LUND UNIVERSITY

Tangible participation

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TANGIBLE PARTICIPATION

Introduction

This rapport consists of a seminar paper from a 2012 CERTEC seminar with Per Linde from MEDEA/MU as invited opponent. It presents an exploration into program-based constructive design research elaborating on the dynamics between a programme at large and its design experiments. As such it suggests ways for a programme to connect designerly actions suitable for the field with a take on the world; i.e. not only visions for and views on a design space to be explored, but also a take on knowledge construction tightly coupled to a will and motivation to participate in the field; in casu a pedagogical practice. Furthermore, the text introduces key notions such as *Digital animism / væsen*, *Tangible participation*, and *Extended materiality*, as well as give early descriptions of design artefacts and interventions in the pedagogical practice of Snoezelen.

TANGIBLE PARTICIPATION

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The time seems right for thoroughly revisiting the framing of my research as the design project – upon which I base my research – has moved beyond the initial consolidating of cooperation and everyday ways of being part in the project, and as we in the project is about to plan the next phase. So, I would like to dedicate most of the seminar to this. This seminar paper and the attached accepted PDC paper serve as foundations for my first PhD-seminar.

Even if the tone of this seminar paper may indicate otherwise, most of what I have written is still in a very searching phase, where many wordings or even distinctions are indeed very tentative. I ask forgiveness for the hazel this may cause the reader, and look forward to hear critiques, where I might have blind spots or angles; i.e. issues I do not even sense.

As the framing of the research is the main topic, and as it is still early in the process with only a few tentative outcomes, the field work will predominately be reported by illustrative tales in various forms. This will inevitably tend to drive attention towards methodological issues, and so will the early stage field work as outcomes so far have mainly dealt with methods. So, it is essential to state that my research is not primarily about methods and methodology but about exploring design knowledge – in the widest sense of the term – evolving from constructive research in long-term participative design interventions.

ABSTRACT

In this seminar paper I present the framing of my research as the centre of the discussion at my first PhD-seminar. I describe and reflect on how I have tried using a *design research programme* to frame my research, and I illustrate this by initial actions and tentative outcomes. The programme serves to connect a curiosity on aesthetic interaction and tangible computing with a designerly engagement with children with profound intellectual disabilities as they take part in the pedagogical practice called Snoezelen.

Throughout this paper I unfold my research as the dynamics between a programme at large and its design experiments. Based on a development project, I explore potentials for tangible computing to promote, support and enhance the engagement, agency and participation of the children. This exploration is based on sensitivities towards meaning making in relation to a) the body and proximate senses, b) continuous co-located coupling, and c) artefacts with rudimentary agency.

The main activity of both project and research is to develop and perform long-term interventions with crude yet interactive artefacts, the children can interact with. Based on this continuous deliberations and workshops with the pedagogical staff are also developed and tried out. In doing so, special attention is given to the role of the children in relation to formative design orientations as well as to the role of design artefacts in participative processes.

The prevailing sentiment in my research has also become the title of the programme, *tangible participation*. It points to a fundamental appreciation of the meaning making around material matters and permeates my research.

The overall outcome of my research is the enrichment of the programme. This entails exploring design qualities as well as – albeit secondarily – methods. The methodological side includes developing, describing and reflecting on experiences with constructive and participative design processes as well as on the use of a programme.

The value of working by a programme is the way it enables the research to be very open to a field – for instance as continuously raising concerns and controversies from within the practice – at the same time as promoting design agency in the form of sensitivities and sentiment.

The design knowledge I seek – and in this respect the research is still at a very early stage – include the *population* and *contours* of a design space as well as an overall enrichment of the sentiment of tangible participation. It is to be articulated through design artefacts and rich descriptions of practice as a basis for suggesting exemplars, patterns, sets of experiential qualities and other intermediate knowledge contributions.

CONTENT

CHAPTER 1

INTRODUCTION

The working title for the design research programme that frames my research is *tangible participation* (see also chapter 4). It points to a sentiment of fundamental appreciation of meaning making around tangible things. This sentiment permeates my design work, my research interests and motivations, as well as methods and knowledge construction. With this sentiment in mind, I have found a very special and exiting pedagogical practice to address as a design researcher, Snoezelen (see chapter 2). Snoezelen emphasises the importance of sensory environments in opening the world to the children involved.

In this chapter I present a first sketch of what design research in such a context can entail. But for this to make sense, I first need to situate my type of research.

Type of research

As an interaction designer, I situate my research in the cross-section (see figure 1) of Scandinavian *Participatory Design*, PD (in the view of Telier, 2011) and the emergent field of *Research through Design* (Gaver, 2012) / *constructive design research* (Koskinen et al., 2011). In this cross-section elaborate sketching on user experiences (Buxton, 2007) and participative design processes go hand in hand to explore qualities and potentials, and in so doing, 'constructing' (Koskinen, 2011) design artefacts (i.e. design game props or remediations, probes, boundary objects, mock-ups, video entactments, sketches, prototypes, etc.) is an integrated part. These fields have

strong affinities to my rather diverse and multi-faceted Ph.D. field, *Rehabilitation Engineering and Design* (Jönsson and Anderberg, 1999), in treasuring 'things' as mediators of knowledge, and – most importantly – in working for the empowerment of the people concerned.

Research through Design is still an emergent research field (Zimmerman et al, 2010; Koskinen et al, 2011), trying to stand on its own feet (Gaver, 2012). I see the approach embedded in using a design research programme as a promising candidate for framing the knowledge construction within this field. The following section, as well as major parts of this paper, will elaborate on this.
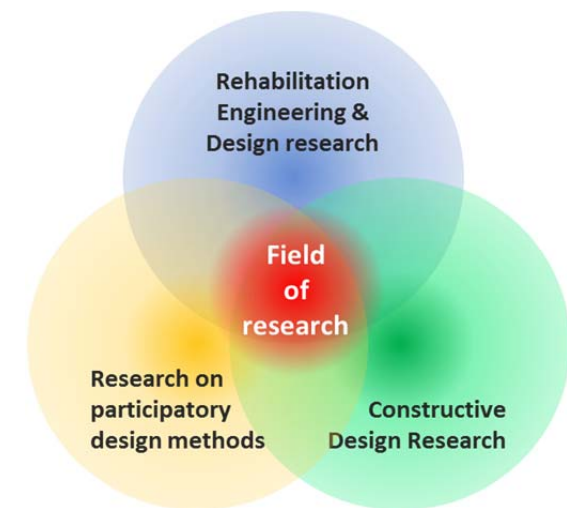

Figure 1:
My research situated in the cross-section of PD, RTD and RehaTech.

Researching by a programme

The concept of *design research programme* can be traced especially through Johan Redström and Thomas Binder's research (e.g. Binder and Redström, 2006; Redström, 2007; Brandt and Binder, 2007; Koskinen et al, 2011) and has recently been used by several doctoral students in Denmark and southern Sweden. The concept of a programme has over time entailed varying definitions as well as application fields and levels, which may not all be commensurable. By their very diversity, though, they serve well as a basis for appropriating the concept to create a framing suitable for my research.

My programme can be seen as a holistic take [Danish: *helhedsgreb*] on how to do explorative design research in a real world setting, where the key activity is design experiments or *design games* (Telier, 2011) in the widest sense of the terms. The programme intimately connects a take on the world with designerly action (Cross, 2007) suitable for the field: not only visions for and views on a design space to be explored – "*potentials of a design space being opened up*" (Binder & Redström, 2006) – but also a take on knowledge creation tightly coupled to a will and motivation to engage in a field. Thus in total, a programme establishes a *provisional knowledge regime* (Binder and Redström 2006). It is provisional as it does not claim to be a general or indeed the only approach possible, but it serves as a way to negotiate the need for situated methods and knowledge construction with that of designerly 'rigor' (Stolterman, 2008) and ditto agency.

The research process is driven by the dynamics between the overall programme (sentiment, knowledge interests, sensitivities) and its experiments: between how the programme situates and gives meaning to diverse experiments – in a sense serving as an *optique* for interpretation – and then at the same time how the experiments enrich the programme at large. In this, concepts of a design space shape and simultaneously are shaped by the sketching of design artefacts and the interventions with them.

By the term *design space* I mean an emergent mental construct of a world-in-spe stipulating contours of a field of characteristics, qualities and potentials; from concrete artefacts to abstract conceptualisations as well as from hunches to analysis. In exploring the design space of what could be Snoezelen, the core activity of my research is design interventions. Through this, design artefacts, practices, views, and sense of patterns evolve and thereby give body to the programme. In this, a world-in-spe becomes inhabited (Gaver, 2012) by exemplars (Löwgren, 2001:33) embedded in rich accounts of practice. These may not only aid in building a designer's repertoire but also in describing contours of design space pointing beyond the specific context. The latter – which is intended to be the main contribution of the research – may for instance be labelled 'inspirational patterns' (Löwgren, 2007b) or 'experiential qualities' (Löwgren, 2009).

Researching by a programme can be likened to a hermeneutical process in the sense that – on the one hand – the programme at large guides and metaphorically shapes the design artefacts and interventions, and – on the other hand – vice versa as the experiments fill, unfold, enrich, challenge or even exhaust or point beyond the programme. So in a sense, the research encompasses the total progres-

sion of the programme as a whole, i.e. the overall programme, the experiments and the dynamics between programme and experiments.

There is no definite start or end in a continuous hermeneutical process like this, but it may indeed be more or less generative. I see the value of working by a programme in the way it enables the research to be very open to a field – for instance as continuously raising concerns from within the practice – at the same time as promoting design agency in the form of motivations, sensitivities and sentiment. This can be seen as a way to not only join a grounded approach with a 'philosophical' stance (Zimmerman and Forlizzi, 2008), but also a way to negotiate the schism between (potentially stakeholder subservient) co-creation and designerly (potentially detached) criticality as suggested by Bowen (2009).

Text structure

Later I present in more depth how I've worked with the programme. In chapter 4, this is done through a closer look on my design research programme in relation to motivation, design space exploration, and knowledge generation at large. This forms the basis for chapter 5 where I present early thoughts and examples of the dynamics between the programme at large and the design experiments, including tentative outcomes. But first – to mirror my view of design research as change making involvement (Jönsson and Anderberg, 1999) – I present the development project on which I base my research. It is the potentials for the children involved that primarily fuel my work and without which the programme cannot be grasped; albeit development work and research are not identical which I briefly stipulate in chapter 3. This seminar paper concludes with a Coda

(chapter 6) revisiting sentiment and criteria. I hope the graphical representation (see figure 2) of the programme may aid the reader. However, while such a structure may ease the reading, it may also risk misrepresenting the holistic take of the programme; just as the linearity of a text may inevitably fail in accounting for the non-linearity of design research.
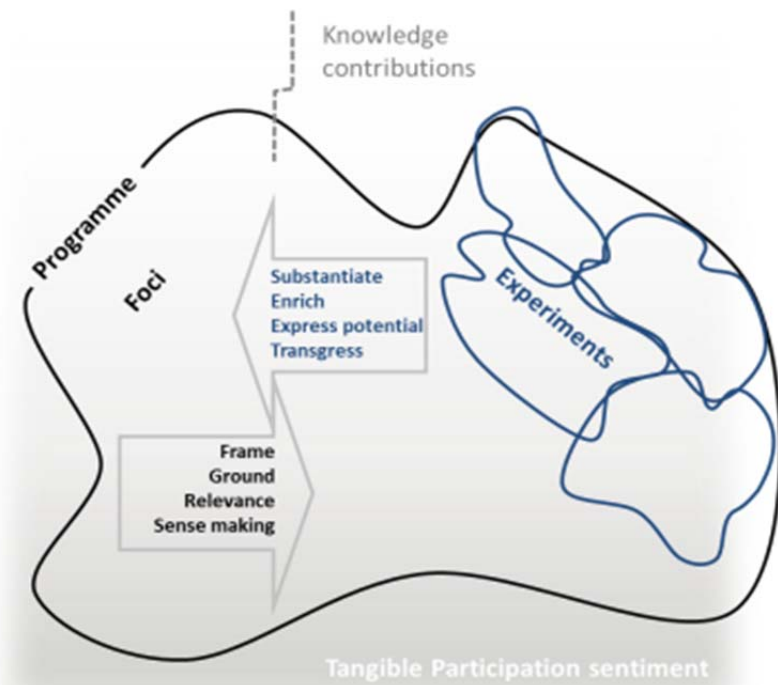

Figure 2:

Model of my design research programme. Knowledge creation is based on the dynamics between the program at large (the provisional knowledge regime including the three foci) and the design experiments. The sentiment of tangible participation permeates it all.

CHAPTER 2

RESEARCH CONTEXT: THE SID PROJECT

My research has a wider interest than the development project I'm engaged in, but can only truly be understood through it. So, I describe the project as far as needed to understand the research, and then I turn to how research and development work is connected.

Project aim

I base my research on an on-going design project in the Øresund Region, *SID* (http://sid.desiign.org). The acronym stands for *Sensuousness* [Danish: *sanselighed*]*, Interaction & Participation* [Danish: *delagtighed*]. The participants are school age children with profound cognitive disabilities together with pedagogical staff from three institutions and the researchers. The main aim is to explore potentials in interactive designs for multisensory environments in a pedagogical practice called 'Snoezelen' (Verheul and Hulsegge, 1987) in order to promote: a) the children's participation and agency in the interactions between child, staff and artefacts by use of tangible computing; and b) the children's role in the design process.Snoezelen is described by the pedagogical staff as interactions between themselves, the children, and (!) the artefacts, where not goal-driven or even unforeseen possibilities emerge (the 'Snoezelen triangle', see figure 3).
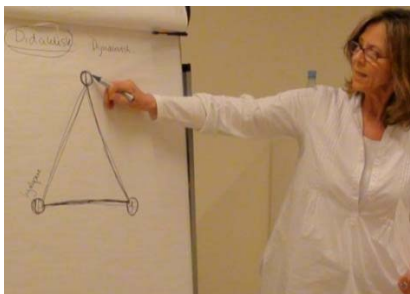
The pedagogical practice of Snoezelen promotes – by use of sensory artefacts and settings – a balance of stimuli and arousal that enables the child to find the calmness or impetus needed to engage in the world.

For this, the Snoezelen rooms are literally packed with sensory artefacts and electronics. Yet, as very few designs go beyond mere push-buttons, the technologies do not seem to have co-evolved with the practice (See figure 4). Recently, however, a few interactive designs have come about, but they tend to lack more elaborated behaviour.

As the designs are to promote and enrich the children's participation at large, it is only natural that we also explore ways for these children to participate in the design process. Snoezelen has been described as *another world* (Verheul and Hulsegge, 1987), and indeed being with the children in Snoezelen is a uniquely generative experience as the practices illuminate the truly diverse ways humans engage in the world. Any assumption about the design space can be challenged, and therefore formative design orientations must be truly based on the children.

(Left) Figure 3:
The 'Snoezelen triangle', presented by one of the staff.
(Right) Figure 4:
The technology seem not to have co-evolved with the pedagogical practice; even to the point that artefacts and practice seems separated.

The project's set-up

The core set-up is that design artefacts are tried by all the children as the artefacts travel between the three Snoezelen places. It is the children's actions that take centre stage in our design processes, while the travelling of the design artefacts serves dialogues among and with the staff of the three places. An important point in relation to disability research is that the children aid and guide the research, rather than being mere objects for research.

It is essential to dedicate time to explore *with* these children, even when it may indeed require a very long time scale as in this project with its three years. Even if the children at each of three Snoezelen according to *plan* currently 'snoezel' for an hour once a school week – the most common set-up – the actual time with the design artefacts can been far less: Many of the children have needed a long introduction period to settle in and where the staff could concentrate on getting to know them rather than on new artefacts. With school times and illnesses, some of the children may snoezel less than 30 times a year. Furthermore, given that Snoezelen activities are self-directed, the design artefacts can only be shown or staged as invitations. So, it can take a while before a child may choose to try a new artefact rather than a well-known one. Even then, interactions rarely last for a longer part of the visit. It is important here to bear in mind that it is the repeated use that is most interesting.

On top of this, the design artefacts travel between the three Snoezelen places. Thus, even without taking into account the technical challenges that can strike any project (and indeed this one), all in all the processes become very stretched out in time, even in a research perspective. However, as we learn, we also moderate the design artefacts continuously.

We have worked so far on nine lines of design artefacts. The artefacts remain for weeks in each Snoezelen place, and then they travel to the other two. During this, the artefacts take on very different development routes as they change to reflect what we experience from the interactions we see (for more on the concrete design artefacts and designerly action, see chapter 5).

All the interactions are recorded on video by the staff. The videos primarily serve as a basis for monthly design and practice deliberations. We have continuously – also when there were no new design artefacts present – worked on setting up a suitable framework for this (see attached PDC-paper). Furthermore, I also visit the Snoezelen places to see the children 'snoezel' and have dialogues with the staff.

Another important part of the processes so far has been the four full day workshops that address the visions of the project, how to work generatively peer-to-peer with video presentations, what tangible interaction by physical computing entails, as well as co-creation. These have been mainly hands-on workshops, where various design artefacts have played a key role (see chapter 5).

Status of the project work

As this is written, we are more than halfway into the first phase of interventions, and the interpretative routines are up and running. Most children – despite practicalities – snoezel with our design artefacts regularly, and seeing them snoezel is indeed very generative. The making of design artefacts is slowly getting up to speed after an unfortunate long delay due to recruitment issues. Most of the pedagogical staff excels in most of the processes. Two Snoezelen places are now ready to move to next phase as they have established a weekly routine that works, and thrive by embracing the possibilities and the mind-set of the project using the different educational backgrounds and extensive experience most of them have as reflective practitioners (Schön, 1987).

In the next phase the staff at each institution will take on a sub-agenda of their own that goes further towards design concepts. At the end of that final phase, they will exchange with their colleagues at the other institutions, not only by presenting, but also by implementing their designs in the practice of their colleagues. This will include their intensions and ways of using them. This can be seen as yet another way to reflect, but also as building a basis for spreading knowledge and empowering the staff.

Figure 5:
Some of the children in the project
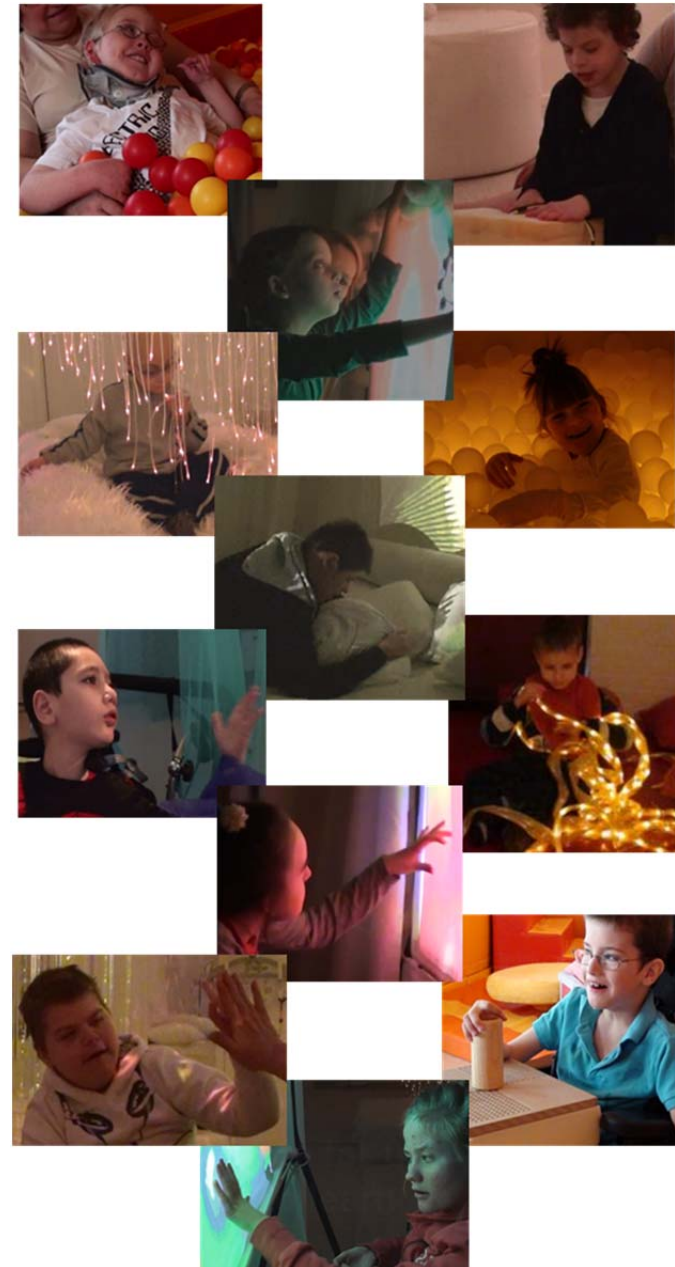
CHAPTER 3

FROM PROJECT TO RESEARCH

The SID-project has not come out of the blue, but builds on long-term criss-cross connections between most of the organisations involved. Part of the background for the project consist of my previous design projects; including a project in one of the Snoezelen places as well as a project with one of the children involved. The SID project also connects closely to several other previous design projects of mine, where the design work may have transferable qualities to Snoezelen.

Hereby also implied the dual nature of the design work as it serves both the project and my research, which calls for a few remarks.

The project provides an inspiring empirical base and a place of action for my research. It *aligns* multiple resources, competencies and experiences needed for a designerly engagement, yet also inevitably *draws together* (Telier, 2011) interests – personal and professional – that may indeed vary considerably. Thus, what we may hope for is *generative collisions* (Hillgren, 2007) around shared activities. So, we work with sense making in diverse ways rather than mutual understandings, let alone unison interpretations (Telier, 2011:165-6).

Thus, my agenda of grounding formative design orientations in the children's actions may not fully fit the interest of all stakeholders, and my research interests will inevitably go beyond the scope of the project, both when it comes to interests in methods and in design knowledge. However, with a view of design as a way to raise con-

cerns and controversies (Telier, 2011), such are inherent traits of the game.

On participative methods

While the project in relation to methods mainly seeks ways to give the children a voice, my research interest is wider. The project provides a base for developing, trying out and reflecting on participatory design methods at large. However, developing the practice and the design knowledge comes before providing thorough accounts of the processes involved, even if the research on methods may thereby be weakened. The reason for this prioritisation is not only my research interest, but also simply because the research ultimately rests on the project in which such second order perspectives may hinder, take precious time from or go beyond the scope of the project.

Besides describing the methods employed, my research also looks for new ways and methodological findings, in so far as the field work may feed or need reflections on such. As there should be fertile ground for method-related outcomes, I anticipate at least the three following themes:

I) Ways for the children to participate in formative design processes, even when the participation – due to profound disabilities – cannot rely on abstract thinking or dialogues. (see also attached PDC-paper).

II) Challenges around tangibles, when simple mock-ups do not suffice in grasping the multisensory and temporal form during sketching (Buxton, 2007), design games (Telier, 2011), interventions and the like. (See also the section on *Sketching tangibles*).

III) Bridging profession's reflective practice with special attention to generative potentials of design artefacts and tacit knowledge, herein promoting the importance of the tangible rather than disconnected theory. (See also the section on *Potentials, concerns and controversies*).

On design knowledge

The central agenda of both the project and my research is to promote the children's participation and agency in the interactions between child, staff and artefacts in Snoezelen. It is important to stress that all of the descriptions should be understood in this light.

In relation to design knowledge the project primarily aims to inspire stakeholders within the field by evocative artefacts and rich descriptions of practices. As such, it is both the artefacts and the emerging Snoezelen practice that are intended to be the outcomes of the project. My research takes this further into a programme serving wider interests – on for instance experiential qualities – and at large the wider knowledge generation of the research programme.

As design knowledge is intended to be the main contribution of my PhD, most of the following chapters are dedicated to this.

CHAPTER 4

THE DESIGN RESEARCH PROGRAMME

As mentioned, a programme intimately connects a take on the world with designerly actions suitable for the field, i.e. not only visions for and views on a design space to be explored but also a take on knowledge construction tightly coupled to a will and motivation to engage in the field the programme connects to. Thus, the following sections describe motivations, the design space and thoughts on knowledge construction.

Motivation for the research

The prime motivation for my research resides in the tight coupling of *a curiosity* as to potentials in an *aesthetic interaction perspective* (Petersen et al, 2004) and *a will* to enrich the world of the children and of Snoezelen users at large. Secondary – albeit important – motivations are research on participatory processes as well as aiding the progression of the Snoezelen practice. In other words, engaging research in a real world involves a mesh of intertwined relevance, both when it comes to design methods and design knowledge. I hope transfer to groups across and beyond the design field will be aided by integrating design artefacts in the knowledge construction (Löwgren, 2007a): both designs and rich videos of practice.

The following sections address the children with disabilities, while the more purely interaction design-related considerations unfold integrated in later parts of this chapter.

For, with and by the children

For the individual child, Snoezelen addresses the very core of being by insisting on adapting the environment so the child can partake in the world. To this end, the SID-project promotes not only an agenda of enriching practice by use of interactive technology, but also the children's active engagement in the Snoezelen interactions as well as the his or her possibilities to affect formative designerly orientations. The ambition is not only to work towards the right of the children with disabilities to benefit from technological developments (Jönsson, 2006), but also for it to be grounded in their lived experience (Hedvall, 2009). As such, we are not only doing research *for* but also *with* these children, – and *by* the children, as the outcomes may have relevance beyond the particular context.

Jönsson and Anderberg (2009) suggest that research related to rehabilitation technology '*requires much more extensive user research than is presently the norm*'. My research programme may be seen as a suggestion of one possible designerly way to do so in this context. (See also the attached PDC-paper).

Design space

At the heart of it all, the programme seeks to envision, create, explore, grasp and articulate salient traits of a design space – a world-in-spe – promoting the children's engagement, agency, and participation.

Figure 6:
An iconic example of the existing technology, the Bubble Tube. The artefact does not react to the exploring child or merely by simple push-buttons.

Three foci

This ambition is carried by three foci that guide my design space envisioning and exploring, and around which much of the design deliberations take place. The foci have – as a programme does – developed as the research progressed; from two-line descriptions in the project application, over initial research framing, to now being enriched by the field work (see chapter 5).

What follows are descriptions of the three foci; each an angle from which to explore potentials for experiences of the children specifically, and for the Snoezelen interplay (see also figure 6) at large; all in light of the main agenda of the children's participation and agency in the interactions between child, staff and artefacts:

Sensing the body as part of the interaction

The Snoezelen staff in the project often emphasise the basic and proximate senses, and some give explicit references to theories on sensory integration / sensory processing (e.g. Ayers, 1979). They promote considering not only touch, but also the proprioception and vestibular sense (i.e. the senses of our body as we move it). This echoes desires within interaction design to consider more senses than the prevailing audio-visuals (see figure 7). This focus, however, entails more than that as it is part of an embodied view on meaning making (e.g. Johnson, 2007; Damasio, 1999). Several of the staff emphasise how '*movement is our primary means of accessing the world outside ourselves*' (here in the words of as design researcher Levisohn, 2011).

Figure 7:
(from left) Igoe's famous finger-eye-being "How the computer sees us" (O'Sullivan and Igoe; 2004)*; a child exploring bodily senses thus pointing beyond the 'five senses'(right), i.e. vestibular and proprioceptive senses.*

Continuous co-located coupling.

Redström (2007) suggests that sometimes an exploration's starting point best can be grasped by negation, and in the project this focus has indeed been labelled '*More than a button'*. This phrase plays on the widespread use of big on/off-buttons, which presuppose distance between the child's action and the effect. In Snoezelen, such technology may represent a communication-related import from the children's school and as such be both well-known and of use. But what if the opposite was tried out in order to enhance ways for the children to experience affecting the world? This suggests for instance couplings, which are continuous (graduated feedback where the amount of action relates to the amount of feedback, as in turning a steering wheel) and co-located (connecting input and feedback, as in crumpling a piece of paper making it sound and change shape). In other words, meaning making in relation to well-known issues within *physical computing* (O'Sullivan and Igoe, 2004).

Digital animism [Danish phrasing: væsen].

Years back as I was introducing the concept of *interactivity* to some Snoezelen staff – for whom anything digital was associated with their alienating PC – I proposed that the existing artefacts could develop a *væsen* (a hard to translate Danish term for essential but possibly vaguely defined properties of an entity assumed to have some agency). One of the staff promptly responded '*many of the kids think so too'*. This echoes Suchman (1987:5) referring – in reflections on digital technologies – to children's tendency to attribute life to physical objects.

From an interaction design perspective the focus is on interactive *behaviour* and addresses the character and role of tangible artefacts seen as entities with some rudimentary agency. I see this as an interplay of *transparency* and *autonomy* that might otherwise be best known from the realm of the living. However, the intention is not to imitate nature for its own sake, but to explore richer ways for the children to interact. In other words, the curiosity is not on the level of resembling gestalts, but on the level of resembling qualities; thus, it is not related to the mimicry of *zoomorphic robots* (Dunne, 1999).

The focus carries a sensitivity, which is both ancient and of the future: Only now can we start to see the contours of technologies, which fit the archaic belief that even a black rock can literally have rudimentary agency, a temperament or even cravings; thus the English phrasing of the focus: *digital animism.*

Delimitation

The three foci bring sensitivities and curiosities to the fieldwork rather than simple delimitations of a design space. Yet, there are, of course, also delimitations. These are somewhat contingent as they are not only derived from the foci or the sentiment, but rather from a mesh of, for instance, the need of a more narrow scope, leaving out fields already well researched, and practical concerns. So, I do not look into, for instance, scent, whole environments, eye tracking, wearable computing, pure communication issues, and too arbitrarily or culturally coded signs.

Role of external theory

While I see the three foci and the sentiment of tangible participation as inscribed in interaction design as well as learning theory, I do not see my research as theory driven in the sense of being guided by a pre-set knowledge field outside design. Rather, the programme actualises design-external theory by *push & pull.*

The programme and herein the experiments may give rise to the need for drawing on theory, a *pull* so to speak. A current example of this may be *How to facilitate progressing as a reflective pedagogical practitioner?* At the same time, the fieldwork also seems to *push* or even challenge theory outside design; e.g. what little theory there is on what Snoezelen really is. While I indeed look into other fields when needed, I do not pretend to be able to contribute to other fields than my own beyond this very push and the field work it is embedded in.

In other words, the design experiments are the driving force. The following sections will address the implications of this for the knowledge I seek.

Design knowledge

In chapter 1 I broadly described the programme as a *provisional knowledge regime* setting up a hermeneutical interplay between the overall programme and the experiment, where it is the progression of the programme at large that is the outcome of the research. In the following I will zoom in on design knowledge as it's the primary interest of my research.

While the overall programme – including and most concretely the foci – frames the experiments, the totality of the participative (Telier, 2011) and constructive (Koskinen, 2011) experiments in reverse gives body to the programme; most concretely in the shape of design artefacts and evolving practices. The foci become more elaborated and enriched from experiences with and around the design artefacts, while the design work simultaneously is guided and given relevance by the foci. In this long-term designerly dialogue with/within the practice, the often tacit situated knowledge of the pedagogical staff together with the children's actions lead to formative design orientations. As such, designs and practices both mediate and evolve with sensed potentials, prevailing concerns and raised controversies (Telier, 2011).

This provides a rich basis for descriptions of practices and interactions around the designs that might not only in themselves serve as inspiration and potential exemplars, but also provide a foundation for drawing design space contours.

Transfer

An analytical take on the contours may bear enough significance to have transferable value. Design knowledge can be seen as semi-abstractions (Löwgren, 2007a) residing on an intermediate level (Höök and Löwgren, in prep.) between the particular of the specific case and general knowledge. Two examples of such are inspirational patterns (Löwgren, 2007b) and experiential qualities (Löwgren, 2009).

The value of design knowledge is its interpretative power and its possible transfer to others and other contexts. It is premature to speculate on how and for whom to facilitate transfer. However, as the artefacts and accounts are part of the construction and communication of knowledge (Löwgren, 2007a), I hope that the rich empirical material through multi-media descriptions can serve transfer. Potentials for transfer also relate to the trustworthiness of the design knowledge as the next section will address.

Trustworthiness

Given my research's hermeneutical interplay of interpretations – including synthesises of analytical work and designerly action – what kind of trustworthiness (Lincoln and Lynham, 2011) can I build for the outcomes of my research?

To me, even in the most lofty speculations, design research like mine should still stay – both literally and metaphorically – close to the artefacts and practices it is engaged in, as I hope the next chapter will illustrate. Yet, I have not come across a satisfying account in design research of how to provide tangible – in every sense of the word – grounding for my type of research.

My concern is how to work with empirical grounding given the ample material, i.e. for the research to be not only novel and relevant as well as theoretical and analytical grounded (Löwgren, 2007a), but also well-connected to the 'field work'. In other words, moving beyond merely stating that it is more important for the research to provide socially relevant debate than '*facts and knowledge*' (Koskinen et al, 2011:48).

I aspire to reach a more clear position prior to the next phase of the project, which is intended to serve as my main empirical grounding. Alas, this merely presents my interim and sketchy thoughts.

In my research rudimentary tales with and around things are being co-created. These come from people's lives and offer perspectives to and on them by being evocative and useful rather than referring to concise facts. As such, I think the design processes provide an ample base for empirical grounding. Herein, it is the abundance and richness – rather than meticulous accounts – that support drawing the contours of a design space. As such credibility is on the level of the *totality* of the hermeneutical play, and confirmability first and foremost relies on the *evocative* nature of the design artefacts and the tales in videos of interactions as they are being related to design knowledge. This may also entail further (re)mediations of the co-created tales of artefactual practice and co-constructed meaning.

Given the hermeneutical dynamics, how do I best portray the *progression* of research? This is still a challenge as also this text bears witness to. However, it may be a premature concern as meaningful ways may themselves evolve from the research process.

CHAPTER 5

PROGRAMME DYNAMICS

My design experiments – or with a very broad definition of the term, *design games* (Telier, 2011) – can be seen as the totality of several activities: workshops, sketching, and interventions. In this chapter I present the dynamics between these and the programme at large; albeit, merely with illustrative examples.

The programme frames and gives relevance to the design experiments, but these experiments do not simply serve the programme as in answering a research question. Rather, the experiments are intended to simultaneously enhance and aid the progression of the programme; even to the point of retelling for instance the foci. Such a co-evolvement of foci and experiments escape my power of explanation in a text format like this, so the process will inevitably tend to be misrepresented as sequential.

There are three intertwined components of my design experiments: workshops with the staff, sketching user experience, and design interventions in the Snoezelen practice of the children and the staff. They overlap, co-evolve and get their strength from each other, but I separate them to serve simplicity of presentation.

Workshops with the staff

I have conducted four workshops with the staff from the Snoezelen places. The workshops have primarily – but far from solely – served to introduce the staff to key aspects of the project as I briefly describe in the following to illustrate the ways we work.

Figure 8:
Workshops with the staff

Væsen workshops

Two workshops have introduced concepts of digital interactivity through the metaphor of 'væsen' (see the section *Three foci*).

At our very first meeting, we asked the staff to explore simple and quickly made digital enhancement of existing well known non-interactive Snoezelen designs (see figure 8), which we had given

rudimentary behaviours by sensors and actuators. Thus, the slogan for the workshop was: *We have awakened a 'væsen'.*

The artefacts served as boundary objects (Telier, 2011) as they belonged to both design and pedagogical practices, and were both well-known and at the same time suggestive of the unknown. The staff played around and discussed, used their bodies and constructed small anecdotes of imaginary use. The evocative nature of the design artefacts was evident, and the knowledge of the staff in the situated dialogues likewise. However, this situated knowledge was noticeably richer than the staff's concluding summary of the event. The workshop nonetheless illustrates a way design artefacts can support shared negotiation of difficult key issues such as *'What's a behaviour of a thing ?'*, and indeed the metaphor of 'væsen' has from early on been adapted by most of the staff.

In the second and recent 'væsen'-workshop the staff were asked to awaken a 'væsen' on the basis of sketches of designs-in-spe. The staff were given basic physical shapes with stipulated 'sensory' apparatus as well as various means to sketch the ability to emit light. Manifold inspiration came from this, even if the staff were unaccustomed to working with the sensory abstraction needed when dealing with such low-fi materials. This time the staff were explicitly asked to create empathic anecdotes by enacting Snoezelen interactions. So they did, but again in the final presentations the situated and more embodied knowledge was almost left out.

Even if both workshops show the importance of concrete and tangible artefacts for mediation, they also call for closer considerations of how to bring together reflecting practitioners in synthesising outcomes.

Workshops on use of video and foci

An essential part of the deliberations are the videos of interactions the staff present at monthly meetings. These somewhat edited videos are intended to be presented in an open and inquisitive manner (see also attached PDC-paper), and the staff have indeed called them *'videos from when we would like to call each other and say LOOK*!' and *'videos that tickle'*. To aid these deliberations I have held two workshops, one on the three foci and one on the use of video.

In the first of these, the staff used the three foci to analyse and map-out their most well-known existing Snoezelen artefacts and then with this in mind suggested opportunities for an early sketch of one of the designs (i.e. *ActiveCurtain* see *Design artefacts and interventions).* In a sense this was a test of the foci, and they seemed to work well. In afterthought, I think this relies on the foci being a) *grounded* in a close and through its processes ever expanding understanding of the practices, b) having the *agency* to raise concerns and controversies, yet c) in *a flexible way* open for appropriations. Even to the extreme that one of the most experienced staff member in this workshop came to fundamentally question some of the existing Snoezelen artefacts. For most of the staff it has anchored the foci in their practice and become a part of their deliberations.

The other workshop was a hands-on full-day session on using video generatively in our deliberations. As the staffs skills and needs varied considerably, the workshops addressed production, reflection and communication, ranging from what to click in a video-editing programme to how to facilitate discussions on the foundations of Snoezelen. It was a success by giving a spur to enrich the further work around using video, but it also highlighted the diversity amongst the staff and thus again issues of what is needed in a reflective practicum.

Sketching tangibles

Drawing on the rich heritage of tangible design experiments that cherish the generative qualities embodied in human actions – such as *placebos* (Dunne and Raby, 2002), *technology probes* (Hutchinson et al., 2003), *critical artefacts* (Bowen, 2009), *technology as a language* (Jönsson, 2006) – close attention is given to the role of the design artefacts in the participative processes.

The design artefacts we create can be seen as wonderings as well as materialised hunches and understandings relating to the design programme, continuously being reshaped and reinserted and in a sense giving form to exchanges between all participants. In this, the programme progress as artefacts and practices take part in a serendipitous interplay between the experiences around the design artefacts and the often tacit understandings and sensitivities.

The design artefacts *simultaneously* serve '*understanding, probing, priming, and generating*' (Sanders et al., 2010). The simultaneity is a key to understanding the interventions as a way to move beyond a merely incremental or affirmative development (Bowen, 2009). The design artefacts are proto- or crypto-envisions of a world-in-spe. They are physically robust and truly interactive, so the children can relate to them (see also attached PDC-paper), yet as simple as possible in order for us to build and alter. Exactly by being manifest, tangible, and alterable, the design artefacts get power in asking *what if?* Not just as design proposals, but to probe the daily practice, i.e. most often alone with the staff and children (Hutchinson et al., 2003). In this, the evocative or suggestive nature (Buxton, 2007) of the design artefacts invites seeing openings as well as curiosities and queries (Telier, 2011). These processes cannot be boiled down to iterations of testing prototypes or factual understanding of context and users. Rather, the participative design practice, we promote, serves as a way to 'prime' the staff to think in possibilities of artefacts, children and themselves rather than impairment and shortcomings; and to reflect on their practice in an open manner. As such the staff's knowledge may blossom and be anchored in the children's actions. Understanding facts about the children and Snoezelen is also part of this, but is rarely generative on its own.

Form and materials

Working with tangibles is all about multi-sensory, spatial and temporal form (Löwgren, 2009); and especially so in light of the three foci. However, such forms are difficult to grasp by fast pen & paper sketching or simple mock-ups (Buxton, 2007). So we use Arduino as well as off-the-shelf equipment like the Kinect sensor to sketch sensor and actuators set-ups (see figure 9); all mixed with an abundance of physical materials in our lab.

Even with the Arduino platform, it is an on-going challenge to combine the manifold and open-ended nature of sketches (Buxton, 2007) with the sturdiness and interactivity needed for the children to engage. I have tried to imagine and build for very rudimentary yet evocative interactions. This has become a very craft-like process requiring a strong feel for the materials; digital as well as non-digital. Yet, it also feels like we are in a sense making materials (Manzini, 1989); or what I would call *extended materiality* as the materials have a behaviour potential beyond for instance the pliability of a wooden plank to a carpenter. This not in the sense of material science of composites, but as in a designer's experience and creative relation to a material. The best example of this is the very generic ActiveCurtain (see section ActiveCurtain), which can be seen as solely adding a third dimension to an interactive surface, where one can physically poke into the deeper layers of colour. I guess it could be built without any digital components, but we have used a Kinect so we can progress further with more elaborate behaviour on the basis of the design interventions.

The next section on interventions will provide a more detailed account of the different design artefacts and their use.

Figure 9:
(top to bottom)
Stages of LivelyButton, LivelyForm and ActiveSphere
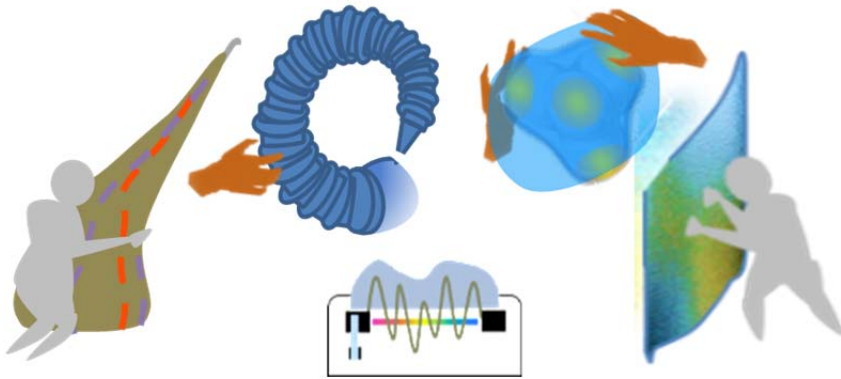
Design artefacts and interventions

Figure 10:
Early graphic sketches relating to the five lines of design artefacts.

I will limit my presentation of interventions to how I have worked with a suite of five lines of design artefacts (see figure 10), of which we are currently intervening with four. All five explore, amongst other issues, various couplings of light to touch, press, hug and push. These artefacts speak into the Snoezelen practice in different ways, have different behaviours and technical constructs, and have indeed changed over time in various ways, as is briefly described in the following along with a few comments on the interventions carried out.

In Snoezelen with its attention to the very different ways we use our senses, variety is a virtue, not one-fits-all. So, exactly the variety of ways, the children have used and related to it, has been an asset, as the following illustrates. Moreover, most of the artefacts have – as intended – in some way or other been adapted or appropriated by the

staff and/or children during use. All in all, a very rich – albeit diverse or even messy – set of interactions has evolved. Even if not all three foci have been in play from the start of every design, they have often over time come to play a role. In other words, they serve as sensitivities. Rather than attempting to fully describe this on-going and often tacit development, I will merely present the basic intentions, while examples of issues raised as well as more overall enrichment of the foci will be described in later sections.

Most Snoezelen places have both tactile materials and moving yet non-interactive light projections on the walls (Figure 11). While fiddling with textiles for the children may be experienced as almost interactive, one may wonder what the projections contribute besides an atmosphere for the staff. To explore embedded qualities and potentials around such artefacts, two lines of design artefacts were developed, *ActiveCurtain* and *LivelyButton*. They are intended to be pastiches combining tactility and light surfaces, thus suggesting critical attention to the Snoezelen rationales.

Figure 11:
Tactile materials and projections.

ActiveCurtain / ActiveSphere

Prior to the current designs, I intervened with very crude Wizard-of-Oz (Buxton, 2007) sketches made by projections on a sheet and by hanging on/off-light strips. ActiveCurtain is one line of design artefacts that came out of these interventions. By being a pastiche it suggests *projections to be not only interactive but also malleable.*

ActiveCurtain adds a third dimension to a projection, as pressing the surface of a backlit soft screen changes the colour of the indented area. In its original form, the construct simply takes a Kinect's image of the back of the screen and projects it back on to the screen, and in the code the only change is from steps of grey to steps of colour.

The basic thought was to relate the feel of one's body touching the material to colour change where one presses. Many children have spent time with it at all the three Snoezelen places. Some have been indifferent towards ActiveCurtain, but for most it has been of interest; yet, the interactions have been very different. Two types of interactions stand out: First and foremost, an otherwise very passive and immobile girl – for whom very few things appeal to activity or are of prolonged interest – has opened up and been very investigative with ActiveCurtain. This has been very different from how two young boys have engaged their entire body; for instance pressing the head far in or by moving the whole frame.

The staff of all three places have appropriated and changed the design in various ways. Currently, we are building a sphere-shaped version and considering more elaborate behaviours both over time and distributed over the surface. Building on the seen interactions and the deliberations with the staff, we are looking for ways to make the design more inviting for a) interplays around simultaneous interaction with the design, and b) more bodily engagement.
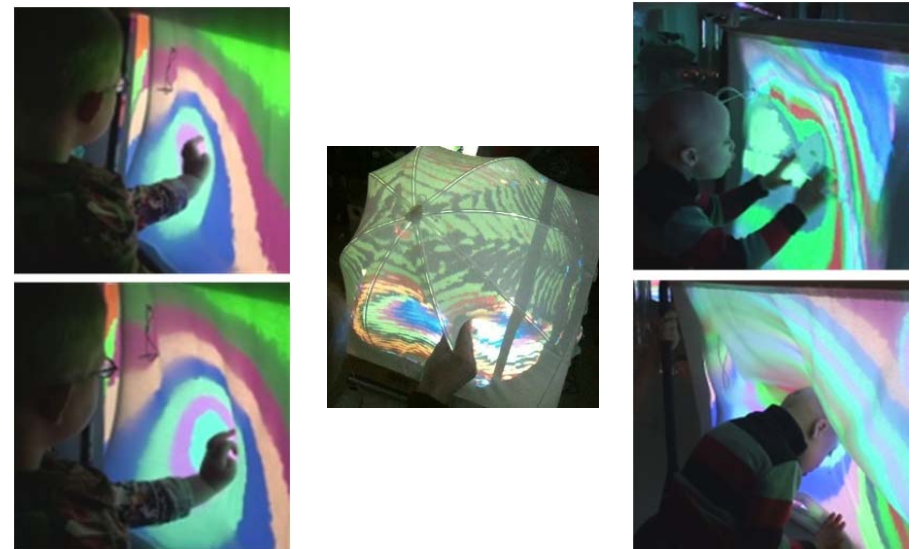

Figure 12:
(Middle) The ActiceSphere
(Left and right) Children trying ActiveCurtain
See also:
http://sid.desiign.org/design-och-teknik/activecurtain,
*http://sid.desiign.org/2012/03/activesphere*

LivelyButton

This pastiche plays on late 60s-style projections, the soft materials as well as big on/off-buttons, the dominant interaction devises in Snoezelen. In essence, LivelyButton is still a button, but it is the artefact itself that reacts and in a way of its own over time. It reacts just before and at touch, and it reacts by not only the interplay of two inner light sources and a twirling shadow, but also by a slightly moving surface accompanied by vibrations and a motor sound. The thought behind this has been to explore co-locatedness.

In principle, it is a rather simple construct of a capacitive sensor controlling two LED-strips and a motor. The motor makes two uneven metal spirals twirl near the surface of a semi-transparent, soft and textured fabric forming one side of an otherwise hard black box.

LivelyButton has been in one of the Snoezelen places for a longer period. The pedagogical staff have interpret the interplay, we have seen so far, as for instance: hugging and having it as a favourite thing even when turned off, the joy of affecting something without demands for motor skills, and something to share experiences of. The children have interacted hard with their entire hands, softly by resting their cheeks, by hovering over the box, as well as a range of interacting in between. The slightly moving surface has been ignored, enjoyed passively and actively; including stopping it to feel a pressure back as well as a change of sound. As such, we have seen uses I could not even imagine, and it has promoted relevant discussions and inspiration. From this, a design student in the project has developed more behaviours intended to relate to arousal.

Figure 13:
Child sharing exploration of LivelyButton.
See also:
http://sid.desiign.org/design-och-teknik/livelybutton
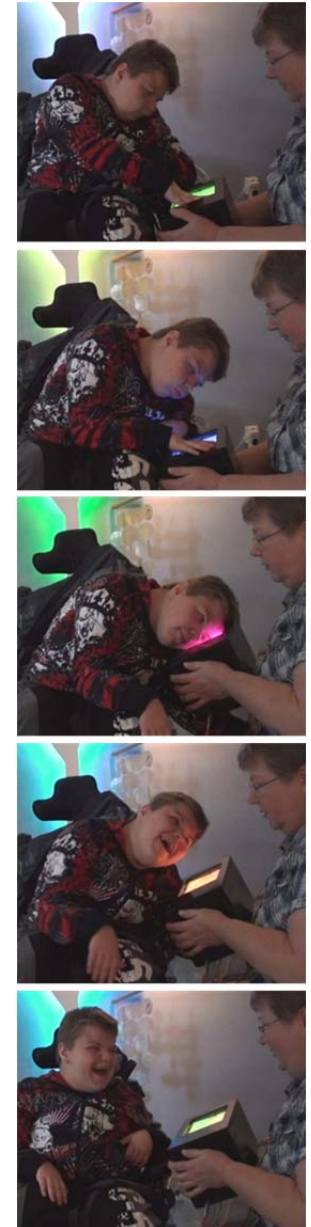
LivelyForm

While the other design artefacts in various ways and degrees relate to the existing artefactual practices, this design points beyond the existing Snoezelen by introducing a moving object. The thought behind this is that seeing a clearly defined moving object promotes one's own movement. While the staff share such beliefs, their views on potential for Snoezelen in fast action seem to vary considerably, so I hope the LivelyForm can promote important discussions based on the children's action.

I wanted the children to be able to affect bigger tangible movements than the subtle ones in both the surface of LivelyForm and the rising bubbles in the existing Bubble Tube (see figure 6). The construct became a semi-soft elongated form that can bend to the degree of almost curling up. A single capacitive sensor controls an array of LEDs and a motor pulling a springy plastic sheet. Coupled to how open it is and the timed elapsed various light patterns run along its inner side.

This construct has taken the longest time to build, and has clearly been too complex to serve as a sketch as it is not easy to make initially, reproduce or alter. Given this, technical compromises have also compromised the meaning making around the design, as we have already seen in the few interventions carried out. For example, as the children tend to stay with an object rather than alternating between touch and look, a single capacitive sensor did not make sense. So the pedagogical staff are currently – in wizard-of-Oz style – try-

ing out letting it react to being moved rather than just touched (we anticipate using an accelerometer and multiple capacitive sensors).

All in all, so far I learnt more in relation to sketching than to design qualities from working with LivelyForm.

Figure 14:
Child exploring LivelyForm
See also:
http://sid.desiign.org/design-och-teknik/livelyform

HugBag

The story of this design artefact illustrates another way design processes can raise concerns or even enlarge the scope of a practice. In the introduction phase, there was doubt about the degree to which Snoezelen was relevant for one of the older children. After seeing some of the interactions I proposed addressing the child's strong and gross motor based actions by letting things like the favourite big pillows become interactive and have a temperament relating to arousal. After pondering that perspective the staff no longer had any doubt that they could do something for this child. Since then, they and another Snoezelen place have tried out various objects of their own, such as laying bells in the waterbed the pillows lay upon, so the pillow-hugging produces sound. On the basis of videos of these interactions the role of proprioception has been part of reoccurring deliberations.

Based on this I have done several sketches, and after a co-creation workshop we are currently building HugBag. The basic thought is to explore continuous and co-located coupling of action and effect tightly connected to gross motor activity.

The construct is made of a semi-inflated ball resting on a round base, like a low and slow tumbler. An accelerometer and stretch-sensitive yarn serves as 'nerve-cells' detecting how it is being touched and moved. This in turn controls evolving light patterns and basic sounds. We are looking forward to seeing it in Snoezelen.

Figure 15:
(from left to right)
Inspiration for HugBag, a workshop sketch, and yarn as a sensor

Enhance existing*MalleablePillow*

In the Snoezelen places various tactile experiences are facilitated by an array of things; including different small balls. We bought some balls that have inner plays of lights, but the light behaviour cannot be controlled except for turning it on and off with a hard push. The Snoezelen staff explicitly desired for the light to do more; to react to the child's action. So – as a purely incremental development of existing non-computational objects and as it connects to the foci on *body* and *coupling* – I set off to create a soft construct where light is closely related to kneading: More kneading gives more light and does so where the child kneads. The basic thought is to explore continuous and co-located coupling of action and effect tightly connected to the use of one's own body.

The technology is as simple as can be: Inside a semi-transparent white fabric case 3x4 LEDs are distributed along three clusters of glass marbles (creating a more intricate light play), each with a microphone picking up kneading sounds from the marbles, so these signals control the light. As a result of dialogues with the staff, the physical construct ended up being elongated with different distributions of the marbles to suit different hand sizes, abilities and ways of touching. This has only recently come out to the Snoezelen places, so it has not developed any further yet, but with another sensor set-up (a set of accelerometers) we are considering adding basic sounds.

Figure 16:
(top left and bottom right)
The existing ball with light and an early sketch of a malleable pillow.
(top right and bottom left)
Try-outs with MalleablePillow
See also:
http://sid.desiign.org/design-och-teknik/malleablepillow.

Foci revisited

The foci mark a sensitivity and attention to emergent qualities in a design space, a world-in-spe on the basis of the general ambition to promote the children's engagement, agency, and participation in Snoezelen by means of tangible computing. The foci progress through the *continuous* dynamics between them and the design experiments. Rather than trying to account for such intricate interplays the previous sections have mainly emphasised how the foci have framed and informed the design experiments, and the following will emphasise how the experiments have enriched my way of seeing the foci.

It is still premature to look for design space contours sharp enough to bear proper knowledge contributions yet, but I can see fertile grounds for it. As this section only serves to illustrate the programme at an early stage in regards to design knowledge, I limit myself to the following two sets of inspiration.

A 'væsen' is now an artefact that takes part in the Snoezelen triangle (see chapter 2), i.e. becomes part of a gathering. Even if the role of artefacts in Snoezelen is still somewhat of an enigma, some openings are apparent. One of the Snoezelen places has taken to a speculation of mine on 'bearable change'. By this is meant that an artefact can continue being part of a somewhat fixated interest of the child at the same time as slightly changing its own behaviour; in other words, it gently appreciates the actions while promoting moving beyond. For this agenda LivelyButton has served as a first exploration of temperaments. From the interactions with ActiveCurtain we have also seen

that it could be relevant with a spectrum of similar behaviours distributed across the surface, yet still with the same basic interaction of press and light. In other words, negotiating transparency vs. autonomy as well as co-located vs. distributed.

In interactions with ActiveCurtain and LivelyButton, the children have shown us so many ways of using the body to explore and engage, which point beyond the dominant manual interactions yet still feeling the body; i.e. not taking leave of touch as in the distant motion detection of Wii and Xbox/Kinect. This involves, for instance, pressing one's heads into the material, and needing a strip of fabric to physically hang on but also as a sensorial and cognitive starting point. To me this is about so much more than feeble hands: It involves rich ways of engaging and indeed it enriches the focus of *the Body*. Furthermore, the staff have pointed to the interactions we have seen, where the uses of the body may play a role beyond mere manipulation: bearable peripheral contact to the staff, feeling one's own body as part of an explorative experience, anchoring one self, keeping alert, comforting oneself. Whether or how this can be seen as part of Snoezelen is an open question for further design processes, open for controversies like those the next section will elaborate on.

Potentials, concerns and controversies

The sections on design artefacts and interventions and foci revisited have primarily addressed sensed potentials. Such potentials inevitably mediate or at least are shed in prevailing concerns and to some degree even controversies (Telier, 2011). Even if such connections between interventions, deliberations and issues cannot be pinned

down as one-to-one, I will – to give an impression of such dynamics in the programme – sketch some of the diverse issues that have played a role.

A key concern of the Snoezelen practice is being self-directed, i.e. the children should have maximum freedom to choose activities. Doing interventions may risk compromising that, as the design artefacts or the cameras by mere presence crave attention. The Snoezelen places have discussed this, exchanged experiences, and found their own ways of navigating this drift.

While the above can be seen as a more practical concern, the SID-project's aim, to promote the children's engagement, agency, and participation in Snoezelen, in itself raises issues. One emerging controversy addresses the degree to which the children's feel of their actual actions can be a goal. It actualises the mix of leisure oriented, therapeutic (in a weak sense), relational, aesthetic and even existential concerns the Snoezelen practices refer to, with or without words. The very actions of the children relate – seen from a design theory perspective – to my research focus *on the body* including the feel of one's own body as part of experiences. Judging by their practice the staff's views vary considerably on such matters that are otherwise core issues as Snoezelen aim to balance stimuli and arousal to enable the individual child to find the calmness or impetus needed to engage in the world. Simplified somewhat, the span ranges from a narrow focus on very of the moment action without any motivation besides spurring the child's attention and will to continue, to a tendency to focus on more meditative feelings of togetherness and finding one's sense of calm.

The latter also play into the foci on coupling and 'væsen' in negotiating transparency (e.g. by tight coupling for the children to grasp) and autonomy (e.g. the beauty of also having evolving and possibly more complex behaviours). However, with the foci of my research in mind, I am still puzzled by how the staff and Snoezelen at large do not see or explicate the connections between appreciating aesthetic experiences (Austring and Sørensen, 2006) and their deep understanding of the importance of the different senses. Nonetheless, it is exactly the variety of voices among the three places that makes deliberations of such controversies rewarding, but certainly not easy.

In commenting on the children's use of the design artefacts, quite mixed signals have come from the different staff members in relation to tight coupling. Clearly this needs more time to mature, but the staff members' different views adress potential qualities of simple digital behaviour: '*Tight coupling makes it understandable*', '*Without a fade the children can't see it*', "*Echo is good*", "*Flickering take attention*", "*One must feel it* ", "*good with aura* [i.e. reacting just before touch]", " *good when it only does something as it touched*", "*It should call for attention when not in use*" (these statement are my synthesis and translation into English terms). Behind this lay not only different situations and needs, but also fundamental discussions on the importance of sensing and relating over time rather than solely instantaneous understanding, which in turn connect to views of aesthetic learning processes (Austring and Sørensen, 2006) central to my research.

A strong undercurrent in all this is the important question amongst the different staff members, *What values are at the heart of*

Snoezelen? The Snoezelen triangle (see chapter 2) has served such discussions well, even if what it really entails is still an open question. Looking at the interactions with the children, the artefact is not solely a communication tool (child <= medium => staff), even if it could be interpreted as such from the outside. Neither is it merely a playful toy session catered for by staff (staff [child ⇔ artefact]); nor just a tool to make the child cope with being present (staff => tool => child), even if the Snoezelen term *sensory diet* can invite such thinking. Snoezelen is *also* these types of relations and in the Snoezelen places many other relevant activities takes place. But what constitutes the core of Snoezelen is – or indeed what it could be – is an ongoing debate; to which I – in a constructive sense (Koskinen, 2011) – mainly contribute through design artefacts.

In a small yet diverse multi-professional and human centred practice with little or late coming theory like Snoezelen, discussions on the very foundation of the practice can easily drift into non-constructive or even defensive debates; in Germany the Snoezelen movement has even re-enacted the Science War. In order to deal with such risks – also as that may be required for the children to take center stage – the project promotes starting from the concrete interactions; so to speak seeing the values that drive the practice in action rather than solely in words. Behind this is a firm belief that the practices are meaningful and carry valuable – albeit often tacit – insights that reflective practitioners (Schön, 1987) can mediate and contribute to a design process. In Schön's (1987) thoughts on being a reflective practitioner, I see a deep appreciation and respect for the combination of training and continued practice professions have developed; not only as we in design circles may think of our own profession, but also importantly so of pedagogues and occupational therapists (the typical Snoezelen staff). In a similar vein, Gaye (2011) points to how lack of training may lead to a more instrumental approach rather than a reflective and appreciative.

This may play a role in an observable but not fully acknowledged controversy around the open and explorative nature of the design process. While such open processes inevitably are very demanding to partake in, one of the Snoezelen places has had a hard time leaving what in design terms is called *a waterfall model*. Their descriptions of the children and the interactions tended to fit a requirement list and hardly looked for design openings and potentials. It was mainly about deficits; not only of the artefacts not being prototypes for testing (Buxton, 2007), but also of the children; the latter being in strict opposition to the rhetoric of the rest of the staff.

The described engagements with the practices are an essential part of the progression of the programme, both in relation to design knowledge and knowledge generation. However, it is still too early to see how these concerns and controversies will evolve in – as well as give form to – the participative processes. Furthermore, to a large extent such is also a delicate matter that may best be played out in the project rather than fleshed out in research like mine, which is not primarily about method.

CHAPTER 6

CODA

In a more free and loose manner than the previous text, I will conclude this paper by sewing some threads needed to join up the image of my programme.

Tangible participation

This paper started with mentioning the sentiment of *tangible participation* as a fundamental appreciation of meaning making around/ with/ through/ by tangible things. By sentiment I mean an underlying basic orientation or perspective. As such it is not a part of the programme, but indeed it permeates – and in a sense takes shape in – the programme, as the following two examples illustrate.

I have come to appreciate how the sentiment comes through in the foci as a way to enrich a pragmatist's aesthetics as proposed by Petersen et al. (2004). In brief, aesthetics in this sense refers to a holistic view on meaning making, where the aesthetic experiences include the interaction itself and herein the use of the body rather than just distant pleasurable appearances. This in opposition to for instance seeing artefacts as efficient manipulative tools and/or means of information transfer.

Building on this, the most concrete implication lays in the view of how the children take part in Snoezelen as well as affect formative design orientations by their very meaning making around things. However, given the sentiment, this is just one side of a broader picture, where all the parties in the project benefit from the way bodies and artefacts engage in treasurable ways; as we as designers know from sketching that may even take the form of body storming. As such the sentiment resonates with the design processes.

After looking at the underlying sentiment, I now move to look at the programme's underlying criteria.

Programme criteria

I have presented how I have set up and worked by a design research programme, which begs questions like: *When is the programme good research? When does it end, if at all?* The literature on design research programmes sketches interim answers, but for me, at least on an implementation level, these are still wide open questions, even to the extent of asking if a programme can be anything but fluid and emergent.

Given its hermeneutical nature, I do not think a programme can – or indeed need to – end. But it may get to a point where it seems saturated, or where it starts pointing beyond itself, for example when the contours of the design space no longer evolve in a significant way or when the programme does not seem to suffice in relating to the evolvement. However, given the long development processes, I doubt my research can come even close to that within the framework of my PhD, but I take it to be a quality if the research raises curiosities and thus tempts peers to continue aspects of the research.

So, it is more pertinent to address the qualities of the programme in its workings and in its possible outcomes. I have given some indications by pointing to how and where the programme connects criticality, action, and participation, as well as – more concretely – how the foci and interventions have co-evolved. Furthermore, my research motivation (see chapter 4) connects to how I have described the role of the design artefacts, which are in a sense focal points for progression of both pedagogical practice and design research. For me, this is not simply dual purposes, but as I have shown intertwined: The design space evolvement gets its strength by being situated in the practices, and the practices evolve as part of design knowledge generating processes and particularly by the suggestive and manifest character of the design artefacts.

The daily life in the project might, however, sometimes speak differently as the criteria for some of the staff in the project easily become whether the design artefact is good for the child here-and-now, thus shunting 'failing' design aspects. However, the criteria, both for the long term interest of the project and the research, are what we can learn from it. Furthermore, my research to a higher degree intends to move existing conceptions of design space. In a similar vein, to do design research by a programme is not about *covering* a delimited design space (alone the imagery stretches an unfortunate but popular metaphor too far). Rather, it is about enriching the programme and more specifically the foci. As such a good design research programme is not just one that makes nicely fitting designs, but one that has *potential* to transgress the existing. As the previous section has shown the programme seems to be able to engage issues, but it is too early to speculate on the outcome.

How the artefacts may partake in making the design knowledge valuable and likely to spread, I have sketched around terms of *transferability* and *trustworthiness* (see end of chapter 5). My thoughts need to mature in this respect, and to do so as the back talk gradually will provide fertile grounds for knowledge construction, rather than by premature speculations on, for instance, the relationship between *annotations* (Gaver, 2012) and *inspirational patterns* (Löwgren, 2007b).

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