of my specific aspirations was to 'unpack' design in multidisciplinary strategic partnership alliances and generate new understandings of the design process. The following analysis takes the first step in this direction by seeking to characterize how project communication technologies operate as a technical infrastructure for design.

The life of Project Communication Technologies

The analysis of project communication technologies is divided in three parts dealing with each of the three technologies observed; Project Workshops, Project User Engagements, Project Communication Materials. The aim of the analysis is to introduce workshops, user engagements, and project communication

materials as project communication technologies, and explore their 'life' in project Lev Vel; what they are, how they come to work, and what they do.

Project Workshops

A workshop is a collaborative event, where many different people from different places meet to work together on a common issue and create some kind of output. It is a kind of event usually limited to a certain timeslot, situated in a physical location that allows many people to be together in one place, and it is usually organized under one guiding theme. The workshop is a very popular project communication technology in public-private innovation projects and other large collaborative frameworks, because it offers a public venue for communication and knowledge sharing. According to Lev Vel's project application, workshops define a platform for knowledge sharing and collaboration on project central activities. From the outset, the innovation process was visualized as a stepwise innovation model:

Figure: Phase 0; potential. Phase 1; platform. Phase 2; track. Phase 3; idea. Phase 4; test. Phase 5; Scaling.

The eight planned workshops[11] were envisioned as practical realizations of each step in the model. Thus, each workshop was crafted in relation to one step in the innovation model and each was seen as manifesting the collaborative work of one of the six phases. In this way, the workshops functioned as the core, structuring public occasions of the project. These were occasions in which the various partners met and worked together, and thus their purpose was to actualize the project as a coherent whole, a partnership.

[11] Eight workshops were planned, but the project decided to split up one workshop into two half-day workshops, so there ended out being 9 workshops in total.

Since each workshop had its own theme, purpose, activities and deliveries, they can be seen as singular events. At the same time, the range of workshops must be seen as a chain of events, a system of interconnected and interdependent technical objects arranged to produce outcomes, such as services and prototypes. Each workshop supposedly 'built on' the output of previous workshops, and produced output functioning as input for the subsequent workshop. Technical and epistemic elements appeared and re-appeared in different forms and guises from one workshop to the other and were tied together into a causal chain of events. Hence, also, information was handed over from one workshop to the next. The production and transportation of information was necessary to keep the flow of the design process.

For these reasons, there was a push to reach the goal of each workshop. To reach the end of a workshop without being able to exhibit some kind of outcome, in the form of materialized knowledge of users needs, problems or possible solutions, and to present it as the fruit of a collective endeavor would mean that the workshop had failed. In turn, this would jeopardize the chain as a whole. Failure to identify the connection between activities (and phases) would interrupt the imagination of the design process as a coherent and cumulative trajectory.

In the following I analyze the first project workshop, which centered on group exercises to identify the users. In particular, I focus on how the technical arrangement of the workshop forged certain ways of participating and how they enabled knowledge production.

Setting up the workshop

The first workshop was held in September 2011, The workshop was held at the IT University of Copenhagen, since researchers from the IT university, including myself, were among the partners of Lev Vel. All partners were invited to arrive at 8.50 A.M. The DesignLab, were the workshop was located, had been prepared in advance: tables and chairs had been organized around two big round tables, the projector turned on with a welcome slide flashing on the screen, name tags

printed and ordered in a neat, alphabetically sorted pile, and the tables set with coffee, tea and croissants for the thirty participants. An atmosphere of excitement and solemnity fills the room as people begin to arrive. As participants arrive in their best clothes, all big smiles and sparkling moods, sunshine cascades through the glass walls, lighting up the room. People pour coffee, take croissants, introduce themselves to new faces and exchange words with familiar ones.

As the first official workshop of Lev Vel, this is a special day. It marks the end of a long and uncertain funding application process, and the beginning of a collaborative project with all the uncertainty this implies. A lot is at stake for the partners, each of whom have made significant investments of time and money to be here. They have done so in the hope that participating in Lev Vel will turn out to be profitable or otherwise beneficial for the organizations they represent. This is why partners arrive with high hopes. They hope to gain access to new, valuable knowledge, to engage in new professional alliances, to enter new markets, and to open up new business opportunities.

Prior to the workshop, a small organizing group [12] has been busy preparing everything for the day: booking facilities, ordering supplies, making a program, and planning a range of activities such as presentations and collaborative events. They have thought about everything from the atmosphere to the set up of activities, aims, and tasks, not forgetting the expected outcome. Everything is thus carefully planned, and nothing is coincidental.

The main focus of the day is 'the elderly users' and the aim is to share knowledge about this group in order to get closer to a definition of who they are and what they need. The program divides the workshop into three purposes; 1) to share knowledge, 2) to get to know each other, 3) to plan the following agendas of phase 1.

[12] Each workshop is carefully planned by the organizing team, which is differently composed for each workshop. The project manager is responsible of organizing workshops in collaboration with selected partner organizations. The organizing responsibility thus rotates between partners, and depends on the purpose of the workshop and the profiles of the partner organization.

PURPOSE WS 1

- Share knowledge
- Get to know each other
- Plan the further process in phase 1

PROGRAM

9.00 - Welcome, initiation of the two working tracks
9.50 – two working tracks 'users' and 'quality of life situations'
10.45 – Break
11.00 Continue group work in the two tracks
12.20 – lunch
13.15 – ambassador rounds and look forward
14.45 – Break
15.00 – project manager presenting project information

16.00 – The end

The actors

The partnership included the following human actors who were all of them present at the workshop; officials from Danish municipalities, re- search institutions and humanitarian organizations as well as entrepreneurs and private companies representing a broad range of professions, such as engineers, designers, health practitioners and ethnologists. The entrepreneurs and private companies consisted of four IT consultancies, three telecare manufacturers, two hearing aid manufacturers, a fitness center, a design company, a medical device business incubator, an insurance company and a robotics manufacturer (Lassen, Bønnelycke, and Otto 2015 p. 11).

The workshop is organized around the two central figures of 'the partnership' and 'the users'. 'The partnership' and 'the users' are juxtaposed as two different entities. The role of the partners is to share knowledge, in order to develop a knowledge platform about users. On this basis, they will decide on future agendas and actions for the project as a whole.

In this way, the workshop frames the partnership as a collective of individuals with different professional backgrounds and different knowledge

about users. These individuals are experts on elderly users and their everyday lives, and they have the capacity to represent them. However, although the partnership shares common agendas and goals, it is also a collective of individuals *with different identities and interests*, formed by the organizations they come from. This framing is inscribed into the program activities, which both foregrounds individual partners, and offers the opportunity for them to present themselves as representatives of an organization with particular forms of expertise and interests. This occurs as part of the group exercise, where the task is for each partner to articulate his or her professional knowledge about the elderly users.

As noted, however, the program and overall setup of the workshop entails simultaneous ideas about the partnership as a collective, or even a community, with shared practices, agendas and goals. The organization and planning of collaborative activities of knowledge sharing, implies ideas about the partnership as a collective working together on the same path towards common goals.

This becomes evident in the program task called 'ambassador rounds and looking forward'. The idea is that various articulations of the different partners' knowledge about users can be fused in a 'knowledge pool'. Moreover, the program assumes that the articulations of knowledge will work to scope out a set of common interests and questions to be explored, and thus frame a shared agenda for future exploration. In this sense, the partnership emerges as a collective in the same process as that in which the 'knowledge pool' emerges. In conjunction, they co-construct project aims and goals.

It can be seen as a premise of the workshop that partners are at once individuals and representatives of an organization or institution; among other things name-tags with personal and company name achieve this. However, they must also imagine themselves as part of a project community; a social and working collective with common goals and agendas, willing to network over coffee and lunch, and able to act on behalf of the project as a whole.

The workshop program thus contain ideas about the partnership as a collective while also seeking, performatively, to build up that partnership by structuring activities in a way that reminds participants that they are part of a

larger whole. The program at once presupposes that participants imagine themselves as part of that whole and aim to ensure that they *will* be part of it.

Although not physically present, the elderly user is also a central actor in the workshop. The elderly user is a figure, not yet actualized, since the project participants don't yet know exactly who they are. We know, or assume, that there *are* users – the self-sufficient elderly (we know that from the vast collection of communication material already produced, and the preliminary maneuvers leading up to this first workshop) – and that they have certain life situations. The workshop activities further presuppose that the users are people whom the different partners are in contact with in their professional lives. In this sense, the users are assumed variably known by the partners. This is why knowledge about the users and their life situations can be shared and assembled into a knowledge pool, representing a broad segment of actual users. The users, that is, are supposed to exist out there, in all likelihood forming a heterogeneous group, yet sharing some common characteristics.

The aim of the workshop is thus to communicate knowledge about users in order to create a shared understanding of these characteristics. That shared knowledge, in turn, will frame the project's agenda of action. For this reason, the main *epistemic object* towards which the workshop orients is the self-sufficient elderly user.

While 'getting closer' to the users is an important aim of the workshop, another purpose is described as 'getting to know each other.' The workshop, that is, is not only an occasion for sharing knowledge about users, but also for performing the partnership. Forming a partnership can therefore be seen as at once a means for achieving the main aim of the workshop, to learn about users, and as an end in itself. Indeed, the program makes a direct link between activities focusing on sharing knowledge and network activities centering on getting to know other partners. For this reason it becomes interesting to examine the interlinked process through which the workshop simultaneously creates user figures and the partnership itself.

A collaborative group exercise

After preliminary introductions and presentations, a collaborative activity follows. The partners are separated into two working groups: a 'users' track and a 'quality of life situations' track. I am in the 'users' track. The program states that the purpose of this track is to discuss the user groups and align them with knowledge about the particular users to which the project has access. The partners in track 1 are from companies and organizations working with elderly people. Among others, there are people from municipalities, from the NGO DaneAge, and from a web-company developing online communities. The idea is that the partners will describe the users of their company or organization and use these descriptions as input for figuring out who will be the users of Lev Vel.

The group exercise starts out with a small individual task, in which all participants develop a collage using some provided requisites: personas and images of elderly people are lying on the table. After having done this exercise, the task is to discuss overlaps and differences between the different users

portrayed in the collages and come up with some definitions of the users of Lev Vel. In other words, the user descriptions are meant to guide the project, highlighting particular questions and themes to explore. In this sense, the descriptions are future-oriented means for shaping the agendas and actions of the next phase.

Technical invisibility, discipline, and imagined collectives

The particular sub-group, of which I am part, goes to the old design lab on the third floor of the university building. The tables there have been arranged in one big cluster, allowing all of us to sit in a circle. On the tables are pieces of paper in different sizes and colors, images of elderly people, pens, scissors, glue-sticks and other devices inviting creativity. Such materials, sometimes called props, are standard requisites in collaborative workshops (Brandt and Grunnet 2000). At one end of the room, the wall is full of posters of personas, developed previously by one partner in the project, a designer from the IT University. Among other personas, I notice Mustafa, who turns out to be central later in the workshop. I notice his foreign name, his age (67), the image of him with a dark skin tone and gray-black hair, which is partly covered by a turban.

The facilitator, Maja, stands next to three white-boards; she wears a homemade belt of duct tape, which hangs loosely around her waist. A row of marker pens in different colors, nicely separated into each their holster, dangles against her hip as cartridges in a cartridge belt. Standing with a hand on the belt, she is ready to pick up all the cue words to be momentarily shared, drawing them in a hodgepodge of colors, words, lines and arrows.

Maja kicks off the workshop by saying that we are going to look at the personas and use our collages to start talking about the elderly users that we already know. Everybody looks at the personas, and then an awkward silence follows. Nobody wants to be the first to say something. The task is straightforward: we are simply to say what we know about the elderly people that we encounter on a daily basis. However, the task does not seem to be that

simple to any of the partners. Probably, their everyday knowledge about elderly people is too thick – diverse and complex – to make it possible to articulate in a few sentences. I do not remember how long the awkward episode lasts, but finally it is interrupted by one participant, Kenny, who questions the exercise.

Kenny: "I don't get the task, it is as if we are inventing the user, isn't it a bit opposite…"

Camille: "What is the target group?"

Facilitator: "That is what we are trying to define now. The frames are open, and we have to narrow it down. Based on the citizens, we have, we can narrow it down to some common characteristics."

Some of the other participants start to talk about their users, and the facilitator writes some of the keywords down on the white board. But then Kenny interrupts the session with another question.

Kenny: "But now we are just making boxes!…what about a problem formulation?"

It is hard to depict in words, but Kenny's comments immediately changes the atmosphere in the room from quite pleasant, or certainly tolerable, to tense. In the face of a carefully thought out exercise, planned by professionals, and in light of the fact that a group of people were trying to make sense of the exercise, they seemed provocative.

Indeed, they appeared almost like a critique: of the organizing team, the facilitator included, and also of the other participants doing their best to participate. The facilitator responded dismissively to his first comment: with a no-nonsense attitude she repeated the task and encouraged the participants to stick with the program and participate in narrowing down knowledge. Her voice sounded slightly irritated, but controlled. After his second comment, I remember holding my breath, feeling certain that the rest of the room was doing the same.

All talk stopped and everybody turned to look at him. The facilitator looked agitated, but chose to ignore him. Physically turning away, she looked at some of the other participants who quickly stepped in, trying to save the situation by talking about 'their' elderly users.

Why did his comments appear so troublesome, and why did they receive such an unresponsive, even hostile, reception? The question appears pertinent, since it was not just the facilitator that dismissed Kenny, but also the other participants, myself included. The decision to brush his questions off was spontaneous, but collective. In reality, I agreed that there was something forced about the situation, but saying it out loud, in such an explicit way, somehow seemed *rebellious*. His words acted as a showstopper, an obstacle for the collective assignment, and thus for the progression towards the common goal.

In order to give some context for the situation, and our reactions to Kenny's comments, a recap of the technical conditions of the workshop is necessary. First, we were under time pressure. As if the task of articulating 'the elderly users' was not difficult enough in itself, we had to do it in less than two hours. Most participants, I suppose, were running frenzied through memories of encounters with elderly people, trying to connect those situations with the exercise. This was the more stressful because our ability to articulate elderly users seemed like the very currency that legitimized our enrolment in the project. Hence, we took it very seriously.

On this background, Kenny's comments seemed to ridicule our efforts. Because he singled himself out as an individual in opposition to the collective frame; one, furthermore, who was a step ahead of the rest of us, he threatened the carefully constructed scene in which all of us worked together. In consequence, the very construction of the exercise became very visible, less self-evident, and thus more fragile. If we could not confidently rely on the project frame, then how would we ever reach goal? I was constantly aware that in only two hours we would be asked to act as ambassadors for 'the users' and present our collectively gathered knowledge to the rest of the partners. Inability to accomplish that task would not only be considered a failure, but it would also inhibit the project from passing along the trajectory to the next phase.

Hence, Kenny excepted, we were eager to move forward, escaping the unpleasant current situation of not knowing who the users were. Obviously, everybody felt a certain discomfort with the exercise, but it faded in contrast with the prospect of failing the exercise, and the project in general. Thus we needed to push forward, and the only way to do that was to act as a collective of partners. Being part of this collective meant accepting the frames for participation and the assumptions about 'the elderly users' and the partnership collective, which they embodied.

The exercise embedded certain ideas about the partnership. First, partners had knowledge about the elderly, which can be boiled down to some common characteristics. Second, the partnership entailed certain modes of proper behavior: an eagerness to talk about users, to describe them and to articulate them conceptually. In contrast, questioning the premises of the exercise does not count as a useful contribution. The particular set up of the exercise can be seen as made up by an assemblage of technical elements that frame certain possibilities for action, disciplining participants to think and behave in certain ways. With technical elements I mean both the instructions given, the materials and requisites, the format for producing output, such as the round-circle arrangement of tables, time, and the set up of following exercises, which this one is supposed to deliver input for. The constellation of these technical objects framed how the participants should think and behave as partners in the project. In that sense the material and technical arrangement of the workshop enacts 'the users' as a group existing 'out there', and the partnership as a collective.

Even though, as the facilitator says, 'the frames are open', the workshop is not a forum for free and unrestrained conversation. Discipline is inscribed into the technical and material setting and re-enacted collectively by the partners and the facilitator. Kenny questions the framework, arguing for an alternative that might bring the elderly user into view in a different form, or might even open up to the production of wholly different epistemic objects, agendas and problem formulations. But this is not possible within the technical conditions of the workshop.

Later on, Kenny notes that what they are all carrying on with is an endeavor of 'making boxes' (quotation above). In a sense, this is a good characterization of how the technical conditions of the workshop, in particular the articulation of the aim of the exercise, structure the making of the epistemic object, the elderly users. The elderly users are already implied as a social group 'out there', with certain characteristics that can be known and described by the partners. Articulation of the elderly in these terms affords an orientation towards 'making boxes' into which the elderly users can be inserted.

To sum up, a workshop must not only produce new epistemic objects and agendas, but it must also enable the creation of an "imagined community" of partners (Billig 1995: p. 13-37). The push towards getting to the project goal-line, producing a certain type of outcome, and presenting it to the rest of the project, makes the participants ignore Kenny's provocative comments or brush them away. This is related to the arrangement of workshops as an interlinked chain of interdependent actions, for this structure makes disagreements appear as obstacles rather than resources. In that sense, the technology of a workshop contains built-in mechanisms for survival that inhibits reconsidering the order of things. Questioning or critiquing the technical conditions of a workshop, and how it enables or limits the production of epistemic entities thus becomes almost impossible.

Re-articulation of epistemic objects

After this awkward episode, order is restored, and everybody, Kenny included, engage in the pre-defined task. We begin talking about the users based on the design materials, the personas and the collages, and in relation to the overall actions and agendas of the project. In the course of the exercise, we produce a range of epistemic objects. Here I present an empirical episode, which shows how the preliminary epistemic object the 'self-sufficient elderly' becomes re-articulated as the 'ethnic elderly'

Kenny (web company): “Well, my heart burns for the lonely and isolated elderly, they are really the ones needing help.”

Poul (municipality 1): “I could recognize Mustafa”

Doris (municipality 2): “Well, we can see them all, the question is who is more interesting?”

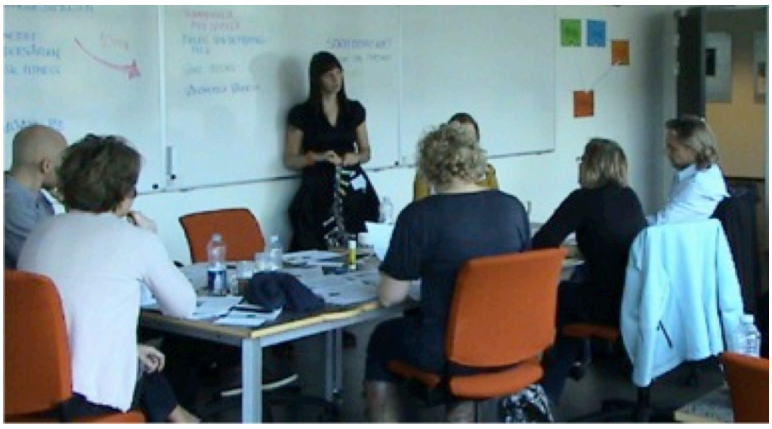
Kenny: “I would like someone older”

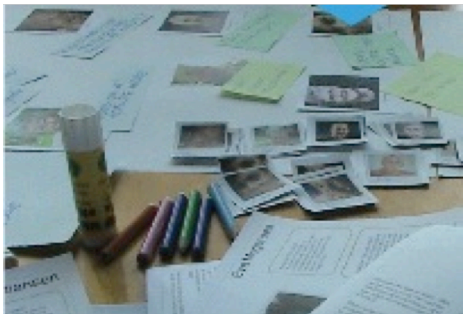
Facilitator: “But they have to be self-sufficient elderly”

Doris: “It is very interesting to talk about ethnical groups. There is a lot of vulnerability in those groups, which we don’t know enough about…and there’s a lot of potential chronicle illnesses.”

Kenny: “It would be very interesting to explore what it takes to make ethnical elderly use a meeting place. How do they navigate? Are they reach-able?”

(The facilitator takes an orange marker pen out of the marker belt and writes with big capital letters on the white board ‘ethnical groups’)





In the design literature, personas is known as a method that can help designers engage with users (Pruitt and Grudin 2003). As a persona, Mustafa is a technical object, which functions as a tool or requisite for the exercise. Poul says that he can recognize Mustafa. Doris associates Mustafa with themes of ethnicity, vulnerability and chronic illness. Kenny re-articulates Mustafa and the associated themes as providing terms and conditions for the subsequent project agenda. At the intersection of Mustafa, ethnicity, user studies, and subproject 'Mødestedet', a set of questions begins to emerge: what does it take to make ethnic elderly use a meeting place? How do they navigate?

In this process, the category 'ethnic elderly' emerges and is written down on the whiteboard among many other emergent categories. Gradually, Mustafa transforms from being a technical object to become the epistemic object 'ethnic elderly'. During the workshop new categories of the elderly users make their way into being through processes of re-articulation. This process is enabled by technical objects, which also frame possibilities for what can be re-articulated. Epistemic objects thus contain the technical objects of previous activities. In other words, it is possible to say that a workshop is not only a platform for sharing knowledge about entities 'out there', it is active in making those objects or subjects along with others such as the partnership.

Secondly, we can observe that the generation of an epistemic object goes hand in hand with the generation of new agendas of action. An epistemic object, like the 'ethnic elderly,' does not only look backwards to the previous conditions of its production, but also looks ahead, since it emerges in tandem with an orientation towards future agendas and aims. An epistemic object thus anticipates certain actions. The emergence of 'ethnic elderly' happens conjointly with the formulation of questions to be explored.

Summary on workshops

The workshop crystallizes around the crafting of material and technical objects, assumptions about the partnership, and the outcome – the epistemic object.
The project communication technology of a workshop is constituted by various technical objects such as programs, social and collaborative exercises, material requisites and tools, but social accountabilities to the partnership and its goals are also inscribed into the practical arrangements, working as technical objects that regulate actions. The workshop was crafted with specific ideas in mind about what the partnership is, and what forms of participation may deliver the anticipated outcomes. Further, the material and technical conditions for participation presupposed that partners imagine themselves and acted in certain ways. They had to imagine themselves as professional individuals, knowledgeable about the elderly. This knowledge about the elderly had to be

selected, ordered, and re-articulated in relation to the collective goals and agendas of the workshop. The workshop agendas encouraged articulation of knowledge about the elderly that could direct the following user studies and aligned that knowledge with the overall aim of making elderly people more self-sufficient. Thus, partners also have to imagine themselves as part of a collective and act accountably towards the partnership collective and the project as a whole; the envisioned process and goals. Technical and material conditions of a workshop thus *discipline* participants to think, behave and act in certain ways and not others. This means that the possibilities for knowledge sharing on a workshop are not free, unlimited and open, but restrained, framed and streamlined by the conditions of its own production.

When workshops are planned and organized, this is done with an orientation towards the future agendas of the project. In case of this particular workshop, the aim was to assemble the partnership and create a site where partners could share knowledge about the elderly users, which was necessary in order to define the scope and purpose of the following activities of doing user studies. Seeing a workshop as a platform for knowledge sharing leaves out the way that a workshop already shapes and frames the entities and realities, which it seeks to be a platform for. A workshop provides the technical conditions for collaboration, communication and knowledge sharing. It is an active agent since it frames who the knowledge-sharing subjects are (a partnership collective), and it frames that which it seeks to share knowledge about (this varies, but in the case illustrated above that was 'the elderly user').

Project User Engagements

I now turn to project user engagements, by which I refer to the various ways, such as user trials and user studies, in which project participants engage with users. The user trial, for example, is a common method in user driven design processes. In fact, it has become increasingly accepted that design processes need to account for the users either by direct methods of involvement or by other means (Sundblad 2009). That there are relations between users and design

has thus become more or less taken for granted in contemporary innovation and design frameworks. In Denmark, as we have seen, public funding bodies for innovation projects center on programs for user driven innovation.

Clearly, then, the user is a central figure in innovation, and methods for involving users are accordingly also standard ingredients in the theoretical and methodological packages of design and innovation. Furthermore, the prevalent role of users and methods for user involvement is also prominent in the constitution of design educations[13] and design textbooks (See e.g. Rogers, Sharp, and Preece 2011). Presently, it is no exaggeration to say that the relations between technological design and users have become naturalized to a significant extent.

In fact, however, this relation is far from inherent and natural to design. A brief glance at the history of 'the user' and its emergence as a figure central to design takes us back to the 1960s and 70s, times in which critical movements of workers and allied labor unions demanded new approaches to system development, capable of taking workers into account (Finken 2003; Kensing and Blomberg 1998). The growing dissatisfaction with how new technologies were developed and implemented in many workplaces without regard for the interests of the workers, and their work practices led to protests and demands for influence on systems development processes. The co-operative movement, Sisse Finken's (2003) term for design approaches with users and other stakeholders at the center, is characterized by a focus on empowerment and equal access to decision making processes in relation to the design and implementation of new technological systems. Marxist inspired ideological currents framed the problem as centering on the unequal relation between worker and management.

In this context of political radicalization, society emerged as an arena of power in which workers and management squared off. As Finken (2003) has documented, this context was generative for a new way of speaking about workers as 'users' of design. Finken shows how the relation between workers and designers created a new discursive object within the co-operative

[13] As an example, design educations at the IT University of Copenhagen contain a wealth of courses focusing on users, methods, and theories of user involvement in design processes.

movement, namely 'the user'. This relationship is shaped around configurations (Woolgar 1990) in which users are weak in influence yet knowledgeable about their own work practices, designers are technological humanists and user advocates, and the computer system is a means of empowerment (Finken 2003). While relations between users, designers, and technological systems have changed over time, the notion that it entails a relationship of mutual dependence has become central to 'morally sound' design practice, at least in Scandinavia. For many people today, user involvement thus stands for best design practice.

As this rough genealogy makes clear, user involvement is a socially constituted technical object. It has an inbuilt purpose, and advocates, ideologies and morals, and thus it can be seen as being socially shaped (Law & Ruppert 2011). The brief history also illustrates that users, designers, and technological systems are epistemic objects whose specific configuration are not given in advance, but shaped by changing social and material constellations.

Crafting the user trial

In Lev Vel, most prototypes and design concepts entailed user trials. I followed many of these trials, which, on most occasions, took place outside the public processes of the project. I was also part of the team organizing these trials, in which capacity I had the chance to follow the process of making and conducting user trials of three prototypes.

The particular user trial situation, which I analyze here, was held as part of a project workshop, where all partners participated. A group of eight people from an activity center in Copenhagen had been invited as participants in the user trial. They were seen as representing the intended users. At that stage in the process there were three prototypes; the online senior community, the robot technological exercise tiles, and the augmented nordic walking sticks. In this chapter it is the trial, and the organization and planning of the trial of the latter, that I focus on. In my role of being one of the partners with certain insights about the elderly users, I was part of the group organizing the event. Together with

three other partners, all three were design researchers; I took part in the practical activities of planning the user trial.

In the time leading up to the user trials a lot of effort was invested in planning the set-up. We had meetings in the planning group, and with the project manager, where we discussed questions such as: how to stage the event, what materials to develop, how to frame the tasks and what users to recruit. We developed a program, and made decisions about how to demonstrate the prototypes, and how to make the elderly users provide feedback. Among other things we decided to put together an expert panel of elderly people – an 'elder-panel'. The idea was that the elderly were experts of their own lives, and it was just this knowledge about the *actual* lives of the elderly that we wanted to tap into. Thus, we would arrange the user trial in a way that supported the elderly in behaving as experts. Among other things, we decided to present the prototypes through videos that portrayed their use in everyday situations. This, we surmised, would make it easier for the elderly participants to understand the prototypes, since we assumed that, by identifying with everyday situations, they could relate to the prototypes with relative ease. The idea of making videos of everyday scenarios was thus meant to enforce the authenticity of the users' feedback: they would be able to imagine themselves interacting with the prototype in mundane settings.

As mentioned, one of the prototypes to be presented and tested with the users was the 'augmented nordic walking stick'. A team of designers from the IT University, who had a background in interaction design, had developed the prototype. The augmented nordic walking stick prototype was, as the name suggests, a nordic walking stick [14] with embedded technologies aiming to enhance the social dimensions of the activity.

I took part in producing the video for the prototype together with the designers and the rest of the organizing group. Producing the video, we decided to change the name of the prototype to 'the super-stick.' We decided to make this change based on the assumption that a less technical name would be more appealing and easier to understand for the elderly. As this exemplifies, the user

[14] Nordic walking is the term used in English for the sports discipline where practitioners walk with sticks.

trials depended on a framing of the elderly as 'less technically competent,' which, in turn, entailed re-framing prototypes as everyday objects rather than 'high tech' devices. In this manner, 'the elderly' and the prototypes were mutually re-configured, both in relation to each other and to the aims and purpose of the user trial.

Each step in the program was carefully planned: design materials were developed to support the activities, power-point presentations were put together to demonstrate the super stick, and the designers worked to prepare tangible objects for the prototypes. Moreover, each prototype owner was informed to prepare a presentation, a small video demonstrating its use, and to bring along a tangible object ready for demonstration and try-outs. Welcome folders for the elderly with information about the project were also produced, and schemes for writing comments in 'pros' and 'cons' columns were printed. These various materials comprised the technical conditions of the user trial situation.

However, they were not merely technical, for they were also the result of processes of negotiating assumptions about the elderly users – such as 'not confident with technical terms'. Moreover, we were less interested in feedback from the users regarding the technical dimensions of the prototype, and more interested in their views on the prototype. The re-naming of the prototype made it appear more as an everyday object than as a technological object. The prototype's inner working was not seen as relevant, while its role as a social and mundane artifact was foregrounded.

In this way, the crafting of the user trial involved decisions about what kind of behaviors of the users and the prototypes were desirable and which were undesirable.

Because prototypes do not speak for themselves, we planned the set up for presenting them carefully and with regards to who we imagined the users to be. Based on this we decided to have oral presentations and demonstrations, videos showing the prototypes 'in use', and, in cases where this was possible, let the users try the prototypes. This set up of the situation makes out what can be seen as the material and technical arrangement of the user trial. Yet the work of making these technical conditions is not commonly considered as a central part

of the design process despite the pervasive role this planning and organization of communication situations had in the project. It was often, for example, rendered invisible when the project as a whole, and the design process, was presented in official documents.

As we shall see, however, the social and material processes of a user trial are instrumental in crafting the user, their everyday lives, and also the prototypes to be presented. In the following I analyze some of the technical elements of this specific user trial, and explore in what ways they were active in making social realities.

Material surroundings: Arranging the room and creating a hierarchy

The arrangement of tables and chairs, and the facilities in general, was not coincidental. Instead, it is part of the technical set up of the situation, working to frame the situation in particular ways. At one end of the room, closest to the screen, we decided to have a long table exclusively for the 'elder panel.' We decorated the table with information folders, specifically developed for the occasion, and describing the program, the project, and the tasks of the day.

At the other end of the room, slightly further away from the screen, are tables and chairs for the partners. Here there are no folders, and things are arranged a bit more haphazardly.

This set up separated the elder panel from the partners, the effect is a juxtaposition which also instantiates a hierarchical relationship. Locating the 'elder panel' at one end; positions the panel as exclusive and privileged, while the partners at the other end are positioned as subservient. Thus, the arrangement underscores our intention to perform the elderly participants as experts. Today, they are in focus, as experts it is *their* views that count. Correspondingly, the partners are performed like an audience of interested and humble observers.




This hierarchy is also felt in the atmosphere: I experienced the tone as reverent, almost solemn. I noticed how partners were sending polite, grateful smiles towards the elder panel. During the user trial, too, presenters look primarily towards the panel, while the rest of the partners observe silently throughout the day, only occasionally offering feedback. As for the elder panel, it lives up to the assigned role as experts, which they seem to take very seriously. They follow the presentations carefully, look very concentrated as the partners present; they also take notes and give qualified feedback upon request.

As noted, the technical set-up enacts the elderly participants as a group of user experts differentiated from the partnership. Correspondingly, the partnership emerges as a collective with a genuine interest in the users. Behind this set up is the aspiration to make the elderly participants act as a panel of experts: to make them feel comfortable, in safe and welcoming surroundings, and to ensure that they feel that their views are seen as important and taken seriously by the partners. All of this goes to show that arranging the room, seats, tables and 'decoration' is not merely a practical task, but rather part of a technical process of making clear juxtapositions and hierarchies between 'users' and 'partners' (or 'designers). Organizing the user trial involved distributions of

rights and identities; the technical elements are *making* user experts and humble partner-observers.

Presentations and demonstrations

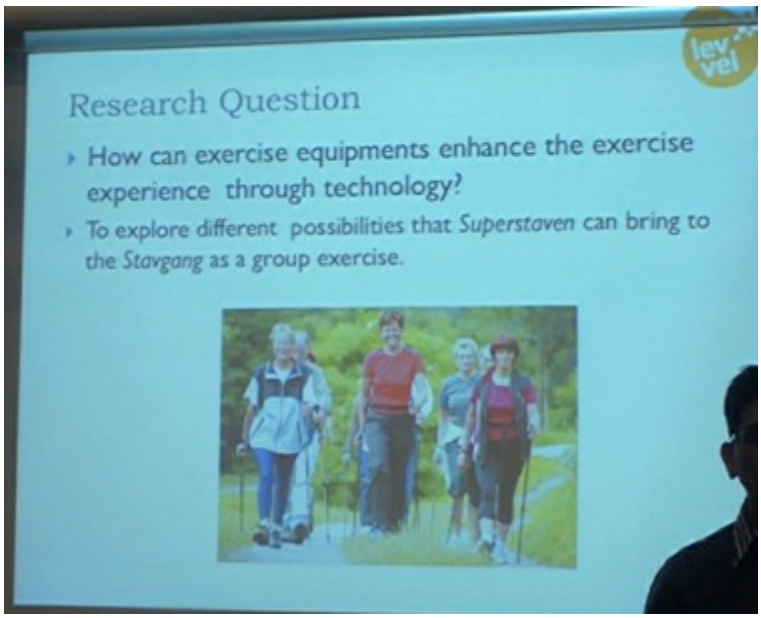
Now lets turn the attention towards the actual event of the user trial. When all participants are arrived and seated, the official program begins. The first prototype to be presented is the augmented Nordic walking sticks, now renamed as the super-stick. The participants have been told in advance that they will be presented with this prototype and that, in their role of experts, it is the opinions of the elderly we want to hear. It is thus abundantly clear to the elderly participants not only that they are invited *qua* being elderly, but also that they are the experts, and that it is *their* responses that are central.

The presentation of the super-stick begins with a power point presentation. This is the first slide:

The headline explains that the slide is about a design vision. That vision has to do with the relationship between exercising and socializing; the super-stick is a means for reinforcing that relationship. The model on the slide reinforces the point by juxtaposing exercise and socialization. These are different phenomena, yet the circular arrows indicate that they are also related. Digital technology is at the model's center, with arrows pointing towards both socializing and exercising. Hence, digital technology is performed as the mediator that enables (or, in the

words of the designers, reinforces) the link between exercise and socializing. What the slide thus aims to accomplish is an articulation of relationality and interdependence between the elements of exercise, socializing and the use of digital technology.

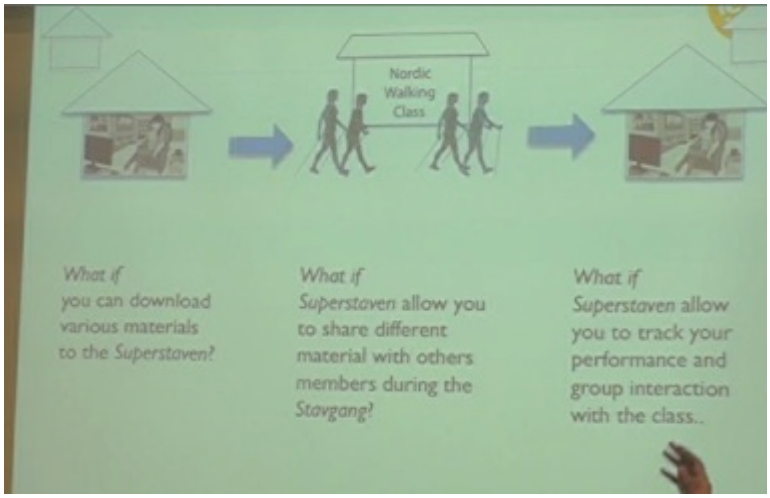
The slide also performs the super-stick as purposeful. It is what reinforces synergy between exercising and socializing. The next slide explicates this purpose:



Look at the framing. The project is performed as scientific (there are research questions), teleological (it has a purpose), and as situated in everyday life (the image shows a situation of a group of elderly people doing Nordic walking: they are in motion, smiling, walking in nature). The slide carries the assumption that embedded technology holds the capacity to enhance exercise experiences, bringing new possibilities to Nordic walking group exercises.

There are further assumptions about the experiences of elderly people doing Nordic walking: they are capable of *enhancement*, and achieving this capacity would bring about different *possibilities* for group exercise. We might also say that the slide enacts general ideals about exercise and an active lifestyle, and norms about enhancement and improvement.

Finally, let us consider the last slide of the presentation:



Talking about this slide, Nabil, the designer explains:

> "In the case of Nordic walking, people come and meet at a fixed place and a fixed time each time. So people come there, meet, and then they have this walk using their Nordic walking sticks. And while walking, they also talk a lot, so there's quite a group interaction happening. So, something happens before the class (points to the first image of the house) people prepare for the class, like checking the weather, checking if their friends are coming. Then, they walk. (He points towards the image in the middle, that of human silhouettes and a house with Nordic walking written on it, the activity center). When they come back home (points to the last house, back home), they could be looking back, like 'what happened in the class?' and 'what discussions did we have?' and 'who came?'"

Nabil's talk and the images articulate the actual, present reality of Nordic walking as one in which home and activity classes are linked. Nordic walking appears as a social activity that is connected to an activity center. In contrast, the home is a private sphere as opposed to a social one. The social dynamic of the Nordic walking class is absent in the home.

However, Nabil's words and the images enact a status quo. His outline of the present situation paves the way for a vision of a different future, in which the super-stick allows for drawing different boundaries between the home and the activity class. In particular, the 'what if' questions suggest a new scenario.

The Nordic walking stick prototype was enhanced with digital technology that allowed users to record, upload and play audio files, like music or news, from their stick. Moreover, it was possible to connect digitally with the sticks of other members of a Nordic walking community, in order to share audio files. Based on this central feature, the first question asks 'what if you could download various materials to the super-stick? Here, users are invited to imagine themselves as users of the super-stick and its digital services. The next asks: 'what if the super-stick allowed you to share different materials with other members while walking? Here, the users are invited to imagine themselves as part of a social walking collective based on sharing digital audio clips. The third question: 'what if the super-stick enabled you to track your performance and group interaction with the class.' It invites the users to once again imagine themselves as part of a social collective of Nordic walkers, but also as someone who *performs* while doing Nordic walking, and who would be interested in tracking performance.

All of these questions are meant to appeal to the participants' imagination, inviting them to perceive themselves in certain ways, and thus performing as potential users of the super-stick. By juxtaposing a present situation of Nordic walking with various 'what if'-scenarios, the slide enacts a boundary between what we already know, and what is yet to be explored. It constructs a delimited experimental system. The agenda of the super-stick emerges within this specific enactment of a frontier between 'the familiar' and 'the unknown.' It facilitates exploration of the possibilities of embedded digital technologies in the context of collective walking exercises for the elderly.

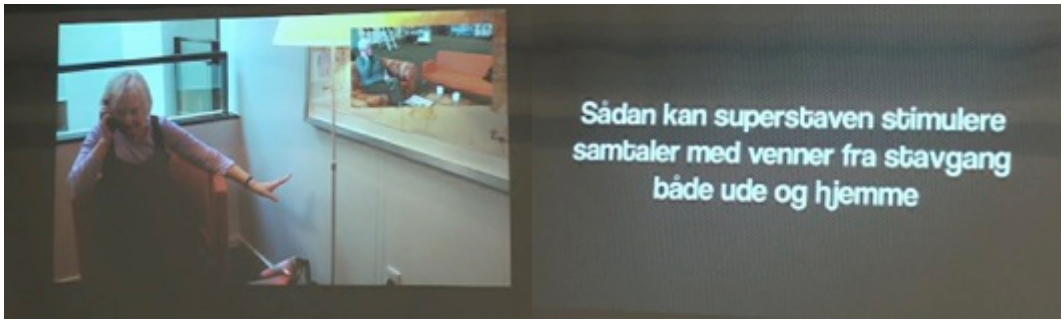
Deploying these various forms of framing, juxtaposition and relating, the presentation enacts elderly people as 'active' (they exercise and socialize), while performing nordic walking as a synergetic relationship between exercising and

socializing. Adding to this, the super-stick also appears to embed norms about performance and its potentials for enhancement.

Video presentation

In support of the demonstrations, each prototype owner had been given the task of producing a video showing the context of use of the prototypes. The super-stick video also presented scenarios of use; recordings of elderly people following scenarios according to a manuscript, and subtitles staging the message of each scene. The video starts out in a home environment, where an elderly woman is getting ready for her nordic walking activity. The video shows scenes in the home, at the activity center, and in nature, where the woman is walking with her friends. In this way, the super-stick is staged as a central part of the interaction. It shows as a device for stimulating conversations, and social interaction, while walking.

Scenes in the super stick video:



Pic 1 text: They meet in front of the activity center and greet each other. Pic 2 text: They all laugh at the joke (just played and shared via the super-stick). Pic 3 text: (image of two women talking

on phone) Pic 4 text: This is how the super stick can stimulate conversations with friends from nordic walking both outside and at home.

Special effort has been made to make the super-stick appear in *authentic* everyday environments and situations: in the home, while watching TV, during phone conversations, at the activity center, and while walking, talking, laughing, and discussing in nature.

The video performs a reality in which the super-stick appears as a completely natural part of the everyday life and of nordic walking and as a central facilitator of a dynamic social atmosphere. Implicitly, it also reproduces the presumption that there is a need – acknowledged or unacknowledged – for stimulating and enhancing these social interactions.

Another central aspect of the video concerns the way in which it seeks to appeal to the elderly by showing up in authentic everyday life activities. Locations, requisites, and material surroundings have all been chosen to create an effect of authenticity. Thus, for example, the sofa, the standard lamp, and the painting on the wall all participate in enacting the home. Similarly, streams, trees, and people walking together all perform the normal, natural activity of a collective walking activity. In this way, the video presents everyday life as a series of private and social occasions. This performance of authenticity is part of luring real elderly 'users' to participate: it is meant to help extract their 'authentic' feedback. The video, that is, can be seen as at once enacting certain realities, creating standards of authenticity, and seeking to make participants act according to these standards by reminding them that they are experts in their own everyday lives.

Formats for feedback

The movie has just ended, and the facilitator says: "*Now we are excited to hear the comments from our experts*", and everyone look towards the 'elder panel' again.

The people in the panel have a piece of paper in front of them, meant for note taking. The headline is 'Nordic walking', and the page is separated in two

columns, a green box to the left and a red box to the right. They have been instructed to take notes during the video, focusing on what excites them in the green box, and what worries them in the red box. The scheme thus orders the feedback into the categories of 'pro' and 'con.'

Picture: Pro's and con's scheme

A couple of hands are raised, and a woman from the panel speaks out:

> "It is as if you think we don't have anything to talk about. We never fall short of subjects to keep the conversations with each other going. And then I want to say, this thing about a backpack and heavier sticks – what is that about? We do not belong to the generation where you always walk around with earphones on. I want to hear the birds and what goes on around me"

Her comment makes visible some particular assumptions about the elderly as well as certain cultural norms embedded in the prototype. It makes visible how the prototype enacts a specific reality of elderly people. As far as the woman is concerned, the prototype enacts 'the elderly' as a group with communication problems, perhaps passive or socially challenged. In contrast, she points to a reality in which socially active elderly people are already satisfied with their experiences of nordic walking; an experience, moreover, which is seen as pleasurable because it is *not* mediated, but rather creates a direct mode of

communion between walkers, birds and natural surroundings. What also emerges from this woman's feedback is thus the realization that the idea of embedding technologies for sharing communicative content, rather than a neutral 'solution' to an implicit problem, is itself culturally specific; specific, that is, to the design community.

This woman did not engage in the imaginary of being a user of the nordic walking stick prototype. Her response makes clear that even though the technical and material arrangement of the user trial stages a certain reality, these elements and their implicit assumptions and norms do not determine the outcome of the situation.

The facilitator responds: "Okay, I think this was very valuable feedback. Thank you. Then another member offers a different view:

> "I'm into all that measuring stuff. I have acquired all sorts of equipment for that, but then most of the time I'm in a rush to get out the door, and then I never get to use it anyway"

This comment is more ambiguous. On the one hand it is clearly positive towards certain dimensions of the super-stick. On the other hand, it indicates that practical circumstances tend to negate these potentials.

What to make of all the output produced during such a user trial? During the coffee break, discussions continue among the partners. They wonder 'how the day is turning out so far?' and 'what to make of the feedback from the elder panel?' Some worry about the feedback for the super-stick prototype, viewing it as leading to a dead-end. Among the team behind the nordic walking stick prototype on the other hand, reflections are less pessimistic. The problems addressed have spurred ideas about possible new directions for development, such as changing the type of content, or maybe addressing a younger target group.

Does this indicate that project partners experience the situation or the comments differently? I want to argue that a user trial produces *vague* results; it produces a lot of *noise* that does not by itself point in any specific direction. A

user trial should not be assumed to produce clear-cut answers to a pre-formulated question. The 'output' that is produced must be interpreted and aligned with other parameters. Specifically, it must be aligned with project agendas, and the overall aim of producing concrete technologies. In case of the nordic walking stick, in order to keep the prototype, and the research project, alive, the designer considered to change the target group to a younger one. Two different categories of 'the users' are in play; 'the elderly', and 'younger people'. These are two different epistemic objects. Other epistemic entities emerged as well during the workshop, such as the 'socially fulfilled elderly', 'nordic walking as a relation between the individual and nature', 'performance-oriented elderly' and so on. Which one(s) to go with?

The diversity of epistemic objects produced during the user trial suggests that a user trial is not simply a generator of answers that can be transferred to the prototype. To come to count as output, user responses are selected and aligned with project agendas. In case of the nordic walking stick, keeping the prototype alive required that 'the elderly users' were re-negotiated and transformed to 'younger users'. Sometimes designers have to choose whether to follow project agendas, or research agendas, since they don't always mesh, and they may have different capacities for keeping prototypes alive.

Summarizing user engagements

Conventional design literature tends to assume that a user trial is a neutral and passive means for gaining knowledge about user needs, and for finding out how users experience a specific prototype (Goodman et al. 2012; Rogers et al. 2011). In contrast, approaching user trials in terms of the project communication technologies deployed, and thus in terms of the experimental situations they create, has facilitated an understanding of how such trials embody and reproduce certain realities of users and their everyday lives.

A lot of invisible work is involved in crafting user trials, and these efforts to craft the technical conditions of the trials, simultaneously work to shape 'the user' and

'the prototype.' As I have shown, these technical objects framed the elderly users as everyday experts in contrast to experts on technology, as performance oriented, and as a collective of socially and physically active walkers. Also, though more implicitly, they assumed that such active walkers contrasted with the passive and isolated lives elderly people were assumed to lead at home.

Technical objects, including power point presentations and video scenarios, thus aimed to enact *authentic* everyday situations. As participants in the workshop, elderly potential users had to imagine themselves interacting with the prototype as part of their normal lives. In that sense, these objects functioned as devices for disciplining the elderly to conceive of themselves and their lives in certain ways.
Even so, the outcome of a user trial is not one singular epistemic object. Instead, the outcomes are vague, pointing in multiple, possibly different directions, such as abandoning a prototype or re-defining its intended users. For this reason, user feedback does not in itself define any clear-cut orientation for future work. Instead, user feedback must be selected, interpreted and re-articulated by the designers, in the process of being worked into new technological objects and agendas.

What a user trial aims to accomplish, more than anything else, is to produce something, which keeps the project alive. That means living up to its place in the project cycle, which in turn depends on producing outputs that can be transformed into operational inputs for subsequent activities. The generation of an output of a user trial, therefore, does not only depend on the feedback from the users, but also on the degree of flexibility and adaptability of the set up, and the links it creates with subsequent activities.

The Book

Towards the end, the project produced different kinds of communication material for external communication. Among other materials, including a video and a website, a book was made to document project activities and outcomes. Of course, producing such textual accounts was not only done towards the end of the project. Throughout the project, different forms of documentation were developed and re-worked. These documents include the so-called 'Lev Vel reporting', the 'process- and resource plan', 'goals for project meeting place,' along with an evaluation, a book and a video. The making of this material does not figure as activities in project agendas or innovation models, and in that sense the production of documentation was a relatively invisible, yet highly pervasive, project activity. Communication and documentation materials like the 'Lev Vel reporting' and 'the Lev Vel book' were central objects that performed the epistemic objects of the project in consequential ways. Below, I concentrate in particular on the making of the Lev Vel book.

Making the book was important because it was seen as a central means for external communication about the outcome, process and value of the project. This mattered in order to document relations between the initial visions and the final results to funding bodies, and also to spread the word to other stakeholders such as potential or existing promoters of public-private innovation projects or new partners. The project application stated that external communication (mediated through a web platform, where the book would be published) would aim to 1) inform potential partners about the project, 2) support communication activities by knowledge dissemination, and 3) provide a platform for open innovation around societal challenges relating to the ageing population.

The application furthermore explicates that project management takes responsibility for 'supporting the project by reporting.' This was the foundation upon which the project applied and received funding, and accordingly the book was seen as an important tool for reporting back to funding bodies about project achievements. Published on a public website, the book was also a means to achieve the involvement of other public and private partners, thereby living up to the overall vision of a "city region tied together by strategic partnerships

between industry, public actors, and educational institutions" (from Lev Vel project application).

An important aim of the book was thus promoting the project, while also instantiating the ambition to create a culture for innovation in strategic partnerships by securing support and involvement from other partners. As such, the book was not only a means for communicating the design trajectory of welfare technologies developed within project Lev Vel, but also for communicating and promoting the model of public private innovation more generally. Accordingly, the book was not only a retrospective object; it was also oriented towards the future. The future it oriented towards was precisely 'a city region tied together by strategic partnerships'. The book was thus meant as a technology for performing this particular vision.

Just like workshops and user trials, the book and other communication materials have to be crafted. This crafting takes place in between the more public occasions of project activity. During these interim periods, documents circulate between partners via email, and they are shaped and re-shaped through long processes of negotiation. Comments are written in the margins, yellow markings are inserted, and multiple revisions are sent back and forth between partners on the mailing list. This leads to the writing up of new versions, which are also circulated, and which generate a new set of comments. Describing what the project is is clearly not a straightforward task. Indeed, the vagueness of the project and its constitutive entities becomes particularly visible in these processes of negotiating communication content.

In the following, I analyze how one draft version of a Lev Vel reporting evolves through a process of crafting and specifying the project and its core entities: outcomes, methods and trajectories. The Lev Vel reporting was developed over several months. This iteration, which I examine in the following, is from June 2011, about 6 months after the first project workshop.

An excerpt from an iteration of the Lev Vel reporting with comments from project partners – here called 'P', 'M', and 'K' – exemplify the negotiations that went in to the shaping of the final document and the presentation of core entities of the project, such as methods, users, and outcomes. The project partners

commenting the text below were all design researchers from the same university, but with different design approaches and specialties.

Excerpt from one iteration of the Lev Vel reporting:

> Text excerpt: "The project is built up around two main activities: Prototype development and testing as well as description of service design and business model."
> "The prototypes are preliminary versions of the products that could end out being produced as a final/commercial version of the project meeting place. The aim of the prototypes are to demonstrate and test function and design as well as finding out how the users receive the new ideas"
>
> Comment from P: What happened to sketching and who can competently think up the product?
>
> Comment from N: Our organization is the only one using the sketching terminology, so I assume that project management has chosen 'prototype' as a term that will make sense for more people.
>
> Text excerpt: "The service design is the design/or the development of the touch-points between the supplier of the meeting place and the end users. The result of the service-design is the actual experience of the service level among the users of the meeting place. The service design requires a deep understanding of the developed prototypes and thorough knowledge about behavior and needs of the users, which is then converted into new service provision for the users, which means a better user experience – and thus opportunities for achieving business competitive advantages.
>
> Comment from K: This seems very unclear. What is the concrete 'service-design' that we should deliver? We have talked about a model for how to deliver services for the seniors. How would we be able to evaluate 'the

> actual experience of the service level among the users'? That demands development and implementation of new services, that moreover have to be in use over a longer period of time […].
>
> Comment from P: It appears a bit mystical to me that it is only through service design that we gain an understanding of the connection between user/use and prototype?
>
> Comment from N: This is a delivery that will help the partners talk about aspects of the prototype (the sketches) that otherwise will not be addressed. Business model development is central to service design, so that is why it goes under this rubric.
>
> Comment from K: But business model development is not one of our deliveries. Who will be doing that?
>
> Comment from N: We read this in very different ways. I read that someone (some of us, among others), in collaboration with other partners, will deliver a sketch of a possible service design, including a sketch of a business model, which can elaborate questions that would otherwise be overlooked.

This excerpt exemplifies how the technical and material substance of the project is negotiated, shaped and re-shaped through reporting. The first comment made by 'P' indicates that something has been lost; sketching has been exchanged with 'prototype' based on the rationale that this term will be more meaningful for more people than 'sketching'. The introduction of the notion of service design then starts a long discussion, since this term has apparently replaced other types of tasks such as producing a 'model.' The following comment by 'K' indicates that this particular framing of service design does something to the 'nodes' in the process, in particular enhancing understandings of the connection between user/use and prototype. The subsequent comment from 'N' suggests that the

controversies over the notion of service design and business model development is only a matter of how you read the document, since the notion of service design is not so different from sketching. 'N' argues that the service design will be a sketch, and as far as the business model goes, this is anyway just a follow-up task of developing possible service designs.

As these disagreements over details and terminology indicate, the writing of this document is much more than merely a reporting of the project. It is an arena for negotiating and crafting what the project *is*, what entities it summons, and what are their relations and outcomes. The fact that these topics remain open for disagreement indicates that they remain fluid and uncertain. Thus, somewhat surprisingly, the task of sketching (which was initially a central delivery of one of the partner institutions) can suddenly be replaced by 'prototype' and 'service design.' Yet, the introduction of service design defines new tasks of developing business models, which a mere 'model' does not. Moreover 'service design' suddenly turns out to be a central activity for understanding the connections between users and prototypes, and that means that these understandings must be developed along the lines of development of business models.

The reporting drafts were sent back and forth between project partners and project management with new corrections and suggestions until some degree of consensus was achieved. Though the aim of the Lev Vel report is to represent the project as a coherent whole, it is clear that a unanimous partnership voice does not exist prior to negotiating its content. Instead reporting is a way of creating coherence in the project while simultaneously creating a partnership united around a common understanding of the project. A report is thus more than a textual representation of what the project is: it is a performative entity that specifies epistemic objects and their interrelations. What the project is, and whit it does, is not given in advance. However, the outcome is not entirely random, because it is restrained by specific prior arrangements, including the technical conditions and frames that lie behind the writing itself. This becomes particularly evident when we consider the writing of the crown jewel of the project reports, the Lev Vel book.

Establishing a Problem-Solution Trajectory

In some respects, the process of making the Lev Vel book was different from the numerous other reports. In fact, the Lev Vel book was more invisible, even to the partners of the project. A team consisting mainly of project managers at different levels put it together. Yet, it was based on the numerous reports made by all project partners. So we don't know exactly how the book was made. But perhaps it is fair to assume that the way in which the book was made was not profoundly different from the making of other communication materials, such as the Lev Vel reporting. Certainly, it was not detached from other documents. Without being certain, I suppose that the book emerged through a process of circulation among selected partners, editing in the margins, changes marked with yellow marker, pieces of information from other reports inserted and adjusted to the context, and so forth, as we saw in the previous example.

Once the book was published on the public website, it had taken a coherent form, and appeared to represent an equally coherent project. This coherence is achieved by the way in which the book depicts project processes as unfolding along a linear trajectory, beginning with the identification of the social challenge and leading to the development of new solutions.

Below I copy some excerpts from the Lev Vel book:

In Lev Vel we have a vision. A vision about turning one of the greatest challenges of our society into new opportunities. And this book is the story about how we do that.

The challenge

The challenge emanates from a situation that is in fact positive. We are living longer and longer lives. And we live well longer and longer. But we also live longer with chronic illnesses, needs of medical treatment, care, and support for everyday activities.

The demographic change means that, at the same time as there are more and more elderly, there are fewer and fewer younger people to treat, support and care for them. Add to that a financial crisis, which forces the public sector to increase efficiency and prioritize, and makes it difficult to create economical growth, yes then you have one of our times largest societal challenges.

The solution

We are solving the challenge by making more elderly people more self-sufficient.

……

We do that by developing innovative solutions that require fewer hands for treatment and care, by making the public sector more efficient, and by giving Danish companies unique products and services that are competitive on a global market.

……

Approach

……

Only through partnerships across sectors can we strengthen or maintain elderly peoples self-sufficiency and thus solve the central societal challenges.

Supporting the elderly requires that we understand them. Therefore, in Lev Vel's innovation projects we begin with deep insight into the everyday lives of the elderly, their worries, dreams, and hopes. We talk, laugh, challenge and listen to elderly all the way through our projects in order to be able to develop the right solutions for them.

……

In Lev Vel we are trying to solve complex challenges, which requires a systematic and solid approach. To manage our PPI projects, we are using an innovation model, which is developed based on the experiences of a range of cross sector innovation projects during the last four years.

……

That way, the solutions will be comprehensive, and able to make a difference once marketed.

These excerpts are from the first section out of the book's[15] three parts. This section presents the general social and economic problem and the general solution to that problem. The second section presents the subprojects and their prototypes, depicted as unfolding along a trajectory of problem-found solution-discovered. The final section presents general reflections and experiences of working within public-private innovation, and highlights the virtues and challenges of this approach.

The structure of the trajectory, as it emerges in the book, is thus clear: problem identified – partnerships established - users studied –needs discovered – solutions found-commercial products and services developed. It is fair to say that the book emerges along the lines of a problem-solution trajectory.

As argued with reference to previous empirical materials, making a report is a matter of negotiating and crafting problems, means, outcomes, and relations between them. As a communication technology, the project book also operates along these lines. Not least, it elides the complexity and vagueness of project activities by crafting a linear and coherent, step-by-step trajectory of the type problem discovered – solution found. That also means that only those things that fit this trajectory are fit to make it into the book.

At the intersection between problem and solution and its arrangement into a trajectory, entities such as users, prototypes and partners emerge in specific ways. Elderly users are enacted as potentially care demanding, yet with the potential to be more self-sufficient and active than what they supposedly are. They are performed as a collective of subjective and emotional individuals with hopes, dreams and worries but also as posing one of the largest problems of Danish society. Contrary to the elderly users, a 'we' emerges as a neutral and encompassing term designating the partners involved in the public-private partnership. This partnership is performed as a collective of people with a vision. As visionaries, the partners are depicted as empathetic listeners capable of taking seriously the concerns of the elderly. Also, in contrast to the elderly, the partners are wholly detached from the everyday. Apparently, they are not ageing; nor is it clear whether they have any worries, hopes and dreams – aside

[15] Find the book at the Lev Vel website: http://lvvl.dk/file/217559/Lev Velbog.pdf

from solving the ageing problem, that is. The partners, then, are simply professionals, solving problems using 'systematic and solid approaches.'

The book is thus a technical object, which defines the conditions for the emergence of a series of epistemic objects: the elderly users, the partnership, and the prototypes. Shaped around a problem-solution trajectory, the book constructs a reality of phenomena and people, both of which are posited as existing out there, causing certain real life problems. That leads to the definition of solutions to those problems. Hence, the partnership approach becomes allied with specific user-centered methods under the rubric of 'problem solvers.' Prototypes emerge as the end-results of the problem-solution trajectories; comprehensive outcomes of systematic inquiry, which purportedly embody not only the professional knowledge of the partners but also the everyday perspectives of elderly users. In this way, the linear structure of a problem-solution trajectory provides the technical frames for how the project process and epistemic entities can be communicated and understood. However, it is not a neutral format for communication, but it arranges reality in certain ways and has inbuilt ideas about users, partnerships, prototypes and the design process.

Conclusion

Organizing platforms for communication is a central dimension of design within contemporary frameworks for government-funded innovation. Usually, it is seen as an activity somewhat separate from research and design, and not in itself generative of the entities of the project such as users and prototypes. As this chapter has shown, however, crafting means and platforms for communication was among the core activities of project Lev Vel.

Based on my observations of the pervasive role of communication and the ongoing investments in crafting the technical and material settings for communication both within the project and to external audiences, I developed the notion of project communication technologies. The chapter explored the

character and workings of these project communication technologies of project Lev Vel; which more specifically were workshops, user trials, and reports.
I found theoretical inspiration in a body of research from STS, which sees science as socio-material practice. This made me frame the analysis as a study of how knowledge, such as about users and prototypes, co-emerges with the material and technical conditions for design.

The analysis of a workshop showed how technical objects such as design materials, task descriptions, time frame, and future project agendas, play a role for how the partners could participate and imagine 'the users'. It was argued that the technical arrangement of a workshop worked to perform 'the elderly users' and 'the partnership' in certain ways. As an example, one group exercise instructed the partners to share their knowledge about 'the elderly' and based on that define the projects users and formulate questions to be explored in following stages of user studies. In order to participate in the exercise the partners had to imagine themselves as a collective of individuals each of them having their professional knowledge but on a common trajectory towards the achievement of shared aims and goals. This meant that in order to articulate 'the elderly' the partners had to align that with the aim of the workshop; to deliver input for the following user studies. To support the partners in sharing knowledge about the elderly, a set of personas had been developed as inspiration. These material resources became active in shaping who the elderly users of project Mødestedet were. One of these personas, Mustafa, caught the attention of some partners. Through the process of making themes to be explored during user studies, the figure of Mustafa was re-articulated into the category 'ethnic elderly' and the research question 'what does it take to make ethnic elderly use a meeting place?'. The technical arrangements of the workshop worked to perform the partnership and the users in relation to project agendas.

The analysis of a user trial illustrates how the user trial is not just a frame for harvesting feedback from pre-existing users about a fixed and singular prototype. As the user trial is being organized, and technical elements are being made, such as a video presenting the prototype, 'users' and 'prototype' are being

re-articulated and mutually performed. This was exemplified in the empirical material where the making of a video to present the prototype to the users involved that the prototype augmented Nordic walking stick was re-articulated and re-invented to the super stick. The prototype was transformed from a technologically advanced artifact to a mundane everyday object. In relation to that the users were simultaneously articulated as not familiar with technological terms.

A central part of making a project report, such as a book, involved the alignment of heterogeneous elements into a coherent and linear problem-solution trajectory. This was particularly obvious in the Lev Vel book, where the presentation of the project process and the emergence of welfare technologies were narrated along the lines of a trajectory beginning with problem identification and ending with the invention of a solution. The empirical example showing the iteration of a project reporting with comments in the margin, showed how reporting about the project involves negotiation. The construction of various reports and communication materials forges activities of ordering, narratively, project processes into certain trajectories. Reports and other forms of communication materials are therefore among the central sites where 'users' and 'project processes' are negotiated and done, and made to fit into this overall trajectory.

Project communication technologies can be seen as agential and *lively* in the sense that they embody and enact certain realities of users, of the partnership, and of project processes; they were actively shaping project processes, identities and hierarchies. The analysis of these project communication technologies shows that the condition of possibility of generating 'new' knowledge is to a large extend framed and limited by these technologies. Where the project is based on ideals about innovative synergy emerging in the encounters between various human actors, these analyses seem to indicate that ideas and agendas inherent in the arrangement of project communication technologies seem to shape what is possible to be known and made. Design processes were neither completely open to surprising and radically new insights and inventions, but nor were they controlled by individual actors and their interests. No one person

controlled the process or the outcomes. But as we participants in Lev Vel went about the business of crafting platforms for communication, we were unintentionally creating 'the elderly users', 'the partnership', and 'project processes' in particular ways, and thus framing conditions for project activities, knowledge production and design.

CHAPTER THREE

The Liveliness of Prototypes

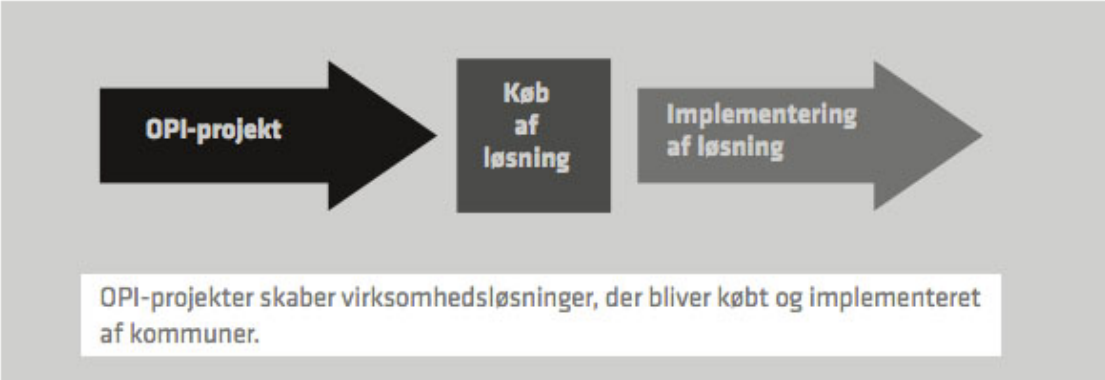
In the previous chapter, I focused on the inseparable entanglement between technical conditions for design, project communication technologies, and their outcomes. I showed that the generation of epistemic objects, was framed, restrained and spurred by the project communication technologies that provided the infrastructures for design within project Lev Vel. I learned that understanding design processes, and the emergence of outcomes, knowledge, and things, could not be done inseparably from these project communication technologies. In this chapter I go on to examine one of these epistemic objects, the prototypes. I explore how prototypes emerge in public occasions of appearance, that is, in workshops, in user engagements, and in the Lev Vel book.

What is a prototype?

> In the beginning there is no distinction between projects and objects. The two circulate from office to office in the form of paper, plans, departmental memos, speeches, scale models, and occasional synopses. Here we are in the realm of signs, language, texts. In the end, people, after they leave their offices, circulate inside the object. [In becoming object]… a gulf open up between the world of signs and the world of things…The observer of technologies has to be very careful not to differentiate too hastily between signs and things, between projects and objects, between fiction and reality, between a [text] about feelings, and what is inscribed in the nature of things…[A bus that now transports] was a text, now it's a thing….Aramis [a personal rapid transit system] was a text; it came close to becoming, it might have become, an object, an institution, a means of transportation in Paris (Latour 1996: p. 24).

Latour's famous study of the *Aramis* project, a case of technological development, which started out as a prestigious innovation project, but ended as a public eyesore, and a political, economic, and technological failure, has become a classic example of hubris and nemesis in technological innovation. The main aim of the Lev Vel project was to develop innovative technological prototypes that would have a life after the project. Insofar as this goal was not obtained, this project, too, can be seen as a perspicuous case of an innovation project gone wrong. But why did the project not manage to fulfill this aim? Why did the prototypes not gain a life after the project ended?

In public private innovation models, prototypes are figured as the end result of collaborative processes. They are figured as solutions to social problems, or as in Lev Vel; 'business solutions that will be bought and implemented by municipalities' (http://icph.dk/tilgang).



Arrow left: PPI-project. Square box: Purchase of solution. Arrow right: Implementation of solution. Rectangular text box below model: Public-Private Innovation projects create business solutions that are bought and implemented by municipalities.

In project documents, prototypes figured similarly as whole business solutions, singular objects or products, to be bought and implemented.

In practice however, the identification of singular prototypes was much more difficult. At the moment of writing, I have not heard of any prototypes either bought or implemented. As far as I know, none of the prototypes developed in the project have had a life after the project. In order to understand the difficulties

prototypes have in becoming business solutions, I suggest, we need a conception of them as simultaneously real and unreal.

When I was first asked to make present each of the prototypes developed in the project, I went through the project database to look for other presentations. Looking through these documents, I tried to trace the eight prototypes that I remembered, but going through the database I found myself face to face with a vast amount of power point presentations, posters, sketches, video demonstrations, a book, images of tangible artifacts in different situations, and descriptions in project reports. The eight prototypes were scattered over this endless body of materials produced for various occasions, and it seemed impossible to distinguish 'the prototypes' from either these materials or the occasions of their production.

In consequence, the prototypes seemed to be at once many more than eight, but also, in all their fragmentary and not yet objectified existence, much less than eight (Corsín 2013; Jensen 2010; Law and Mol 2002). Somewhat dejected, I realized that it would not be easy to introduce the eight prototypes.

However this was in the aftermath of the project. During the actual process, we felt no problems in viewing the set power point presentations, reporting, models, sketches, videos and other sorts of materials as instantiations of "the prototypes". The prototypes were viewed as new inventions and singular objects: we would ask questions such as "Who owns that prototype?", "Would this or that company be interested in buying this prototype?", "How did the users experience that prototype? And "did it have any effect?". In short, there seemed to be a common orientation towards singular objects that would work as prototypes for further innovation and commercialization, and a shared understanding that such objects were in fact being produced.

When project plans are developed as part of public-private partnerships, workshops organised and methods chosen to bring partners together to collaborate, new prototypes and services are often at the very centre of attention. The tasks are variable: from generating ideas for new prototypes, to testing, evaluating and further developing existing prototypes and creating

service designs to ensure the 'life' of these objects in a broader context of actors and agendas. Yet the aim of all of these occasions in which prototypes appear is to add to their reality, make them more real, and get them closer to having a life of their own (Jensen 2010: p. 19-31). How is this done in practice?

In the partnership, there seemed to be a gap both between the conceptions of ideal prototypes and between such ideals and practice. This, or these, gaps corresponded to yet another discrepancy between the rather grand vision of the project, and its actual outputs, including their ability to travel beyond the confines of the project. To gain an understanding of the problems of realizing these expectations and visions, this chapter explores the relationship between the ideals and practices of prototypes: What sort of a thing is a prototype? How do people in the project go about designing them? What are the processes and arrangements through which they either gain in reality or wither and die?

In the following, I outline how the notion of prototypes as ontologically diffuse objects has developed within STS. This view inspires my analysis of prototypes as they emerge during their public appearances within the Lev Vel. Following my previous identification of three central project communication technologies, I analyze the appearance of prototypes in a book, in workshops, and in a user trial.

Prototypes and ontologically diffuse objects

In their explorations of 'the prototype,' Lucy Suchman *et al.* date the use of prototypes in systems development back to the 1970s, where software engineers started to recognize the difficulties of building technologies based on written demand specifications (Suchman, Trigg, and Blomberg 2002). Reliance on prototyping as a design method first appears in the late 1980s in the context of trade union-sponsored Scandinavian system development research (Ibid). These authors state that for most advocates of the approach, prototyping is viewed as a strategy for 'uncovering' user needs. As I have also discussed in the previous

chapter, the purpose of the prototype is then to elicit pre-existing needs from the users and make these needs available to the professional system designer.

Suchman and her colleagues develop the alternative view that "prototyping practice simultaneously recovers and invents work requirements and technological possibilities, that each make sense in relation to the other" (2002: 166). This implies a shift from viewing prototypes as a mediator between users and designers to seeing it as constituted in, and inseparable from, those interactions. In other words, work practices and prototypes are mutually (re) configured. In line with this view, my approach refrains from viewing prototypes as objects responding to pre-existing needs and demands. Instead, they are socio-material configurations aligned into more or less durable forms through processes that simultaneously generate 'prototypes' and the 'needs' they are meant to address.

This means that attention to the interrelation between prototypes and other entities must be central to the analysis.

Also on a mission to show the co-constitution of technical and social elements in what is assumed to be purely technical objects, the ethno-methodologists Brigitte Jordan and Michael Lynch analyze the multiple variations of the 'plasmid-prep,' a technical procedure in biochemical practice. Preparation of a plasmid-prep is usually described as a rationalized, coherent procedure. However, in practice it appears much less like a uniform technique than as a multitude of variations on a theme (Jordan and Lynch 1992: p. 81). The authors emphasize the "*continual* genesis of incoherence and fragmentation within the relatively settled development of an established technology" (Ibid, p. 84). They go on to argue that

> The social constructivists' black-box analogy places diversity and fragmentation at a preliminary stage of the narrative, whereas we see a persistent dispersion of innovations even within the frame of a highly consensual practice […] What our ethnographic materials make perspicuous, however, is not a process of closure and stabilization of initially "flexible" technological designs. Rather, we are alerted to the

> conditions of instability and fragmentation in routine laboratory practice (Jordan and Lynch 1992: p. 84)

In order to work, the plasmid prep has to be unstable, open to transformation and able to flexibly adapt to other actors. Said differently, the plasmid prep only works as a collective practice. Under these circumstances, any separation between the object and *who* is doing it, *how*, *when* and *where* looses sight of the array of the situated interrelations with other entities that produces the object in different versions.

Prototypes, much like the plasmid prep, are done differently from one practice to the other. As such, they can be seen as hybrids (Callon and Law 1995; Latour 2012); inter-relational, contingent and fragmentary entities. Obviously, this understanding is quite far from the prototype-as-object depicted in project talk and reports. Yet presenting prototypes as merely objects, products or business solutions skips over the complex interweaving of things and humans.
As making a prototype can be seen as an attempt to construct an object that appears singular, a black box in the sense that various elements are made to work as one (Jordan and Lynch 1992), studying them in practice requires attending to their status as not-yet objects.

Studying these diffuse not-yet objects requires a methodological framework attuned to their complexities and intricacies. The sociologists Joan Fujimura and Adele Clarke's studies of the *crafting* of scientific facts are useful here (Fujimura and Clarke 1992; Fujimura 1996). Fujimura and Clarke describe science as practices of co-constituting "tools," "jobs," and "rightness". Scientific facts are not discovered but *crafted*, since what counts as 'the job', 'the tool', and the 'rightness' of the tool for the job are mutually constructed in situated practices. Means and end are mutually constructed. To understand how a scientific fact emerges requires situated analyses;

> at heart our argument is that to understand science in practice we must analyze the situations in which scientific work (broadly conceived) is done, including all the elements and their interrelations. Moreover, relations among these elements are complex, multiple,

> dialectical, transformative, and even conflicted and contradictory. Understanding the nature of such relations in a particular situation requires asking empirical (italic) questions about complex and interweaving phenomena that can be quite dicey to specify, much less study (Fujimura and Clarke 1992: p. 6)

> We thereby demonstrate the situatedness of scientific work practices and hence the need for situated analyses of what is "guiding" scientific work in any particular setting at any particular historical moment. Instead of a singular, generalizable primacy, we seek not only an ecology of knowledge (Rosenberg 1979), including an ecology of the contents of scientific knowledge, but also an ecology of the conditions of its production [italic] […] nothing is predetermined. Moreover, the material practices are differently constructed by the various participants in specific situations (Fujimura and Clarke 1992: p. 4-5)

Fujimura and Clarke thus emphasize the situated nature of science and the mutual crafting of scientific facts and the conditions for science. By alerting us to the *situations* in which work is done, the sites of production of facts and artifacts do not merely provide a surrounding context for practice. Instead, the entities that emerge from the situation embody all the elements of the situation within it, including nonhumans – like prototypes. Specifying the various *elements* of the situated production of techno-science objects, such as a prototype, is a significant task in terms of understanding the nature of the object and its interrelations with other entities.

That means and end are collectively invented or crafted suggests that, in the case of prototypes, 'problems' do not pre-exist their 'solutions'. Indeed, the concept of *doable problems* aims to characterize the sense in which problems are crafted in relation to specific social, technical and material possibilities for problem solving.

> Achieving do-ability thus means that investigators simultaneously align or fit their research problems across experimental or other research capacities, laboratory/work site organization and overall direction, and the broader worlds of fiscal, scientific, and extra-scientific support and interest. Before beginning the work, scientists must both pull together and articulate – craft the necessary connections among – a wide array of requisite elements to make as sure as possible, given local and other circumstances, that something they think will be recognized as worthwhile by significant others will emerge downstream. Moreover, this crafting is not merely a pre-commitment activity but continues throughout the project as the problem is constructed and reconstructed along with attendant reorganizing over time. Things can also fall apart at any time, and may or may not be patched together again to continue the work. (Clarke & Fujimura 1992: 8)

What counts as a solution thus depends on the situated circumstances under which 'the problem' is made. Making a problem *doable* consists in making it fit with the demands and constraints shaping the broader conditions of the (research) situation.

The concept of 'doable problems' captures well what is at stake – often implicitly - in the process of designing prototypes: In the world of design, it is commonplace to see the purpose of design as developing solutions for existing problems. The raison d'etre for prototypes is therefore defined in terms of their ability to solve problems. In innovation projects like Lev Vel, by and large, partners are assembled and practice driven forward by the common articulation of a specific problem to be solved. In that sense, designers, much like researchers, must 'pull together' or 'craft' the necessary connections among a wide array of requisite elements: funding bodies, innovation programs, users, research communities and commitments, 'cutting edge' technologies, collaborating partners etc. Designers must also make the right connections

between the tool and the job, or perhaps more to the point, they must construct adequate problem-solution plots (Jerak-Zuiderent 2013)[16].

An operational question; What are the circumstances under which prototypes can be claimed as solutions to a problem? What do these claims tell us about the epistemic commitments that drive the design of welfare technologies, and how they could be otherwise? In addition to our understanding of the prototype as not-yet-object, studying its emergence along the situated crafting of 'doable problems' is significant for helping us understand why an 'all right' prototype does not 'make it', why it did not become a business solution.

The public appearances of prototypes

In the following, I draw on my empirical observations from different situations in project Lev Vel were prototypes appeared. I attempt to discern the liveliness of prototypes by focusing on how they are presented and done in relation to other entities in project practices. Specifically, I focus on their appearance in the project Lev Vel book, in user engagements, and in a project workshop.

Prototypes in the project Lev Vel book

If a person who had not participated in Lev Vel wanted to learn about the prototypes developed in the project, the most obvious way would be to download the official Lev Vel book from the website[17]. Doing so, you would have in front of you a document summing up in 56 pages the main vision, approach and organization of the project, along with descriptions of the three sub-projects and their prototypes, and evaluations and recommendations for future public-private innovation projects.

[16] The term problem-solution plot is inspired by Sonja Jerak-Zuiderent who speaks about the possible need to slow down 'the plot of problem-solution-found' within the context of development of accountability in healthcare practice (2013: p. 20)
[17] Find the Lev Vel book at: http://lvvl.dk/file/217559/Lev Velbog.pdf

The first sentence you would encounter would be this one:

> In Lev Vel we have a vision. A vision about converting one of the great challenges of our society into new possibilities. This book is the story about how we are going to do that [p. 3]

This initial sentence sets the stage for the rest of the book. It tells you, the reader, that society is facing great challenges, which can be transformed into new possibilities. The book is therefore crafted as a story about how Lev Vel will contribute to that transformation. In other words, the book is arranged as a problem-solution narrative about a trajectory of converting problems into possibilities. The narration of prototypes and their relations to other entities are aligned in the format of the problem-solution trajectory.

The problem, or 'challenge', is described immediately after the first sentence:

> The demographic development implies that while there are more and more elderly people, there are less and less younger people to treat, support and care for them. Add to that a financial crisis, which forces the public sector to be more effective, to prioritize, and complicates the stimulation of economic growth. Well, then you end up with one of our time's largest challenges to society [p. 3]

The problem thus has to do with the growing population of elderly people that need treatment, support, and care. These fragile and care-demanding people pose a burden to the public sector, which is already under pressure because of the financial crisis. The problem of the elderly is thus interwoven with the problem of a public sector that needs to be more effective, to prioritize, and which is currently not contributing to economic growth.

In the following paragraph, the book specifies its 'solution':

> We are solving the challenge by helping elderly people become more self-sufficient. We help them maintain a good health for longer, and we help them stay in control and be co-managers in their own life. We do that by developing innovative solutions that demand fewer hands for treatment and care, by making public sector services more efficient, and by giving Danish companies unique products and services that are competitive on a global market. In that way, we are not only solving the challenge of an increasing number of elderly people, but we also create new possibilities for companies, municipalities, hospitals and researchers. [p. 3]

The solution, here presented, is two-fold: it solves the challenge of making the elderly capable of maintaining self-sufficiency, and it solves socio-economic challenges related to a general lack of resources.

Reading a bit further, one gets additional information about what it takes to develop good solutions and how this project has the capacity to do so. The book explains that the first criterion for successful solutions is the establishment of *partnerships* across sectors. The partners involved are *experts* within their fields; they are partners that have *cutting edge knowledge* about the elderly, health and technology. They are also partners who are responsible for supporting and treating elderly people in their everyday lives, and able to develop and produce new products and services. The particular organization of Lev Vel as a strategic partnership ensures that the problems addressed are *relevant*, and it ensures *professionalism* and *innovation height*. Hence, the project is committed to collaboration across sectors and to invite 'expert-knowledge' into the development of prototypes.

Moreover, the project has a commitment to the intended users, the elderly people:

> To support the elderly it demands that we understand them. The innovation projects of Lev Vel are based on deep insights in the everyday lives of elderly people, their worries, dreams and hopes. We talk, laugh,

> challenge and listen to elderly people all the way through our projects in order to be able to create the right solutions for them [p. 5]

The project is thus based on visions of supporting 'the elderly', and developing solutions based on their worries, dreams, and hopes. The book emphasizes that *intimate* and *affective* relations with the elderly are central to the project and necessary for developing innovative solutions.

This is where prototypes enter the picture. They are the end result of a process of establishing affective relations with users and acquiring deep insights about their needs. At the intersection of vulnerable elderly and empathetic designers, prototypes thus emerge as devices in support of the former. They are solutions to the problem of the fragility of aging, since they are meant to stimulate the self-sufficiency of elderly people. In this sense they are explicitly transformational devices, objects to render passive people active. Things are more complex than that, however, for in the book, prototypes relate to a version of 'the elderly' that itself oscillates between two binary figures, the 'passive' and the 'active', and the 'vulnerable' and the 'self-sufficient'.

Prototypes as hybrids of ['users'-'design teams'-project processes']

An important aspect of prototype development mentioned in the Lev Vel book is that the process is 'systematic and sound.' To ensure these qualities, the project deploys an innovation model developed in similar innovation projects and evaluated over four years.

The introduction outlines the criteria based on which the prototypes are expected to perform. The prototypes must embody, confirm and perform the overall problem-solution trajectory articulated by and driving the innovation project. To do so, they must convince the reader that they can make elderly people more self-sufficient, that they can remedy the burden on public healthcare, and that they can create new business opportunities for private companies. To enable their alignment with the problem solution plot, the

prototypes must also demonstrate that their trajectories 'fit' with the commitments of three overall project areas:

- *user involvement*: the prototype must show that it 'fits' with user needs and hopes, that it is empathetic with the user; that it is sensitive to their emotions.
- *collaborative partnerships/design teams:* the prototype must prove that it is based on expert knowledge, has 'innovation-height' and is based on cutting edge knowledge and expertise.
- *systematic processes*: the prototype must demonstrate that it is a 'whole' solution that has progressed along the lines of an accumulating collection of knowledge; that it has learnt from various partners in different phases of its trajectory towards realization. This shows in the sense that the prototype encompasses multiple perspectives that makes it 'adaptable' to real life settings in the market.

An adequate problem-solution trajectory consists in the ability of the prototype to demonstrate commitment to these three overall criteria. This entails that the solutions to be developed are enacted as a relation between 'users', 'design teams' or 'partnerships', and 'project processes.' This trajectory is textually enacted as singular and linear, stretching from the identification of the problem to the design of the right solution.

In the book, prototypes are thus presented as configurations of design teams, elderly users, and project processes. For a prototype to appear it requires that design teams, elderly users, project processes are pulled together, aligned and made to fit. This is the sense in which a prototype can be seen as a hybrid of ['design team'-'elderly users'-'project processes'] configured and aligned into material or textual forms.

Now that we know a little more about what it means for the prototypes to 'do well' in the book, let us look closer at one of them. The following section examines how the prototype 'robotic tiles' performs as it appears in the pages of the book.

The Robot Technological Exercise Tiles

The robot technological exercise tiles, or just 'tiles,' as it was casually called among project partners, was a mature prototype from the start. The prototype had actually been developed in 2003 by a different research project focusing on children's development and their sensory and motoric skills. Since then, the tiles had been lying on a shelf at the Danish Technical University, until it was 'found' years later by other researchers doing different projects. These researchers, part of a centre for play ware, were partners in Lev Vel. Thus, the robotic tiles were brought into project Lev Vel where it was re-specified as a technology for the elderly.

From the very first workshop, the tiles prototype was considered 'miles ahead' of the other prototypes. For one thing, it had already gained physical and tangible appearance. It was fully functional and workable from the start. Indeed, by the time of the first workshop, the prototype had already assembled a large network of actors around it: play-ware developers, enthusiastic researchers interested in the usability and applicability of the device in practice, physiotherapists and municipalities. Having felt the allure of the prototype, this dedicated team of designers worked to promote it to external partners. From the start, a large and solid design team thus backed the tiles. When it made it into the book it took no one by surprise.

In many ways, the tiles could probably be counted as the most successful of all of the prototypes: had the other prototypes been articulate they would perhaps have admired and envied this one. Its special importance was underlined by the fact that the tiles had two full pages in the book, where the other prototypes only had one each. This was how the prototype made its appearance:

> With age, elderly people experience decreasing functional abilities and reduced muscle strength. The decreased functional ability can be the start of a negative spiral, where the functionality loss leads to even worse mobility, which leads to even more serious functionality loss, risks of falling and possible isolation. Particularly the increased risk of fall

> accidents is the most common type of accidents among elderly people in Denmark and it can involve great damages, hospitalizations, and added risk of falling. For this reason, there are high risks of both great human damages and great socio-economical costs (p. 14)

The prototype is introduced in relation to the articulation of a problematic situation having to do with ageing bodies. Ageing is described as a process of functionality loss, decreased abilities, and increased chances of accidents. We also learn that this is a problem related to 'the elderly' that involves human damages as well as socio-economical costs. Statistical facts underscore this point. More than just learning about a serious problem, however, we also learn that the prototype is based on scientific facts. Reading only slightly between the lines, we see that the design team has scientific knowledge about ageing and its risks. There is thus strong authority behind the articulation of this problematic situation, which makes the problem difficult to deny.

> Studies show that, given strength training, elderly people can limit the deterioration of their muscular abilities and thereby reduce the risk of fall accidents with relative ease. In order to motivate the elderly to physical activity, we have developed the robot technological exercise tiles that can be a future element in rehabilitation training for elderly people [p. 14]

The solution is based on scientific studies, for example studies of the effect of strength training. In this framing, which connects 'the elderly', as people with deteriorating bodies, with studies showing the positive effects of strength exercise, rehabilitation training comes to appear as the natural solution to a naturally occurring problem. Since the elderly have poor motor skills and tend to fall a lot, the solution is technological support for strength exercise, which, further, motivates the elderly to be more active.

The prototype was initially developed for children with motor challenges, but inserted into the context of Lev Vel its purpose was re-adapted to the elderly users. In this process, the prototype's problem and solution were mutually adjusted. The problem-solution trajectory, however, operates by separating the

problem and solution and inserting them into a linear development process. The prototype is presented via a narrative about its trajectory: a design team of scientifically knowledgeable experts on ageing has identified the problem-to-be-solved; the decreasing functional abilities of elderly people. Technological devices that motivate to rehabilitation exercises emerge as the solution responding to that problem. In this framing, the prototype appears at the intersection between a design team of interdisciplinary professionals, elderly users with deteriorating bodies, and a process that is systematic and scientifically sound (based on statistics and different forms of expert knowledge).

After this outline of the problem-solution plot follows three columns enumerating the technical specificities and functionalities of the tiles, and their capacity to represent the elderly users.

> Our tests of the tiles show that the games challenge the individual within his or her own frame. They initiate mental training, physical training and social interaction in a very simple way, and therefore they receive very positive user feedback. The tiles are simply fun to use, provide the foundation for a good social interaction, and work in their design. They are easily accessible and appear neither as a discouraging technology, nor as a demotivating 'elder-' or rehabilitation exercise. The municipality is currently collaborating with physiotherapists to see how the tiles can be used for exercise and rehabilitation. […] The tiles can be used as an element that the municipality lend to elderly people as part of rehabilitation, where they can both train on the tiles at home and in a public rehabilitation centre along with physiotherapists. […] All in all, there are a lot of possibilities for making the exercise tiles into a good meeting place (p. 15)

The prototype is presented as following a systematic process. It starts with identification of the problem to be solved and analysis of its cause, based on which the prototype is developed and tested by users. According to this ideal (or idealized) narrative, the prototype simultaneously performs as a solution for the

users, the municipality and for the physiotherapists who are interested in buying it. Since the users have been involved and they are happy with the result, the process is sound from a moral perspective no less than from a design one. As the description emphasizes, this is a prototype that does not discourage the users or reproduce the stigma of other 'elder' technologies and services.

From the text we can also learn that a team of professionals developed the prototype: designers conducting scientifically sound user studies and user tests, a municipality and physiotherapists. The prototype emerges out of the shared efforts of strong interdisciplinary team of designers and advocates. Their attachment to the prototype makes its appearance as a solution even more solid and convincing. The conjoint efforts and care of this dedicated team has re-invented a piece of otherwise discarded technology into a mature prototype that performs as a solution. It is a solution both for the elderly users who find it 'fun to use', and for the municipalities and physiotherapist in relation to whom it is marketed as a viable product.

The 'tiles' prototype, then, is a hybrid between 'deteriorating elderly users,' 'an interdisciplinary team of professionals,' and a 'scientifically and morally sound project process'. Its problem-solution plot has been tinkered with, re-adapted, and re-configured in relation to the context into which it is supposed to work. Even though the material artefact was not originally designed as a solution for 'the elderly', the appearance of 'tiles' in the book establishes it as a solution.

As this description makes clear, what is considered 'the problem' is not external to design, but rather shaped in on-going processes of adaptation to the specific conditions and arrangements of design. Similarly, how the prototype counts as 'the solution' is not necessarily inscribed in the nature of the prototype. How the prototype comes to work as 'a solution' can change over time according to what different actors it becomes attached to. Moreover, the re-invention of the tiles from a technology for children to an elder technology exemplifies how what the prototype *is*, and how it counts as a solution, and for whom, is something, which can change radically even after the prototype has achieved material form.

All of this suggests that what is most important for the success of a prototype is not how a given material prototype is designed as a solution to a

specific problem. What truly matters is its re-invention during specific occasions of appearance. As noted, the 'tiles' prototype was able to gather a wide network of interested people around it. This success itself manifests its potentials as a 'solution.' In order to be *seen* as a solution, that is, it needs a dedicated team of designers to make it appear viable to relevant audiences. Only during these strategic moments of appearance does the prototype emerge as a problem-solution entity, which is a first step in being considered a solution by anyone. Obviously, therefore, the attachment of project members to the prototype is vital. Moreover, the particular *manner* in which the prototype is made to appear in relation to users, design teams, project processes, is central to its chances of being seen as a solution. In the case of the 'tiles', for example, the configuration of ['elderly users with deteriorating bodies but fun loving'-'empathetic and moral design teams of scientific professionals'-'systematic and morally sound user driven project processes'] was both uncontroversial and appealing to a wide array of actors.

Prototypes in project workshops

The case of the 'tiles' illustrates the importance for prototypes of having a team of dedicated supporters back their claims to existence; their suitability as 'the right solution for the problem'. In the Lev Vel book, this importance is evident in the way the connections between the prototypes and the interdisciplinary team is emphasised. During workshops, however, the ability of the prototypes to attach to people via direct encounters is even more vital. They can have immediate effects for how prototypes gain or lose existence.

Workshops are central occasions of appearance for prototypes. They are thus also opportunities for making the necessary attachments to other actors. As we have seen previously, throughout Lev Vel a number of workshops focusing on the prototypes were held.

On these occasions, the design teams present the prototypes, seeking to make them come alive. The intermediary platforms through which this happens

are oral presentation, power point, photography, scaled down modelling, scenario building, and drawings, to mention just a few tricks of the trade. The partners listen and observe, and are then offered the chance to ask questions, give suggestions and feedback.

The idea is that, by organising project workshops around the prototypes, the multidisciplinary and collaborative environment will enrich and strengthen their capacity for acting as solutions. The prototypes, it is hoped, will be enriched with the expert knowledge held by various professional partners, which can subsequently be translated by the designers and incorporated into the prototypes. Roughly speaking, the prototypes are thus seen as gradually coming to incorporate not just the ideas and knowledge of the designers, but also of the municipality, industry, and users. Thus, they are expected to become successful final products. Viewed this way, the prototype workshops are arranged around the separation of the design teams, the prototypes, and the rest of the project partners. The design teams (re-) present the prototypes, and the rest of the participants give input.

A lot is at stake for the prototypes and their design teams during the workshops: these are brutal trials for a just barely existing prototype. Hence, much depends on how well the prototypes perform, and how the project partners react to them. In many cases, a workshop presentation became both the first and the last public appearance. If they do not do well, the prototypes remain mere posters and models, nothing more than waste material to be thrown away or hidden away in some messy basement.

I have posed the question what does it mean for the prototypes to do well on a workshop? First and foremost, the prototypes need to be 'likeable', and this requires strong attachment to at least one person. They need to have a designer or 'owner,' that is; one who will act as a spokesperson during the event and make sure the prototype looks its best. Ideally, this will make other partners grow similarly attached to the prototype and motivate them to stay faithful at least for a while. Later on, it is necessary to find other ways for the prototype to exist.
Presentation at a workshop is therefore not a green card to full existence. At the end of the day, the prototypes that did not manage to maintain or reinforce connections are likely to simply vanish.

In the following, I analyse the public appearances of two prototypes during a workshop. This workshop was the fourth out of eight, and it was the first occasion on which each of the prototypes were presented. It was also an event charged with expectation, since none of the partners had seen the prototypes in advance. The prototypes had, however, had a long life in private. In between workshops, designers had worked on them. Not least, they had worked to sharpen them up for public appearance.

On the day of the workshop, all partners met in the activity centre of Wieder garden, one of the partner institutions. Prototypes were displayed in posters, images, and graphic screen representations in each corner of the workshop room.

All of the partners have looked forward to this moment, where the project would finally meet around something concrete. I remember the excitement and anticipation as we circulated from one poster to the next, curious to see what the design teams had come up with. Initial reactions ranged from big smiles or laughter, to curious inspection, or scepticism or even disdain.

As regards the prototypes themselves, their material 'finished-ness' was highly variable, ranging from simple sketches and post it notes to professional graphic representations and fully working devices. Oddly, however, the prototype that appeared most 'finished', functional and professionally designed, the telenoid, received the harshest reactions from the partners as they scrutinized the exhibit.

The Telenoid

On a table close to the entrance door, a computer screen showed an animation of the telenoid. A poster on the wall showed accompanying images and text. The creature depicted was a white torso, small, like a young child, with a bald head and stumps in place of arms. It had no legs; instead the 'body' ended in something looking a bit like a short tail. Next to the poster, a computer screen pictured the telenoid. The screen portrayed the telenoid hovering in a black universe. Its dark eyes are looking disturbingly real as they stare straight out at

the viewers. The features are clearly humanoid, but other associations blend in too, such as a foetus kept in a jar, which you would see in a horror movie, or perhaps in the laboratory of some crazy biology professor. There is something ghost-like or alien about this creature: Is it human or other-than-human? Dead or alive? Foetus or fully developed? Friend or enemy?

Behind the poster and the screen lay the fact that the telenoid prototype was being tested in a Danish care home at the time of the workshop. Hence, we could not see, touch or interact with the thing itself. Even so, there were a lot of exclamations as partners faced the creature. On the computer screen it appeared at once scary and enchanting, puzzling and enigmatic – and quite impossible to define with common categories.

There was definitely something eerie about this prototype. One partner walking next to me whispered indignantly: “What is this! I do not support this kind of technology at all, and I definitely do not want my name in any way associated with this robot!” In general, an awkward atmosphere surrounds the

telenoid. Some merely inspect it, their faces remaining neutral, whereas others frown, and some express outright hostility.

Looking back, I remember that I, too, experienced a feeling of contempt for the telenoid. Starkly different from my ideas about the care needs of 'the elderly', and the project ideal of empathetic and moral solutions, it provoked me.

Apparently, the motive behind presenting the telenoid as an ambiguous creature, hovering in a mysterious, black universe was to create a feeling of enchantment. According to the text on the poster:

> A telenoid is a 70 cm high, 4 kg heavy robot with a vivid and live-like face, and body movements that can be controlled remotely via the Internet. It adds to communication via the Internet a new dimension – movement. The users can speak together via the robot, which simultaneously transmits bodily gestures and as such adds communication via the Internet.
>
> The robot is a tool for talking to grandchildren, friends, the doctor and care personnel. The robot can also observe the users' health condition and can be used to activate the elderly by encouraging physical movement. The main idea underlying the robot is that it can help maintain contact to family, friends and relatives in a way, which involves the parties more than with mail, text messages and Skype. Among other things, the experiment explores if it is possible to relate to a computer as if it was a human being

Images on the poster show an elderly man sitting across from the telenoid, one of his hands touching its cheek and neck, as in an intimate conversation or a caress. Underneath is an image of a woman holding the telenoid in two outstretched arms. There seems to be eye contact, and the position is akin to a mother's playful interaction with her baby. Both the poster and the screen emphasize the humanoid qualities of the robot: fingers that caress, eyes that seek contact, arms that hold, an entity that has body-weight and height, facial expressions and a body that moves and gestures. The boundaries between

human and technology are destabilized. These images underline the unidentifiable, mysterious character of the telenoid, and represent it as an ambiguous, enchanted creature. Both the screen image and the poster make an effort to articulate the device as a vivid, life-like and somewhat human-like entity. There are no images of elderly people in active everyday scenarios here: instead we see a robot in an intimate and seemingly affectionate relation to a human.

From the text, we learn that *qua* technological object, the telenoid can be *controlled* via the Internet. In turn, it can mediate communication. It is also a monitoring device that can observe health conditions and activate 'the elderly'. And it is a quasi-scientific experiment; it has a purpose of exploring scientific questions about the relations between humans and computers. The arrangement of the telenoid thus seeks to appeal to the viewers in different ways: scientifically, functionally, and mystically.

Unfortunately for the telenoid, its powers of mystical attraction does not seem to work very well on the project partners, who obviously had very different ideas and visions for what a prototype within the realm of Lev Vel ought to look like. What they were generally on the look out for were technologies that solve certain problems of the elderly. What is foregrounded in the presentation of the telenoid, is not a relationship based on assistant-receiver divisions, but a mutually caring and intimately affectionate relation between human and technology. The cultural imaginaries inscribed into the telenoid blur the boundaries between the human and the technology. The relationship between the robot and the human is not pure functional, but affectionate, emotional and mutually caring. Yet the responses that the telenoid receives were almost the exact opposite than love, care and attention.

In contrast, other, rather more successful, prototypes presented the relation between technology and human as instrumental and functional. These were relations in which the technology took the subordinate position of servant or assistant. This for example was the case for the augmented Nordic walking sticks, which had the role of a mediator of social relations between members of a walking community through sharing of digital audio material via the stick.

In this configuration, it is the designer who is enacted as empathetic and caring through his/her understandings of users, not the technology. The visions of a human-robot relationship based on empathy, care, and emotions are not well received within the project. Apparently, technologies that appear as human-like and loving are seen as morally condemnable. The hybrid of ['human-like-affectionate-enchanted-technology'-'human-caring-for-robot'-'technology-driven-design-team'] is not acceptable in this context. The other prototypes did not seek to establish these emotional ties with the intended users; instead they maintained a pleasant distance between the machine and the human.

Finally, the telenoid does not appear to appeal to any of the partners as a scientific and functional object. Whether because of their concerns with its appearance or for other reasons, nobody expresses any interest in its experimental aims.

The difficulties for the 'telenoid' became increasingly obvious when the presentation rounds were about to begin. No designers in the room claimed to be representing it. When the project manager asks who has brought the telenoid, at first no one answers. Then, hesitantly, a woman from the Danish Technical University admits that it comes from her institution, but, she emphasizes, it was her colleague who wanted to bring it. The colleague, who is also a project partner, is absent from the workshop, and the woman says she is unable to present it. No one volunteer to present it. The project manager, appearing slightly confused over this awkward situation, quickly decides to simply ignore the telenoid for the rest of the day.

So without any human to present it, the telenoid has to present itself. But this means that the telenoid does not appear in narratives about the trajectory from problem discovered to solution found. It is not embedded in stories about how users' needs have been studied by empathetic designers. There are also no narratives about morally sound design processes, or successful user tests.
Instead, the telenoid is on its own, and on its own telenoid has little chance of survival.

This, therefore, was the first and last public appearance of the telenoid in Lev Vel. It was never mentioned in any documents or workshops again. Instead,

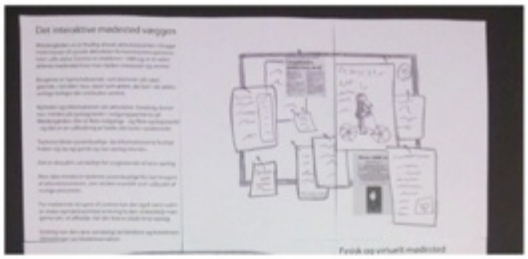
it was forgotten, even deleted, from the project as suddenly as it had entered. However, the curiosities of the story aside, the central point is that being detached from a design team at this early stage is unsustainable and fatal. Becoming part of a problem-solution trajectory is very difficult, if not impossible, for a prototype with no voice.

Even if the prototype had not been particularly popular with any of the project partners, it might have survived if just one dedicated designer had insistently brought it back. Because this did not happen to the telenoid, it could gain no footing, and thus no life, within the project realm of Lev Vel.

The Wall

'The Wall' was a prototype developed by the small design company, ILP, named after the owner Inge Laub Poulsen. The Wall was an interactive screen, a digital bulletin board for internal communication in an activity centre for elderly people. The prototype concept was developed for the Wieder garden activity centre, which was a partner in the project, and in which the mother of the designer was an active member. During the workshop, the wall appeared in one poster. The poster was modest, but in just a few images and a little text it negotiated its way into appearance through a narrative about a problem and a solution.

The images showed 1) a hand-drawn pencil sketch of an old school bulletin board, messy with notes on top of each other, 2) a mix of sketch and graphic illustration of a screen with ordered tables of information neatly divided into boxes with different colours, 3) a mix of photo, graphic illustration and pencil sketch showing a staircase, a screen hanging on the wall, and a senior holding on to a walker and interacting with the neatly ordered information on the screen. A messy and chaotic bulletin board, that is, is replaced by an interactive and ordered screen-based bulletin board.



The text on the poster states:

> News and information on activities, presentations, courses etc. are announced on bulletin boards in the entrances to Wieder garden. There are several entrances and more bulletin boards – and it is a challenge to keep them up to date. The boards get chaotic since the information quickly piles up. New and old notes get mixed together. Moreover, it is difficult for the visually impaired to read the notes. Not least, the bulletin boards are confusing to new users of the activity centre who want to get an overview over the activities. For the established user of the centre it can be hard to draw attention to e.g. the knitting club they want to run, when there is not enough space for new posts. It can also be hard to manage and coordinate enrolments and room reservations (From design poster)

At first glance, the problem has to do with communication and management of information at Wieder garden. This is a problem for several users: the impaired users of the activity centre who cannot view information, the new users who get confused, and the old users who have difficulties drawing attention to their activities. The prototype negotiates its way into being by enacting 'the user' as elderly people experiencing communication and information problems: physically impaired users, confused newcomers, or old users whose activities are overlooked.

The designer begins to present the prototype, telling us that she has conducted user studies at the activity center, Wieder garden, where her mother is a frequent visitor. She has spent a lot of time with her mother and seen how important Wieder garden is for her. In fact, the main part of the presentation

seeks to underscore the close relation between the prototype and the users at the activity center. This relation between the prototype and the users is a result of the designer's close, personal relation to people at the center, and the deep knowledge she has acquired during user studies. The prototype thus defines a clear-cut problem-solution trajectory: A trajectory starting out with user studies and identification of a problem and ending with the design of a conceptual solution and a material artefact; the wall.

The oral presentation emphasizes the empathetic character of the prototype, by focusing on the relation between vulnerable users, empathetic designers, and the user driven design process:

> This is a project that I'm very passionate about because Wieder garden has such a profound influence on many elderly peoples lives in [town], including that of my mother. At the moment, the municipality is imposing user payments. My mother says that this has meant that a lot of users have stopped coming. Elderly people with small retirement incomes can't afford to come there. Moreover, the municipality is considering closing the activity center down, which would be a catastrophe for the elderly who have nowhere else to go and meet up. So my prototype is motivated by a wish to improve the communication pathways in the house and strengthen the possibilities for the elderly users of engaging in many of the great social and physical activities. But there is also a political motivation, since I hope that 'the wall' can also be a communicative tool to the outside. The intention is that it will send a message of a stronger community of users at Wieder garden and convince politicians that Wieder garden is a popular and important place for the elderly people in [town], and should not be closed down (Fieldnotes from the Workshop)

The wall emerges at the intersection of elderly users, a design team, and a design process. Once again, the prototype embeds a relation between users-design team-project processes. The users are enacted as vulnerable elderly citizens, and elderly care as an area in need of political attention and investment.

The elderly are vulnerable in more than one sense: they are simultaneously physically, socially and economically insecure and fragile, and they are weak in terms of political influence. The prototype appears empathetic in revolving around the aim of caring for the needs of the users while also seeking to empower them. Emerging out of this script, the prototype appears as a 'un-selfish' agent, seeking political influence on behalf of its users. But the designer is also a central figure. Caring and sympathetic to the concerns of the elderly, she takes seriously their needs, wishes and problems. This, then, is a caring prototype born out of a daughter's affection for her mother.

After the presentation of 'the wall', the project partners are asked for comments. The comments are supportive and the partners express sympathy with the project. Apparently the hybrid of vulnerable elderly user/empathetic designer/user driven process works well. The main comment concerns accessibility for users with hearing and seeing impairment. Another person states that the designers should consider the need for an editor to manage the content of the screen. As these kinds of suggestions make clear, the project partners find the wall to be likable. There is no hard criticism and the prototype survives the day unharmed. Indeed, it ends the day in the same form as it entered it, subject to no de- or re-construction.

Prototypes in project user-engagements

Design textbooks usually have one or more chapters on user tests. User tests are often seen as an invaluable method for evaluating prototypes and testing whether they fulfil the needs of users. These books also tend to convey a rather simple understanding of user trials. They are occasions where a single, detached prototype is tested by equally singular and detached users.

Yet, a large body of design literature has begun to recognize that user driven design entails processes of tinkering with, and trying out, different ways of relating 'things' and 'humans'. Notions such as 'rehearsing the future' (Halse et al. 2006), designing 'matters of concern' (Ward and Wilkie 2010), and as the design of 'Things' (Bjögvinsson, Ehn, and Hillgren 2012; Ehn 2008) or

'assemblages' (Wilkie 2010) among others, acknowledge the profound interrelations between the physical object being designed and the performance of imagined 'users' in design practices.

In these versions of design, a prototype is not a singular object. It is multiple and hybrid. Despite this multiplicity, however, in practical terms the aim of the user trial is to make entities 'clot.' It is about making a not-yet-object turn into a prototype, and about making not-yet-users into users – at least nominally (as it is not always possible to achieve this clotting materially). So how does the arrangement of a user trial *make* prototypes and users?

If prototypes perform users, this means that, upon encountering 'actual users' in a user trial, a mis-match between the users performed and the users-in-the-flesh may become evident. How is the user trial and the appearance of the prototype arranged to prepare for unexpected and different figurations of users? How are attachments between prototypes and users achieved? The previous examples illustrated the importance of human spokespersons for creating the best conditions of survival for the prototypes. In contrast, the following examples discuss in more detail some of the strategies and processes whereby attachments between prototypes and human actors are established.

Nordic Walking Stick

One prototype that went through a series of encounters and evaluations with users was the so-called 'augmented Nordic walking sticks'. The designer of the walking sticks was Nabil, a PhD student working within the field of Interaction Design. Nabil was technically ingenious and prone to losing himself in fiddling and fumbling engagements with diodes, sensors, chips, cables and wires, flamingo, bolts and elastic bands. Arriving from India to do his PhD in interaction design, he worked closely with a team of other students and his supervisor.

Focusing on embedded technology, their design approach was mainly guided by what is called concept-driven interaction design research (i.e. Stolterman and Wiberg 2010). Briefly sketched, this implies a design process that aims at manifesting theoretical concepts in concrete designs, thereby

making theoretical advances through practical means. This approach does not exclude user involvement in the design, but excavating 'user needs' is not the driving force of the design process. Hence, the approach admits to a different set of visions and epistemic commitments than those driving the Lev Vel project.

For one thing, the figure of the designer is not connected to ideas about empathetic relations with users, but rather to a research community. Above all, the designer is a researcher and a technological innovator, in contrast to the empathetic designer appearing through an affectionate help-motivated relation to the users. It follows that relations between processes, users, and designers are differently performed, since the main objective is to do theoretical advancements based on innovative processes, not representing unacknowledged needs.

Within this particular design team, the concept being explored was called 'ticket-to-talk.' Ticket-to-talk centered on questions about how technology embedded in everyday objects can act as a gateway to communication. In the context of Lev Vel this was connected to the issue of how to enhance the sense of community among peers in local exercise environments in order to stimulate the synergy between sociality and physical activity.

The user trial workshop was held at the IT University of Copenhagen. A group of elderly intended users from a Nordic walking community had been invited to participate. The purpose of the workshop was to test the prototype with these users and inviting their participation in developing it further. In the words of the designers, the purpose of the workshop was to explore the *space of opportunities* of the prototype. In the following, I recount the dialogue at the beginning of this event in order to show the designers' strategy of making users attach to the prototype.

Aside from Nabil, the workshop participants counts four seniors from a Nordic walking[18] group in Copenhagen, I call them Pia, Ellen, Kjeld, and Irene. Then there is Nabil's supervisor, Torben, and I. We are gathered in a meeting room at the university, all of us sitting around a large oval table. Three prototypes of the Nordic walking stick are lying on the table when we arrive. They are covered in flamingo, holding together the diodes, the sensors, arduino

[18] Nordic walking is the name of the type of sports where practitioners walk with walking sticks.

and the regular walking sticks. Wires run from the sticks to bags carrying mobile phones.




Nabil has prepared a very short introduction. There are no sketches, only few PowerPoint slides and no posters. The sticks themselves are in the foreground. They are somehow expected to present themselves. The participants get to try them out, walk with them, and hear audio in the headphones. Meanwhile, the designer stays in the background, acting as a facilitator, letting the sticks take as much of the stage as possible.

Strategies of articulation

Nabil begins by briefly introducing how the sticks work. He explains that the sticks can record, store and play many different sorts of audio material, and that they can be used during walking classes. He is standing in front of the oval table with one Nordic walking stick in his hand. He shows the headphones attached to

the stick, puts them in his ears to demonstrate, and uses his thumb to show how to operate the control button on the top of the stick. “The best part is”, he says, “when you come to the Nordic walking group meetings everyone can hear the same.” He also explains how audio material can be shared among the sticks, so that people in the same walking group can hear the same audio files during their walks.

Nabil’s supervisor, Torben, then asks the elderly participants some questions related to Nordic walking and about the possible use scenarios and usefulness of the prototype. Torben tells about an exercise club that congratulate members when they have been present 25 times:

Torben: “Could that be something that you had on your sticks?”
Pia: “well, yes sure, but…there is this thing about the limit between fun and seriousness…”
Torben: “would it also be a bit serious? That you sort of showed that it was you.”
Pia: “that is one of those small things that I think can scare someone away”
Ellen: “Yes, you have to be very careful what you say or else people won’t show up. And that’s also what we always say, you don’t have to bring sticks, just come, it’s fine, it doesn’t matter just as long as you come, do some exercise. It is important to get some exercise, right.”
[Excerpt from workshop transcripts]

Torben is trying to make articulate how the prototype can encourage physical activity by tracking the performance of its users. As he says, it can show to the community when a person has joined a certain number of walks. However, the two women, Pia and Ellen, are doubtful whether this is suitable. As they gently suggest, any feeling of being ‘activated’ or ‘pushed’ to perform can have the exact opposite effect of scaring people away. What is important is not how people walk, or how often, but just that it is done. Thus, Pia and Ellen worry whether the walking stick will be perceived as a product to improve performance. This contrasts with the values that the elderly participants associate with Nordic

walking: to be non-performance oriented and have fun. Potentially, the prototype can be a threat to motivation.

At this point, Torben goes on to explicate another dimension of the prototype, which articulates it as a *social* technology:

Torben: "Okay, then you say welcome. Could it be an idea if new members entered the walking group through a kind of system? Do you think this type of technology could help make the welcome of new people even warmer?"
Kjeld: "I have a stronger belief in personal contact"
Torben: "Definitely, I hope you can also see that, or that is also our intention of doing this, it is not about replacing the physical meeting, on the contrary it is about reinforcing it. That is what we are looking at, could this technology do something that made it even more, even more intimate, even more…"
Pia: "Yes, technology appeals more to some people than to others, right"
Kjeld: "Yes, I'm very interested in it, I'm like a child that likes to play"
Pia: "Yes, me too! I always have to fiddle with it and disassemble everything (laughs)"
Torben: "Yeah, we are actually trying to separate the discussion about buttons from discussions about what is it actually that this *can* do"
(…)

By suggesting that the prototype might make welcomes 'warmer', Torben points out that the walking stick can be seen as a social thing enhancing the community. However, the participants reject the notion that the prototype might be social. Viewing it as a technical plaything, they contrast it with 'personal contact.' From their point of view, the prototype is interesting as a technology that can be disassembled and put together, that is, as mechanics. Torben once again tries to guide the participants to see the prototype according to the purpose of its design concept, but he does not succeed. As far as the participants are concerned, the walking stick is simply a technological object.

Torben does not give up, however. Instead, he tries to articulate the social dimension of the prototype by emphasizing how it can help strengthen intimacy and social ties among peers, by creating new modes of contact. Doing so, he

draws on an implicit idea about social barriers, such as fear of being too intimate with relative strangers, and lack of strong social ties between the peers, which keep elderly people from being as socially active as they could be. According to this problem-solution plot, the elderly emerge as socially timid and as having problems of reaching out and taking social initiatives.

Torben: "If someone is walking really slowly, would you then think of calling him on the Monday to hear if he is feeling better?"
Kjeld: "arh, usually I have a pretty good sense of what is going on."
Torben: "I'm just thinking, maybe, this thing about calling each other might be a bit too intimate, because people don't know each other that well in a Nordic walking group. But maybe, if you had something, not directly anonymous, but more." (He gestures with his hands but is interrupted by Ellen…)

Once again, the participants reject the problem-solution plot. They are not socially timid, they indicate, and they already have a strong community based on 'a good sense of each other.' Accordingly, they don't need technology to help them. The Nordic walking stick prototype is therefore not a solution to a real problem.

In the context of the user workshop, it is less the prototype as a trajectory that is being enacted, as it is the prototype as a practice. The prototype, that is, appear in relation to a specific context and practice, that of Nordic walking.
The setup of the user trial, and particularly the role of the facilitator, seeks to make the participants engage in collective imaginaries about themselves as Nordic walking practitioners *and* as users of the prototype. This is done by articulating certain features and dimensions of the prototype as *social*.

Yet, despite the effort to make scenarios in which the walkers use the prototype, the aim of making them 'clot' as related entities is not achieved. The participants representing the intended users do not accept the specific user-prototype hybrids presented. In short, the elderly users imagined and inscribed into the prototype do not match with the users-in-the-flesh. Hence, as we have seen, the prototype is enacted by the participants as *nothing but* a technology. In the words of Torben, the prototype is reduced to merely 'buttons.' Since the

participants do not buy in to the imaginaries about users and their problems embedded in the prototype, the prototype does not manage to appear as an object-in-practice.

If the problem-solution plot, which makes up the prototype, falls apart because the imagined users do not match with the emergent users, the designers cannot progress with the aim of the workshop. After all, the aim is to develop the prototype *further*, making it more robust. So how does a prototype adapt to a situation where the users, a core part of the hybrid, do not behave as expected? What does this kind of situation, often encountered, imply for the future life of the prototype?

Transforming the prototype: re-adapting and re-purposing

As we have seen, the participants in the user trial did not accept the particular 'emplotment' of the walking stick. Instead, they question, disregard, and reject the configurations of both problem and solution.

Instead of attaching to users, the prototype thus clings to the designers. It is they who have to engage in ongoing 'explication-work' in order to make the participants imagine the prototype and their own practices in a particular, interrelated, way. Since the strategy of explication did not succeed in making closer attachments, only one solution, aside from scrapping the prototype, is possible. It is now the *prototype* that must learn to adapt the user that has emerged in the situation. This process of change and adaptation to the new condition in which it must seek to gain life, might be referred to as re-purposing (Ribes and Polk 2015).

Such re-purposing did not take place during the user test I have just described. However, it did happen at another occasion at which the Nordic walking stick was tested with a set of users. On this occasion, the facilitator was not a member of the design team, yet she was a design researcher from the Lev Vel, and had followed the design of the prototype closely throughout the project. When the intended users participating in the event once again rejected the

prototype, she engaged in a strategy of adaptation to what she perceived as the interests of the users:

Facilitator: "Now, it seems that you are all healthy and active. Fit for fight. But you have probably also thought about this tragic story with the two women walking around with their sticks in Madeira, who fell down and died. It was terrible. But what if you could use these sticks in a way so you were part of a community, and could feel certain where the others were? For instance, if the stick fell down and was lying horizontally in two minutes without being turned off, it would automatically send out an emergency call to another person in the community, an alarm center, or something like that. Would that be useful?" (field notes from user trial)

Since there is no guarantee that the prototype will garner interest or make attachments with the intended users, to survive it must be able to change. Doing so, is a matter of reconfiguring functions and purposes in relation to concrete practices of use.

In the excerpt above, the facilitator thus tinkers with the configuration of the prototype and the users, seeking to make transformations that will stabilize the relation between 'users' and 'prototype.' This is an attempt to create a successful 'fit': small changes are introduced to the prototype, but the re-purposing also entails highlighting different aspects of being elderly (being vulnerable). The configuration of the elderly users and the technology has transformed slightly. This specific strategy of modest re-purposing did not have any effect on the users' attitude towards the prototype, which they continued to reject. Despite this transformation of the prototype, the change is not dramatic since the problem-solution plot remains the same: the prototype is still a functional device, an assistant helping users in need, and the elderly remains a figure flickering between active and passive; doing physical activity, but potentially vulnerable, socially restrained and needing help.

Tiles

Let us take a look at another case of a user trial, where the prototype 'tiles' was more successful in attaching to the user figure emerging in the situation.

This user trial was once again held at the IT University of Copenhagen. A panel of six elderly users had been invited to participate as experts and discussants. The 'tiles' prototype was presented by Klaus; a member of the design team. As for the tiles themselves, they were lying on the floor, while Klaus gave a brief presentation. Not using Power Point, he looks directly at the elder panel as he introduces the prototype.


After a simple and straightforward introduction, Klaus quickly moves on to show a video. The video presents situations where the tiles are tested with users. We hear elderly people laughing, and see them dancing and jumping on the blinking tiles.

After the video, Klaus invites the participants to come and try the tiles . A couple of people volunteer. As the colors on the tiles change, the players have to move their feet around from one tile to the other. They start laughing as they tiptoe around the tiles, or whenever a shoulder, hand, foot, or arm brushes against the others, as they chase the changing colors. I also can't help smiling as I see all this dancing, giggling and whining. We are immersed in a moment of careless play.

After the demonstration, the facilitator asks the elder panel for comments. "Please feel free to say what ever pops into your mind" she says. Someone from the panel, who tried the tiles, says: "This was so fun, we had a blast!" Other people join in with comments, mostly positive and excited. The moderator is obviously excited as she is counting hands, nodding, and passing on from one

participant to the next. She does not have to promote or protect the prototype, but simply facilitate. The design team also remains passive in the background. At this moment, there is no need for explanations. It is not necessary to try to give life to the prototype, or to change it, since it is already alive with the eager comments from the users. This, then, is a situation where the messy hybrid [users-prototype-design team] 'clots' into relation: the configuration of prototype as a 'fun-plaything', and the 'users' as 'fun-loving', works in practice.

The tiles were originally developed for children. They are not therefore an 'elder-technology'. For the same reason, the tiles do not contain any ideas about the elderly as vulnerable or as needing technology to enhance their social and physical activity. Instead, it was developed according to ideas about play, about playful users, and with the intention of being fun to use. But though the 'intended users' have changed, during the trial the prototype still performs its magic trick: The participants are laughing, having fun, and enjoying using it. Immersed in play, questions about how the prototype came into being, with what purpose and intentions, fade into the background and become irrelevant.

If I were to characterize this magic, I would say it has to do with the ability of the prototype to blur or render irrelevant that (and how) it is a 'made' object. It allows the users to be playful and have fun instead of being 'fragile and old'. It blends, as it were, naturally with the situation, and it allows the users to immerse in the activity seemingly without any ulterior motives.

That the prototype is developed for children, means that 'its user' is configured differently than in the case of other welfare technologies. It is specifically intended to be an enchanting and fun object, and 'the users' are equally rendered as playful rather than 'needy' or 'vulnerable' elderly. The mode of operation is one of enchantment rather than of problems and solutions. In turn, the simple fact that the users *do* find it fun to use defines the prototype as overtly useful. Apparently, user trials do not necessarily have to be premised on deeply felt problems, which the prototypes 'solve.'

What sort of a 'thing' is a prototype?

This chapter has addressed the overarching question: what sort of a 'thing' is a prototype? It has also examined what it takes for a prototype to 'do well' in public occasions of appearance.

As noted, my analysis has been inspired by STS discussions about the qualities of technological objects, in this case prototypes, as hybrid, not-yet-objects, seeking to gain 'life' through processes of attaching to various other actors. In Lev Vel the prototype is a vague, fragmentary, and odd hybrid entity comprising users, design teams, project processes and materials. As I have shown, designing a prototype is a matter of creating suitable problem-solution plots or trajectories. Yet, what counts as the problem-to-be-solved and the suitable solution are co-constructed in specific situations. Designing prototypes as problem-solution plots thus involves the proper arrangement of a series of elements, centrally 'users', 'design teams' and 'project processes'.

Exploring the hybrid character of prototypes, this chapter has also considered what makes up the liveliness (or, other times, inertness) of prototypes. Such liveliness, I have emphasized must be understood in terms of processes whereby *life* is conferred on prototypes by others, whether designers or intended users.

'Prototypes' were central epistemic objects in project Lev Vel. Since the success of the partnership, in terms of being perceived as innovative, was dependent upon the prototypes gaining a life as solutions after the project ended, they were the center of a great deal of attention not to mention of high expectations. Yet, even though much effort was invested in them, none of the prototypes achieved the status of business solution. As I have suggested the limited extendability of the liveliness of the prototypes related to their difficulty of performing, consistently at least, a problem-solution nexus. My analysis has also indicated something of why such consistent performance is very difficult to achieve.

The chapter has studied prototypes during three different forms of public appearance: in the project book, in project workshops, and in project user engagements. On each of these occasions, prototypes emerged along with

narratives about 'problems-to-be-solved' and 'solutions-discovered.' The problem-solution trajectory arranges 'users', 'design teams', and 'project processes' in relation to each other. Seeing prototypes as singular problem-solution trajectories thus involves seeing them as hybrids of [users-design team-project processes]. The prototypes that do well and 'make it' to the book, and in project workshops crystallize around particular arrangements of [users-design teams-project processes] that are similar to the way these entities figure in descriptions of the aims and purposes of the project – as relations between potential passivity and activity.

These arrangements have a series of particular characteristics. They involve performances of elderly users that oscillate between vulnerable and self-sufficient, and between passive and active. They include empathetic design teams in close and affectionate relations with elderly users and motivated by intentions of 'helping' them. And they build on project processes that are soundly user driven, interdisciplinary, and systematic.

For prototypes to pass as solutions, elderly users with needs and problems are required. In project user engagements, however, it is not exclusively (if at all) the ability of prototypes to perform as a problem-solution trajectory that is central. If the prototype does not thrill both designers and users, there will be no attachment. The problem of designer interest was most vividly exemplified with the 'telenoid,' whereas the Nordic walking stick prototype illustrates the difficulty of capturing user interest.

The latter case is especially interesting because it shows conventional and morally loaded ideas about 'vulnerable and passive users' and technologies that 'solve social problems' to be rejected by the 'actual elderly.' In contrast, the tiles prototype, which was actually developed for children, worked to enchant the elderly. In this case, the key point was that the prototype was experienced as 'fun'. Perhaps, part of that experience was that it was precisely *not* experienced as a solution to pre-specified problems.

However, the success of this prototype throughout the project also had to do with its broader adaptability. In the Lev Vel book it was able to perform both as a morally sound and systematic problem-solution trajectory, and in user

engagements it was performed as a fun play-thing. Thus it was capable of making attachments both to project partners and to users.

This is a point of broader purchase. Flexibility and adaptability are both necessary qualities for prototypes to survive in, not to mention beyond, projects. Achieving a singular object is therefore not what is at stake. On the contrary, both 'the prototype' and 'the users' must be kept open towards many possible life-trajectories. All-though project documents build on inherent ideas about design as linear and prototypes as singular objects, these views were not always mirrored in the actual design practices. On some occasions, elderly users and prototypes were managed, by designers, as multiple and hybrid entities. This for instance seemed to be the case in the situation were the facilitator of a user trial of the Nordic walking sticks engages in attempts to transform both the users and the prototype. This was done in strategic processes of re-purposing. However, present ideas about the problem-solution trajectory, ingrained in the prototype and the project, set a limit to how radically different the elderly users and the Nordic walking sticks could be imagined.

All of this is testimony to one of my central analytical claims in this chapter: that the existence of prototypes is inherently under-determined and fragile, usually flickering somewhere in between life and death. This chapter has made explicit this common 'tacit knowledge' of designers especially by emphasizing the importance of the relation between the design teams and prototypes. The 'life' of the design team and the prototype are indeed interconnected in many ways.
On the one hand, prototypes depend on human spokespersons to have any chance to become real. Nowhere was this more than in the case of the telenoid, which had no chance of survival whatsoever, since it had not dedicated advocate. However, prototypes also depend on other actors, such as users and partners that participate in bringing them to life also outside of the project.

On the other hand, however, the prototypes also effect the lives *of* human actors. This is perhaps most clearly the case of PhD students whose own life depends upon the ability to sustain the life of the prototype. Whenever the relations supposedly sustaining this life, for example to project partners or to

users, begin to falter, this has immediate implications for the PhD student whose career depends on demonstrating the ability to do innovative research.

However, the tension between the many different criteria used to evaluate the success of the project -- from the point of view of design, business, research, and practical use -- was felt not only by doctoral design students, but by everyone in the project, myself included. Discerning the interconnected lives of prototypes and design teams is thus also a way of making visible negotiations and tensions at the edge where research, use and design meet. Indeed, the conflation between a 'scientific object' and 'an assistive technology' in one and same material object, as in the very different cases of the telenoid and the Nordic walking stick, may create irresolvable frictions and detachments.

Though the design literature tends to emphasize the importance of the relation between design teams and users, relations between designers and their prototypes are at least as complex and important.

In conjunction, all of this goes to show that design does not only happen in the secluded spaces of design laboratories, in between occasions of public appearance. Rather, design must be seen as an ongoing endeavor, requiring design teams to be continuously vigilant to the importance of situated 're-design' of prototypes. To recognize the hybrid and affective dimensions of prototypes is thus necessary in order to improve the ability of prototypes to make the attachments necessary to stay alive.

The analysis has also shown that although the project wished to design innovative prototypes, it tended to get trapped. For example, its relatively fixed ideas about vulnerable users and empathetic designers arguably limited the possibilities for design. Certainly, the project had difficulties in designing technologies able to release the intended elderly users from the iron grip of preconceived notions of fragility, needs, and passivity, even if these notions were often glossed by phrases such as 'active' and 'self-sufficient'.

Whereas the project wanted to do innovative design, that is, ingrained ideas, such as the 'problem-solution trajectory,' put a *de facto* limit to the ability to perceive other relevant ideas. Thus, they operated as brakes on the project imagination.

More than limiting the scope of innovation, these ideas regularly operated to fixate 'the elderly users' in stigmatizing positions, which they showed many signs of wanting to escape. The constant oscillation between active and passive, self-sufficient and passive remains difficult to escape as long as ideas about the inherent, singular relation between problems and solutions, and their moral soundness as guiding principles for design practice, are maintained.

CHAPTER FOUR

An earlier version has been accepted for publication as:

Ertner, Marie (Forthcoming) Different generalizations of the elderly in design of welfare technology. *STS encounters*

User Studies and the Different Generalizations of 'the Elderly' in Design of Welfare Technology

The previous chapter explored the emergent objects that the innovation project Lev Vel is meant to produce; the prototypes. The chapter showed that prototypes and the project communication technologies that enable their public appearance are profoundly interrelated. The prototypes did not present themselves but depended on the arrangements of heterogeneous actors to sustain their life within the project. In other words, prototypes *were* the hybrid relations between users, design teams and project processes. Project communication technologies thus enabled the appearance of prototypes. They were arranged so as to make the prototypes 'clot' as solutions, to make the intended users 'clot' as users, and to render the design teams *as* design teams.

In this chapter I focus on another central epistemic object around which the project revolves. This object is the elderly intended user. Here, I explore how the project communication technology of user engagements, or user *studies* as it was called within the project, worked to perform 'the elderly' in a specific way. The chapter centers on an empirical situation encountered in a fitness center where I was doing user studies for the project. In this situation, I became aware of the difficulties of re-presenting 'the elderly' for the design of welfare technology.

In the fitness center I followed a group of elderly women in order to understand their exercise practices. The knowledge produced was meant to inform the design project. I start by presenting an empirical story of a subtly tense moment in which the relations between my informants and I were negotiated and transformed. The chapter seeks to make sense of this 'moment of disconcertment' by seeing it as a way of generalizing 'the elderly', which was fundamentally different than the way 'the elderly' were being generalized by my approach to do user studies, and by the project, more generally. This chapter is an attempt to deal constructively with the situation that there may be different capacities for generalization within an innovation project, and in the empirical field. It explores how an ethnographer may deal constructively with this

situation by looking towards current discussions in STS about representation and intervention, and particularly by following Helen Verran's proposition of paying attention to moments of epistemic disconcertment. Based on these ideas, I was encouraged to write a different type of ethnographic account than what I had first set out to do. This, in turn, led me to different insights both about 'the elderly', my own role as an ethnographer, and the project. Let me reveal the main insights that I gained. In brief, they are that ethnographic attention to epistemic disconcertment can act as a 'switch' that allows project partners to shift between different ways of generalizing the elderly user, and thus nurture and enhance the potentiality for reflexivity, which already exists within the project. What I also became aware of was that the specific arrangement of project processes and progress worked to enforce a certain mode of generalizing. As long as these technical arrangements are in place, they work against the aspirations of project partners to base design on practices that are accountable to the actual users.

Tension and laughter in an encounter with 'the elderly'

Liselotte, Gitte, Mona and most of the other women from the fitness class "senior-switching" look at me with amusement, as we gather around the coffee table after an hour of exercise. "So what do you think, was it hard?" Liselotte asks me, obviously trying to suppress a giggle as she looks at my glistening forehead and bright red face. "Yes, it was hard," I say, "surprisingly hard." Birgit goes on to ask me about the studies I'm doing and my reason for joining the exercise class. "Well, the project is called 'The meeting place'," I respond, "and it is about developing meeting places for social and physical activity for elderly people…" Before I can finish the sentence, the women burst out in laughter, sending knowing looks to each other, showing that something is obviously hilarious to them. I start laughing a little bit too, while I think to myself: "What is so funny about that?"

The situation lasts only a moment before the women regain their composure. Liselotte's face becomes more serious as she reassures me that physical activity is very important when you're aging:

"Yes, it's true, it is very important to be physically active when you are ageing. Studies have shown that our brain cells re-generate every seventh year, did you know that? So in principle we don't have to age. In theory, it should be possible to find a way of stopping the aging process. You should read about this, you can use it as a reference in your project. Henning Kirk. Do you know Henning Kirk? No. Well, remember to read Henning Kirk, he is a very famous ageing researcher" Saying this, she points a finger at me like a reproving schoolteacher. Again I spot this suppressed giggle in her face. Is she serious or not? I nod politely, but can't help feeling slightly irritated. It is obvious that they are not taking me seriously even though they try. Why is she telling me this, when I am clearly not looking for information about Henning Kirk? They should be talking about themselves, their experiences of ageing, of their bodies and of doing physical activities. Not lecturing me about my PhD. Who is this Henning Kirk guy anyway?

When Liselotte and Gitte start speaking about all the things they do to stay fit and healthy, I turn positive and attentive again. Liselotte explains that: "…it is all about the maintenance, postponing the slow decay, because that's the sad thing about ageing, it is only getting worse." "Don't say that to her!" Gitte scolds with a humoristic glimpse in the eye, "it is not just about decay, it is also about the well-being here and now!" "But I have to tell her that, or else she won't do anything about it!" Liselotte responds.

As they stand there quarrelling (to their own amusement), while giving me advice on what I ought to do in order to get a more fit and healthy body and how to train my brain, I lose track of my reason for being in the fitness centre. I start

worrying about the exercise I almost never do and about the ailing condition that my neglected body must surely be in.[19]

As the description above suggests, I was both confused and puzzled with the way these women took over the situation and turned upside down the power relations between us. How did I end up on the receiving end of well-intended encouragement to be more active? How was my body suddenly rendered fragile and in need of fitness? The women were obviously amused by these shifting roles. Maybe they also felt a twinge of pity for what I can only assume they saw as my ignorance and simple-minded understanding of their lives. In any event, it is hard to explain the kind of change that I experienced in this situation, and the difference between my ideal plan of study and the way in which the elderly emerged in the encounter.

What to do when the objects and subjects of study don't seem to 'fit' with the techniques and categories available to the researcher? How to understand the 'users' of developing technologies when they 'misbehave' (Michael 2012) or don't lend themselves to the analytical schemes of 'the user study', as usually deployed in technological innovation? In this chapter, I address these questions via engagement with the STS literature on representation and intervention. Inspired in particular by Helen Verran's notion of moments of disconcertment (Verran 2001; Verran 2013; Verran 1999; Verran 2014), I argue that empirical stories like the one presented above opens up to different ways of generalizing about the elderly user.

Background for the user study

Since Lev Vel was a user driven innovation project, a key element of the project was its commitment to users. All solutions developed, whether technologies or services, had to be based on the actual, but so far unarticulated, needs of the users. In order to live up to that commitment, the project required insights that would enable the development of innovative solutions. User studies were

[19] The conversation has been translated from Danish to English.

applied as a technique for achieving this outcome. Ethnography was therefore the primary method for conducting user studies. Accordingly, I, and other researchers participating in the project, acted as 'mediators' between the users and the project (Jensen 2012). My role in the project was to produce user insights by carrying out ethnographic and qualitative studies of intended users, and as such I, along with other partners doing user studies, carried the responsibility of informing the design activities and the development of technological objects. To understand my role as ethnographer within the project, I will remind the reader that the project was divided into separated phases. Each phase comprised one or two workshops working as hand-over sessions. The partners communicated intermittently in between and during workshops, but the majority of the work was conducted under the direction of just one or a few partners. In the first phases, the ethnographers carried out user studies, which were submitted to the rest of the project in the form of analytic documents or workshop presentations. Secondly, the design partners used this material as springboard for developing design concepts and prototypes, at least in theory.

When the prototypes were presented in later phases, the ethnographers were responsible for contributing with user knowledge that could help designers develop their prototypes further. Doing user studies in this context required an orientation towards the project agendas and the future phases of prototype development and design.

As the project was mainly concerned with the so-called 'self-sufficient elderly,' it took a keen interest in acquiring knowledge about their motivation for staying active and self-sufficient. For this reason, the ethnographers where encouraged to conduct studies among partner organizations, which were mainly activity centers and sports organizations. Hence, I decided to focus my study on activities in a fitness center in Vanløse, a suburb of Copenhagen, where several activities and classes were explicitly directed towards senior members. I therefore carried out ethnographic studies in a weekly fitness class, "senior-switching",[20] where I

[20] Senior switching is a style of exercise, which combines strength training on machines and various forms of cardio workout. Participants switch between floor and machine exercises.

did participant observations, informal interviews and focus groups with some of the participants in the class.

In correlation with the overall aim of the innovation project – to increase the quality of life by stimulating the social, physical and mental well-being of elderly people - my initial task was to produce knowledge about what motivated 'the self-sufficient elderly' to stay socially and physically active, and what needs they had in order to remain motivated and self-sufficient. Gradually, however, I experienced difficulties in living up to these requirements. During encounters with the women from the fitness center, it became more and more unclear to me who the elderly were, and what kind of description and analysis might fruitfully intervene in the design process. Fruitfully; that is, without merely reproducing already existing stereotypes and contributing to further stabilization of the category 'the elderly.'

During the encounters with my informants, I often felt that my interview guides and research questions fell short. On many occasions the informants did not behave as informants. Sometimes they reacted with subtle, internal jokes and spontaneous laughter for reasons I did not understand. Their responses seemed to simultaneously respond to the preconceived ideas about ageing embedded in my questions and refusing to 'fit' with them. Indeed, the responses were often either deliberately ambiguous or obviously ironic.

It did not seem that the elderly were simply *resisting* age categories; yet, they were not *complying* with them. I have come to think it is precisely the ambiguity of their responses that made it so hard to pinpoint the relation between my categories and the 'real' elderly. The consequence was that there seemed to be at once a match and a mismatch between my categories and the actual people I met in the fitness center. That, in turn, profoundly complicated my task of identifying their presumed unarticulated needs, which would inform the design of innovative welfare technology.

The frictions emerging from these occasions of spontaneous laughter, and the playfully mischievous attitudes of my informants indicated that something escaped the very framework of my user study.

‘The user’ in sts

Within Science and Technology studies there has been a great interest in understanding how ‘users’ are (re-)configured in technological practice. This interest turns on a focus on how designers imagine the users, and how in turn, users are inscribed into the material content of technological objects (Akrich 1992; Latour 1992; Suchman 2002, 2007; Woolgar 1990). A central concern within this body of literature has been the relation between the designers’ imagined user and the embodied user:

> (…) we cannot be satisfied methodologically with the designer’s or user’s point of view alone. Instead we have to go back and forth continually between the designer and the user, between the […] designer’s projected user and the real user(…)(Akrich 1992: p. 208-209)

The general impetus behind these discussions is the recognition that despite commitments to represent users, much technology design fails to do so adequately, instead projecting desires and preferences of the designer *onto* the user (Oudshoorn and Pinch 2005; Oudshoorn, Rommes, and Stienstra 2004). Given this tendency, the question is not so much whether or not the user is physically present within the processes of design, but rather how the users are *semiotically* figured by design practices (Ibid). The relation between the imagined user and the real user is thus viewed as central to understanding the success and failure of technology design. The ‘failure’ of design, that is, does not necessarily relate to an inability to get closer to real people, but rather to a reflexive blindness towards project politics (Akrich 1992; Oudshoorn and Pinch 2005; Oudshoorn et al. 2004; Suchman 2009).

These discussions inspired my initial approach to do ethnographic user studies within the project. My initial concern was thus to identify ‘flawed’ or even stigmatizing stereotypes of the elderly within the project. I wanted to find a way for the designers to better align the human user ‘out there’ with the users they were inscribing into the welfare technologies being developed. However, I soon realized that the accounts I would be able to produce were not necessarily

more relevant, interesting or correct than the knowledge that already existed within the project. I now see this in part as a consequence of limitations in the literature that inspired me. This literature introduces very valuable approaches to understand how particular figures, like the user or the elderly, become inscribed in technology. Yet it also maintains the idea of a homogeneous user existing out there. Furthermore, it maintains the boundary between 'us' and 'them'. However, the idea that 'users' can and should be inscribed 'correctly' in welfare technologies under development didn't seem to hit into the heart of the problems I experienced in my attempts to represent the elderly. The problem did not seem to be that the designers and my project partners necessarily had 'flawed' or simplistic understandings of the elderly. In fact, there was a general wish to be reflexive and acknowledge heterogeneity. However, when it came to concrete tasks and exercises it seemed to be the case that we had to 're-version' (Jensen 2012) our understandings of the elderly and turn them into workable units and fixed categories, that somehow always re-produced ideas about the elderly as a distinct social group, and did them in relation to ideas about passivity and activity.

Indeed, I felt how the push for the sort of operational knowledge that the project needed about the elderly was creeping into my own way of thinking about the episodes in the fitness center, and into my accounts of the elderly. While I wanted to be nuanced and reflexive in my renderings of 'the elderly' I was also very aware of how my accounts were supposed to be 'delivered' as inputs to the design endeavors. Moreover, I knew that, based on my empirical insights and analyses, I would be expected to act as a 'user expert' and be attached to design teams in order to engage in the concrete development of already existing design concepts, prototypes and service designs. In that sense, I felt a need to turn my study in the fitness center into some operational categories, which could easily travel in the project. I felt caught in-between proposing new stereotypes to be adopted by the designers or finding myself in a situation where my more detailed descriptions of social practices would circulate in the project without being noticed by the designers at all.

Thus, I found myself involved in what Helen Verran calls a foundationist mode of analysis (Verran 2001). Either I could adopt the projects ideas about

'the elderly' as a group of individuals characterized in relation to their relative activity or passivity. Or I could juxtapose the stories told by the innovation project with the experiences of the elderly to show how ageing and quality of life is profoundly different and more complex in the practices of everyday life. I could show how *their* experiences, *their* social routines and motivations, *their* physical capabilities vary and are relative to their social practices.

It is noteworthy that within ageing studies attempts to loosen up categories of ageing and elderly has taken place. Many of these studies focus on elderly peoples social practices and experiences of ageing and categories of age. Some studies have examined the discursive repertoires of age and their relations with other discourses, including of gender (Persson 2010). Others have focused on elderly peoples' experiences with ageing, pointing out that the elderly often don't see themselves as such (Jönsson and Lundin 2007; Kaufman 1994). Yet others have explored how age is performed in everyday practice, and zoomed in on the social practices of ageing (Laz 1998, 2003). In different ways, each of these studies de-construct fixed categories of ageing and being elderly by inquiring into the social practices and experiences of 'elderly' people.

The problem Helen Verran pinpoints concerning this kind of approach is its inclination to *explain away* empirically encountered tensions with reference to different foundations; essences and social practices, hereby maintaining the distinctions between different 'logics' and thus also between 'us' and 'them'. Could there be a way in between reproducing universalist ideas about 'the elderly' as a distinct group with certain needs and characteristic, and detailed ethnographic descriptions of social practices, which both maintain 'the elderly' as a distinct group, and are likely to be dismissed by the designers developing concrete solutions?

In the following I explore another option; to attend to moments of disconcertment as a way to make ethnographic accounts that have the capacity to intervene. I outline Helen Verran's idea of generative critique, which I see as a heuristic for making explicit the normative project of the researcher, and an approach to deal analytically with matters of difference and complexity. More specifically, generative critique has to do with recognizing and tell empirical

stories that reveal how the same situation or phenomena can be understood and done differently, but without one way necessarily excludes the other.

Disconcertment and generative critique

The recognition in STS that the social and material are profoundly interrelated and co-constituted, has lead to questions regarding sameness and difference. How to understand that which appears to be messy, complex and embodying difference in a non-reductive way? John Law formulates the challenge in terms of a series of interrelated questions:

> how to *talk* about something, how to name it, without reducing it to the fixity of singularity? […] How to talk about objects (like theories) that are more than one and less than many? How to *talk about* complexity, to *appreciate* complexity, and to *practice* complexity? […] How to make a difference in ways that go against the grain of singularity, simplicity or centering? (Law 1999: p. 10-11)

These concerns well summed up the dilemma I felt myself in. In response to such dilemmas, Law proposes that we pay attention to the complexity of tension and resist the simplicity and fixity involved in processes of naming (Law 1999).
In Helen Verran's (2001) studies of mathematics in Nigeria, her disconcertment with some teachers' methods became an entry point for thinking about different logics of generalization[21]. Specifically, Verran came to realize that English and Yoruba number systems operate with different logics of generalizing; respectively as "one-many" and as "whole-part."

English language numeration is based on one-by-one addition (Verran 2001). Length is measured by adding up centimeters to one whole of length as linear extension. Verran identifies this way of "doing number" as related to a

specific logic of making general claims. The one-many generalizing logic enables abstraction from many entities, here centimeters, into one unified whole, the total body length. Doing so, it takes for granted that body length exists prior to being measured and as such implies the idea that there is a given unity of some kind of entity (Verran 2001).

In contrast, Verran observed Yoruba teachers doing length in a different way. They wound a length of string around a piece of 10 cm card, then counted the number of full lengths and multiplied by ten. In this form of measurement, the notion of length as extension is replaced by the idea of multiplicity as constitutive of length. All in all, we have a contrast between an 'English' idea of length as a quality residing in the body of the object being measured, and existing as a linear ordered and singular whole, with a Yoruba notion of length as contingent upon the multiplicity. For the latter, the whole does not exist prior to its parts. The whole can be achieved in multiple ways of combining parts, which means that length is constituted by emergent parts that form a whole. The whole-parts logic thus generalizes from emergent parts (i.e. a piece of card and a line of string) that never add up to one coherent unity but form only vague wholes (Ibid).

Length done as an accomplishment of specific, situated procedures of ordering sortal entities, forms only a vague whole since the measure of length is dependent upon how the parts are ordered in practice. In this way of generalizing, the whole is rendered an accomplishment of ordering practices, rather than as a pre-existing, natural entity. The whole-parts logic embeds a situating moment (in contrast to an abstracting moment) (Winthereik and Verran 2012: p. 40). In other words, the one-ness of length is not taken for granted in Yoruba quantifying logics which refers to the world as constituted by sortal entities – contingent and almost incidental upon the situation. Verran notices how this way of doing length is both the same and different from the exercises laid out in the English curriculum.

The distinction between 'Yoruba' and 'English' ways of doing length was important in order to acknowledge the Yoruba mathematics curriculum on equal terms as the English. However, generalization is also at work in the stories told about these different knowledge traditions. While Verran describes the

differences inherent in African and Anglo-American quantifying logics, she becomes concerned with how her own stories themselves employ generalization. She is concerned with how her separation of different logics 'explains away the disconcertment', and the sense in which something can be both same and different at the same time. She discovered that her emphasis on the inherent differences in the English and Yoruba ways of doing number contributed to a reproduction of boundaries between 'English' and 'Yoruba', 'traditional' and 'modern'. The foundationism of her relativist account, generalizing from social practices to abstract number logics does much the same work as universal accounts of number (generalizing from natural essence to abstract categories); it fixates boundaries and thus remakes the naturalness of historical structures of domination evolving around the very distinction of 'African' and 'Western' thought. In this case neither universalizing accounts, which only accept one method for doing length and quantification, nor relativist emphases on the socially constructed and contingent nature of number and quantification resulted in a generative situation. Moreover both approaches miss the central point; that the logics are not mutually exclusive, they co-exist and sometimes blend or become used interchangeably, un-problematically.

Disconcerting moments in the encounters between different knowledge traditions can alert the researcher to possibilities for telling different stories that escape the foundationism of both universalism and relativism (Verran 2001, Winthereik & Verran 2012). Disconcerting moments constitute in them an irresolvable tension between sameness and difference, which "alert us that here is an occasion for writing generalizing stories that work as a 'loosening agent' and help prevent further hardening of categories" (Winthereik & Verran 2012).

Similarly Christine Hine points to 'adequate stories' as stories that are agential in the sense that they have the capacity to surprise, challenge or offer new insights (Hine 2007). These "fleeting experiences, ephemeral and embodied" (Verran 2001) become clues for how we might write different stories, which generate new possibilities for answering moral questions of how to live (Addelson 1994 in Helen Verran 1999). Instead of explaining tension away, disconcertment points to a here-now that might allow us to escape the explanatory repertoires of foundationism. Doing generative critique is a matter

of privileging the here-nows in our empirical encounters that, like mimesis, is "pulling you this way and that, mimesis plays this trick of dancing between the very same and the very different. (…) mimesis registers both sameness and difference of being like, and of being Other" (Verran 2001: p. 5). According to Winthereik & Verran, writing generative ethnographic stories is exactly about writing about entities in ways that allow transgression across boundaries (Verran 2013; Winthereik and Verran 2012). Disconcerting moments exactly allow the researcher to evoke the puzzling ways in which entities emerge as both same and different.

That qualities and essences are not attached to singular entities, bodies or places also requires a re-specification of the notion of the field-site. Up against an understanding of 'the field' as a bounded whole and the ethnographer as mapping (as accurately as possible) that whole, a *here-now* works time and place together. In that sense, bodies, age and other objects emerge through their situated interaction with each other and the places, the here-now's, in which the interaction is located (Brichet and Winthereik 2010). This notion of the field-site, affords me to take seriously the performative character of my own participation in the field, and the performative effects of my ethnographic account. Doing this means writing about the empirical in a way that considers the effects of ethnography as a participant in the forging, maintenance or erasure of boundaries and relations.

In that sense, ethnographic stories are always political. They make and work boundaries and relations and thus take part in creating the actors and situations they are about (Winthereik and Verran 2012).

Inspired by Donna Haraway's notion of a double-vision (Haraway 1991) Verran and Winthereik propose 'good faith' as a heuristic for doing ethnography that seeks to generate useful links between different knowledge positions. Doing ethnographic work in 'good-faith' has to do with finding the relevant here-now that open up the possibility of both 'seeing and seeing through' different generalizing logics and the entities and realities they create (Verran 1999; Winthereik and Verran 2012).

Thinking about the difficulties of representing the elderly in terms of the dual logics of generalization shifts the focus away from a pre-occupation with

'alignment of real and imagined users', towards thinking about relations between different ways of doing 'the elderly'.

Following Winthereik & Verran, I began taking an interest in the project too and noticed how stories about the elderly would generalize differently. In the following, I use some of these concepts as guiding 'tools' for dealing with the tensions I experienced. I first attend to the project and analyze different dynamics and capacities for doing the elderly within the project. I then return to the here-now in the fitness center and seek to tease out how the women's reactions to my categories rendered 'the elderly' as a vague whole. Finally I discuss what the potential of embodied accounts based on moments of disconcertment may be for design projects like Lev Vel.

Generalizations of 'the elderly' within project Lev Vel

User studies are a central part of most Danish government funded innovation projects. User studies broadly refer to several different methods and techniques for involving users in design processes. However, usually user studies are framed according to ideas about uncovering the unarticulated needs of users. In project Lev Vel, user studies were thus expected to:

> uncover user needs in relation to existing public services - the user needs that are not yet met and remain unacknowledged by the users (Lev Vel project application p. 4, my translation)

In project documents, the elderly is presented as a group bounded by the common qualities of being self-sufficient, elderly, and having certain problems and undiscovered needs. This story has universality characteristics, since it articulates the elderly as naturally existing, bounded entities with inherent qualities. These real entities are the objects of user studies, which will uncover their actual needs. Within this general frame, user studies are organized as a

process of deriving knowledge about the elderly, which, as noted, was meant to inform the design of welfare technologies.

In discussions among partners, I noticed that the picture was rather more nuanced. Although many ideas about the elderly were circulating in the project, there was a general acceptance of the fact that 'the elderly' was a very heterogeneous group. Thus, one aim of user studies was seen as identifying differences and to make more fine-grained distinctions between various kinds of elderly people. I often overheard partners talk about how they saw 'the elderly' as a very complex user group exactly because it was so heterogeneous. Moreover, as many partners had experienced, the people they saw as elderly often did not see themselves as such (See i.e. Kaufman 1994). There seemed to be a wish to be reflexive, accountable to users experiences, and to open the category up. However, in project practice, this seemed to be more difficult. Workshop tasks and exercises always oriented towards the development of certain outputs that could be transported in to the next phases of the project. In that sense, project exercises demanded concrete knowledge about the characteristics of elderly people, their needs, wishes, lifestyles, and motivations.

The fieldnote below is from a project workshop, where a group of project partners were engaged in an exercise aiming to define the users. This situation is from workshop 1, where partners were assembled to define the elderly. In chapter 2 I showed how there was certain hesitation among partners to the task. In one case, there was explicit resistance to engage in this exercise, which the partner Kenny criticized as enforcing an approach were the elderly were made to fit into 'boxes' (See Chapter two). In the situation I present here, we were all engaging in the exercise and accepting the premises that it described; that the elderly could be translated into categories. In that sense, we took part in doing 'the elderly' as a plurality of people and sub-groups with different characteristics:

> Two social workers from different organizations discuss their experiences of what motivates 'the elderly men' to be socially active. They both articulate 'the elderly men' as being a bigger challenge than 'the

elderly women'. One social worker explains that 'the elderly men' associate social activities with the stigma of loneliness and thus tend not to participate in social events. But when the event is called 'fried pork and parsley gravy day' or 'herring and schnapps day' the men show up, she says. Surprised, a social worker from another activity centre asserts that she does not recognize this picture at all, because the men she sees in her work are very concerned with healthy food and a healthy lifestyle. The note-taker says that she will just write both insights down and add a comment that what motivates the elderly to social activities varies a great deal. Other people nod and the discussion moves on to other topics
(Field notes Project Lev Vel workshop 1, my translation).

Picture: Group exercise in workshop 1 - defining the elderly.

This situation exemplifies a recurring process of specifying or dividing the elderly into more differentiated subgroups. The outcome is that the elderly emerge as a mosaic of many mutually exclusive subgroups, which, in the aggregate, form one diverse yet coherent group of 'self-sufficient elderly.' While the diversity within this group is emphasized, the assumed boundaries between the subgroups as well as between the elderly and 'others' are maintained. Thus, an assumption that there is a kind of essence to elderly people remains operational. That idea also penetrated the format for how to do user studies. It influenced the decision to call the ethnographers 'user experts,' the subsequent delegation of design responsibilities, and the way in which the user studies were

expected to deliver 'results,' or answers, to pre-defined questions, later to be transferred to others via reports or power point presentations.

Within these arrangements, other ways of doing the elderly, than making a plurality of categories that in the end still add up to one distinct unity, seemed difficult if not useless. It was with an awareness to how my user studies should be delivered to designers, and how I in turn would be called in as a user expert, that i crafted my ethnographic accounts. To live up to the demands implied by these project arrangements, which required user studies figured as workable 'input' for displaced activities, I chose to develop personas; a design method to create engaging user narratives based on empirical user studies (Pruitt and Grudin 2003). I attempted to make my personas as nuanced as possible. However, upon writing these personas I moved further away from the complexity of the moment in the fitness center, which had made me profoundly disconcerted with regards to the core assumptions of the category 'elderly' and its relation to myself. I found myself engaging in the same business of splitting up 'the elderly' into a plurality, simultaneously taking for granted the category itself and the boundary between 'the elderly' and 'the project'.

Birtha

- "If it's not fun, don't count me in!

Sanne

- "It has to be effective!"

Picture: Two of the personas I developed for the project Lev Vel

My personas were printed and handed out to project partners on a workshop. Moreover they were made accessible to project partners via the project database. After this, they were never mentioned again. They were never referred

to on any occasions, nobody ever discussed them within the project, and I did not see or hear of any of the designers using them as inspiration. I think it is fair to say, that they never had any impact on the design process. As a 'delivery', on the other hand, they did the work they were supposed to. They manifested that I had lived up to my role of doing user studies, and that certain output had evolved from that. In that sense it legitimized my presence in the project, and showed that i was an actively involved project partner, taking my responsibility as 'user expert' seriously. Merely producing a delivery, however, was not satisfying to me. I felt like I had done exactly what Verran calls 'explaining tension away'. Moreover, my uncontroversial, though concrete, account had not managed to intervene in the project, or interrupt pre-existing ideas about the elderly. Re-presenting my engagements with people in the fitness center in this way did not seem as an act in 'good faith' either towards the project, or towards the elderly.

The empirical story in the beginning of this chapter was written after these project events. The episode in the fitness center, and my dilemmas of re-presenting the elderly kept rummaging in my mind. As an attempt to deal with the issues in a different way, I tried to write an embodied account that, as Verran suggests, expands and foregrounds epistemic disconcertment. In the following I will analyze that moment and discuss the possible value of such an embodied account for a design and innovation project.

What to make of the moment in the fitness center?

During his study of contemporary Afro-Cuban divination, anthropologist Martin Holbraad receives the contention from an oracle, conducting a divination for him, that he is prone to impotence (Holbraad 2009). Rather than seeing this as a prediction, Holbraad understands this statement as transformative in scope and effect; the oracles' statement creates new relations and thus re-invents and transforms the object that it is about, in this case Holbraad himself.

I can't help being amused by the striking similarity of this situation and what happened to me in the fitness center. It was as if the women here were making an analogous statement about my impotence, and that of the project, which travelled with me to the fitness center.

Yes, there is aging and it is certainly corporeal. It has to do with the body, and it can be prevented. Yes, too, it is important to exercise and stay 'active' and healthy. This is indeed one way of generalizing about 'the elderly'. According to this way, ageing resides within singular and bounded bodies. In this sense, it exemplifies what Verran calls a one-many logic. That logic enabled the project and my user study to generalize from chronological age, to elderly bodies, to an ageing population of intended users. Doing so, it also kept the boundaries between 'the elderly' and others, like me, intact. But there, in the fitness center, another logic made an entry, blending with that of the project. The elderly also engaged a different form of generalization. In this generalization, the concrete elements of the situation become involved with the category of ageing. In turn, that category became associated with specific things, people and practices. Sweaty foreheads, blushing cheeks, the number and length of breaks taken in between exercises, and also other elements outside of the fitness center, such as my son, a desktop job and the absence of daily exercise, all merged with ideas about who *needs* care and motivating help, and even who might be considered ageing and elderly. Ultimately, 'the elderly' is rendered more vague, uncertain and close to random, depending upon the way elements from the situation are ordered. During the moment of disconcerted laughter, it seemed that the elderly referred more to me than to 'them.'

Instead of acting as 'informants,' instantiating the elderly as a category, the women in the fitness center transformed me. I changed from a neutral, disembodied and age-less observer to someone located within a certain body, also in process of ageing, with a particular understanding of the world. Yet, whereas the situation subtly unraveled my fixed understandings of ageing and the elderly, it did not deny 'realness' to these phenomena.

What I experienced in this situation resembles what Verran (through Haraway 1991) refers to as a double-vision; the ability, evoked by empirical moments of tensions, to both *see* and *see through*. While the women were doing

ageing in a different way than what I expected, my version was not wholly incongruent with theirs. They did not deny my implicit suggestion of ageing bodies and the importance of exercise. Nor did they deny the importance of motivating passive people to be more active. However, in that moment the figuration of 'passive elderly' was distributed to me, and not them. This showed me the projects and my own tacit assumptions about passive elderly with needs for motivation, but in their rendering of the elderly as a vague whole with permeable boundaries, I was the one with unacknowledged needs and problems. I was more fit as a target group for welfare technology, than they were. Although they did not reject categories of 'the elderly' or 'passive', their different way of generalizing meant that relations between categories and people changed, and so did the relations between them and me. I was at the receiving end and they were empathetic and caring helpers. How those categories came to legislate judgments and identities and to whom, was changed.

As I reflected upon this situation, I realized that my version of the elderly was an accomplishment of a particular way of generalizing from one to many – from chronological age to concrete persons. What they had shown me was another way of generalizing, which rendered more uncertain the relevant parts and their relation to a whole: what it means to be 'elderly' and who the elderly are. Much like bundling and winding string around card to come up with length, they bundled and wound emergent parts into a different whole of 'ageing' and the elderly. By adding up various situated parts, such as my bodily signs of exhaustion, my life situation with little space for exercising, and the gerontologist Henning Kirk's suggestions to prevent ageing, they accomplished a whole where I was no longer external to it.

In this muddle of bodies and identities, the question of who 'needs' technologies for motivating to physical activity was also turned upside down. Now it seemed to be my body that needed activation; I, who had unarticulated needs. From inhabiting a position where my body and my own ageing was irrelevant, this suddenly became the center of attention. From a comfortable position of removed, disembodied and un-problematized actor, I was tossed into a residual position in which my bodily condition, my everyday practices, and my motivations were scrutinized and problematized by the very people I was

supposed to 'help.' Being 'elderly' crept into my body, and I was no felt part of the 'age-less' team of project members. At this point I realized that using a one-many logic to generalize about the elderly shored up boundaries between us and them. What I was being taught is that if the elderly are generalized in a specific here-now, the boundaries are no longer fixed.

Moments of tension, like the one I experienced in the fitness center, are not uncommon in encounters between people studying or designing for the 'quality of life' of elderly people, and the 'actual' elderly thought to be the receivers of such solutions. In the project, there was a general wish to be tolerant of the intended elderly users and inclusive of their perspectives and experiences. As mentioned, many partners talked about a tendency among elderly to resist the category. Attempts to avert this problem, by seeking for other categories with more positive connotations, were sometimes seen as a way of avoiding negative stereotypes. Indeed, categories like the active elderly, the self-sufficient elderly, older adults, the young old etc. were deliberately chosen to overcome the baggage of negatively loaded terms.

However, viewing these tensions as exclusively to do with certain symbolic meanings associated with a given category is also a way of 'explaining away' the differences at stake. Even though the alternative categories add positive adjectives to the existing categories, they nevertheless remain the same fixed boundaries. As it became obvious in the fitness center, it was the case that even though the project had chosen positive categories of active and self-sufficient elderly these did not replace ideas about passivity and fragility. Ideas about potential passivity were contained within the category of the active elderly, which meant that ascriptions of moral values, identities and judgments were oscillating between these two binaries. Indeed, I would suggest that the construction of new categories based on the same practices of ordering 'the elderly' in opposition to 'us' only serves to hide or evade the separations effected by these categories. So how to deal responsibly with these subtle differences in the conduct of user studies for design?

Towards embodied approaches to study and design for 'the elderly'

The empirical story in the beginning of the chapter was written after the project Lev Vel had ended. I never had a chance to present it to the project, and in that way share my disconcertment with project partners. For that reason, I cannot claim to know what an embodied ethnographic account, which is what I tried to make in this chapter, would do in the project. I had the chance of presenting the ethnographic story in other contexts, in an academic conference, and at a PhD workshop. The responses were embodied, people laughed. As one person said to me after the presentation, "We were laughing, both with you and at you, at the elderly people and at the project".

It is exactly the ambiguity of embodied accounts, and their ability to trigger embodied, affective engagements with the empirical material and the issues they quietly raise, that I see as valuable in the case of project Lev Vel. While the story does not debunk ideas about age, bodily ageing, fragility and needs, it prevents us from settling on any fixed meaning of categories of 'the elderly', with equally fixed distributions of attributes such as 'passive' and 'active'. This also means that the story does not allow us to settle on who has the 'right' or 'wrong' perspective, or on taken for granted ideas about who needs what from whom.

According to Nathalia Brichet and Brit Winthereik, paying attention to disconcertment is about re-inscribing and locating the researcher in the text with the researcher in the flesh and allowing ourselves to 'touch the world and be touched by it' and represent the process through which this happens (Brichet and Winthereik 2010). Re-inscribing myself in the ethnographic text, made it possible to see two different ways of generalizing the elderly. Through my figure in the text as a user investigator, which was pre-scribed to me by the project, I saw the elderly done as a unity. By attending to my own disconcertment, and the subtle moment where the elderly turned upside down the relations and distinctions that my role relied upon, I came to see 'the elderly' as a vague whole.

What, then, is the value of embodied ethnographic accounts that show different ways of generalizing? As mentioned, partners in Lev Vel expressed aspirations of being reflexive and nuanced in their understandings of the elderly. However, in project practices the concrete construction of exercises and tasks meant that these aspirations were usually pursued through processes of making the elderly as a plurality. In order to produce 'output' for following phases the exercise of 'defining the users' was carried out as a process of splitting a unity into smaller parts. The result was a unity that was fragmented, but still maintained its boundaries towards the world. Doing complexity as a sum of infinite fragments contributed to brake up the category elderly into smaller parts, however without changing relations between 'us' and 'them', or the normative ascriptions such as 'passive', which the project was unintentionally distributing to 'the elderly'. According to Astrid Jespersen et al. "cultural-analytical practice is not only about investigating complex matters by splitting them into smaller and 'simpler' parts; it is also about attempting to enact wholes into being" (Jespersen et al. 2011: p. 4)

Diving into the moment of disconcertment in the fitness center, revealed a different way of generalizing, which rendered boundaries between 'me' and 'the elderly' an effect of situated events, and thus contingent. This made me see both my own (and the projects') way of generalizing, and how it could be done differently, and with different effects. The story stimulates increased reflexivity towards the moral agenda of the design project and the initiatives to develop welfare technology. It shows how what is usually considered a morally sound aspiration to 'activate', is not necessarily an empathetic, or morally uncontested, project. When it evolves from underlying assumptions about those who the help is oriented towards as being potentially passive, fragile and in the subordinate position of needing help, it distributes judgments and shift power dynamics to the advantage of the 'helpers'. It certainly did not feel like 'empathy' or 'care' when the same agenda was turned against my own body and lifestyle. Re-inscribing the ethnographer in the flesh with the ethnographer in the text, made me experience how categories of 'active' and 'passive' are not mutually exclusive, but contain each-other.

In the case of project Lev Vel, I contend that this form of reflexivity is more needed than new and alternative categories for the elderly. Already, there were a heap of categories, but they all did the same, they rendered the elderly a group out there, with fixed boundaries, and separated from 'us' and the project. This sort of embodied account is generative for the project in the sense that it nurtures the already existing aspirations to be reflexive and acknowledge complexity. Despite these wishes, it seemed the case that this reflexivity was shut down by tasks and exercises that were tailored to live up to the projects agendas.

An embodied account does not deliver concrete answers or solve dilemmas. The insights provided by my ethnographic story are rather abstract, and it does not deliver 'workable units' that are easily rendered as input for a design process. Doing this would not be true to the complexity of the moment in the fitness center, and the entanglement of categories, bodies, identities, norms, and power dynamics. Besides providing an alternative to the projects' way of generalizing 'the elderly', what the story does is to alert us to how certain arrangements, such as that of a user study, enforce specific ways of generalizing the elderly users, and work against others.

In the course of doing user studies, presenting them and seeking to make them travel, I noticed three institutionalized ideas inherent in the technical arrangements for design, which influenced my way of doing the elderly. These arrangements worked against aspirations of reflexivity, experimentation, and empirical openness, and instead enforced demands for reified insights and reducing empirical accounts. The arrangements that I wish to foreground as enforcing this dynamic of 'closing down' complexity and reflexivity are; 1) The articulation of ethnographers as user experts; 2) The division of ethnography and design into two separate phases, 3) the consecutive idea of ethnographic knowledge as a 'delivery' that links users and design.

As already mentioned, ethnographers were expected to act as 'user experts'. This way of seeing the ethnographer's role was made possible by an idea of the elderly as a group 'out there'. There were different situations were this

articulation of the ethnographer became manifest in practice. On prototype workshops ethnographers were asked to give 'a user perspective' on the prototypes in order to help the designers align their conceptions of the user with 'the actual' users. Moreover, ethnographers were given the task of developing service designs for existing prototypes based on the idea that our knowledge about the users everyday practices could be transported into the design of services. In other words, ethnographic knowledge was seen as something that could easily be transferred to design. These arrangements demanded that my ethnographic engagements were transformed into instrumental knowledge that could fit in with the projects agendas. However, this transformation instigated a 're-versioning' (Jensen 2012) of my experience of the emergent users and their relation to myself and the categories that I came with. Instead of representing this process of mutual emergence of me, categories, and the people in the fitness center, I felt forced to reduce the ethnographic material to a set of reified personas with certain characteristics, attitudes, and needs, which could be communicated and count as a concrete 'delivery'. The idea of ethnographic knowledge production as a delivery is the second construct that I see as enforcing a certain way of generalizing 'the user' as a unity within the project. This is related to the vision of a design process that is separated into distinct but processual phases. In practice, this meant that user studies and design was seen as distinct activities, tied together by the ethnographic deliveries meant to link the users with the technological designs. Ethnographic knowledge was expected to travel by itself from the ethnographer's pen to the designer's lab. Latour refers to this idea of innovation as the diffusion model, which mistakenly asserts that facts travel by themselves, and thus overlooks how facts are translated and transformed in networks, in order to move (Latour 1987: p. 132).

These technical arrangements made up the infrastructure through which my ethnographic engagements were expected to travel from the empirical site to design practice. My ethnographic engagement had to be converted into a delivery, which could link the design practices to the users. Moreover they had to be formulated in a way that enabled me to participate in design as a 'user expert'. Within those arrangements I felt what John Law describes as an 'overwhelming

pressure [on academic production] to render knowing simple, transparent, singular, formulaic' (Law 1999: p. 11).

By enabling me to 'see' and 'see through' how the project was generalizing the elderly in one way, and how another way was possible, the ethnographic story made another insight possible. By turning the lens inwards, towards my own practices and the projects, I became aware of the ingrown ideas, habits and routines, which, among other things, had me reduce my ethnographic engagements to a set of personas. This called attention to a set of technical arrangements, which had a profound influence on how users were imagined, and how, in turn, the role of the ethnographer was interpreted into the premises of innovation. This calls for another dimension of reflexivity regarding the value of embodied ethnographic accounts. Ethnographies that are embodied, reveal complexity and nuance, may not, in practice, have much effect on a project that is constituted by these technical entities and infrastructures. The capacity of ethnographic accounts to change already existing views and practices may be restrained by these arrangements. In order to re-invent the elderly users and the welfare technologies, these arrangements has to be re-considered and re-invented, too. In other words, if a design project wants to be reflexive and base design on nuanced and situated versions of the user, it is not enough to call in ethnographers to produce deliveries. As long as the technical infrastructures for project activities enforce a 'one-many' way of generalizing upon ethnographers and project partners alike, this restrains the ability of designers and ethnographers to make innovative translations *together*.

My view on embodied ethnographic accounts as generative for design can be seen as related to Lucy Suchman's call for more situated design approaches;

> Within prevailing discourses anonymous and unlocatable designers, with a license afforded by their professional training, problematise the world in such a way as to make themselves indispensable to it and then discuss their obligation to intervene, in order to deliver technological solutions to equally decontextualized and consequently unlocatable users (Suchman 2002: p. 95)

Suchman argues that 'design from nowhere' is blind to the social mediations involved in technical production and thus makes it impossible to locate responsibility (Ibid). Instead, design has to be situated, and designers have to be made answerable for 'what we learn how to see' (Haraway 1991: p. 190). In a similar vein, Verran suggests that responsible knowledge production has to do with avoiding outside perspectives and requires stepping deeper inside situations (Verran 2013). Her notion of producing knowledge in good faith is about writing embodied accounts; accounts that show the solidified collective institutional habits that make certain ways of categorizing and knowing the world possible (Verran 2013). My analysis responds to Suchman's call for situated approaches that locate both designers and users. In that sense I re-articulate a critique of design, which has to do with certain tendencies to 'problematize the world' based on unlocated notions of the users. However, I wish to draw attention to a different tension than the one between designers and users. In case of project Lev Vel, the project partners wanted to be reflexive, and base the design practices on located users, but project agendas and processes were working against this. In that sense, the tension that seems pertinent in this case, was a tension between the users, or the ethnographic accounts of users, and the inertness of the technical infrastructure for project processes.

Let me pose the question again; how could an embodied account of a disconcerting moment have been generative for project Lev Vel? Why not do as Holbraad suggests, make a category that is better and more empirically situated than the existing ones? There are no fixed answers to how ethnography can be generative, for whom, when, and where. Instead this is an empirical question. In the course of my ethnographic studies of 'the elderly' no new and better categories emerged out of the empirical engagements. The difference that touched me was pre-conceptual, ambiguous, and not reducible to single categories. In this case, the categories used did not appear outright wrong, but not right either. The generative contribution of an ethnography was to do difference before coming to categories. This was a way of making an account that allowed us both to see our own and an alternative way of generalizing the

elderly. This also opened up to see that for an embodied ethnography to be able to intervene in design, it requires a re-thinking of so-called active elderly users, our own normative aspirations of being 'empathetic helpers', and of the technical arrangements for doing user studies and design. Re-thinking these relations, i argue, would be generative for the project struggling to make users attach to the developed design concepts and solutions. Moreover, it would be generative for those people, the intended elderly users, who did not see themselves as receivers of 'empathetic' help or in need of activating technologies, but were continuously articulated as such in Danish policies and concrete welfare technology initiatives, such as project Lev Vel.

Conclusion

As an attempt to 'do difference before coming to concepts' (Helen Verran 2013: p. 144) I experimented with a form of storytelling that was embodied and appealed to its audience by seeking to foster embodied responses of laughter and disconcertment. By instigating this sort of affective sense-making on a pre-conceptual stage the hope was to foster reflexivity, but without giving fixed answers to who the elderly 'are' or how to re-present them well in design.

By paying attention to a moment of laughter and tension in an encounter with elderly people in a fitness center, I discovered how 'the elderly' could be generalized in different ways; as a unity and as a vague whole. The consequences of these different ways of generalizing were concrete; they were doing boundaries and relations between us in different ways, and thus they were consequential for the power dynamics of the situation. This became evident, when I was suddenly rendered at the receiving end of activating help based on a parts-whole way of generalizing. In this way of generalizing, emergent entities such as my panting breath, sweaty forehead, static computer work, and an ageing researcher encouraging a move to 'prevent ageing', rendered me as 'passive' and in need of motivating help. The projects articulation of elderly as active, contained ideas about the elderly as potentially passive. As 'the elderly' was being generalized as a vague whole, it came to encompass me.

By attending analytically to this moment of disconcertment, I became alerted to the way in which the set up of my user study employed a capacity for generalizing 'the elderly' from a one-many logic. This, in part, was enforced by certain arrangements in the project, which required that empirical engagements were transformed into workable units for the consecutive design process. I highlight three technical arrangements, that enforced this specific logic of generalizing, and worked to close down the possibility of seeing others; 1) The articulation of ethnographers as user experts; 2) The division of ethnography and design into two separate phases, 3) the consecutive idea of ethnographic knowledge as a 'delivery' that links users and design.

Contrasting the projects logic of doing 'the elderly' as a bounded group with the empirical situation from a fitness class for elderly people enabled a different mode of generalizing the elderly as a vague whole. Foregrounding this empirical moment of disconcertment, where the elderly informants 'misbehaved' as informants shows the possibility of generalizing 'the elderly' in different ways. Embodied accounts of the elderly do not provide settled categories, but illuminates the social and material practices in which categories are made, and how they could be made differently; as accomplishments of situated practices, instead of as derived from a reality that naturally exists 'out there'.

This is a located, embodied and responsible alternative to the removed researcher in UDI that – despite its claims to do otherwise –often ends up as 'design from nowhere'. The value of ethnographic accounts that incorporate an irresolvable tension of sameness and difference is the capacity for presenting stories that resist contributing to further hardening of categories and boundaries.

The main conclusion of the chapter is that ethnographic attention to epistemic disconcertment can act as a 'switch' that allows project partners to shift between different modes of generalizing the elderly user, and thus nurture and enhance the potentiality for reflexivity, which already existed within the project. This, in turn, could work to loosen up on the idea of design of welfare technology as an

'empathetic' project, and show how the articulation of 'active elderly' goes hand in hand with ideas about passivity, fragility, and needs.

However, by analyzing the emergence of 'the elderly' within the project, it became evident how the specific arrangement of project processes and progress worked to enforce a certain mode of generalizing. As long as these technical elements are in place, they work against aspirations and initiatives of doing the elderly in a different way in practice.

Concluding Discussions and Reflections

Denmark, as many other countries around the world, is experiencing a situation in which more and more tasks, originally taken care of by the welfare state, are delegated to design, and thus to technological and social innovation. The entailment is that tasks and responsibilities traditionally governed by democratically selected politicians and performed by the institutions that they govern (such as healthcare), are increasingly outsourced. Said differently, institutions, practices, and models rooted in design, and oriented towards the design of new objects, are increasingly managing our society. In this sense, design is becoming an ever more important social and political 'regime' (Wilkie 2011). Although not formally recognized as such, design and technological practices effectively exercise many sorts of invisible politics, and this happens *through* practices of design and technological objects. In the management of welfare provision and services this means, among other things, that ideas about ageing and welfare are tied to and blend with ideas about 'users', 'technology', and 'innovation' - thus transforming what eldercare and healthcare comes to be.

Since design is an instrumental discipline, however, its growing social and political influence on society poses problems and dilemmas. For example, design tools and frameworks have been made with the purpose of developing technological objects, not to remain accountable to the complexity of intimately social phenomena such as ageing, health, and care. Alex Wilkie and Mike Michael argue that the employment of 'the user' in technological innovation runs alongside a bifurcation of the 'technical' and 'the social'. This means that innovation can be understood as an 'empirical filtering process wherein the complexities of the "out there" are rendered as workable domains' (Wilkie and Michael 2009: p. 517).

Approaches like UDI and PPI are pursued not least as responses to the problem that new technologies are often developed without relation to and relevance for the social realities they seek to support and change.

These approaches, pervasive in contemporary Danish funding structures and design practices, seek to couple the expertise of designers with the knowledge of professional stakeholders from diverse public and private institutions, and with the knowledge of intended users. They build on the general idea that if the right people are present in a design project, and the right procedures for collaboration and design are followed, then innovation *will* occur, resulting in the design of innovative solutions and products, such as welfare technologies.

This dissertation has offered a more nuanced picture of this set of relations. Analyzing empirical situations in order to *open up* design, it has shown the relations between elderly users and welfare technologies as a set of interrelated social, material, practical, imaginary, and political *processes*.

Lucy Suchman's pioneering studies in design and systems development has been an inspiration for many STS researchers and designers (Suchman 2000, 2002, 2007, 2011). Her notions of interaction as situated and design as processes of re-configuration have provided an effective response to any idea of design as linear progress. Seeing design as situated re-configuration also suggests an emphasis on more located approaches (Suchman 2002), and a 'development' of more humble attitudes to the innovative potential of design.

Viewing design in terms of *infrastructuring*, as I have done in the present thesis, resonates with this ethos of humility (Jasanoff 2007) (Jensen 2005b). Several authors (See i.e. Akrich 1992; Oudshoorn and Pinch 2005; Lucy Suchman 2007) have studied what happens at the human-computer interface. They have been occupied with designers, computers, and users in many interesting ways. Highlighting design as processes of infrastructuring, as I have done here, brings into view design as a *system* of interrelated technical, material and social sites and objects. Looking at design in this way is important because, as Brian Larkin has argued, infrastructures 'reveal forms of political rationality that underlie technological projects and which give rise to an "apparatus of governmentality" (Foucault 2010 in Larkin 2013: p. 3). Looking at design infrastructures is thus salient if we want to understand the forms of governmentality being exercised by and in design. Or, said in other words, it is important for understanding what sort of politics are being exercised along with

the development of new technological objects and infrastructures - also beyond the human-computer interface.

Processes of infrastructuring can generally be seen as 'invisible work' (Star and Strauss 1999) in the sense that they do not concern that which designers are most articulate about. Indeed, to this day, infrastructuring has not been recognized as a central part of design practice. This invisibility brings with it a lack of reflexivity regarding the ideas and assumptions that are incorporated into the textures of design practice, and the unintended consequences of this incorporation. The present study of design infrastructures, and in particular project communication technologies, offers a way into the social and political rationalities at stake in design practices.

Within STS, anthropology and bordering disciplines, notions such as 'technopolitics' (Barry 2001) have suggested that technological practice is a way of doing 'politics by other means'. Welfare technologies offer an interesting case of such 'technopolitics'. The growing concern with 'the grey tsunami', and responding technological initiatives aiming to encourage or enforce active ageing via technological assistance, means that welfare technologies are now an area in which the technical and the political are very much bundled together. For this reason, welfare technologies offer an important case for exploring issues of 'technopolitics', or forms of government enforced through and disguised as technological development projects. Up to this point, however, not much work has been done within STS on welfare technology. Studies relating to topics of 'technologies of care' (i.e. Pols and Moser 2009; Milligan, Roberts, and Mort 2011; Finken and Mörtberg 2011; Singleton 2007; Lassen, Bønnelycke, and Otto 2015) are certainly related to what I have in mind, since they are also concerned with relations between elderly people and technology, and even take up issues to do with care and active ageing. However, this literature tends to focus on use-situations and interactions between humans and technologies.

What this dissertation adds is precisely a focus on design practices and processes of infrastructuring. The analysis suggests a view of welfare technology not only as things that are developed and used, but as things that are part of a larger 'design apparatus,' one operating to create change at different scales.

Several scholars have pointed to the profound relations between techno-science and forms of government associated with liberalism, or 'soft capitalism' (Thrift 1997).

> liberalism is a form of government that disavows itself, seeking to organize populations and territories through technological domains that seem far removed from formal political institutions
> (Larkin 2013: p. 3)

In this dissertation, via methodological attentiveness to empirical practices of infrastructuring, I have coupled the study of welfare technology with that of design practices carried out as public-private partnerships and user driven innovation. In my view, this holds the benefit of opening for an exploration of welfare technologies as more than 'things'. Instead, welfare technologies are studied in relation to social and technical processes that make their appearance within the project and to an external public possible. Instead of focusing only on the effects of welfare technology on specific users, I have engaged with multiple sites in which figures such as 'the elderly user', 'prototypes', and 'partnerships' are mutually made. I would like to think that this approach exemplifies the fruitfulness of increasing attentiveness to the specific constellation of infrastructure, design, public-private partnerships, and user driven innovation, since these constellations are central to the current 'apparatus of governmentality' (Foucault 2010) in Denmark – and elsewhere – today.

Main empirical findings

My project started out with a broad interest in the innovation project Lev Vel, and the welfare technologies it sought to develop. I wanted to understand more about what welfare technologies are and about how they are imagined and designed as part of public-private partnerships and practices of user-driven innovation. Both UDI and PPI are discourses that have gained a high degree of popularity and political backing at this specific historical moment where welfare

technologies have become part of political strategies for the transformation of healthcare. They are both discursive constructions that position actors in specific relations to each other. Exploring these discursive positions and their actual material effects was central to my research ambition. During the PhD project, I followed Lev Vel with the aim to empirically unpack the multiple assumptions about technological development, design, and the users' role in innovation and design present in the project.

Based on ethnographic explorations of Lev Vel, this general interest was pursued in conjunction with three more specific empirical foci: 1) To gain an understanding of the social, material, and technical set-ups that design takes place within; 2) To explore welfare technology through emergent figures such as 'the elderly', 'the partnership' and 'prototypes' within the project; 3) To analyze the consequences of these emergent figures and the lesson learned for theories and practices of user driven design approaches.

Conceptually, my analyses draw from the STS literature, and particularly STS approaches that emphasize the socio-material nature of design (Lucy Suchman 2007; Wilkie 2011; Casper Bruun Jensen 2010; Latour 2010 to name a few) and science (Fujimura 1996; Latour and Woolgar 2013; Rheinberger 1997). As a contribution to these ongoing debates, the dissertation analyze the social, material, and technical *processes* and *arrangements* within which new assemblages take form, and emerge as, welfare technologies. Notions of hybrids (Callon and Law 1995; Latour 2012), collective practices (Fujimura and Clarke 1992), and not-yet stable objects (Jensen 2010; Jordan and Lynch 1992) provided me with a view of the objects and subjects of design, not least the welfare technologies and the putative elderly users, as fundamentally *relational.* Based on this approach and the subsequent identification of empirical tasks, the thesis offers three main findings: 1) Design is not only a matter of developing 'things' but also, crucially, about crafting infrastructures for project communication and activity. Infrastructures ensure progression and coherence across time and space, but they also shape and make people, things, and forms of knowledge.

2) Contrary to prevailing ideas and the rhetoric of innovation, prototypes are not necessarily, or solely, to be seen as solutions to problems. Instead, prototypes are hybrid assemblages of elderly users, design teams, and project processes. These figures and their relations may be mutually re-negotiated, and re-invented at various occasions, which means that what counts as the problems and its solutions' are imagined and re-imagined collaboratively over time. This also means that the success of prototypes does not depend exclusively on their ability to solve problems in practice but just as much on their capacity for making affective and sensuous attachments with particular people. 3) 'Innovation' does not just depend on how many people are gathered to solve a problem, or even on the diversity of their expert competencies, but also on how project infrastructures create specific assemblages of 'the user', 'partnerships', and 'project processes'. These can be more or less divergent from, or alternative to, common figurations, but they are not completely new inventions. The following elaborates and exemplifies these findings.

Project communication technologies as infrastructures for design

In order to gain an understanding of design and welfare technologies one of my central tasks was to explore the social, material and technical conditions out of which such designs and technologies emerge. These are the processes and arrangements of, and for, design. Early on, I had observed a gap between rhetoric and practice; rhetorically, users and partners were foregrounded as innovation drivers, while in practice the project struggled to make collaboration blossom. It was clearly difficult to generate synergy and complicated to involve users in ways that were productive for the design practices. In spite of these struggles, the project still proceeded with its planned activities, and 'things', prototypes, were developed. But if users and partnerships were not driving the project activities then what was?

Inspired by Hans-Jörg Rheinberger's studies of scientific practice (Rheinberger 1997), I came to see project Lev Vel as an experimental system in

which new scientific objects, like prototypes, emerged in a reciprocal interplay between technical and epistemic objects. Studying how the project was ran on tracks laid out by the crafting of sites and occasions for project communication activity made me realize the salience of what I call 'project communication technologies'. I identify three project communication technologies; project workshops, project user engagements, and project communication material. In chapter two, I examined these project communication technologies, and the processes through which they came to work, and their consequences for particular project understandings of 'partnership' and 'elderly users'. By exploring the material practices of project activities, chapter two showed workshops to be much more than occasions for bringing different actors and knowledges together. As I discovered, the format of the workshop was itself already invested with normative ideals of what it means to be part of a partnership, and what knowledge and what activities count as relevant and productive. These ideas were not only an operative *background* for the workshop but, rather, were inscribed into its technical and material frameworks with significant consequences, which not least took the form of exercising certain forms of discipline over participants. For one thing the simple idea of questioning the workshop agenda was unwanted. Furthermore, the workshop format tends to enforce certain ways of knowing the entities in focus. The chapter showed how the material architecture of a particular workshop seeking to develop understandings about 'the elderly', already inscribed particular imaginaries about this group and its properties. More generally, project communication technologies were dense with ideas, not only about elderly users, but also about partnerships, collaboration, innovation, and interdisciplinary synergy. Material inscriptions shaped how these figures could be done in practice.

Sharing knowledge about the elderly required that partners first imagined themselves as part of a collective on a common trajectory towards the development of solutions, thus aligning their knowledge with the project agendas. As described in chapter four, I felt this dynamic on my own body. Here I experienced a lack of commensurability between my ethnographic knowledge of 'the elderly' as a vague and complex category and the collective project aim of

developing user studies to uncover pre-existing but hidden needs and wishes. Within the realm of the partnership collective, ethnographic user studies were enacted as a node in the design process; one that linked 'the elderly user' to future technological solutions by way of prototypes.

Initially, this led me to embark on an effort to divide 'the elderly' that I encountered in the fitness center into categories divided based on different needs and motivations. This endeavor, however, elided my ethnographic experience of the situation as profoundly complex, messy, and disconcerting.

These cases illustrate that knowledge production and knowledge sharing was not a cumulative process. Rather, project communication technologies were crafted to anticipate and prepare for certain outcomes and future agendas. Said differently, knowledge was shaped and transformed in relation to project infrastructures for communication and design. In this sense, the arrangements of project communication technologies were generative of much more than prototypes. They also enacted 'partnerships', 'elderly users', and 'project processes' and their particular ways of doing so shaped knowledge, people, and things in various ways. These technical arrangements for design resembled infrastructures as they are described by Casper Bruun Jensen and Brit Winthereik (Jensen and Winthereik 2013); that is, as entailing a recursive relation between the infrastructure and that which it is built to carry. In a similarly recursive manner, project communication technologies, partnerships, and elderly users reciprocally shaped practices of design.

Public-private partnerships and user driven innovation projects thus depend upon crafting infrastructures for project communication. The infrastructure that became visible to me during my ethnographic inquiries was an infrastructure of sites, visualizations, presentations, communication technologies, and other materials that made project communication possible. These project communication technologies (PCT) could be either discursive, technical, or material, but they all operated as basic instrumental and organizing units for design. The typology of *project workshops, project user engagements*, and *project documents,* helped me further characterize the specific infrastructure for communication in Lev Vel. The coupling of these project communication technologies into a more or less coherent system is what ensured progression of

activities from a start towards the envisioned end: the development of welfare technological prototypes based on user needs. More than a neutral layer through which communication travels internally in a project, project communication technologies thus come into view as a central driving force that makes anticipation of design processes possible.

The arrangement of project communication technologies into a self-propelling system worked to ensure progression by connecting entities and activities across time and space. However, this also meant that the capacity of the project for 'innovating' was not as such driven by participants' knowledge. Instead, the shape of innovation was already anticipated and limited by the specific configurations of 'elderly users', 'partnership' and 'project processes' inscribed in the PCT's. Seeing design as processes of infrastructuring thus illuminates the inherent inertia of the system. Rather than enabling radical innovation, epistemic objects were already contained in technical objects. Thus, for example, 'the elderly' were imagined in relation to historical stereotypes about vulnerability and deterioration and it was based on this that the design endeavors were often framed as empathetic initiatives of helping these fragile and challenged individuals.

The attention to project communication technologies, thus, calls forth an image of innovation not as the groundbreaking outcome of certain innovative synergies between actors and their knowledges. Instead, the generation of new objects proceed through gradual re-articulations of 'the user' in connection to future aims, envisioned processes and goals, which are all already anticipated and prescribed by material and discursive infrastructures for design.

Welfare technology as problem-solution trajectories

In chapter three, I explored welfare technology through the emergent prototypes that appeared in social and material occasions of project activities. I asked 'what sort of a thing is a prototype?'. Viewing prototypes as socio-material practices

facilitated an exploration of how welfare technology emerged in tandem with the articulation of a 'problem-solution trajectory'. The making of prototypes depended on the ability to negotiate relations between, and align problems and solutions through processes of re-adaptation and re-purposing. In contrast with ideas common in design and innovation about 'problems' and 'users' as antecedent to design, this offered a view of the problems and solutions of prototypes as mutually shaped in relation to the emergence of the user. Prototypes thus appear in relation to specific configurations of 'users', 'design teams', and 'project processes.' In other words they are hybrid forms.

Seeing the welfare technologies as collective practices (Fujimura and Clarke 1992), and therefore as hybrids, made it possible to also see them enacted as relations between 'elderly users', 'design teams', and 'project processes'. Although different prototypes enacted this relation in different ways, one configuration was particularly pervasive in Lev Vel: the figuration of users as vulnerable, design teams as empathetic helpers, and project processes as problem-solution trajectories. This configuration was most vividly exemplified by the prototype 'the wall,' an interactive screen in an activity center, the intended users of which were politically vulnerable and information-challenged elderly threatened by recent initiatives to introduce user payment. In relation to this figuration of the user, the design team emerged as empathetic helpers, motivated by an unselfish wish to empower the elderly. Most of the prototypes appeared in relation to a similar configuration. Indeed, this configuration was at the heart of project Lev Vel, inscribed into project documents and project communication technologies, and re-articulated by project partners' responses to the prototypes. To be successful, prototypes had to negotiate their way into existence by aligning with this particular configuration of [elderly users – design teams – project processes]. In contrast, prototypes that did not enact this relation to the putative users were unable to gain footing within the project. This was most evident in the case with the telenoid, a Japanese robot, whose presence spurred reactions of disdain from project partners. Appearing as an enchanted, mysterious being, the telenoid blurred boundaries between human and technology, leading to immediate contempt from the partners.

The case of the telenoid was furthermore illustrative of the salience of close ties between a prototype and a design team. Only by having human spokespersons was it possible for prototypes to survive within the project. When nobody claimed ownership over the telenoid, the prototype had to present itself. This turned out to be the end of the prototype within Lev Vel because, without a design team advocating for its existence, it could not travel from one design occasion to another. It had no means for surviving within the project.

While prototypes were rhetorically articulated as solutions to problems, their success seemed also to depend on other factors than functionality. Perhaps the most popular prototype within the project, the interactive dancing tiles, was originally developed for children and not for elderly. Originally, this prototype had been developed in relation to ideas about playfulness and fun. As the prototype was brought into Lev Vel and transformed into an elder technology, however without any material changes to the design of the artifact, the tiles enabled a whole new figuration of elderly as playful and fun-loving. However, during other occasions, for instance in the Lev Vel book, the tiles was also able to perform the familiar problem-solution trajectory, thereby gaining wide support from project partners and stakeholders.

During a project workshop where intended elderly users, invited as participants, were asked to try the tiles, their immediate reactions were smiles and outbursts of laughter. In encounters between the elderly-in-the-flesh and the prototype, this figuration apparently enabled the elderly to form attachments based on affective and sensuous experiences. Such attachments had been difficult to make for other prototypes.

These explorations of prototypes and 'elderly users' as emergent in collective practices facilitated a different perspective on prototypes than as solutions to problems. Specifically, the thesis has argued that the ability of prototypes to 'do well' has little to do with how well they solve problems in practice, and much to do with their ability to make attachments with, or even 'enchant,' humans. From this perspective, different occasions require different modes of attachment and these are necessarily based on rational assessments of their capacity as problem solvers. Among other things, the cases showed how emotions such as contempt,

fun, empathy, love and care, expressed by humans and the prototypes, were key factors in allowing prototypes to survive, or wither away.

Analyzing the 'liveliness' of welfare technological prototypes moreover illuminated the fragility and interdependence of these not-yet-quite-objects. As I have continuously emphasized, prototypes do not act on their own. In order to enchant anyone, they depend on advocates, design teams, dedicated people to care for their ongoing life. The property of being 'enchanting' is not inherent in prototypes. It is as much a matter of how prototypes are designed as it is about how their appearance is arranged and orchestrated during public occasions.

In summary, claims about prototypes as solutions to problems depended on the mutual enactment of vulnerable elderly and empathetic designers, and on processes figured as problem-solution trajectories. The claims whereby prototypes gained their socio-economic relevance as solutions, that is, were not based on processes of discovering pre-existing user needs, but instead obtained through ongoing adaptation to imagined and actual elderly, and ongoing technological re-purposing. Neither problems nor solutions were fixed and antecedent to design, but rather continually performed, re-invented, and re-negotiated in social and material processes.

Implications and contributions of seeing design as processes of infrastructuring

Recent years have seen new efforts within design research aiming to account for and theorize the complex relations between technological initiatives and the worlds of 'the users' (i.e. Wilkie 2010; Halse and Clark 2008). This dissertation connects with that body of work in seeking to understand the vague, diffuse and complex phenomena of design, both in discourse and in material practice. This thesis has aimed to add another dimension to these constructivist studies by entering the specific empirical realm of design practices with a focus on infrastructures for project communication and on their role in shaping the initiatives, practices, imaginaries and ontologies of welfare technologies. In this way, the dissertation contributes not only to reflexive considerations among

design researchers and practitioners embarking on user driven and collaborative partnership approaches to design, but also to STS analyses aiming to understand the processes and effects of design and innovation practices.

It is, however, noteworthy that while the above-mentioned movements center on rendering the world of design more complex, the inverse seems also to be taking place. In national policies and among innovation practitioners, for example, authoritative claims about the potential of welfare technologies and innovation are made on the basis of reified views of design and elderly users. These claims empty design practices of all complexity and erase all contradictions. Such reifications have effectively instituted what might be called a design 'regime' (Wilkie 2011) based on wholly instrumental views on users, partnerships, and design processes. My emphasis on project communication technologies as providing infrastructures for design has helped me challenge this reductive view by focusing on the liveliness and agency of these technical arrangements.

Articulating design in relation to an infrastructure constituted by project communication technologies provides an alternative to understandings of design as functional, aesthetic, and material practices of developing a 'thing'. The notion of project communication technology emphasizes that conjointly with practices of designing things, sites of communication must continuously be crafted too, this crafting is both a social and material process. Analyzing these aspects of design crystallized in the identification of the set of interrelated project communication technologies making out an infrastructure that sometimes appeared as wholly autonomous from its technical function. This generated a view of design as social and material processes that are largely driven by interrelated technical and epistemic objects.

To be sure, defining an infrastructure is always already a categorical and world-making act. It brings something into view, and leaves other things in the shadows. When I eventually chose to focus on project communication technologies, however, it was due to the realization of the profound and largely overlooked role that communication, and the crafting of sites for communication, had in Lev Vel and the design literature. What enabled Lev Vel to refer to itself as a PPI and a UDI project, and thus receive funding, was the commitment to craft

project communication technologies and sites for public occasions of project activity and communication. Despite the pervasiveness of such activities in design and innovation approaches today, to my knowledge this is the first STS/design study that focuses specifically on the importance of crafting such sites for communication.

Leaving out of scope the processes of developing design concepts and physical objects outside of their modes of public representation invariably means that I have not traced concrete design processes of inscribing 'the user' into material artifacts. However, while this is definitely an important dimension of the design of welfare technologies, it was often the case that the design of prototypes was displaced in space and time. Many of the prototypes, the tiles, the telenoid, and to some extent also the Nordic walking stick, had gained material shape in design processes with no relation to the project Lev Vel. While exploring the design of the prototypes themselves would certainly be interesting, it thus did not necessarily align with my guiding effort to examine processes and practices of Lev Vel as a public-private and user driven innovation project. Indeed, 'design' within this set up turned out to be about much more than 'building things.' Not least, as I have shown, welfare technologies were negotiated into being through processes of communication. Yet even while these communicative occasions transformed what the things were, they did not necessarily leave physical marks on the material objects. Accordingly, the understanding of welfare technologies requires one to go beyond a focus on material features. It is necessary to explore also how such technologies are orchestrated and negotiated in relation to other emergent entities. This happens in processes of project communication. In this sense, therefore, I content that the present study has zoomed in on a dimension of design and technology that has so far largely been overlooked.

So what, more precisely, results from looking at practices of infrastructuring design through the crafting of project communication technologies? What are the normative commitments tied to a view of design as infrastructured by project communication technologies? And what sort of work might the ethnographic re-

description of this specific infrastructure do for design and the development of welfare technologies?

National policies, as well as the concrete organization of project Lev Vel, draw heavily on discourses that emphasize the innovative potential of public-private and user driven approaches. These are discourses built on beliefs in partnership and user involvement as a *means* to achieve better effects of innovation processes, and better healthcare services. Partnerships and user involvement in design are expected to bring about a particular form of innovative synergy as a result of deploying methods and approaches that bring different actors and their knowledges into relation. This depiction of design as 'driven,' as if naturally, by its methods, might be referred to as a form of 'methods fetishism' (Wastell 2008). The present analyses of project communication technologies and their roles and forms of agency in design interfere with any reified belief that separates design from its complex social and material contexts.

In line with Jensen and Winthereik, I would argue that partnerships were a 'self-contextualizing form' (Jensen and Winthereik 2013: p. 2). For example, the analysis in chapter two illuminated the inseparable relations between the ways in which partnerships were done in practice and the ways in which it was imagined and inscribed in project communication technologies. While 'partnership' required the crafting of specific project communication technologies in order to collaborate, these technologies in turn helped to forge specific forms of 'partnership,' during which process they also enforced certain ideals of adequate participation. Although the ideal was to stimulate innovative synergy between different partners, the crafting of project communication technologies framed what it was possible to know, thereby *pre*-shaping agendas and possible forms of action. Similarly, the technical and material setup of project workshops enacted the partnership as a collective of individuals with individual skills and capacities but common interests and shared goals. Technical elements like descriptions of collaborative workshop assignments set in time, and having a fixed and well-defined outcome to be disseminated to following activities, meant that all activities had pre-set goals. It also entailed the aim of

producing an outcome that would fit in, and count as, productive for subsequent agendas. In order to achieve such dissemination, partners had to constantly imagine themselves as part of a collective working towards the same goals, thereby aligning their knowledge with the aims and agendas of the envisioned process and the project in general. In turn, this meant that participation involved the articulation and re-articulation of knowledge in relation to the project.

However such re-articulation caused difficulties since the different types of knowledge of various partners were not in practice immediately commensurable. Similarly, research and design perspectives were not inherently aligned or mutually generative. The difficulties of connecting these different knowledge practices, synthesizing them in innovative ways, was particularly evident in the ongoing struggle to make design endeavors and user studies of 'the elderly' mutually generative. In chapter four I pointed to three ideas embedded in the technical arrangements and shaping practices and outcomes, which worked against the aspirations of making surprising and nuanced user engagements that were generative for the design practices. These had to do with enactments of ethnographers as 'user experts', and their engagements with intended users as 'deliveries' to subsequent activities. These ideas were related to the separation of the process into phases, and the subsequent ideas of ethnographic engagements as in themselves providing a basis for design; that ethnographic 'deliveries' could act as linkages between users and technology. This overlooked the work of translating intricate social encounters into workable units, and evaded the possibility of activities for ethnographers and designers to make constructive translations together.

Both chapter two and four focused on the difficulties project partners, and specifically partner-ethnographers, faced when trying to generalize about 'the elderly users' in ways that would escape stereotypes. Indeed, project procedures and formats for user studies tacitly shaped knowledge production based on ideas about 'the elderly' as a singular group 'out there.' This tendency had the effect that elderly users were defined in relation to ideas about their inherent, and generic, problems and needs. Technology could thus be brought to motivate, activate, optimize and enhance their lives. The requirement to make knowledge

about ‘the elderly’ link with design aims meant that knowledge was transformed into the premises of design.

In fact, as I have shown in this thesis, neither users nor partners are the driving force of innovation and design. It is neither the needs of elderly people, nor expert knowledges that shape the design of welfare technology. Similarly, methods and procedures, do not lead to inherently ‘better’ innovation. Quite differently, technical objects, including methods, are linked together and work as systems, or infrastructures. Chained together, they become mutually, recursively, generative. They shape project agendas and frame what counts as productive activities and outcomes.

Infrastructures for project communication do not merely transport or disseminate information. Rather, they anticipate and generate certain forms of collaboration and modes of knowing, thereby shaping what it is possible to know and what it is possible to design. But then it follows that neither PPI nor UDI can make any particular claim on innovation. However, it is possible that these approaches facilitate configurations of things, people and processes that easily align with contemporary apparatuses of governmentality.

The figurations of ‘the elderly’ emerging out of project Lev Vel rendered design as solution to social problems to do with ageing. ‘The elderly’ were seen as potentially fragile people in need of help from design. I would argue that this figuration is neither new nor particularly innovative. Moreover, it was not effective, in that it diminished the capacity of project prototypes for making real life attachments with elderly-in-the-flesh.

The implication of these analyses offered in the dissertation is that technological design should not be imagined as the foundation for shaping more effective health care practices and better welfare per se. Instead, possibilities for improving practices through welfare technology emerge out of heterogeneous assemblages, in which not only technologies but also other materialities, and subjectivities, all play important roles. From this vantage point, the dissertation seeks to intervene in a politics that renders welfare technology as solution to a pre-existing problem. As I have emphasized, this is a politics that builds upon imaginaries about fragile elderly users, and in which welfare technologies figure

as transformative devices helping these users become more active and self-sufficient. This imaginary is at the heart of welfare technology initiatives, though it continues to remain generally invisible, and thus taken for granted, which pre-empts the possibility of exploring other possible figurations of elderly users. Figurations, for example, that would be less pre-occupied with pre-defined 'problems' and more interested in experimenting with technologically mediated forms of affection, emotion or enchantment.

The analysis also suggests that rethinking the user is in itself insufficient in order to open up different, possibly more innovative, approaches to the design of welfare technology. Instead, the dissertation suggests the fruitfulness of questioning and re-thinking the numerous dichotomous oppositions that structure prevailing understandings of technologies, users, and the elderly. This set of dichotomies include, though it is not limited to, those of active-passive individuals; prototypes as problem-solution trajectories, and partnerships as collectives of individual experts whose knowledges are commensurable and synergetic, and users whose needs are hidden and extractable. In order to transform welfare technology, I have argued, it is necessary to re-think the ways in which project communication technologies tend to rely on these dichotomies, without losing sight of the concrete practices and imaginations of elderly users, partnerships, and project processes – all at once.

Presently, as I have suggested, relatively little is still known about the co-emergence of welfare technology and design practices. However, the perspective outlined in this thesis – one that sees design as socio-material practices of infrastructuring – opens up for novel ways of exploring the 'liveliness' of welfare technologies.

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English Abstract

Infrastructuring Design

An Ethnographic Study of Welfare Technologies and Design in a Public-Private and User Driven Innovation Project

Keywords; infrastructures, public-private partnerships, social and technical innovation, design, users, elderly care, prototypes, project communication technologies

The fact that the average citizen in Western societies is aging has significant implications for national welfare models. What some call 'the grey tsunami' has resulted in suggestions for, and experiments in, re-designing healthcare systems and elderly care. In Denmark, one attempted solution to these challenges has been the development of welfare technologies and services. Thus, a range of projects is currently being initiated, all with the shared aim to create technological and social innovations for health care in general, and for elderly care, more specifically. This PhD thesis focuses on practices of developing welfare technologies within one such project, Project Lev Vel, a public-private and user driven innovation project.

Based on an initial curiosity about what motivates the recent upsurge in projects aiming to introduce 'welfare technology' into elderly care, the central questions posed by the dissertation is: What is welfare technology? How is it imagined, designed, and developed, and by whom? Who are driving the design processes and how? Who are the elderly users that are imagined as the target group for welfare technology, and where are they located? Based on ethnographic explorations of 'welfare technology' and related figures that include not only 'the elderly', but also 'prototypes' and 'partnership' the dissertation analyses the *processes* and socio-technical *arrangements* through which welfare technology, as concept and practice, emerges. Despite high expectations for the positive effects of welfare technology in Danish government policies, the practical development of technological solutions turned out to be a difficult task. What caused such difficulties? The dissertation aims to elucidate

the activities of design, and the development of welfare technology within the framework of public-private (PPI) and user driven innovation (UDI) project. One of the main findings is that for design carried out under the auspices of PPI and UDI, the crafting of socio-technical sites and *infrastructures* for project communication plays a central role in the design processes and, ultimately, for what welfare technology comes to be. The chapters explore different processes of what I call infrastructuring *design*; the ongoing crafting of social, material, and technical arrangements for collaborative design to happen. The implication of these analyses is that technological design should not be imagined as the foundation for shaping more effective health care practices and better welfare. Instead, possibilities for improving practices through welfare technology emerge out of heterogeneous assemblages, in which not only technologies but also other materialities and diverse subjectivities all play important roles.

Presently, relatively little is known about the co-emergence of welfare technology and design practices. The perspective of this thesis, which sees design as entailing socio-material practices of infrastructuring, opens up for novel ways of exploring the 'social life' of innovative welfare technologies. As noted, I specifically focus on the co-emergence of *infrastructure* and *partnerships*, *elderly users*, and *prototypes*. In general, the thesis thus contributes to design researchers and practitioners embarking on user driven and collaborative partnership approaches to design, and to STS researchers interested in design and innovation. It offers an alternative to conventional views that depict design as driven, as if naturally, by its methods (a view that might be called 'methods fetishism'), and as leading, again, as if naturally, to the development of 'better' technologies (a view that might be called teleological design). Instead of such reified views, the dissertation offers an account of design practices that takes seriously the efforts and the continuous negotiations among heterogeneous actors out of which technologies emerge.

Dansk referat

Den stigende gennemsnitlige levealder i Danmark, og store dele af verden, har store konsekvenser for nationale velfærdsmodeller. Det som af nogle kaldes 'den grå tsunami' har resulteret i forslag og konkrete initiativer for at re-designe danske sundhedssystemer og ældrepleje. I Danmark har der været stort fokus på udvikling af velfærdsteknologier som løsning. En række projekter er, og bliver fortsat, søsat med det formål at skabe teknologisk og social innovation i sundhedssektoren generelt, og inden for ældrepleje specifikt. Denne afhandling fokuserer på udvikling af velfærdsteknologier i praksis i et konkret innovations projekt, projekt Lev Vel. Formålet med dette projekt var overordnet at udvikle velfærdsteknologier til selvhjulpne ældre ved at anvende en brugerdrevet tilgang til innovation i kombination med en offentlig-privat innovations strategi.

Baseret på en nysgerrig undren over, hvordan disse tiltag inden for teknologisk velfærds-innovation skal forstås, og hvad de gør, stiller jeg følgende spørgsmål i afhandlingen: Hvad er velfærdsteknologi? Hvordan bliver velfærdsteknologier forestillet, designet, og udviklet i praksis? Af hvem og hvad? Hvem er 'de ældre brugere' som ses som målgruppe for disse indsatser, og hvor befinder de sig? Baseret på etnografiske studier i projekt Lev Vel undersøger afhandlingen figurerne 'velfærds teknologi' og 'ældre brugere', men også figurer såsom 'prototyper', 'partnerskaber', og 'aktiv aldring' viser sig at være relevante for forståelsen af velfærdsteknologi i den specifikke kontekst. Afhandlingen er primært inspireret af koncepter og tilgange udviklet inden for Science and Technology Studies (STS) der ser det 'sociale' og det 'teknologiske' som infiltrerede og gensidigt skabende fænomener. Afhandlingen undersøger dermed de socio-tekniske *processer* og *arrangementer* hvorigennem disse figurer opstår, og nye velfærdsteknologier bliver til.

Til trods for de høje forventninger til velfærdsteknologiernes positive effekt, som udtrykkes af blandt andet mange danske politikere og innovations aktører, var udviklingen af konkrete teknologier en udfordring i praksis. Hvad forårsagede de problemer og udfordringer, som projektet stødte ind i undervejs? Igennem analyser af konkrete empiriske situationer i løbet af projektets halvandet år lange design proces, er det afhandlingens formål at analysere

velfærdsteknologier i kontekst af projekt Lev Vel, og de design praksisser hvorigennem de søges udviklet. Én af afhandlingens hovedpointer er, at I designpraksis i Lev Vel, et bruger drevet og offentlig privat innovations projekt, er en central aktivitet at skabe sociale og tekniske platforme for projekt kommunikation. Med andre ord afhænger projektet af, at der kontinuerligt produceres det, som jeg kalder 'projekt kommunikations teknologier'. Disse projekt kommunikations teknologier kan samlet ses som udgørende en infrastruktur, der transporterer og skaber viden, ting, og mennesker i løbet af projektet, og i sidste ende er med til at skabe selve velfærdsteknologierne. Kapitlerne i afhandlingen udforsker forskellige aspekter af denne gensidige skabelse af infrastrukturer og design processer; hvordan design kan ses som teknisk og socialt infrastruktureret og samtidig infrastrukturerende. Der ses henholdsvis på relationer mellem projekt kommunikations teknologier og 'partnerskaber', 'ældre brugere', og 'prototyper'. Implikationerne af disse analyser er, at teknologisk design ikke skal ses som et fundament for at skabe 'bedre' ældrepleje og 'bedre' løsninger indenfor sundhedsområdet. Design af velfærdsteknologier resulterer ikke kun i udvikling af konkrete teknologier, men de er også med til at skabe andre subjektiviteter og materialiteter, blandt andet er de med til at skabe hvem 'de ældre' er, og relationer mellem 'de ældre' og 'designere', og potentielt resten af den danske befolkning.

Der er indtil videre ikke meget litteratur, der fokuserer på den gensidige tilblivelse af velfærdsteknologi og design praksis. Denne afhandling sætter perspektiv på velfærdsteknologi som en social og materiel praksis orienteret mod skabelsen af infrastrukturer for projekt kommunikation. Med dette perspektiv åbnes op for nye forståelser af, og nye måder at undersøge velfærdsteknologiers sociale effekter, og hvordan de er viklet sammen med andre menneskelige og ikke-menneskelige aktører, værdier, rationaliteter, og normativiteter. Afhandlingen bidrager dermed primært til design forskere og praktisører med interesse i bruger dreven og offentlig-privat innovation, og til STS forskere med interesse i innovation og design. Den tilbyder et alternativ til konventionelle tilgange, der fremstiller design som 'naturligt' drevet af dens metoder (et syn der kan siges at udtrykke en metode fetish), og som ledende til,

igen ‘naturligt’, udvikling af ‘bedre’ teknologier og samfundsmæssige løsninger (et syn der kan kaldes teleologisk design). Istedet for disse reificerede forestillinger, tilbyder analyserne et billede af design, der sætter fokus på konkrete praksisser og de kontinuerlige forhandlinger der finder sted blandt både menneskelige og ikke-menneskelige aktører. Det er ud af disse forhandlinger og heterogene arrangementer at nye velfærdsteknologier opstår.

APPENDIX 1

Lev Vel Project Application (Original name; No Age)

NoAge

– et strategisk partnerskab om innovative samfundsløsninger indenfor sundhed og velfærd

0. Resumé

Alder er ingen hindring
Om 30-40 år vil Danmark have ca. 400.000 flere ældre end i dag. Samtidig falder antallet af ansatte i den offentlige sektor markant. Hvis ikke de offentlige serviceydelser skal løbes over ende, bør vi understøtte de ældres ressourcer og gøre dem bedre i stand til at klare sig selv så længe som muligt. Derfor vil NoAge gøre flere ældre selvhjulpne og droppe al snak om "ældrebyrden".

I NoAge samles virksomheder, førende forskningsinstitutioner, regioner, kommuner og hospitaler i offentlig-private innovationsalliancer på en platform i form af klubber og konkrete innovationsprojekter. Ambitionen er over 4 år at udvikle en lang række nye, markante innovative servicetilbud og produkter med potentiale for kommercialisering. Målgruppen er den meget store gruppe af ældre, som gerne vil fortsætte med at have et aktivt liv langt op i en høj alder. Aktive og selvhjulpne ældre frigør ressourcer i det offentlige sundhedsvæsen til mere krævende grupper og giver samtidig de aktive ældre større medbestemmelse og øget livskvalitet.

NoAge vil i sine projekter fokusere brugercentreret på sundhed, forebyggelse, pleje, aktivering, behandling og rehabilitering. Projekterne omhandler innovationer indenfor både services, teknologiske og organisatoriske områder. Blandt de planlagte projekter er nye mødesteder, som skal forbedre ældres fysiske, sociale og mentale fitness, nye selvmonitoreringsredskaber, som gør det muligt for ældre at forebygge sygdom samt add ons til det elektroniske medicinkort, som styrker ældres egen indsigt og samarbejde omkring medicinsk behandling.

Fakta om partnerskabet NoAge

Kontaktoplysninger på tilskudsmodtager
Innovation Center Copenhagen (icph), VHHR, Gribsskovvej 4, 2100 København Ø
CVR 29832978
Nana Scheibel, ns@icph.dk, tlf 30108097

Medkoordinator på NoAge
Alexandra Instituttet, Rued Langgårdsvej 7, 2300 København S
CVR 24213366
Peter Carstensen, peter.carstensen@alexandra.dk, tlf 40228210

Kontaktoplysninger og profiler på andre deltagere i partnerskabet inkl. CVR er vedlagt i bilag 1.

Det bærende spørgsmål
Hvilke innovative samfundsløsninger muliggør, at selvhjulpne ældre fastholder deres ønskede livsrum og funktionsevne?

Antal private parter indenfor IT, SundhedsIT, højteknologisk, medicinsk udstyr, service og design

Større virksomheder: 25
SMV'er: 76

Heraf fra
ØstDanmark: 71
VestDanmark: 30

Førende nationale parter indenfor forskning og innovation
Københavns og Aarhus Universitet, Danmarks Tekniske Universitet, IT-Universitetet, Danmarks Designskole, Alexandra Instituttet, DELTA, Teknologisk Institut, Innovation Center Copenhagen, Medico Innovation, Biologue.

Internationale partnere indenfor forskning og innovation
CEO (Sverige), Certec, LTH (Sverige), Halmstad Living Lab (Sverige), Healthy Ageing Network Northern Nederlands (Holland), Helsinki Living Lab (Finland), Interactive Media Technology Center (USA), National Institute on Aging (USA), TI Pharma (Holland), Waag Society (Holland) .

Offentlige parter – stat kommuner og hospitaler
Region Hovedstaden, Koncern Regional Udvikling, Koncern IT og Vækstforum
Projektkommuner: Københavns, Herlev, Gentofte, Gribskov, Hillerød, Brøndby og Greve Kommune.
Klubkommuner: 29 kommuner i hovedstaden, på sigt alle kommuner i Danmark
Projekthospitaler: Herlev og Bispebjerg Hospital.
Klubhospitaler: 14 hospitaler i hovedstaden, på sigt alle hospitaler i Danmark
Endvidere Sammenhængende Digital Sundhed i Danmark og Sundhed.dk
Væksthus Hovedstadsregionen og Væksthus Sjælland

Organisationer
Danske Regioner, KKR, DI ITEK, IDA, KKR, Teknologirådet, Ældresagen, Diakonissestiftelsen, Foreningen Livsnettet.

Antal nye deltagere i forhold til prækvalifikationsansøgningen:
Private parter: 90
Forsknings- og innovationsparter: 2
Internationale parter: 9
Offentlige parter: 7
Organisationer: 5

Profiler på parter er listet i bilag 1.
Interessetilkendegivelser listet i bilag 5

1. No Age partnerskabet

1.1 Navn på partnerskabet

Partnerskabets navn er NoAge.
NoAge samler førende parter omkring innovative samfundsløsninger i strategiske partnerskaber. Partnerskabets fokus er udvikling af innovative løsninger, som muliggør at selvhjulpne ældre fastholder deres ønskede livsrum og funktionsevne så længe som muligt. Ansøgerkredsen er en ny national og tværfaglig samarbejdskonstellation mellem virksomheder, førende nationale og internationale forsknings- og videninstitutioner, relevante organisationer, som kan løfte vidensprednin og dialogskabende aktiviteter nationalt og kommuner og hospitaler med udgangspunkt i hovedstadsregionen. Målsætningen for NoAge er at involvere offentlige parter fra hele landet på både projekt- og klubniveau på sigt.

2. Partnerskabets formål og fokus

2.1 Den centrale samfundsmæssige udfordring er det aldrende samfund

Vi står i Danmark og i hele den vestlige verden over for en langsigtet samfundsmæssig udfordring, som allerede i dag viser sine indbyggede problematikker. Under ét kan man kalde den specifikke, komplekse samfundsmæssige udfordring for det aldrende samfund. Alene indenfor de kommende 30-40 år forventes der i Danmark at være 400.000 flere ældre end i dag. Ældre som vil adskille sig væsentligt fra tidligere generationer i forhold som uddannelse, livsbetingelser og økonomi. Endvidere i form af ændrede behov, ønsker og krav til livet. Det aldrende samfund rummer en lang række komplekse og indbyrdes forbundne problemstillinger. Fire af de helt centrale problemstillinger (bl.a. jf. *Forsk2015*) adresseres af NoAge:

- Flere borgere kommer til at leve med sygdomme, herunder kroniske sygdomme, som allerede i dag tegner sig for ca 80 % af de samlede sundhedsudgifter.
  NoAge kan bidrage til en løsning i form af patientrettede medicinske, teknologiske og organisatoriske løsninger indenfor forebyggelse, behandling og rehabilitering.

- Der vil være stigende forventninger og krav hos både de ældre og deres pårørende til en mere fleksibel, efterspørgselsorienteret offentlig service indenfor sundhed, pleje og omsorg. *NoAge kan bidrage til en løsning i form af brugercentrede forløb, som nytænker og udvikler fremtidens offentlige service indenfor sundhed, pleje og omsorg, med det formål at øge den oplevede kvalitet samtidig med at offentlige ressourcer frigøres.*

- Levetiden af produkter og services bliver stadig kortere, også på det marked, som gives af det aldrende samfund. Det stiller store krav til virksomheder om at forbedre innovationsevnen, og understreger, at markedspositionering i forhold til det aldrende samfund kan blive en vigtig national og international konkurrenceparameter.
  NoAge kan bidrage til en løsning gennem effektiv organisering og ledelse af innovationsprocesser, som tilvejebringer en mere brugercentreret approach og nye innovative produkter og services med potentiale for kommercialisering.

- Kravene til den offentligt finansierede forskning om at bidrage til at tilvejebringe løsninger rettet mod det aldrende samfund vil stige.
  No Age kan bidrage til at sikre sammenhæng i værdikæden fra forskning til innovation gennem et systematisk, tværfagligt samspil i det strategiske partnerskab. Det vil sikre efterspørgsel, nyttiggørelse og vidensprednin af relevant, forskningsbaseret viden.

2.2 Det overordnede formål i NoAge

Den overordnede ambition for NoAge er at adressere og bidrage til at løse de specifikke samfundsmæssige udfordringer, der er forbundet med det aldrende samfund. Ambitionen er, at NoAge på sigt udvikler sig til en national strategi på området. Det vil ske gennem innovative samfundsløsninger i strategiske partnerskaber, som:

- muliggør, at ældre forbliver selvhjulpne så længe som muligt
- nytænker og udvikler fremtidens offentlige service med afsæt i brugernes behov
- forbedrer virksomheders innovationsevne og markedspositionering som konkurrenceparameter
- sikrer sammenhæng i værdikæden fra forskning til innovation

NoAge's innovative samfundsløsninger er karakteriseret ved:

- at være brugercentrede og patientrettede
- at integrere medicinske, teknologiske og organisatoriske løsninger
- at omfatte både forebyggelse, behandling og rehabilitering

Det overordnede formål kan opsummeres i følgende bærende spørgsmål:

Det bærende spørgsmål

Hvilke innovative samfundsløsninger muliggør, at selvhjulpne ældre fastholder deres ønskede livsrum og funktionsevne?

2.3 Fokus på de selvhjulpne ældre i NoAge

Oftest betragtes og beskrives væksten af ældre i samfundet som noget negativt og problematisk - eksempelvis via den udbredte diskurs om "ældrebyrden" der tynger samfundet. NoAge vender denne tilgang til det voksende antal ældre på hovedet og fokuserer på de ældre som ressourcer frem for byrder: Vi står overfor en samfundsøkonomisk udfordring af dimensioner i gabet mellem de mange flere ældre og de meget færre varme hænder i det offentlige sundhedssystem som helhed. Men de mange flere og nye typer ældre repræsenterer en uopdyrket ressource. Under ét kalder vi den nye type ældre for de selvhjulpne ældre. Dette svarer til den største gruppe af ældre, ca. 80 % af ældregruppen over 65 år.

De selvhjulpne ældre

No Age beskæftiger sig med sundheds- og velfærdsinnovation med fokus på de selvhjulpne ældre. Herved forstås gruppen af ældre, som enten slet ikke, i begrænset omfang eller midlertidigt får offentlig service fra kommuner og hospitaler.

Når hidtil selvhjulpne ældre kommer i kontakt med sundheds- eller pleje/omsorgssystemet pga. sygdom eller funktionsnedsættelse, vil forløbet ofte blive unødigt langvarigt i forhold til unge med samme lidelser. Risikoen for permanent at miste sin selvhjulpenhed er specielt stor i sektorovergangen mellem fx hospital, ambulant behandling, egen læge og kommunal ældrepleje, hvor der også samtidig sker store skift i de ældres livssituation. Der vil endda være en gruppe af ældre, for hvem resultatet af en sygdom eller funktionsnedsættelse bliver kronisk plejeafhængighed. Et velkendt eksempel er ben- og hoftebrud, som hos nogle ældre fører til kronisk sengeleje og død.

2.4 NoAge's strategi

Strategien for NoAge skal bidrage til at innovative samfundsløsninger viser deres potentiale for kommercialisering, bl.a. ved at øge SMV'ers innovationsevne og sikre at flere SMV'er involveres i åbent innovationsarbejde. Strategien har tre hovedelementer, som hver for sig repræsenterer markante nyskabelser i forhold til den måde, man indtil videre primært har arbejdet med strategiske partnerskaber på inden for forsknings- og innovationsområdet. De tre hovedelementer i NoAge er:

- at afprøve nye tværfaglige samarbejdskonstellationer ved at forankre det strategiske partnerskab i en offentlig-privat innovationsalliance, der inddrager *state of the art* på forskning og brugerbehov.
- at afprøve nye innovationsformer gennem etablering af levende laboratorier i hovedstadens kommuner og hospitaler, hvor nye løsninger udvikles, afprøves og valideres.
- at skabe konkrete innovationer i virksomhederne og en videnplatform for innovation gennem en gennemgående innovationsmodel, der skaber effektiv ledelse og organisering af innovationsprocesserne i NoAge projekter samt synergi og sammenhæng i de tværgående, generelle hovedaktiviteter i NoAge videnplatformen.

Del 1 af strategien: Offentlige-private innovationsalliancer – en ny tværgående samarbejdskonstellation
Det ene hovedelement er at afprøve nye tværfaglige samarbejdskonstellationer ved at forankre det strategiske partnerskab i en offentlig-privat innovationsalliance. En Gallup-undersøgelse fra 2008 viste, at der er et uudnyttet potentiale i at øge virksomheders innovationsevne og konkurrencekraft. Ikke kun gennem strategiske partnerskaber mellem erhvervsliv og forskning, men mellem erhvervsliv og offentlige sundheds- og velfærdsområder. Hele 64 % af danske virksomheder angav, at de anså innovations-partnerskaber med offentlige parter som en stor drivkraft for udviklingen af nye produkter, services og forretningsområder, mens blot 2 % p.t. havde erfaring med innovationssamarbejder andre offentlige aktører end forskningsinstitutioner.

Værdien af et strategisk partnerskab forankret i en offentlig-privat innovationsalliance ligger i, at der sker en større træfsikkerhed i de konkrete innovative samfundsløsninger. Innovationsalliancen forener virksomheders og forskeres kernekompetencer med konkret input fra slutbrugere, selvhjulpne ældre og de offentlige fagprofessionelle. Det sikrer faglig kvalitet og gennemførbarhed i løsningerne.

Analyser viser at både små, mellemstore og store virksomheder har værdi af offentlige-private innovationsalliancer, men at deres motivation er væsensforskellig *(Analyse af offentlig-privat samarbejde om innovation, EBST, 2009.)* Iværksættere og SMV'er går typisk ind i offentlig-privat innovation for at udvikle et konkret produkt eller en serviceløsning, som skal leveres til den offentlige sektor. Store virksomheder engagerer sig for at opnå generelle udviklingserfaringer med den offentlige sektor, eller for at styrke viden om markeder og/eller segmenter, som kan anvendes med *spill-over* effekt til en bredere portefølje af produkter og services.

Samarbejdskonstellationerne i NoAge er struktureret således, at de tilgodeser både små, mellemstore og store virksomheder. Det vil være gennemgående, at relationen mellem offentlig og privat partner etableres som et strategisk partnerskab mellem udviklingspartnere. Se NoAge definitionen herunder.

Definition af strategisk partnerskab
Det strategiske partnerskab i NoAge er et tæt og gensidigt innovationssamarbejde ml. offentlige og private parter samt forskning med det formål at skabe nye samfundsmæssige løsninger med potentiale for kommercialisering. Det særegne er, at relationen mellem parterne ikke kan karakteriseres som et aftager-leverandør-forhold med henblik på levering af en kendt løsning. Parterne er derimod udviklingspartnere, der sammen udforsker nye innovative løsninger på fælles definerede problemer.

Del 2 af strategien: Det levende laboratorium – afprøvning af en ny innovationsform
NoAge afprøver en ny innovationsform i form af et levende laboratorium, der i første omgang etableres blandt hovedstadsregionens hospitaler og kommuner.

NoAge anvender en brugercentreret tilgang til at forstå, udvikle og validere nye innovative løsninger til centrale samfundsudfordringer i det aldrende samfund. En af strategiens hjørnesten er, at de innovative

løsninger udvikles sammen med og til mennesker i deres hverdagsliv og daglige omgivelser – et såkaldt levende laboratorium. Levende laboratorier sikrer:

- at løsningerne tager højde for virkelighedens kompleksitet, hvorved risici reduceres
- at der i øget omfang kan skabes konsensus om anvendeligheden for de involverede aktører
- at der arbejdes med nye innovationsformer præget af en eksperimenterende tilgang med høj brugerinvolvering og åben innovation.

I NoAge udgøres det levende laboratorium af hovedstadsregionens kommuner og hospitaler ud fra den betragtning, at flertallet af netop denne regions ældre bærer de egenskaber, som bliver karakteristiske for fremtidens ældre i hele Danmark. De er generelt højere uddannet, har en højere indkomst og er politisk og kulturelt aktive (*Danmarks Statistik, 2007).* Derudover er hovedstadsregionens kommuner og hospitaler allerede i front i forhold til inddragelse af borgere, patienter og pårørende i det, man kan kalde det sammenhængende patientforløb. Hovedstadsregionens ældre og deres pårørende repræsenterer allerede i dag en type brugere, som stiller eksplicitte krav til den offentlige sektor.

Det levende laboratorium i No Age betyder, at prototyper og services i de innovative samfundsløsninger udvikles i samarbejde mellem virksomheder, forskere og hovedstadsregionens hospitaler og kommuner. Det vil ske gennem:

- Afdækning af umødte og uerkendte brugerbehov i relation til de nuværende offentlige serviceløsninger
- Validering af innovationsspor gennem involvering af både brugere, forskere, offentlige og private parter
- Tilvejebringelse af *proof of concept* gennem afprøvede *set-ups* i en mindre afgrænset *real life* kontekst, og sandsynliggørelse af potentialerne ved skalering, bl.a. internationalisering og vækst.

Living Lab is more than experimental facility as its philosophy is to turn users, from being traditionally considered as a problem, into value creation

Del 3 af strategien: En fælles innovationsmodel - konkrete innovationer og den fælles videnplatform
Der tilvejebringes konkrete innovationer gennem NoAge's innovationsprojekter. De enkelte innovationsprojekter tager afsæt i en innovationsmodel for offentlig-privat innovation, udviklet og afprøvet af Innovation Center Copenhagen (icph). Modellen har vist gode resultater og sikrer innovationshøjde, tempo, fremdrift og fælles systematik i de enkelte innovationsprojekter gennem en iterativ proces over 18 måneder fra projektidé til skalering af den innovative løsning. Det strategiske partnerskab i det enkelte innovationsprojekt ledes en projektleder stillet til rådighed af NoAge konsortiet.

Gennem kommuner og hospitaler sikres adgang til brugerne. Hvert projekt drives og udvikles i tæt samarbejde mellem offentlige og private parter. Innovationshøjden sikres gennem en national og international *state-of-the-art* i No Age's projekters videngrundlag. Forskningsbaseret viden vil indgå som løbende kvalificering af det enkelte problem, hvilket bl.a. kan være en forudsætning for at identificere omfang, større sammenhænge etc., som i sidste ende kan have betydning for den samfundsmæssige effekt og potentialet for kommercialisering.

Innovationsmodellen
Innovationsmodellen rummer 6 faser over de 18 måneder. I det følgende er de 6 faser kort skitseret og illustreret ved et gennemgående eksempel (*i kursiv)* med afsæt i ældres faldproblematik.

Fase 0 Potentiale – hvor projektidéens potentiale klarlægges, bl.a. gennem screening af marked og scouting af internationale forskningsresultater.
Forskningsbaseret viden viser, at fald er et stort problem. Derfor ligger der er stort potentiale i nye løsninger, hvor ældre selv kan opdage potentielle fald inden de sker. Det kræver samtidig en nytænkning af sammenhængen mellem hospital, og den borgernære forebyggelses og rehabiliteringsindsats i kommunerne.

Fase 1 Platform - hvor det konkrete strategiske partnerskab etableres og der skabes grundlag for at brugerbehovene kan kortlægges i det levende laboratorium.
Ved at skabe en fælles platform for parterne kan de forskellige behov afdækkes. Hospitalet ønsker fx færre genindlæggelser, de ældre tryghed, kommunen en forebyggende indsats, virksomheden et forretningspotentiale og forskeren ny viden om adfærd og sygdomsårsager. Gennem kommunen og hospitalerne findes de relevante brugere.

Fase 2 Spor - hvor brugerbehovenes afdækkes og innovationssporene dernæst fastlægges og valideres gennem inddragelse af offentlig klub, virksomhedsklub og den internationale forskningsklub.
Brugerbehovet er især behov for varsling, men på en måde, så svækkelse ikke udstilles. Innovationssporet som følges er idéen om en varslende vibrator i form af en ny type forebyggende hjælpemiddel og et mødested, hvor fysisk genoptræning sker i social interaktion.

Fase 3 Alliance - hvor nye prototyper og services udvikles i tæt samspil og synergi med brugere og forskere.
Gennem alliancen udvikles en prototype for en slingredetektor og et nyt servicedesign for et nyt slags mødested.

Fase 4 Effekt - hvor der opnås effekt og tilvejebringes *proof of concept* gennem afprøvning af udviklede prototyper og services i det levende laboratorium.
En gruppe ældre tester, om detektoren virker. Forskeren studerer, om slingredetektoren medvirker til nye mestringsstrategier og til ny mental-muskulær koordinering. Effekter dokumenteres, fx færre genindlæggelser på hospital ift. kontrolgruppe, og proof of concept på slingredetektoren er tilvejebragt.

Fase 5 Skalering - hvor der opnås gennemslagskraft ved at skalere de innovative samfundsløsninger med henblik på kommercialisering, dvs. internationalisering og vækst.
Et helt nyt forretningsområde har åbnet sig, ikke kun i Danmark, men også internationalt. De ældre har fået ekstra tryghed i hverdagen. Forskeren kan publicere en ny videnskabelig artikel. Og snitfladen mellem hospital og kommune er med den nye visitation af et forebyggende hjælpemiddel blevet mere effektiv og sikrer borgeren en bedre service.

Seks innovationsprojekter på 4 år i NoAge
NoAge igangsætter i alt 6 innovationsprojekter over 4 år. På nuværende tidspunkt er 3 innovations-projekter planlagt. De øvrige 3 innovationsprojekter vil blive planlagt via inddragelse af NoAge klubber –

virksomhedsklubben, den offentlige klub og den internationale forskningsklub - og igangsættes efter ca. 2 år. Hvert innovationsprojekt er dimensioneret til et budget på godt 13 mio kr ved opstart.

Gennem de 3 første innovationsprojekter udvikler NoAge konkrete innovationer inden for tre helt aktuelle områder med relevans for det aldrende samfund:

- Mødestedet
- Forebyggende selvmonitorering
- Patientrettede Add Ons til medicinkortet.

Det er fælles for projekterne, at de griber aktuelle konkrete initiativer og tendenser indenfor sundhedsområdet, men lægger innovationshøjde til. Endvidere vil de via de strategiske partnerskaber og levende laboratorier tilføre nyhedsværdi og nytteværdi af konkrete innovationer og opnåede effekter.

Projekterne er udviklet i ansøgningsfasen gennem udstrakt inddragelse af brugere, virksomheder, kommuner, hospitaler, forskere og videninstitutioner på to workshops. Der er således opnået et stort ejerskab allerede for de involverede parter. Workshop-metoder og materialer er vedlagt som bilag. Ligeså projektskitserne på de 3 innovationsprojekter, som også beskrives i afsnit 7 om partnerskabets aktiviteter.

Videnplatformen og de generelle aktiviteter i NoAge
Det er helt centralt for NoAge, at der er tale om en videnplatform med værdiskabende, generelle aktiviteter for de deltagende parter i konsortiet. Der igangsættes indenfor de 2 første år i NoAge fem centrale generelle aktiviteter på NoAge platformen:

- No Age klubber for virksomheder, offentlige parter og international forskningsklub
- Matchmaking og fundraising
- Webplatform
- Ledelse, projektadministration og tværgående koordination
- Dialogskabende aktiviteter, strategi og analyse

De generelle aktiviteter er beskrevet i afsnit 7, og er vedlagt i bilag 2: Aktivitetsplaner.

2.5 Nyhedsværdien i NoAge's tilgang

Ifølge ugebrevet MandagMorgen *(23. september, 2009)* skal fremtidens innovationsdrivere ikke kun findes indenfor teknologi og naturvidenskab, men i lige så høj grad i form af samarbejder med brugere, globale vidensnetværk, klodens store udfordringer og presset på velfærdsstatens ydelser. Ifølge MM har Danmark stadig et stykke op for at være blandt de allerbedste indenfor den nye innovation. Det handler om nye kompetencer og om at arbejde på tværs af siloer. Der bliver altså tale om en meget kraftigt tvær- og flerfaglig tilgang, hvor den fælles drivkraft er at adressere en af tidens store samfundsmæssige udfordringer. Der har hidtil været gennemført en række projekter med teknologiske innovationer, brugerdrevne innovationer, privat-offentlige samarbejder. Det unikke i NoAge er at alle disse fagligheder og tilgange samles om en fælles udfordring.

I forbindelse med platformsaktiviteter og de konkrete innovationsprojekter udvikles og formidles helt ny viden om brugerbehovene og de konkrete innovationer samt en unik viden om innovative løsninger, som har en meget bred relevans langt udover den primære målgruppe af selvhjulpne ældre.

3. Virksomhedsmålgruppe og erhvervsmæssige effekter

3.1 Virksomhedsmålgruppen

NoAge virksomhedsmålgruppe er landsdækkende og dækker over serviceudbydere, produktleverandører, systemleverandører og rådgivende virksomheder. NoAge virksomhedsmålgruppe har et stort spænd fra

enkeltmandsvirksomheder/iværksættere, til små og mellemstore virksomheder og til store virksomheder. NoAge's strategiske tilgang tilgodeser i særlig grad SMV'er, og har i det eksisterende partnerskab 76 SMV'er.

3.2 Virksomhedsmålgruppens vækst og udviklingspotentialer
Sundhedssektoren er en af de største sektorer indenfor velfærdsområdet, og udgifterne stiger hurtigere end økonomien som helhed. (*McKinsey, 2008: "Health Care Costs: A market bases view").* Udviklingen i sundhedsudgifterne ikke bare i Danmark, men i hele den vestlige verden, er alt andet lige med til at øge afsætningspotentialet for danske virksomheder. Dansk erhvervsliv har hidtil været gode til at udnytte de markedsmæssige muligheder, der ligger i at afsætte løsninger til den offentlige sundhedssektor, som er den største kunde i Danmark, men styrkepositionen er p.t. under pres. NoAge giver virksomhederne mulighed for at drage fordel af, at den offentlige sektor i Danmark efterspørger avancerede løsninger, herunder teknologiske løsninger, og derfor kan være en stærk udviklingspartner for et erhvervsliv, der stræber imod innovative løsninger.

Dog er der en række barrierer, der må adresseres meget direkte, for at sikre, at innovative samfundsløsninger også har et kommercielt potentiale. Bl.a. skal det offentlige-private samarbejde om innovation styrkes. Det offentlige sundhedssystem skal i endnu højere grad efterspørge innovative løsninger, og mindre virksomheder skal i højere grad medvirke til at løse udfordringer i sundhedssektoren. Det er disse barrierer, som NoAge adresserer direkte:

- SMV'er og iværksættere øger innovationsevnen, fordi de får adgang til et åbent innovationssamarbejde, hvor de kan målrette udviklingen af nye prototyper og services, teste idéer og løsninger og dele ressourcer uden betragtelig venture kapital.
- Større virksomheder får adgang til en større base af idéer, som er valideret af aktiviteter i det strategiske partnerskab, samt adgang til mindre virksomheders kompetencer.

3.3 Forventede effekter som resultat af NoAge for partnerne
For alle de virksomheder, som deltager direkte i innovationsprojekterne (11 medfinansierer allerede i de tre første projekter), er der store udviklingspotentialer. De vil alle få stor indsigt i innovative processer og potentialet i disse, og det forventes at mindst 10 virksomheder vil få direkte udbytte af de første tre innovationsprojekter som følge af de koncepter og prototyper, der udvikles. En stor del af disse vil kunne udvikles til færdige produkter, som har meget store muligheder for bred afsætning.

Udover virksomhederne vil også hospitaler og kommuner hente effekter og værdi gennem NoAge.
De innovative løsninger understøtter kvalitet, øget effektivitet og øget sammenhæng i den offentlige sektors serviceudbud til gavn for den ældre, og med effekter, der flytter ressourcer fra kolde til varme hænder. Der vil således være reel mulighed for at fastholde og forbedre serviceniveauet for en stærkt voksende gruppe af borgere med nye, ændrede krav, uden at udgiftsniveauet vil skulle stige tilsvarende. Endvidere giver NoAge-innovationsprojekterne mulighed for at øge innovationsevnen og styrke innovationskultur og –kompetencer hos såvel frontpersonale som ledere i de det offentlige.

For forskere vil NoAge bidrage til at styrke sammenhæng i værdikæden fra forskning til innovation gennem et systematisk, tværfagligt samspil i det strategiske partnerskab. Det vil sikre efterspørgsel fra brugere, samt offentlige og private parter, hvormed forskningsbaseret viden nyttiggøres og spredes til praksis.

Det forventes at mindst 100 SMV'er, 25 kommuner og 40 forskere har været involveret i åbent innovations-arbejde i de første 2 år, med den heraf forøgede løft af innovationskompetencer hos alle involverede.

4. Partnersammensætning

4.1 Valget af partnere i NoAge

NoAge bygger videre på det partnerskab, der stod bag prækvalifikationsansøgningen fra juni 09. Partnerskabet er dog siden prækvalifikationen blevet udvidet og styrket indenfor alle relevante type aktører i NoAge (private parter, nationale og internationale forsknings- og videninstitutioner, offentlige parter og organisationer).

NoAge er et landsdækkende initiativ med en international dimension, hvori Region Hovedstadens kommuner og hospitaler bidrager som levende laboratorier. Initiativets innovative løsninger stiller de ældre borgere og deres sundhedsprofessionelle fagpersoner i centrum.

Kriterier for valget af parter til NoAge har i ansøgningsprocessen været at inkludere parter, som

- i *mindset* og resultater har vist, at de er innovative
- er bevidste om de potentialer og udfordringer, der ligger i offentlig-privat innovation, som er brugerorienteret og kvalificeres af forskningsmæssig viden
- er førende og spidskompetente på deres felt
- har komplementerende kompetencer, som sikrer synergi og helhed i den samlede løsning
- kan formidle resultater og perspektiver nationalt og internationalt i en agenda med nyhedsværdi

Partnerskabskredsen er endnu ikke komplet, men repræsenterer på nuværende tidspunkt et solidt grundlag. I ansøgningsprocessen er partnerskaber fra VestDanmark blevet styrket. Endvidere har partnerskabet udvidet med en række førende internationale parter, bl.a. gennem deltagelse fra internationale virksomheder samt førende internationale forsknings- og videninstitutioner.

4.2 Partnernes roller i NoAge

Partnerskabet i NoAge samler relevante parter om innovative samfundsløsninger med tre forskellige foci:
- Det strategiske fokus i NoAge
- Det tværgående fokus på NoAge platformen
- Det resultat og effektrettede fokus i NoAge innovationsprojekterne

De tre fokusområder er uddybet i afsnit 9 om organisering af NoAge. I det følgende er de forskellige parters roller oplistet udfra deres væsentligste bidrag i NoAge.

Private parter

Er *drivere* for det kommercielle potentiale i de innovative løsninger.
Bidrager til

- førende *know how* (indenfor teknologi, service, design, rådgivning m.m.)
- konkrete innovationer og kommercialiseringen af løsninger i innovationsprojekterne
- udvikling og videreudvikling/kombination af prototyper og servicedesigns

Deltager i innovationsprojekterne og i generelle aktiviteter på NoAge platformen. I de generelle aktiviteter særligt gennem virksomhedsklubben med åben innovation.

Førende nationale og internationale institutioner indenfor forskning og innovation

Sikrer forsknings- og innovationshøjde i NoAge.
Bidrager til

- *state of the art* bag identifikation af de *gaps*, som de innovative løsninger skal kunne lukke
- adgang til en *pool* af erfaringer og internationale netværk af relevans for NoAge
- metodeberedskab og den systematik, der sikrer værdiskabende synergi i projekter og aktiviteter på platformen og i det strategiske fokus i NoAge

Deltager i innovationsprojekterne og i generelle aktiviteter på NoAge platformen, den internationale forskningsklub. Videninstutioner (Alexandra, DELTA og icph) varetager projektledelse, ledelse af NoAge og en del af vidanspredningsaktiviterne på NoAge platformen.

Offentlige parter i regionen: Hospitaler og kommuner
Giver adgang til brugere, dvs. borgere og fagpersoner i *real life* konteksten og relevante servicesituationer i den offentlige serviceløsning på tværs af sektorgrænser mellem kommune, praktiserende læge og hospital.
Bidrager til

- løsninger, som er orienteret mod brugernes umødte behov i hverdagslivet
- førende *know how* (indenfor praksisfeltet og nuværende offentlige serviceløsninger rettet mod ældre
- konkrete innovationer med samfundsmæssig nytteværdi, der frigør offentlige ressourcer og bidrager til uændret eller forbedret oplevet serviceniveau

Deltager i innovationsprojekterne og i generelle aktiviteter på NoAge platformen, særligt gennem offentlig klub med åben innovation.

Organisationer
Spreder og løfter resultater til nationalt niveau og initierer dialoger i offentligheden.
Bidrager til

- relevante dialogskabende aktiviteter, som spreder viden og sætter nye standarder for innovative løsninger i strategiske partnerskaber
- synergi til projekter og initiativer på nationalt og internationalt niveau med relevans for NoAge
- strategiske input til videreudvikling og forankring af NoAge

Deltager i generelle aktiviteter på NoAge platformen, samt i det strategiske fokusområde i NoAge bestyrelsen.

En kort profil af de deltagende institutioner og virksomheder er vedlagt i bilag 1. CVer for parter i bestyrelsen og ledelsen er vedhæftet. Interesseerklæringer fra alle parter er vedlagt i bilag 5.

5. Sammenhæng til strategisk forskning og den eksisterende nationale innovationsindsats

5.1 NoAge's sammenhæng til strategisk forskning

NoAge har foruden sit afsæt i prioriteringsgrundlaget for strategisk forskning, Forsk2015, interessante snitflader til flere aktuelle projekter under bl.a. Det Strategiske Forskningsråd (DSF), herunder særligt til projekter, der som NoAge beskæftiger sig med nye innovationsformer. Der vil givetvis kunne opnås spændende synergi-effekter ved samarbejde med disse. NoAge påtænker bestemt at høste disse.

DSF-projektet "Collaborative Innovation in the Public Sector" (CLIPS) beskæftiger sig som NoAge med offentlig innovation, men som 'samarbejdsdrevet innovation'. Der vil imidlertid være mange paralleller til brugerdreven innovation i det offentlige, som NoAge-konsortiet benytter sig af. "When the customer encounters the employee" er et andet DSF-støttet projekt inden for brugerdreven innovation. Her ses på hvorledes ansattes forståelse af brugeres behov kan skabe innovation, et felt der også har nær sammenhæng med innovationsmodellen, der bruges i NoAge. Endvidere er der en potentiel stor synergimulighed for NoAge med projektet "The Participatory Dynamics of User-Driven Innovation", som støttet af DSF forsker i brugerinddragelse i udviklingen af nye produkter. NoAge vil, som nogle af sine første handlinger efter etableringen, tage kontakt til disse projekter mhp. at definere brugbare samarbejder og sikre bedst mulig synergi.

5.2 NoAge's sammenhæng til den nationale innovationsindsats

NoAge har tre GTS-institutioner med som parter: Alexandra Instituttet, DELTA og Teknologisk Institut. Disse har tilsammen en meget stor og relevant berøringsflade til virksomheder, som beskæftiger sig med udvikling og anvendelse af informations- og kommunikationsteknologi i bred forstand. Samtidig har de tre institutter stor kompetence indenfor teknologiudvikling, innovationsprocesser og brugerinvolvering, og driver hver især en række innovationsnetværk, erfagrupper mv. der vil kunne fungere som bredt netværk når resultaterne skal spredes og formidles. Gennem involvering af disse institutter og stærke danske forskningsmiljøer har NoAge sikret kompetencer på højeste internationale niveau inden for de relevante fagområder. I relation til Rådet for Teknologi og Innovations nye innovationskonsortier 2009 vil NoAge fungere som et supplement, idet ingen af innovationskonsortierne beskæftiger sig med at fastholde ældres selvhjulpenhed eller direkte relaterede emner. Da der, så vidt vides, ikke eksisterer en samlet fokuseret strategi for en innovationsindsats ift. at fastholde selvhjulpne ældre i deres funktionsrum, vil etableringen af NoAge samtidig kunne være et første skridt imod at etablere en sammenhængende strategi på området.

Der pågår p.t. en række NoAge-relevante aktiviter ifm. EU-programmet "Ambient Assisted Living" (AAL), hvorunder også Forsknings- og Innovationsstyrelsen har et program. NoAge forventer i de sidste to år af den første fireårsperiode, at søge midler fra AAL-puljen, ligesom de igangværende projekter vil blive kontaktet mhp. at koordinere berøringsflader og samarbejder. I denne periode planlægges der endvidere at starte nye innovationsprojekter op, dels som innovationskonsortier, dels som EBST BDI-projekter. AAL-puljen og partnerkredsen vil endvidere blive adresseret, dels for at udvide deltagerkredsen og dels for at finde partnere til også at søge EU-midler indenfor området. Når NoAge har konkrete innovationer færdige, vil disse blive søgt afprøvet, implementeret og eventuelt skaleret med midler fra ABT-fonden, eller eventuelt forebyggelsesfonden, hvis ideerne er arbejdsrelaterede.

I alle de nye innovationsprojekter vil der blive arbejdet på at gøre brug af viden- og forskerkupon-midler som løftestang til at få SMV'er aktivt involveret i projekter, og af erhvervsPhD-midlerne. Begge er stærke virkemidler ift. at få tætte og forpligtende samabejder imellem forskningsinstitutioner og virksomheder. Herudover satser konsortiet på at gøre brug af eventuelle virkemidler fra det strategiske forskningsråd i det omfang disse har innovation centralt i kravene. Netop nu er GTS-institutternes resultatkontrakter til forhandlinger, og vi kender ikke udkommet af disse. Når resultatkontrakterne er faldet på plads, vil NoAge undersøge hvilke af disse, der har berøringsflader til NoAge. Disse projekter vil blive kontaktet mhp. at koordinere berøringsflader og mulige samarbejder.

NoAge har i ansøgningsfasen været i kontakt med parterne bag ansøgningen fra Syddansk Universitet/Robo Cluster: "Sundheds- og Velfærdsinnovation med fokus på velfærdsteknologier". NoAge er indstillet på at sikre fortsat koordinering og synergi mellem de to partnerskaber.

6. Sammenhæng til de regionale strategier og innovationsindsats

6.1 Sammenhæng til de regionale strategier og innovationsindsats

NoAge repræsenterer en væsentlig landvinding og har direkte sammenhæng med de visioner, der allerede blev formuleret af Region Hovedstandens Vækstforum tilbage i 2007.

"Vi satser på viden som drivkraft i vores regionale landskab og arbejder målrettet på at skabe landvindinger i mødet mellem forskning, erhvervsliv og offentlige service. ….Vi ser for os en storbyregion bundet sammen af strategiske partnerskaber ml. erhvervsliv, offentlige aktører og uddannelsesinstitutioner"

"Et eller flere af regionens ældrecentre indgår i et forsknings- og testmiljø…….Målet er at udvikle nye koncepter og teknologier baseret på de ældres egne præmisser, som dermed kan give større kvalitet og effektivitet i sektoren."

Uddrag af Erhvervsudviklingsstrategi og prioriterede initiativer, Region Hovedstaden 2007

NoAge medvirker til at skabe større synergi mellem den nationale og den regionale innovationsindsats under Vækstforum Hovedstaden. Der er allerede i udgangspunktet en konkret sammenhæng mellem partnerskabets indsats og de regionale erhvervsudviklingsstrategier og innovationsindsats. NoAge vil bidrage til større slagkraft i den række af aktiviteter, som Vækstforum Hovedstaden har prioriteret på tværs af erhvervsområder. Det drejer sig bl.a. om centrale vækst'*drivere*' som offentlig-privat samarbejde om forsknings- og teknologibaseret, brugerdreven innovation samt om anvendelsen af IKT og ny teknologi.

NoAge har endvidere en klar sammenhæng med Politik for Sundhedsforskning 2008 i regionen.
Denne parallel-strategi til Vækstforums erhvervsstrategi har fokus på, at tæt samarbejde med universiteter, kommuner og erhvervsliv i regionen, i resten af landet og i udlandet, skal sikre såvel endnu bedre forebyggelse, diagnosticering, behandling og genoptræning i sundhedsvæsnet som mere innovation, vækst og udvikling. Den nye viden skal udvikles i tæt samspil med patienter, forskere og andre personalegrupper i regionens sundhedsvæsen, handicapområdet og praksissektoren.

6.2 Den regionale opbakning til NoAge

Der er regional opbakning til NoAge partnerskabet. NoAge placerer sig centralt i Vækstforum Hovedstadens erhvervsudviklingsstrategi. Derfor besluttede Vækstforum at yde en betinget bevilling på 2 mio. kr. NoAge vil få snitflader til mange aktiviteter og aktører, idet Vækstforum Hovedstaden har en høj prioritering af det felt, som NoAge vil operere i:

- feltet er en regional, *erhvervsmæssig styrkeposition* med et stort, globalt og allerede stærkt voksende eksport-volumen.
- *jobs i sektoren er attraktive* med høj værdiskabelse.
- væsentlige konkurrenceparametre på området er *vigtige vækst'drivere'*, som Vækstforum har udpeget som afgørende i sine strategiske og konkrete dispositioner.
- det er en prioriteret udfordring at skabe netværk mellem klynge-aktører *på tværs af værdikæder.*
- det er en prioriteret udfordring at efterkomme presset på blandt andet kommuner om at opfylde borgernes behov via øget *offentlig-privat innovation*.

Der er allerede en stor erfaringsbase i regionen, som NoAge kan drage fordel af, og som NoAge kan blive en central figur i at samle og løfte yderligere. Følgende strategier, aktører og aktiviteter, der udspringer af Vækstforum region Hovedstadens erhvervsudviklingsstrategi, har snitflader til NoAge:

- Innovation Center Copenhagen (icph) – 29 kommuner i regionen
- Center for Sundhedsinnovation – 14 hospitalerne i regionen
- Medico Innovation Center – styrket samspil mellem medicoindustrien og bl.a. sygehuse og plejehjem, der trækker på og styrker erfaringer med brugerinddragelse i innovative processer.
- TECTRA, FIE og creoDK.
  Region Hovedstadens enheder for teknologioverførsel, fundraising og interessevaretagelse i EU i forbindelse med forskning på regionens hospitaler.
- Øresundsregional Udviklingsstrategi (ØRUS).
  Aktuelt strategiudviklingsforløb mellem Regionerne Skåne, Sjælland og Hovedstaden om ny fase i Øresundsintegrationen, hvor fokus er på blandt andet forskning og innovation og på helse og sundhed.

Udover Region Hovedstaden og Region Sjælland er NoAge også forankret i Region Midt. Alexandra Instituttet og Århus Universitet er de centrale aktører i Region Midts satsning på sundhedsIT-området, CareTech. Der vil derfor være et godt grundlag for at koordinere med aktiviteterne i Region Midt.

7. Partnerskabets aktiviteter

På helt overordnet niveau vil der være tale om to typer af aktiviteter: Generelle aktiviteter, hvor vægten er på matchmaking, vidensspredning og dialogskabende aktiviter. Og mere specifikke aktiviteter i form af konkrete innovationsprojekter med fokus på innovative løsninger af specifikke problemstillinger og ideer. Hertil kommer selvsagt administrative og ledelsesmæssige opgaver.

7.1 Generelle aktiviteter

De generelle aktiviteter har fokus på vidensdeling og spredning, samt at facilitere matchmaking og fundraising.

NoAge klubber for virksomheder, offentlige parter og international forskningsklub

Formålet er at

- afprøve åben innovation som en ny innovationsform, herunder særligt at involvere flere SMV'er i åbent innovationssamarbejde med andre aktører i det strategiske partnerskab
- styrke matchmakingen gennem faste arrangementer, hvor parterne har mulighed for at mødes og blive inspireret til samarbejde, samt modne projektidéer til kommende innovationsprojekter i NoAge

At drive disse klubber vil betyde muligheder for mødepunkter imellem relevante partnere og skabe et forum for vidensdeling og udvikling af ideer og visioner. Den daglige operatørdrift af klubberne vil blive finansieret via grundbevillingen, men de mange deltagere vil selv finansiere deltagelsen. Partnerskabet satser på at involvere mindst 60 virksomheder, 30 offentlige parter og 20 enkeltforskere i klubberne. Mindst halvdelen af virksomhederne er SMV'er, og i løbet af de fire år vil der være skabt vedvarende kontakter til mindst 10 internationale innovations- og forskningsmiljøer udenfor Danmark. Hver klub forventes at have mindst 4 arrangementer/år med deltagere fra mindst 20 medlemmer. Deltagelse i klubberne vil medføre, at mindst 10 SMV'er vil engagere sig i de næste runder af projekter, og derved få direkte mulighed for at deltage i innovationsprocesserne. Det vil give meget fine vækstmuligheder for disse.

Matchmaking, innovationspolitiske virkemidler og fundraising

Formålet er at

- matche relevante parter for eksisterende og kommende innovationsprojekter, herunder gennem afstemning af forventninger og idégenering forud for initiering af innovationsprojekter
- geare projektfinansieringen med EU midler og øvrige nationale nationale innovationspolitiske virkemidler ved at understøtte tilvejebringelse af supplerende projektfinansiering til eksisterende og kommende innovationsprojekters strategiske partnerskaber

Som det fremgår af planerne, forventer partnerskabet at skaffe nye danske og internationale projekter, der i omfang mindst svarer til det, som i første omgang er planlagt. Ud over de tre yderligere innovations-projekter vil der blive ansøgt om midler til mindst tre konkrete afprøvninger hos ABT-fonden, og der forventes ansøgt om mindst 8 videnkuponer og 4 erhvervsPhD'er. Desuden forventes det at partnerskabet vil være deltagere i mindst to EU-projektansøgninger i løbet af de 4 år. Langt størsteparten af aktiviteterne med matchmaking og fundraising vil foregå for medfinansieringsmidler. Der vil blive afholdt en del matchmaking-aktiviteter for grundfinansieringen. Det forventes at matchmaking-aktiviteterne vil betyde, at mindst 5 nye virksomheder og offentlige institutioner involveres i offenligt-privat-samarbejder.

Webplatform

Formålet er at

- informere potentielle parter om NoAge
- understøtte formidlingsarrangementer med vidensspredning
- afprøve en digital platform med mulighed for åben innovation om samfundsudfordringen det aldrende samfund

Det planlægges, at der skal lægges mindst 20 nyheder af relevans for partnerne om året. Derudover vil mindst et projekt om året arbejde med åbne innovationsprocesser via platformen. Webplatformen vil være en helt central del af den generelle formidling fra partnerskabet. Det vil samtidig betyde, at en lang række andre virksomheder og institutioner vil få adgang til den nyeste viden på området, og herved få anledning til selv at komme i mere direkte dialog med partnerskabet, enten i form af klubmedlemskaber eller direkte involvering i innovationsprojekter. Der forventes mindst 25 unikke besøgende på platformen pr. dag. Det forventes at mindst 10 nye virksomheder pr. år vil melde sig ind i klubberne eller deltage i projekter som følge af kontakter startet via webplatformen. Den daglige administration og drift af webplatformen vil blive finansieret via grundbevillingen og via fondsmidler.

Dialogskabende aktiviteter, strategi og analyse
Formålet er at

- sikre sammenhæng , arbejdsdeling, samarbejde og nyskabelse mellem NoAge og den nationale forsknings- og innovationsindsats
- sikre synergi mellem erhvervsudviklingsstrategier og NoAge fokusområder
- tilvejebringe dokumenteret grundlag for dialogskabende aktiviteter på det nationale forsknings- og innovationsområde med relevans for NoAge

Det forventes, at resultater og ideer fra NoAge præsenteres på mindst 10 andre events om året, dels rettet imod virksomheder og dels rettet imod offentlige institutioner. Arbejdet med at analysere forskellige tiltag og strategier samt koordinere ift. partnerskabets mange medlemmer vil blive varetaget af ledelsen og sekretariatet, og derved blive finansieret via grundbevillingen og suppleres via en fondsbevilling.

Ledelse, projektadministration og tværgående koordination
Formålet er at

- sikre effektiv, transparent og konsistent ledelse opad mod NoAge bestyrelse, udad mod NoAge interessent- og brugerorganisationer og nedad mod NoAge projektledere
- udvikle strategier for tværgående, sammenhængende aktiviteter, som skaber synergi for partnerskabets aktører
- understøtte NoAge med økonomistyring, samt rapportering

7.2 De tre første innovationsprojekter

Som omtalt planlægges der gennemført tre store innovationsprojekter i de første 18 måneder.

Innovationsprojektet Mødestedet
Integreret styrkelse af fysisk, social og mental (kognitiv) fitness hos endnu selvhjulpne ældre gennem leg og oplevelser. Formålet er at øge modstandskraft, fleksibilitet og kompensationsevne overfor helbredskriser, således at disse ikke antager kronisk karakter. Den mentale træning vil sandsynligvis også øge den psykiske fleksibilitet over for skift i livsvilkår ved sektorovergange i sundhedsvæsnet. Kan kronisk plejeafhængighed afværges hos blot få ældre, vil store økonomiske ressourcer kunne spares. De innovative løsninger vil således have kommercielt potentiale. Der vil blive tale om koncepter og systemer, der samtænker fysiske mødesteder med de digitale dimensioner, som muliggør, at mødestedet kan nå helt ud i den ældres dagligstue. Løsningerne vil virke inkluderende frem for stigmatiserende for de ældre. Der lægges vægt på systemer, der rummer mulighed for differentierede tilbud til en række forskellige segmenter af målgruppen - fx forebyggende træning vs. genoptræning. Der vil blive arbejdet med nye tværfaglige og privat/offentlige samarbejdskonstellationer i udviklingen af systemerne, bl.a. mellem aldrings-specialister, designere, arkitekter, IT(playware)-eksperter og offentlige brugere.

Fysisk inaktivitet forøger risikoen for tab af funktionsevne hos ældre mennesker. Selv kortere perioder med fysisk inaktivitet i relation til sygdom og hospitalsindlæggelse øger risikoen for tab af funktionsevne, og

restitutionsperioden er længere hos fysisk inaktive ældre. Tab af muskelmasse og dermed nedsat muskelstyrke forekommer hos over 50 % af ældre over 80 år og mellem 13-24 % af ældre 65-70-årige og medfører øget risiko for balanceproblemer, fald, funktionsevnetab og nedsat livskvalitet (*Motions- og Ernæringsrådet, 2007. Fysisk inaktivitet – konsekvenser og sammenhænge*).

Studier i USA med flere tusinde raske ældre har vist, at formaliseret mental (kognitiv) træning - selv i moderat omfang (ti sessioner af 60-75 min. varighed) - øger selvhjulpenhed og evnen til at løse kognitive problemer i hverdagen – fx at huske indkøbslister og forstå busplaner - mindst fem år frem i tiden (se fx *ACTIVE study group, 2006. Long-term effects of cognitive training on everyday functional outcomes in older adults. JAMA 296: 2805-2814*).

Nyhedsværdien i dette projekt er først og fremmest at arbejde forebyggende med forbedring af mental fitness hos endnu selvhjulpne ældre. Kognitiv (genop)træning har hidtil i Danmark primært været anvendt inden for snævre specialer, som fx hjerneskade- og demensområdet. Det er også nyt med målrettede systemer til integreret mental og fysisk træning af ældre, som indtænker de nyeste virtuelle muligheder og tager højde for at undgå den stigmatiserende effekt, især mentaltræningsdelen kunne risikere at få.

Gennemførelse af dette projekt vil betyde, at de deltagende parter opnår stærkt forøget viden om hvordan fysisk, social og mental træning kan understøttes, og om hvorledes fysiske og digitale mødesteder og rammer kan tænkes sammen. Alle de involverede virksomheder vil have prototyper, servicekoncepter eller ideer, som vil kunne udvikles til kommercielle produkter og services. De problemstillinger, der adresseres, vil kunne generaliseres til en lang række andre og beslægtede anvendelser. Der forventes et meget stort vækst- og eksportpotentiale for de innovationer, der produceres. Virksomhederne vil selv finansiere deres deltagelse. En del af forsknings- og vidensinstitutionernes aktiviteter vil blive finansieret via grundbevillingen. Der planlægges en tæt integration med et større projekt med fokus på social interaktion blandt ældre hvori bl.a. Københavns Kommune, ITU og Danmarks Designskole deltager. Dette projekt er delvist finansieret af EBSTs program for brugerdreven innovation. Se nuværende deltagerliste i bilag 2.

Innovationsprojektet Forebyggende selvmonitorering
Selvmonitorering af sundheds- og sygdomsparametre i forebyggende øjemed. Både raske ældre i risikogrupper og selvhjulpne patientgrupper inkluderes. Selvmonitorering har stort potentiale for at spore nye - eller forværring af allerede erhvervede - sygdomme og funktionsnedsættelser. Ved tidligere indgriben er chancen for helbredelse større. Idet de selvhjulpne ældre selv måler parametrene, vil selvmonitorering have stort potentiale for at kunne aflaste det offentlige sundhedsvæsen ved fremtidens personalemangel. Der er omfattende kommercielle muligheder i udvikling af nye selvmonitorerings-teknikker samt brug af eksisterende teknologi på nye måder. Projektet lægger også op til udvikling af nye offentlige servicedesigns på tværs af sektorer og fagskel for at kunne udnytte selvmonitoreringspotentialet maksimalt. Der satses på at arbejde med et antal forskellige sensorteknologier, f.eks. digitale plastre, lydmålere, temperaturfølere etc. Udviklingen af konkrete prototype løsninger vil ske i nye tværfaglige og privat/offentlige samarbejdskonstellationer, bl.a. mellem aldrings-specialister, specialister i monitoreringsteknik og offentlige brugere.

Det er dokumenteret i forbindelse med fx type 2 diabetes, hjerte insufficiens, astma samt antikoagulant behandling, at selvmonitorering fører til forbedret sygdomsstatus og –kontrol, reduceret brug af sundhedsydelser samt forbedret livskvalitet og selvhjulpenhed *(Sundhedsstyrelsen, 2007. Chronic disease management – a national strategy*). Selvmonitorering af sygdomsparametre hos medicinske patienter er så småt ved at vinde indpas i det danske sundhedsvæsen, særligt ift. kroniske lidelser som diabetes, hjertelidelser og KOL. Forebyggende selvmonitorering af sundhedsparametre hos selvhjulpne ældre er

imidlertid helt nyt og finder ikke sted i Danmark i dag. Der er således ikke p.t. udviklet kommercielle systemer til forebyggende selvmonitorering tilpasset selvhjulpne ældre.

Gennemførelse af dette projekt vil betyde, at de deltagende parter opnår store muligheder for at evaluere potentialerne i sensorteknologier til selvmonitorering. Der vil foreligge resultater i form af prototyper og konceptideer, som vil kunne udvikles til kommercielle produkter og services. Der er et meget stort vækst- og eksportpotentiale for de innovationer der produceres. Virksomhederne vil selv finansiere deres deltagelse. En del af forsknings- og vidensinstitutionernes aktiviteter vil blive finansieret via grundbevillingen. Se nuværende deltagerliste i bilag 2.

Innovationsprojektet Patientrettede Add Ons til medicinkortet
Patientrettede og borgernære tilføjelser til det elektroniske medicinkort, som muliggør, at medicinkortet bliver et kommunikations- og informationsredskab til patienten selv. Det elektroniske medicinkort forventes lanceret i 1. halvår af 2010 som et instrument til at sikre større behandlingskontinuitet ml. fagprofessionelle i sundhedssektoren. Patientrettede add ons kan sikre, at selvhjulpne ældre tager deres medicin korrekt (compliance) i et partnerskab med lægen baseret på dialog og enighed (concordance). Således vil der kunne frigøres betydelige offentlige ressourcer, der i dag spildes på non-compliance, fx i form af genindlæggelser og indgriben fra den kommunale ældrepleje. Af samme årsager har patientrettede Add Ons til medicinkortet kommercielt potentiale.

Der er i de senere år kommet øget fokus på, at vejen til compliance går gennem information og kommunikation. Medicinbrugernes compliance og ejerskab overfor eget liv og helbred øges, hvis de får et vidensløft ift. deres sygdom og behandling, således at de kan træffe valg om deres indtagelse af medicin på et velinformeret grundlag. Ligeledes kan forbedret kommunikation mellem læge og medicinbrugerne føre til større motivation, øgede forventninger til egne evner og indsigt i personlige ressourcer og barrierer ift. compliance hos medicinbrugerne (*Pharmakon, 2007. Sikker og effektiv medicinbrug*). Den centrale nyhedsidé i dette projekt er at ændre det elektroniske medicinkort til også at blive et kommunikations- og informationsredskab til patienten selv. Denne nyskabelse vil blive udviklet i nye tværfaglige og privat/ offentlige samarbejdskonstellationer. Bl.a. medvirker compliance-eksperter, lægemiddelinformations-specialister, IT-eksperter og offentlige brugere. Se deltagerliste i bilag 2.

Gennemførelse af dette projekt vil betyde, at de deltagende parter får etableret koncepter og prototyper for, hvordan services rettes imod borgere i medicinering. Dette har meget store potentialer, både nationalt og internationalt (fx som services overfor de mange og voksende grupper af kroniksk syge). Alle de involverede virksomheder vil have prototyper, servicekoncepter eller ideer, som vil kunne udvikles til kommercielle produkter og services, med et meget stort vækst- og eksportpotentiale. Virksomhederne vil selv finansiere deres deltagelse. En del af forsknings- og vidensinstitutionernes aktiviteter vil blive finansieret via grundbevillingen. Der planlægges i dette projekt en tæt integration med et større projekt med fokus på social interaktion blandt ældre.

Foruden den generelle nyhedsværdi i de nye typer strategiske partnerskaber, det levende laboratorium og den gennemgående innovationsmodel, som sikrer konkrete innovationer og synergien til klubberne, er der også i tilknytning til de tre første innovationsprojekter tale om en mere konkret nyhedsværdi i forhold til den eksisterende indsats, herunder gennem en tværfaglig tilgang, hvor en større samfundsrelevant problemstilling er den samlende innovations*driver*.

7.3 Internationale aktiviteter
Strategien i NoAge er at starte med at etablere et miljø i Danmark, og umiddelbart derefter arbejde på at få etablere kontakter og samarbejder på internationalt niveau. Arbejdet med at skabe internationale kontakter og etablere samarbejder og projekter internationalt vil bruge flere virkemidler.

For det første vil vi benytte de allerede etablerede kontakter som virksomheder, kommuner og vidensmiljøer allerede har (visse af disse kan ses i de internationale interessetilkendegivelser). I forbindelse med klub-aktiviterne vil vi invitere relevante og interessante projekter og aktører til Danmark for at høre om, hvilke resultater andre har nået. Dels for at skabe kontakter, og dels for at sikre at vore egne projekter starter på baggrund af den nyeste viden.

Derudover vil en del af de generelle aktiviteter (jf. afsnit 7.1) omhandle etablering af en *scouting*-funktion. Denne har bl.a. til formål at finde resultater fra projekter udenfor landets grænser, som er af interesse for de første innovationsprojekter vi igangsætter, samt identificere mulige internationale partnere for den næste runde af innovationsprojekter (igangsættes efter godt 2 år). Kontakterne til disse håndteres, således at vi først kigger på de lande, der omgiver os (Norden og Nordeuropa), og derefter på resten af EU og USA.

Som en del af klub-aktiviteterne er det endvidere planlagt, at der i løbet af de første 4 år vil blive afholdt to internationale konferencer med deltagelse af internationale forskere og vidensmiljøer. Formålet med dette er dels at få indblik i, hvilke problemstillinger og ideer, der arbejdes med andre steder i verden, dels at knytte kontakter samt sætte Danmark og NoAge på verdenskortet ift. innovationer til selvhjulpne ældre.

Sidste, men yderst vigtige, hovedaktivitet handler om aktivt at arbejde på at komme med i et eller flere EU-projekter på området. Første skridt i denne forbindelse er at bruge kontakter og projekter i AAL-puljen (Ambient Assisted Living) til at undersøge muligheder og få kontakter. Vi tager afsæt i det nye *roadmap* som fokuserer på *enabling technologies* i relation til aldring i hjemmet, i samfundet og på arbejdspladsen. På baggrund af dette, vore øvrige internationale kontakter, samt de temaer vi foreløbig har identificeret, vil NoAge arbejde aktivt på at komme med i et eller flere projekter under 7. rammeprogram.

8. Forankring og formidling af resultater

8.1 Forankring af viden i partnerskabet NoAge

NoAge kombinerer offenligt-privat samarbejder med innovationer drevet af både teknologiforståelse, brugerinvolvering og presset på velfærdsstatens ydelser. I forbindelse med de konkrete innovationsprojekter og i forbindelse med de mange klubaktiviteter, matchmaking og dialogskabende aktiviteter vil partnerskabet få en unik viden om innovative løsninger, som har en meget bred relevans også udover den primære målgruppe af selvhjulpne ældre.

Matchmaking-aktiviteter vil dels foregå i form af egne åbne arrangementer, dels som led i arrangementer afholdt via relaterede netværk, drevet af videninstitutioner og organisationer. Eksempelvis de tre innovationsnetværk SundhedsITnet, Netværk for forskningsbaseret brugerdreven innovation (NFBI), og InfinIT (om indlejret, mobil og pervasive IT) som alle drives af Alexandra, netværk drevet af DELTA og OPInetværket, drevet af icph. De mange involverede videninstitutioners aktive deltagelse i formidlingen undervejs styrker forankringen. Center for Sundhedsinnovation kan sprede resultater til de 14 hospitaler i regionen, icph til de 29 kommuner.

NoAge har endvidere en lang række organisationer i partnerskabet. Mange af disse organisationers interessevaretagelse vil helt naturligt have en stærk sammenhæng med formidling og forankring af viden. Særligt har både Danske Regioner og KL tilkendegivet, at de gerne bidrager med vidensspredning og forankring af NoAge resultater til regioner og kommuner i hele landet. I Danske Regioner sker det gennem ViS-gruppen, i KL gennem KKRs sundhedsudvalg.

8.2 Videnspredning i NoAge rettet mod virksomhederne

Internt i partnerkredsen vil nye indsigter og nye ideer blive fastholdt og forankret primært igennem klubberne, hvori resultaterne vil blive præsenteret og evalueret af et større kompetent forum. Alle projekter og større aktiviteter skal præsentere deres resultater i klubregi. Herudover vil ledelse og sekretariat løbende gennemføre matchmaking-aktiviteter med det formål at involvere flere og nye virksomheder i de fremadrettede innovationsaktiviteter. Dette vil både fungere som en yderligere videnssprednin, og som en indgang til det fundraisingarbejde der kræves for at få yderligere aktiviteter igangsat.

Webplatformen vil blive brugt til at annoncere nyheder og resultater fra partnerskabet selv, men også fra andre beslægtede og relaterede aktiviteter, fx fra andre projekter, partnerkredsen er med i, eller aktiviteter helt udenfor NoAge. Det planlægges, at der i starten udsendes nyhedsbreve for at skabe viden og bevidsthed om projektet. Samtidig skal webplatformen i løbet af de første to år udvikles til et dynamisk forum, hvor virksomheder, forskere, offentlige institutioner, borgergrupper, mfl. deltager i åben innovation.

I forhold til virksomhederne sigtes der på at ramme virksomheder fra en række brancher, først og fremmest service- og produktleverandører til sundheds- og plejesektoren, samt forskellige områder indenfor teknologi- og systemudvikllng. Det forventes, at mindst 100 danske virksomheder (udover partnere og klubmedlemmer) vil kunne nås med relevant viden og information i løbet af de første fire år.

Hovedparten af de konkrete formidlingsaktiviteter vil blive organiseret af NoAges ledelse og sekretariat, men i den konkrete formidling af de faglige resultater vil alle typer parter (kommuner, virksomheder, vidensinstitutioner, forskningsinstitutioner, hospitaler mv.) blive involveret. Erfaringen er helt klart, at for personer, der selv er i fx den kommunale sektor, giver det ofte langt bedre mening, at høre hvordan andre "ligesindende" har gjort og erfaret. Derfor ville alle partnertyper blive søgt bragt i spil i de forskellige events og arrangementer, der gennemføres. Endvidere vil der gennem virksomhedsklubben og gennem offentligheden inviteres til mere fokuserede temamøder med få virksomheder om et meget specifikt område af interesse for disse.

8.3 Formidling til en bredere offentlighed

Emnet omkring selvhjulpne ældre vil have bred almen samfundsmæssig interesse. NoAge's ledelse og sekretariat vil derfor, som en del af de dialogskabende aktiviteter, udsende pressemeddelelser og holde kontinuerlig kontakt med pressen. Allerede i ansøgningsperioden har NoAge været omtalt i både landsdækkende og lokale aviser. En brugercentreret vinkel bidrager til at gøre pressehistorier om samfundsudfordringer og innovative løsninger herpå i NoAge's perspektiv relevante for den brede offentlighed.

Mandag Morgen har tilkendegivet interesse i at formidle NoAge gennem initiativet Velfærdens Innovatører, hvor partnerskabet kan formidles bredt ud til offentligheden, bl.a som caseoplæg på konferencer, som debatoplæg i Velfærdspanelet og som historier i Ugebrevet og på web. De deltagende forskere vil udover formidling til virksomheder og institutioner også publicere i de gængse videnskabelige sammenhænge indenfor deres respektive områder.

9. Organisering

"Det er i brudfladerne mellem kulturer, organisationer og fagtraditioner, at de afgørende nybrud sker"
Forsknings- og Innovationsstyrelsen

9.1 Princippet bag organiseringen af NoAge – magtens tredeling

Organiseringen af NoAge skal i sin helhed bidrage til at skabe synergi og sammenhæng mellem organisatoriske og faglige brudflader, således at de afgørende nybrud indenfor innovative

samfundsløsninger sker. Der vil være 3 ledelsesniveauer i NoAge svarende til de 3 forskellige foci i det strategiske partnerskab i NoAge:

- En bestyrelse, som varetager den strategiske ledelse
- En ledelse, som varetager den innovationsfaglige, tværgående ledelse
- En projektrettet ledelse i form af styregrupper og projektledere for innovationsprojekterne

Bestyrelsen

Organiseringen i bestyrelsen skal i sig selv afspejle et nyt strategisk partnerskab mellem parter, som *repræsenterer* forskere, videninstitutioner, private virksomheder, offentlige organisationer og brugere. Bestyrelsen bidrager til den strategiske ledelse af NoAge og vil have sit fokus på:

- innovationshøjde, synergi og sammenhæng mellem NoAge strategien og den nationale forsknings- og innovationsindsats
- igangsættelse af nationale dialoger, der synliggør erfaringer og perspektiver fra NoAge
- potentialevurdering og prioritering mellem kommende, potentielle innovationsprojekter i NoAge, herunder bistå med input til fundraising
- at tilvejebringe principielle beslutningsgrundlag, der sikrer transparente, tværfaglige og værdiskabende samarbejdskonstellationer i innovationsprojekterne

Bestyrelsesmedlemmerne er udpeget efter følgende kriterier:

- forskning i aldring og teknologi skal repræsenteres
- bruger- og interessentorganisationer indenfor aldring og teknologi skal repræsenteres
- både store og små virksomheder fra hele landet skal repræsenteres
- såvel kommuner, hospitaler og praktiserende læger fra hovedstadsregionen skal repræsenteres

Bestyrelsen vil udgøres af:

- Kristian Johnsen, udviklingschef, Region Hovedstaden
- Lene Juel Rasmussen, direktør for Center for Sund Aldring, Københavns Universitet
- Jørgen Staunstrup, prorektor ITU
- Morten Kyng, direktør for Caretech Innovation, Alexandra Instituttet og leder af Center for Pervasive Healthcare, Alexandra Instituttet og AArhus Universitet
- Bjarne Hastrup, direktør i Ældresagen
- Lars Klüver, sekretariatschef Teknologirådet
- En kommunaldirektør udpeget af KKR's social og sundhedsudvalg (kommunerne)
- Frans Boch Waldorff, formand for DSAM i Region Hovedstaden, der er de praktiserende lægers videnskabelige selskab
- Søren Rohde, medlem af direktionen på Bispebjerg Hospital (hospitalerne)
- Tom Togsverd, ITEK, DI (større virksomheder)
- Marlene Haugaard, direktør VHHR (SMV'er og vækstiværksættere)

Det er forventningen, at bestyrelsen mødes 2-3 gange årligt. CVer for bestyrelsesmedlemmer er vedlagt i bilag 1.

NoAge ledelsen

Der etableres en ledelse, som varetager den faglige, daglige og tværgående ledelse. Ledelsens rolle er at:

- bistå bestyrelsen med kvalificerede beslutningsgrundlag og afsæt for dialogskabende aktiviteter
- træffe de daglige ledelsesmæssige beslutninger, og være fagligt ansvarlig for NoAge, herunder lede projektledere i innovationsprojekterne og NoAge's kernestab
- sikre opbakning og interesse blandt parter, potentielle parter og interessenter, herunder RTI
- udvikle og kvalitetssikre det innovationsmetodiske grundlag for innovationsprojekterne i NoAge
- sikre strategisk og finansieringsmæssig udvikling af NoAge for platformen og innovationsprojekterne.

Ledelsen er udpeget efter de samme gennemgående kriterier som bestyrelsen: Aldring og teknologi skal repræsenteres, og der skal skabes synergi mellem to fagligt førende innovative miljøer:

- brugerdreven innovation, levende laboratorier og erfaringer med OPI-alliancer indenfor det offentlige sundhedsområde skal repræsenteres – Innovation Center Copenhagen (icph)
- matchmaking, forskningsbaseret innovation, teknologiudvikling og videnspredning indenfor sundhedsområdet skal repræsenteres – Alexandra Instituttet

Ledelsen vil udgøres af:

- Nana Scheibel, leder af Innovation Center Copenhagen
- Peter Carstensen, afdelingsleder af Alexandra Instituttet, København

Det er forventningen, at ledelsen varetager den daglige ledelse af NoAge-sekretariatet og innovationsprojekternes projektledere. CVer på ledelsen er vedlagt i bilag 1

NoAge's styregrupper på projektniveau

På projektniveau etableres projekt-styregrupper med centrale beslutningstagere for parter i det konkrete strategiske partnerskab - styregruppernes NoAge projektleder. Projekternes styregruppers rolle er at:

- sikre synergi i det strategiske partnerskab i innovationsprojektet
- godkende innovationsprojekterne ved faseskift
- træffe de overordnede beslutninger om fundraising i det enkelte projekt, som øger volumen, partnerkreds eller tidshorisont.

I innovationsprojekters styregrupper indgår parter, som leverer ressourcer til innovationsprojektet.
Det er forventningen, at projekternes styregrupper mødes ved faseskift i innovationsprojektet, ca. 1 gang i kvartalet. Innovationsprojekternes styregrupper skræddersyes til det enkelte innovationsprojekts behov i projektets 1. fase, men vil som generelle kriterier sammensættes, så der sikres repræsentation fra

- Centerdirektører fra universiteter, som lægger timer i projektet
- Udviklingschefer fra hospitaler, som deltager i projektet
- Sundhedsdirektører fra kommuner, som deltager i projektet
- Patientforeninger (hvis relevant for målgruppen)
- Lokale brugerorganisationer – eksempelvis kommuners ældreråd
- Adm. direktører eller udviklingsdirektører fra virksomheder, som lægger timer i projektet
- Repræsentation fra fond i det omfang, der er privat funding
- NoAge ledelsen indgår i alle projekternes styregrupper.

Qua de 3 ledelsesniveauer vil der blive udarbejdet samarbejdsaftaler for de forskellige typer af strategiske partnerskaber:

- En samarbejdsaftale mellem parter på det overordnede strategiske niveau i bestyrelsen
- En samarbejdsaftale mellem videninstitutioner, som tager ansvar for den overordnede og tværgående ledelse af NoAge, samt for den faglige ledelse af NoAge projektledere
- En samarbejdsaftale i form af projektaftaler, der specificerer parters bidrag og rettigheder i de enkelte innovationsprojekter

Udkast til samarbejdsaftalerne er vedlagt i bilag 3.

10. Økonomi og medfinansiering

NoAge har ambitioner om et højt, samlet budget

Finansieringssammensætningen i NoAge er, at den statslige grundfinansiering matches mindst 1:1 med privat medfinansiering i grundfinansieringen. Den private medfinansiering tilvejebringes via

virksomhedernes egen medfinansiering af timer i innovationsprojekterne, via klubmedlemsskaber i virksomhedsklubben, samt gennem eksterne bidrag i form af ekstern funding fra private fonde.

Det har været et centralt princip i det samlede budget, at alle parter i NoAge, herunder også de, som modtager midler fra RTIs grundbevilling, skal lægge en vis medfinansiering. Forsknings- og videninstitutioner har derfor i tillæg til timer, der ønskes finansieret af den statslige grundbevilling, lagt op til 50 % yderligere ufinansierede timer.

Grundfinansieringen dækker aktiviteter i NoAge i de første 2 år, såvel generelle aktiviteter, som innovationsprojekter. I samme periode fundraises den supplerende projektfinansiering. På nuværende tidspunkt er tre private fonde kontaktet (TrygFonden, NordeaFonden og MærskFonden), og har tilkendegivet, at NoAge ligger indenfor deres interessefelt, hvorfor der ses frem til en ansøgning ifm. tilsagn. Bemærk i budgettet herunder, at midlerne fra fonde er fordelt jævnt, som et udtryk for en generel gearing af alle aktiviteter, hvis der opnås midler. Alle aktiviteter kan dog gennemføres på en passende niveau selv uden fondsmidler.

NoAge har et ressourceeffektivt budget

NoAge har et ressourceeffektivt budget for grundfinansieringen, hvor hovedparten af midlerne anvendes på aktiviteter, som direkte bidrager til effekt for de involverede parter.

Aktiviteter på NoAgeplatformen	23.300.000
Innovationsprojekter	40.000.000
Ledelse og administration	2.200.000
Etablering	2.000.000

Nedenstående skema viser hovedaktiviteterne og hvorledes disse forventes finansieret:

	Finansierings-kilde						
Aktivitet	RTI-grundbevilling	Medfinansiering: Videns- og forks.institutioner	Medfinansiering: Virksomheder	Medfinansiering: Kommuner og hospitaler	Medfinansiering: Vækstforum	Finansiering via fonde	Budget pr. aktivitet
Dialogskabende aktiviteter	1.066.666					2.000.000	3.066.666
Matchmaking og fundraising	2.266.666				1.000.000	2.000.000	5.266.666
Webplatform	2.200.000				1.000.000	2.000.000	5.200.000
Klubber i NoAge	2.266.669	1.000.000	3.000.000	1.500.000		2.000.000	9.766.669
Ledelse og tværgående koordination	2.200.000						2.200.000
Etablering	2.000.000						2.000.000
Innovationsprojekt: Mødestedet	4.333.333	2.000.000	4.000.000	1.000.000		2.000.000	13.333.333
Innovationsprojekt: Patientrettet Add Ons til medicinkort	4.333.333	2.000.000	4.000.000	1.000.000		2.000.000	13.333.333
Innovationsprojekt: Forebyggende selvmonitorering	4.333.333	2.000.000	4.000.000	1.000.000		2.000.000	13.333.333
Total	25.000.000	7.000.000	15.000.000	4.500.000	2.000.000	14.000.000	67.500.000
%-del som pt er realiseret		**> 100%**	**60%**	**83%**	**100%**	**0%**	

Det skal bemærkes at medfinansieringen for virksomheder er 60% på plads efter kun få ugers indsats, mens den tilvejebragte medfinansiering for kommuner er helt oppe på 83%.

Det samlede budget for grundfinansieringen er på 67,5 mio kr. Heraf kommer 25 mio kr. som grundbevilling fra RTI. Disse midler anvendes til dækning til forskere og vidensinstitutioner, samt i mindre omfang til konsulenthjælp og etableringsomkostninger. De over 42 mio kr. i medfinansiering stammer fra virksomhedsmedfinansiering, private fonde, kommuner, samt medfinansiering fra forskning og vidensinstitutionerne.

Supplerende fremadrettet finansiering
Udover de allerede budgetlagte aktiviteter stiles efter en supplerende projektfinansiering på op til 25 mio som modsvares af en (primær privat) medfinansiering på omkring 38 mio.

De supplerende midler kunne for den offentlige finansiering se således ud:
- 2 mio fra Vækstforum Region Hovedstaden (til generelle aktiviteter)
- 5,0 mio til innovationsprojekt via innovationskonsortiemidler og en erhvervsPhD
- 5,0 mio til innovationsprojekt via AAL-puljen og to erhvervsPhDer
- 5,0 mio til innovationsprojekt via EBST-program for Brugerdreven Innovation og en erhvervsPhD
- 8,0 mio til evaluering, afprøvning og effektevaluering af to af NoAge's innovationer fra ABT-fonden

Til at modsvare de 25 mio i offentlig finansiering planlægges følgende medfinansiering:
- kommende 12 mio privat medfinansiering til næste 3 innovationsprojekter (projekter)
- kommende 3 mio fra kommuner til næste 3 innovationsprojekter (projekter)
- 12 mio supplerende midler fra private fonde (generelle aktiviteter)
- 5 mio gennem flere klubmedlemsskaber over næste 2 år (generelle aktiviteter)
- 6 mio fra forskeres medfinansiering til næste 3 projekter (projekter)

De 12 mio som skaffes via private fonde bruges på at fastholde et niveau af generelle aktiviteter (ledelse, stabsmedarbejdere, samt konsulent- og sekretærbistand) som modsvarer projektaktiviteterne.

Med dette omfang af efterfølgende/supplerende aktiviteter lægges der således op til at NoAge ønsker at reservere følgende midler hos RTI: 4 mio til et innovationskonsortie, 3 mio fra AAL-puljen og 4 mio til 4 erhvervsPhD'er. Hertil kommer et ønske om 4 mio fra EBST-BDI-programmet og 8 mio fra ABT-fonden. Mindre dele af disse forskellige midler kan komme fra viden- og forskerkupon midler. Endelig kan man forestille sig, at store dele af projekterne med midler fra innovationskonsortiepuljen eller AAL-puljen kan komme fra midler, som Det Strategiske Forskningsråd udbyder.

11. Ligestillings- og mangfoldighedsaspekter samt social ansvarlighed

NoAge partnerskabet lever op til forventninger mht. ligestilling, mangfoldighed og social ansvarlighed, idet NoAge professionelle aktører og målgruppe (selvhjulpne ældre) har en relativt lige kønsfordeling, og projektets fokus på ældre borgere i sig selv repræsenterer mangfoldighed og social ansvarlighed. NoAge tilstræber ligelig kønsfordeling og mangfoldighed blandt sine ansatte og brugere, der deltager i brugerdreven innovation via partnerskabet.

Bilag

1. Kort profil af parter i NoAge samt CV'er for ledelse og bestyrelse
2. Aktivitetsplaner: Projektskitser og generelle aktiviteter på NoAge platformen (bilag A)
3. Budget (bilag B)
4. Udkast til samarbejdsaftale i NoAge, herunder principper for rettigheder
5. Interesseerklæringer fra deltagere i NoAge partnerskabet
6. Andre bilag:

- Annoncering af workshops ifm ansøgningsprocessen
- Nyhedsbreve til partnerskabet ifm ansøgningsprocessen
- Projektkatalog efter workshop I med illustrationer
- Artikler fra pressen ifm ansøgningsprocessen
- Video om NoAge fra workshop II