

Robotising Dementia Care?

A Qualitative Analysis on Technological Mediations of a Therapeutic Robot Entering the Lifeworld of Danish Nursing Homes.

Sarah Weingartz
Maastricht University (ID 520497)
Aarhus University (20108425)
MA European Studies of Science, Society and Technology (ESST)
3rd of October 2011
Word count: 23.190

Supervisor: Prof. Dr. Finn Olesen, AU

0. Abstract:

In general, this thesis concentrates on the relation between care and technology. The object of study is the role of dementia care and technology in society and the case study is a socially interactive robot, categorised as 'therapeutic robot'. The aim of this study is to analyse the technological mediations of the robot affecting the social and working relations involved in dementia care and the ways subject and object are constituted in a concrete situation in practice. Arguing that both, technology and the experience and existence in dementia care, are not separate but inextricably bound and constituted by each other, this thesis examines if and how this is the case with a robot technology in practice observed in two Danish dementia care wards. The general research questions of this study are: How can we conceptualize the role of dementia care and technology in our Western societies? How does Paro, the therapy robot, mediate the perception and action, hence the existence and experience of dementia in care practice? The design of the study is qualitative and is motivated by an empirical and theoretical reflection based on both technology and dementia studies.

Keywords: STS, postphenomenology, socially interactive robot, dementia care practice, person-centred approach.

Table of Content

1. Introduction	p. 3
1.1 Research questions, aims, methodology and structure	p. 4
1.2 Reflections on field study and interviews on individual level	p. 6
1.2.1 Data collection	p. 6
1.2.2 Interviewees	p. 7
1.2.3 Limitations and considerations	p. 8
2. Dementia studies:	
Current perspectives on dementia and its relation to society	p. 11
2.1 Approaching dementia: what is at stake?	p. 11
2.2 Cultural influences on 'the problem' of dementia	p. 12
2.3 Explanatory models on dementia and their effects	p. 13
2.4 Implications for person, family, and therapeutic efforts	p. 15
2.5 Theoretical approaches to 'good' care in practice	p. 17
2.5.1 Tom Kitwood's Person-centred approach	p. 17
2.5.2 Annemarie Mol's 'praxiography'	p. 18
3. Technology studies:	
Current perspectives on the relation between technology and society	p. 22
3.1 Technology: human savior or cause of all evil?	p. 23
3.2 Technological determinism	p. 24
3.3 Social determinism or 'technology as neutral tool'	p. 26
3.2 (Social) Constructivism	p. 28
3.3 Postphenomenology	p. 32
3.3.1. Mediation of perception and action	p. 35
3.3.1.1. Mediation of perception	p. 36
3.3.1.1.2 The ambiguity of alterity relations	p. 37
3.3.1.1.3. Emotions in relation to technology	p. 41
3.3.1.2. Mediation of action	p. 43
4. Case study:	
A therapy robot in dementia care practice	p. 46
4.1 Field study: In the nursing homes of Aarhus	p. 46
4.2 Entering the nursing homes	p. 47
4.2.1 Part one. The elderly's relation to Paro	p. 49
4.2.1 Part two. The caretakers' relation to Paro	p. 56
4.3 Before leaving the nursing home	p. 62
4.4 Bridging technology and dementia studies	p. 64
5. Conclusion	p. 69
6. Bibliography	p. 72
7. Annex:	
7.1 Post-reflections	p. 77
7.2 Paro Certificate received by the Danish Technological Institute	p. 79

1. Introduction

Nowadays, the unthinkable becomes reality, a fluffy robot finds its way to the heart of many people. One does not need to go to obscure high-tech laboratories, fancy shopping malls or spy on inaccessible robotics institutes to become a witness of this, one simply has to go for a visit in some elder care institutions and keep the eyes and ears open for a white fluffy baby seal robot squeaking for attention and interaction. What is this all about robots, why are they becoming so prominent and spread even out into elder care institutions?

The wonder about the advancement of technologies in general and robotics in particular is enmeshed by amazement and worries about the direction humanity and technology seems to be propelling. Robotics nowadays are characterised as assistive, therapeutic, entertainment, service, navigation, in short, - welfare robotics – which have left the realm of mere fantasy or science-fiction literature and are increasingly appearing beyond assembly lines in factories in more sophisticated social, cultural and work organisational settings such as surgery rooms, private homes and elder care institutions. It is claimed that robotics is currently one of the most important emerging market segment of this century (Wright in Ichbiah, 2005, foreword). At the same time there is a widespread and persistent view that technology is something cold and rational, drastically opposed to the warm human relationship envisioned and associated for instance in caring situations (Widdershoven in Slatman, 2009). How is such technological development and the diversification of robots justified?

The justification to foster the development of robot technologies is provided by diverse public institutions. For instance, European Ministries of Research and Education as well as robotics institutes argue that the demographic shift plays a central role in defining the relevance for developing and introducing robots in places such as elder care. The demographic shift indicates an estimation of a fundamental change of the population development, appointed to two general factors: accomplishments in medical care have contributed to longer life span while the fertility rate

is stagnating if not reducing over time. This development has crucial effects on social and work organizations in elder care:

[b]ased on the demographic development in most western countries, it has been predicted that the number of people with mental and/or physical disabilities will increase while the amount of people to take care of them will decrease. [...] These factors have fostered the idea of using robot technology in elder care in order to reduce the workload of assisting personnel and secure life quality and self sustainability. (DTI, Hansen, et al. 2010, p.1)

In particular, dementia is considered to be the most prominent form among mental disabilities “and may prove to be the most significant epidemiological feature of the late twentieth century. Its presence will have profound and lasting effects – for good or ill – of our political, economic and social life.” (Kitwood, 1997, p. 1)

So far the relevance to justify robotics development seems to be due to gloomy causes, often referred to as 'problems', paved on an increasing population and cases of disabilities. Yet, this is not the whole story. The association of 'problems', as I will argue in this thesis, depends most crucially on our conceptions of both: of technology's role and mental disabilities such as dementia.

Since elder care institutions are working and living spaces at the same time it is also important to understand on a practical level: what does this technological alternative mean for the persons involved in elder care institutions, such as caretakers and persons needing special support? How is dementia defined and regarded to be an adequate subject of technological support, since after all “[t]he use of the term 'technology' in relation to dementia care provokes conflicting reactions”? (Cash, 2003, p.313). What does a robot *do* in elder care, what does it work at and through? Finally, how does a robot mediate relations between caretaker and elderly, their experience and existence involved in their interaction with a robot technology?

1.1 Research questions, aims, methodology and structure

This thesis circulates around these questions and engages into the general discussion of the relationship between dementia care and technology. In recent years this relationship has mainly

been discussed in terms of how technology can be used to compensate for the impairments many people have to face much in the way technology has been used as aids and appliances for cognitive disabled people. As a consequence of this discussion, dementia is often regarded as a pathology whose group of people labelled as such has become a target group for the development of respective technologies. Hence, my research questions are formalized as follows:

- 1.) **What are the current perspectives on the role of technology and dementia care in our Western societies?**
- 2.) **How does Paro, the therapy robot, mediate the perception and action, hence the existence and experience of dementia in care practice?**

The aim of this study is to analyse the technological mediations of the robot affecting the social and working relations involved in dementia care and the ways subject and object are constituted in a concrete situation in practice. The design of the study is qualitative and is motivated by an empirical and theoretical reflection based on both technology and dementia studies. Since in this thesis I depart from basic insights into technology and dementia studies and elaborate these in the part of the case study to more complex issues, my intention is to write for a broader audience, for those who are not necessarily acquainted with technology or dementia studies, for any interested caretaker and scholar alike. The style of writing varies between analytic and narrative, especially in the case study part, in order not to abandon the lively and narrative character of the interviews.

In the next two chapters, I will present the perspectives on both technology's role and dementia in our Western society and analyse the implications of current perspectives and explanatory models. This analysis is a critical literature review of dementia and technology studies and offers a basic understanding on the intricate nature of both technology and dementia studies by reflecting on their strengths and weaknesses. I propose postphenomenology as a main theoretical framework to analyse the mediations of relations within care settings, and as I will argue, it is fruitful to involve Annemarie Mol's concept of *tinkering* and Tom Kitwood's *person-centred*

approach to highlight how a technology as the therapy robot, Paro, is handled and used on an individual level in dementia care practice.

In chapter four, my case study on Paro follows, which I observed for three days in two care centres in Aarhus, Denmark. This case study is a synthesis of my empirical findings such as observations and interviews and the previous theoretical discussions respectively. This chapter contributes to my argument that technology and the experience and existence in dementia care, are not separate but inextricably bound and constituted by each other. In my conclusion, technology and dementia studies are brought closer together by a reflection on how postphenomenology and a person-centred approach are fruitful for theoretical and practical insights into the role and use of technologies in dementia care wards.

1.2 Reflections on field study and interviews on individual level

The interviews were all carried out in two care centres in Aarhus, Denmark. The names of the centres and persons interviewed are anonymised to protect their privacy.

1.2.1 Data collection

Since this research is of qualitative design, I used the opportunity to conduct qualitative interviewing, which was undeniably helpful to engage more deeply with my second research question. A limitation of qualitative interviewing is that the researcher can deploy a strategy to bring out the answers fitting best the intended research goal. This is to some extent unavoidable, however, in order to circumvent this pitfall in the best manner possible, I decided to conduct semi structured interviews. This has the opportunity that the interviews have a rather conversational character (without following a catalogue of defined questions but rather a broad topic guide), in which explanations of the interviewees take on different dynamics and directions leading to an understanding of what is important and emphasised by them. Thus, it is this flexibility that makes interviews so attractive. (Rubin & Rubin, 2005) In this sense, my role as an interviewer in this particular setting can be defined as in David Walsh's *Doing ethnography* (1998) terms a "participant

observer”: “as the primary research instrument [...] [interested in] how people *do* things.” (Walsh in Seale, 1998, p. 217)

1.2.2 Interviewees

Caretakers: I was allowed to interview four caretakers in two different nursing homes in Aarhus: an occupational therapist, a professional dementia consultant who also teaches social helpers, assistants and nursing students, a social assistant and a nurse specialised in dementia care. The interviews were conducted each with two caretakers together (in pairs) and ranged between 60 minutes with each pair in a continuous fashion. The language we used was English (further reflection on the language will follow in the next subchapter). The interviews with caretaker were audio-taped after I received their consent. Later discussions during Paro interactions and other day care activities (which I will explain later more thoroughly) were not audio taped but noted down afterwards.

Elderly: The elderly who were present in both nursing homes were about eight persons (some left and others joined the common room during my stay). The elderly were diagnosed with dementia and ranged from mild to severe. I interviewed the elderly in a way, which could mainly be understood as listening to and observing their chatting, expressions and actions in situations of Paro interactions but also in situations when Paro was switched off and lying on the next table. There were in total two Paro interactions that I was allowed to observe and participate. Sometimes it happened that elderly involved me in Paro interactions by encouraging me to take it over, to caress it I specific ways. In these situations we were chatting but rather in informal yet in my view respectful ways. I did not audio-tape these interactions but was allowed to take pictures during the interactions, which will be included in the analysis part of this thesis.

Finally, I transcribed the interviews I was allowed to audiotape, from which I include only bits and pieces when quoting the interviewees during the analysis part.

1.2.3 Limitations and considerations

Language

Being a German, non- Danish speaking student and planning fieldwork in a non-native-English speaking country, means also to face the risk that not everyone is able or eager to speak English. Luckily, this was no problem when arranging interviews via the Danish Technological Institute in Odense and the caretakers in Aarhus confirming these appointments. However, one could say I faced language barriers in *doing* fieldwork, which requires much more sophistication in a language than simply arranging an appointment. This is the problem of not communicating in native languages. Sometimes I had the feeling that my interviewees searched for a more adequate word, and hence I felt they were not 100% confident or even satisfied with what they actually wanted to express. Since I am a non-English-native-speaker myself and excited to gain insights into daily care activities in a foreign country, I hope I was able to formulate and express my questions in a well understandable manner.

There was also a difference between caretakers and elderly. While the caretakers most of the times felt more comfortable in speaking English, the elderly usually spoke some German, a bit English, and sometimes mixed them in one sentence, as it served the purpose of understanding each other. There was one Lady, who *only* spoke Danish, but expressed herself quite well with mimics and gestures and consulted the caretaker when it was something very important she felt to explain to me, who then did the translation part for her.

Non-verbal communication versus verbal communication

Non-verbal in contrast to verbal communication occurs without words and requires another quality of interpretation. Non-verbal communications played a crucial role for my observations during Paro interactions with elderly and carer. The participants interacted with each other in ways which unveiled gestures and mimics such as smiling, looking puzzled, coming closer to and

touching Paro by stroking and holding it, or by doing a gesture of annoyance (e.g. the gesture with your hand as if throwing something behind your shoulder) by moving away from Paro and without engaging into physical contact at all (e.g. to give Paro the “silent treatment” by ignoring it in a demonstrative way such as sitting with the back towards Paro). For example, a situation occurred in which an elderly Lady reached for and took the caretakers hand to put it on Paro in order to show the carer how to stroke Paro 'properly'. This observation is very valuable because in this particular moment “the body says, what words cannot.” (Martha Graham) Hence, non-verbal communication as opposed to verbal communication made it possible for me as a foreigner to observe and interpret the way participants *act* and demonstrate their attitudes and feelings towards each other in relation to Paro and at times by means of Paro. It helped me to reduce the limitation of a language barrier in order to connect my interpretations during field work with theoretical concepts such as tinkering, enacting, technological mediation of perception and action - which will be explained in the following two chapters.

However, as it is with any communication whether verbal or non-verbal, a limitation is always given to a certain extent because communication depends on both the 'sender and receiver' in which cultural differences play a role impacting, in this case, on the receivers (my) interpretation skills, even if my role came close to a “participant observer. Although the language barrier was undeniably there (and it is important to be aware of it), it did not stand necessarily as an impassable obstacle between me and my interviewees. I argue that it sometimes stimulated the interviewees to reflect thoroughly about what they really want to express in that moment and how I, for example, should understand it in order to overcome any doubts and vice versa. Thus, during the fieldwork the face-to-face communication did indeed require much more sophistication and actual time, but the skill of explaining things without the full command of a foreign language, demands another value of sophistication, namely dedication of the interviewees to *explain*. From my side, it demanded first, to engage in an empathic way to scrutinize non-verbal communication as just as possible and

secondly, to try to be aware of my subjective interpretations throughout my field studies and my later analysis and thirdly, by pointing at the limitation here, in this section, as a limitation of my research to be aware of as a reader.

But in what language to speak of care and its specificities? The ideal of good care is silently incorporated in practices and does not speak for itself. (Mol, 2008, p.2)

Moral considerations. 'I come and take what I need and go.'

In the beginning I felt like an intruder, although caretaker and elderly alike showed their openness and welcoming attitude by integrating me from the first day into their activities. Moreover, I was uncertain about finding the right timing to leave the nursing home. I did not want to leave the false impression to be merely interested in what Paro is and 'does' and not to care about the people who are primarily living there and were present to make these interactions possible.

This uncertainty was solved by communicating my concern to the caretaker during the first meeting, and we arranged that I would leave after the very end of the day-activities (such as *reminiscence*) which consisted of having some coffee, baking bread, singing, and chatting in a group of the elderly and two carers. During such day activities Paro was present in the room but switched off, and I had no voice-recorder, pad and pen and camera on the table. That way, a more personal interaction took place, which eased moral considerations of 'intruding and leaving behind' a residential place for own (research) purposes. It had a positive effect on both, on the personal but also on the research level, since I could experience how the elderly interacted *without* Paro and thus I was enabled to note differences in personal interactions.

2. Dementia: current perspectives on dementia and society

2.1 Approaching dementia: what is at stake?

Commonly, diseases are conceptualized in terms of scientific labels, medical diagnoses and measurable symptoms. If one says 'I feel sad and lonely', it has not the same effect as saying 'I have depression.' Psychological and psychopathological labels relate to what Ian Hacking (1999) calls 'interactive kinds', which can be understood as categories that are subject to so-called *looping effects*.¹ (Course book *Brainspotting*, BA Arts and Culture, p.41) Generally, people are not indifferent to how they are labelled. For example, many persons with dementia and their relatives are informing themselves about the latest neuroscientific insights and share their experiences in diverse online blogs². Hence, knowledge of psychological and psychopathological conditions is not neutral. Instead, this type of knowledge plays a fundamental role in Western societies of shaping our identities, relating to others and defining measurements for an adequate treatment, since “[they] will affect both the experience of living with a condition and how we support people and their families living with these conditions.” (Cassell in Hughes, 2006, p. 235)

The way of labelling triggers a response from labelled individuals and their families, who may start seeing themselves differently and act accordingly. The looping effects thus do not stop, instead they are evolving because they interact with those being classified etc. In this context, Hacking refers to a moving target: because the classifications and labels (the 'kinds') interact with those who are being classified. Thus the picture of a condition is not neutral but the good news is that it is to a certain extent lively and mouldable.

In the following I will present currently dominant explanatory models of dementia and show their social and therapeutic implications for dementia care.

¹ Looping effects are in Hacking's sense circles in which descriptions and attributions to persons are normative and evolve into classifications such as labels of these persons.

² See e.g. <http://www.dailydementia.com/>, <http://www.alzheimersforum.com/content/>, <http://www.alzheimerblog.de/>,

2.2 Cultural influences on 'the problem' of dementia:

The consequences on the great emphasis on autonomy and rational capability

As stated earlier, the estimations deriving from demographic analysis entail that, “as the longevity of the ageing population is extended, so their levels of chronic morbidity will increase” (Brown & Webster, 2004, p.5), within which dementia is considered to be the most prominent form. (Suther, 1997, Hansen, et al., 2010) At this point, I could use the option to insert some tables and graphs to show how a dramatic red line is curving up resulting in disastrous long numbers. Statistics do provide an overview yet I decided to avoid such demonstrations because my purpose is not to review the epidemiology of dementia, but to understand the ways dementia is conceptualized so far and how the understanding of dementia bears challenges also in conceiving the role of technologies; so not to disregard that “after all if there were only one person in the world with dementia, the condition would still raise the same conceptual puzzles.” (Huges et al., 2006, p. 5) Hence, this is the reason I decided to engage with and provide a qualitative study.

Every disease of course poses challenges on the individual as well as on the societal level. However, cultural norms and standards are contributing to foster the picture of dementia as a hopeless problem, since there is to date no medical cure, and the disease is chronic and deteriorating over time. Attitudes towards cognitive impairment are value laden, not at least because *failures* are considered to be among others the incapability of remembering certain things, worse if they are essential:

We live in a hypercognitive culture, [...] where intellect and reasoning are valued above relational and aesthetic aspects. Thus, the cultural significance of intellectual impairment will further jeopardize people with dementia living in the West.
(Downs in Hughes, 2006, p. 245)

This statement shows how our cultural norms are channelling our understanding of good or bad

memory, of capable or incapable person, or as Basting sharply says: “[c]ultural pressures to remember have given us unrealistic expectations as to how memory should work.” (Basting, 2009, p.5) This ‘incapability’ often turns into a hyped understanding of dementia as being the disease which causes loss of the mind, memories or even personhood. These high-standard cultural expectations on memory, autonomy, and full rational capability have contributed to rather negative dimensions on our views and interactions with people having dementia. Without doubt, there is a huge difference in seeing dementia as a source of failures in (inter)actions or as an individual and societal challenge which needs special support. So far that we gained an introductory insight into the normative implications involved in our understanding of dementia, the question raises: which kind of explanatory frameworks on dementia are currently dominant in Western cultures?

2.3 Explanatory models on dementia and their effects

For many dementia is located in an individual's brain. It seems logical, because it *has* something to do with a brain functioning disorder. Yet one can also look at other sides to find descriptions and explanations on dementia such as various discourses taking place in scientific, social and cultural domains. On an individual level, dementia can be quite a different experience than what one can read for instance in diverse medical journals which all have different answers and emphases. However, we come to terms with diseases by creating models, accounts and categories to one can refer to.

Before I present two dominant frameworks, I have to anticipate by making two points clear. First, defining a 'good' approach to dementia is already a challenge as such, “[l]ike ontology, the good is inevitably multiple: there is more than one of it.” (Mol, 2002, p. 17) It requires first an understanding of what dementia actually is, and what is good for whom, under which circumstances, etc. Therefore, there is no universally tangible definition of dementia: “The pathology of Alzheimer's disease defies precise definition at present. This is because its individual

components all occur to some extent in normal ageing.” (Esiri and Nagy, 2002, p.107). This statement is somewhat ambiguous, since it is also not the case that no definite diagnose can ever be made. Clinically and pathologically some people have very straightforward Alzheimer's disease. Nonetheless, it is still difficult to define what dementia is since it diverges from person to person.

My second point is similar to the first one: there is also not one explanatory model and understanding of dementia which has the one and only truth. Probably I may say it is easier to philosophise upon, yet in practice many approaches intersect, alter or are ignored by some while embraced by others – there is no ultimate approach either. Still, it is important to become aware of and to terms with these perspectives because they represent “ways of conceptualizing how illness is recognized, understood, and interpreted, from popular, folk and professional perspective” (Kleinman in Hughes, 2006, p. 235) and are subjects to *looping effects* or as Sabat calls *vicious cycles* (Sabat in Hughes, 2006, p. 290). These perspectives represent a mapping of specific attributions which serve to explain why people with a certain condition behave as they do, or in this case, why we believe that people with dementia feel and act as they do. These accounts are not neutral in their effects, because they provide us with guidance concerning the most appropriate way of response, which then stresses once more the relevance to study their implications not only for the person with dementia but also for “the nature of the therapeutic effort required to provide support.” (Hughes., 2006, p.235)

So which explanatory frameworks on dementia are currently dominant? One dominant account in Western countries is the model which explains dementia in terms of *normal ageing*. It describes how in general people think of memory difficulties and behavioural changes deriving from dementia as the natural result of normal ageing. Some symptoms of dementia may overlap with commonly perceived 'scatty' behaviour, absent mindedness and forgetfulness as it is often experienced by and with elderly of high age. This model is generally referred to as “ageism” (Kitwood, 1997, p. 10)

The other model explains dementia in terms of a neuropsychiatric disease, which derives from bio-medical insights of the brain and its functioning. The experience of dementia is referred to as the “result of underlying progressive brain disease.” (p.240) This explanatory model stresses the neuropathological side of dementia, its symptoms and the quest for a cure in form of medications.

2.4 Implications for person, family, and therapeutic efforts

The implications of explaining dementia as a normal part of ageing is that the person having dementia maintains the same style of living, status and expectations raised towards him or her. This is problematic because it reduces the person's condition to an extent that it does not sufficiently meet the special needs and care required, since “there is no justification for offering additional health and social service resources over and above those already provided for older people [...]”(Hughes, 2006, p. 236) Therefore, this explanatory model may lead to a failure of care and to the rapid deterioration of the person's condition.

Yet, explaining dementia in neuropsychiatric terms has the implication of positioning the person in a patient's role and reducing his or her signs, feelings and expressions to symptoms of neurological impairment. It is easier to say then “She did this, because, you know, she has dementia, that's supposed to happen.”, or “What can you expect?”, statements which strengthen the label mentioned afore. It leads to questionable sentences such as the headlines of a popular magazine saying “Alzheimer's: No cure, no help, no hope.” (Behuniak, 2011, p. 70)

This view is very problematic because it draws a clear line between the social and natural sphere, usually granting scientific knowledge and ways of dealing ultimate priority over intuitional ways of dealing with and caring for a person. Although there are many reasons to look for scientific explanations (e.g. when simply wanting to know what the diagnosis of dementia means ‘officially’, or what the symptoms are), its consequences on a person's social life can be drastic: for relatives and friends, the neuropsychiatric explanatory model stresses the passive side of dealing with a

disease and assigns responsibility largely to 'professionals', who have more expert knowledge about neuropathology. For the person having dementia, it is strengthening the sufferers and victimized role for whom is no prospect in form of a cure or an adequate medical treatment. This of course impacts on the person's psychological well-being, irrespective if mildly or severely demented. It implies to live with further difficulties such as stigmatization and depersonalization³, two value-laden terms often explained as the results of psychiatric labelling, because: “[a] psychiatric label is as disabling as the condition to which the label was assigned, [...] [a] result where all actions and expressions are attributed to the labelled condition.”(p.240)

In sum, both models have severe implications for the persons living in the dementia experience and the therapeutic efforts required. While the former model, *ageism*, does not take into account a disease at all, the latter “biological determinis[t]” (Hughes, 2006, p.246) model does but only stresses the disease. To conclude, both views fail to grasp the complexity of dementia in being reductionist, and offer rather one-sided guidelines and explanations in over- or underestimating ways.

However, although both models are presented here as separate frameworks, in actuality one person or society can take on both at the same time or can fluctuate between one and the other model, thus they are not necessarily exclusive. Moreover, it is crucial to stress that neuropathology *does* provide important insights into dementia which should not be directly or solely interpreted in terms of reducing or stigmatizing a person; as mentioned in the beginning, dementia *is* part of brain activities and this will not change with any other framework. The same counts as well for the model of explaining dementia in terms of *normal ageing*: for any person not familiar with symptoms of dementia, it is hard to become aware, understand and relate to the changes of the other's behaviour to a disease (especially in the early stages of dementia) since it develops gradually and is not as obvious as a broken leg for instance due to its intangible, cognitive nature. It is part of their

3 Several cases describe a process of depersonalisation of the demented person, for instance when others, be it carers or family members, start talking about the person as if she or he is not present (“She will soon forget what was said” or “She is so apathetic, she doesn't get it anyway.”)(Sabat, 2006, p.291)

experience with demented persons, which also cannot be ignored. Still, the main problem of both accounts is that they do not provide a full and complex picture of dementia.

What needs to be included to approach dementia goes into the direction of the view by Ingunn Moser who claims that: “[d]ementia [...] is not mainly located in individual brains and bodies, but in interactions and daily life.” (Moser in Mol, 2010, p.278) What this view entails and adds, will be pursued in the following paragraphs with the introduction of the person-centred approach.

2.5 Theoretical approaches to ‘good’ care in practice

The lessons learned from the dominant perspectives mentioned above, indicate that we need a more balanced view which does not ignore neurological insights and attributions of ageism but incorporates social factors as well. Why social factors? In practical terms, as Mol (2002) straightforwardly says: “Disease is being *done*.” (p.32), which implies dementia is lived, experienced, suffered, cared for and learned from, in homes, institutions, and many other social places involving activities and interactions. In philosophical terms, “what might be constitutive of something in the psychological realm is likely to have correlates in the physical and social realms.” (Hughes et al., 2006, p. 4) As I will argue in the following such inclusive approach can be found in the so-called *person-centred approach*.

2.5.1 Tom Kitwood's Person-centred approach

The person-centred approach seems to be less exclusive, because it proclaims a dialectical process of explanatory models. Tom Kitwood, a British socio-psychologist and psycho-gerontologist, is central in this context because he has been one of the first to propose that psychosocial factors, which are “health, individual psychology, and the environment, with particular emphasis on the social context” (Kitwood, 1997, p. 12) should be included into a model on

dementia which seeks to balance the view on dementia in both neurological and social ways. This finds resonance with the idea that not every case of forgetfulness or cognitive impairment can be regarded as a mere natural kind, since there are not always clear-cut cases neither in nature nor in the nursing homes.

Yet, we still feel the need to say that they are part of one kind. Here I will come back to Hacking's concept of *interactive kinds*:

[...] when known, by people or those around them, and put to work in institutions, change the ways in which individuals experience themselves – and may lead people to evolve their feelings and behaviour in part because they are so classified. The *inter* may suggest the way in which the actors may become self-aware as being of that kind, if only because of being treated or institutionalized as of that kind, and so experiencing themselves in that way. (Hacking, 1999, p. 104)

While natural kinds are indifferent - for example, to be a goldfish is simply that, and you do not become more or less gold or fishy by being described in this or that way – an interactive kind is one that is affected by the description given to it. As stated in the beginning of this chapter, interactive kinds relate to labels and categories which are subjects of looping effects. In order to create less harmful labels to persons being categorised through their condition, one needs, as Hughes argues, a *whole sight* which can be found in the person-centred approach. Whole sight refers to the idea that people with dementia have to be understood in terms of relationships - not exclusively in terms of but together with neurological insights.

As I argued so far a person-centred approach seems adequate in theory, but how can this work in practice?

2.5.2 Annemarie Mol's 'praxiography'

In fact, dementia is not only a disease which is only explained and experienced but is performed in specific ways. Following Annemarie Mol I will engage with how the “disease is being *done*”. (Mol, 2002, p.32) Mol is a Professor of Social Theory, Humanism & Materialities at the University of Amsterdam, and has developed in her book (2002) *The Body Multiple. Ontology in*

Medical Practice a so-called *Praxiography* deriving from her ethnographic studies in Dutch hospitals as a

shift from epistemological to a praxiographic appreciation of reality, telling about what [a disease] is, isn't quite what it used to be. Somewhat along the way the meaning of the word "is" has changed. Dramatically. This is what the change implies: the new "is" is one that is situated. It doesn't say what [a disease] is by nature, everywhere. It doesn't say what it is in and of itself, for nothing ever "is" alone. *To be is to be related*. The new talk about what is does not bracket the practicalities involved in enacting reality. It keeps them present. (pp. 53, italics in original)

Praxiographic studies, hence, depart from a situated, context dependent idea in which disease (in Mol's above mentioned book it is the case of atherosclerosis) is being enacted. What does enactment mean according to Mol? Mol explains that she tries "to mobilize a theater metaphor" (p.32) which entails that a "disease is performed in specific ways" (ibid). She introduces a rather neutral term (neutral in terms of academic history) of enactment, meaning:

It is possible to say that in practice objects are enacted. This suggests that activities take place – but leaves the actor vague. It also suggests that in the act, and only then an there, something *is* – being enacted. Both suggestion fit in fine with the praxiography that I try to engage here. Thus an ethnographer/praxiographer out to investigate diseases never isolates these from the practice in which they are, what one might call, enacted. (p.33)

Another concept by Mol (2008) introduced in her later book *The Logic of Care* and elaborated further in (2010) *Care in Practice. On Tinkering in Clinics, Homes and Farms* needs to be included here, one which allows space to explore in how far 'good' care can be realized in practice, even though a disease such as dementia is chronic and not curable with medicines. Mol offers the concept of tinkering, which entails that: "[...] even suffering involves activity: [...] pain is not something people undergo, but something they actively negotiate and tinker with." (Mol, 2008, p.113) Since it is crucial to understand that care is not only about receiving but also giving, the concept of tinkering shows that there is not one ultimate way of doing care right or good. It is an ongoing process of actions, of giving and receiving care:

In practice however seeking a compromise between different goods does not necessarily depend on talk but can also be a matter of practical tinkering of attentive experimentation. In care then qualification does not precede practices but forms a part of them. The good is not something to pass a judgement on in general terms and from the outside but something to *do* in

practice as care goes on. (Mol, Moser, Pols, 2010, p. 13)

So, good care, as it becomes clear so far, does not depend on certain theoretical models only, but on our conceptions, practicalities and collectives. It is not only the caretaker who gives care and the person with a disease receiving it, it is the working together of both as a team, which forms the collectives. This collective actively tinkers with the condition in which both are situated in experiencing and living.

However, when speaking of *doing disease*, objects, instruments, tools, devices, artifacts, in short, *technologies* need to be involved as well, since they also play an important, and constitutive part in dementia care and the collectives. Hence, technologies need to be addressed and studied as carefully in order to be part of an analysis of dementia care practice. How can a technological artifact, such as a 'therapeutic robot' like Paro, be constitutive for dementia care and vice versa? How does such artifact like Paro mediate our perception and action involved in dementia care?

For answering these questions, we need to involve other fields of studies and theoretical approaches as well. Since we are by now a bit acquainted with current dementia perspectives and how to approach good care in terms of Kitwood's person-centred approach and Mol's praxiography, we now need to do the same with regard to technologies by engaging as well with *technology studies*: to find out first, which current perspectives on technology's role in society do exist and which implications they have on dealing with technologies and ourselves. Hence, this is what will be discussed in the next chapter: it will be about the relationship between technology and society in general terms, and it will be treated separately from dementia studies. This distinction I draw here in these two chapters is for analytical purposes. I also draw this distinction because not all - in fact hardly any - interdisciplinary theoretical frameworks are build to match but as it appears rather to disprove each other, as it already became clear in this and also will become clear in the following chapter. As a final step of this thesis then, we will be able to find out if a framework of technology studies is theoretically resonant and fruitful to be put in close relation to Kitwood's person centred

approach and Mol's praxiography and how this can be shown by means of the case study on Paro in the nursing homes.

3. Technology studies: current perspectives on the relation between technology and society

Living in a “technological culture” (Bijker, 1999, p.1) bears challenges in itself for its understanding is not united in one single framework or one ultimate truth, similar to the above mentioned understanding of dementia. The understanding of technologies' role in society is as complex as diverse, it can be even a minefield for heated and endless discussions, since use and role of technologies are not unchangeably determined neither a priori nor a posteriori, as “[...] we can never take the use of a technology for granted.” (Oudshoorn and Pinch, 2003, p. 1) Although there is not one dominant account explaining the ultimate role and use of technology in society, there are many accounts and perspectives, among which one is often referred to as 'the standard account', as opposed to the perspective of the academic field in this study called Science & Technology Studies (STS).

STS is “a dynamic interdisciplinary field, rapidly becoming established in North America and Europe.” (Sismondo, 2010, p. vii) It combines works deriving from sociology, history, philosophy, anthropology among others and is a counter response to modern and essentialist views on the origin of artifacts and scientific knowledge. STS engages with the invisible complexity and development of artifacts and scientific facts in various theoretical and empirical ways, and by doing so, STS presents the underlying myriad meanings, interpretations and politics shaping the material world we know, and the facts we take for granted.

This chapter will be about following two questions: how can we conceptualise technology's role in society? Which implications are involved? By answering these two questions, I will lay a further layer of theoretical ground for the following analysis.

3.1 Technology: human savior or cause of all evil?

Welcome to the world of [...]technologies. You may have noticed that they seem multiplying, and it is true. As our technology expands, as our wars multiply, and as we invade more and more of nature, we create systems – organizations, and the organizations of organizations – that increase the risks of operators, passengers, innocent bystanders, and for future generations. (Perrow, 1984, p.3)

With regard to this quote I may add: welcome to the world of a *dystopian* view on technologies. The quote presented above derives from Charles Perrow, who as a sociological theorist of organizations, aimed at raising awareness on high-risk technologies. Of course, he had to start off with an excessively gloomy picture on technologies, how else would you introduce your reader to the risky side of technologies? However, technologies cause in general ambivalent associations and feelings in many of us: they are either embraced with both hands and seen as the saviour to our earthly problems or doomed to be the cause of all evil in creating uncontrollable 'monsters' (Collins&Pinch, 1998b, p.1).

Both extremes in viewing technologies' effects on society is categorised in technology studies as *utopian* and *dystopian* views, in which the former holds the position that technology leads to a better life for most people through increasing wealth (the latter is in particular associated with the Liberalist account) but also that technology is a productive force to accelerate the dialectic process toward a class-free society (Marxist account)⁴ (Olesen, lecture, February 2011). A dystopian view conceives technologies as determining the entire social and human life which depends on and is limited to technological pace. Lewis Mumford has been influential in this context, especially his concept of *Monotechnics*: they produce “mega machines” which increase power dramatically, “but by regimenting and dehumanizing.” (Sismondo, 2010, p. 10). From the point of view of modern technology, Heidegger developed a similar position in arguing that a technological worldview

4 See for a more detailed discussion on dystopian and utopian technologies, e.g. in: Winner, L. (1998). Technology Today: Utopia or Disutopia? *Social Research*, Vol. 64, Issue 3, 989-1017.

produces a thorough disenchantment of the world, thus in Heidegger's view “technology is a sending of being and our only hope is to await expectantly a new configuration of being to take shape.” (Verbeek, 2005, p. 101)

3.2 Technological determinism

What both, utopian and dystopian, extremely opposing views have at heart in common is that they share a deterministic view on technologies. In technology studies, this perspective is called *technological determinism*, which is a framework subdivided into a *theory of technology* and a *theory of society*. According to Mackenzie and Wajcman (1999), the theory of technology holds that technological development is independent of society, a “simple cause-and-effect theory” (p.4). This implies that technological development occurs autonomously, outside of society by following its own inner logic. While the theory of technology stresses the effect of technology on technology (inner logic), the theory of society is concerned with the effects of technological’s predominant power *on* society (for instance that technology drives history). Hence, it can be argued that the theory of society builds on the theory of technology, since without the inner logic of technology there would be no (determining) effects on society⁵.

Not only at Mumford's time, but still today, this view on technology is widespread and common: “[...] technology itself and the idea of technological determinism continue to fascinate, even if those of us in the STS community sometimes deny this fascination.” (Wyatt in Hackett et al., 2008, p.165) For instance, when one has a look into newspaper articles or in mass media such as “*Robot Seal Leads Way To Tomorrow’s World*”⁶ , “*Robotic Seals for Welfare and Comfort*”⁷, technology does indeed seem to diffuse in surprising yet automatic ways just as the next logic step

5 Even though technological determinism is sometimes distinguished between 'soft' and 'hard', the soft versions of technological determinism acknowledge some influence by social factors, still human agency is weakened and has over technology little control or influence. See for further discussion on different forms of technological determinism for example: Bimber in Smith & Marx, 1994.

6 Henderson, M. (2002). *Robot Seal Leads Way To Tomorrow's World*. The Times. London.

7 Danish Technological Institute. (n.d). *Project – Robotic Seals for Welfare and Comfort* (2008-2010).

to occur to society. The only option for society in this respect is “to adapt, to protest or to run away.” (Bijker, September 1010, lecture).

However, despite Wyatt's assertion that technological determinism continues to fascinate, to the critical reader it soon becomes apparent that technological determinism is a radical and reductionist theory in explaining the relationship between technology and society for various reasons. First, in this model, it would make no sense to study the way technological change occurs since its development runs according to its own inner logic, as McGinn (1991) nicely put: “juggernaut-like”. (p.72) Second, technological determinism reduces society in a passive role: “[t]he view that technology just changes, either following science or of its own accord, promotes a passive attitude to technological change. It focuses our minds on how to adapt to technological change, not how to shape it.” (MacKenzie and Wajcman, 1999, p.5) This underlying passivity implies that choice and participation in technological development are futile, hence ethical concerns do not have any room in this framework. This is problematic due to its debilitating consequences on society, which means that “there is neither need nor the possibility for political deliberation”. (Bijker, September 2010, lecture) To summarise technological determinism's implications, I refer to Dusek (2006) who pinpointed sharply: “[t]he claim that technology is autonomous is the claim that technology is independent of human control or decision.” (p. 105)

Yet, despite technological determinism's problematic implications on society, its theory should not be easily dismissed or conceived as outdated. As stated before, it is still a widespread and commonly shared view not only among laymen but also among academic scholars⁸.

8 For further insight, consult for instance the fierce debate between Ray Kurzweil and Bill Joy about the inevitability of technological progress of the next generation technologies of GNR in: Joy, B. (2006). Why the Future does not need us. In, A. Teich (Ed.), *Technology and the Future* (pp. 115-136) and Kurzweil, R. (2006). Promise and Peril. In A. Teich (Ed.), *Technology and the Future* (pp. 144-165). New York: St. Martin's Press, 10th ed.

3.3 Social determinism or 'technology as neutral tool'

So if technology is not autonomous, does not follow an own inner logic, and is not acting on society alone, how can we explain the fact that we are depending on technologies to such an extent that we cannot even imagine a life without them anymore? Indeed, our dependency on technologies is indisputable – but this is just one of the many relations we can have with technologies. After all, what would technologies mean if no one is there to use them? They would succumb and lurk in the dark corners of our memories stored under 'failure'. As it might be clear already, this model called *social determinism* or also referred to as *technology as neutral tool* stresses societies dominance in its relationship with technology. It also seems very logical, since technologies depart from humans - they are envisioned, build and used or *refused* by us. We give technologies a 'voice' and make them 'alive' by relating to them in many, even in anthropomorphic ways, like when you give a name to your new car or start talking to the elevator to hurry up. In this view, technology is merely confined to the users' imaginations, intentions and ways of utilisations and therewith-going explanations and justifications.

With regard to the current robotics development, from a social determinist point of view, the 'rise' of welfare robotics in elder care is a challenge to be met by society; this is to say that the implementation and use of robots is a matter to be decided upon. Nothing seems wrong so far with this view, since democratic handling with technologies is just the right way to reflect on the role of technology in society. However, the problem is that social determinism does not challenge the view that technology autonomously diffuse into society by following its own inner logic (theory of technology), in this case that society adopts the view that welfare robots will come either way, and what is left to society is merely to react (against or for). Another famous example in technology studies is that of a gun. The saying “Guns don't kill people, *people* kill people” underlines that a gun itself can not do anything at all, that it is nothing else than a tool, which is neutral in itself but

becomes dangerous if it used by, as Latour (1999) casually says, a 'gunman': "If the gunman is a good guy, the gun will be used wisely and will kill only when appropriate. If the gunman is a crook or a lunatic, then, with no change in the gun itself, a killing that would in any case occur will be (simply) carried out more efficiently." (p. 177)

While in technological determinism, technology defines our actions ("we are what we have"), in social determinism we decide upon our actions by using or not using 'technology as a neutral tool' ("what matters is what you are, not what you have"). Hence, opposed to technological determinism, technology has in this model no explicit, a priori or straightforward effect on society. The effect that occurs is the result of human choice and action and thus enables political and ethical reflections. Humans can be held responsible for their decisions on whether or not to develop or put in use technologies; for example, decisions need to be made which drug needs a prescription or not, etc. One advantage of this model is that it "gives a prominent place to people, individually and in groups, making choices about how they want to use the technical artifact." (Wyatt, 1998, p. 13)

However, as hinted on before, the model of social determinism does not provide a full picture on the relationship between society and technology either. A problematic underlying assumption of this model is that it still treats technology and society as two distinct spheres. Social determinism shares with technological determinism the view that technological development occurs autonomously by following its own inner logic (theory of technology). Hence social determinism only disagrees with regard to how technology affects society (theory of society). This is problematic, because by placing ultimate emphasis on human control and decision, this model is too optimistic about the ability to control and account for the 'neutrality' of technologies in practice. As the introductory quote of this chapter already illustrated, Charles Perrow (1984) highlights the risks involved in complex technological systems such as nuclear power plants, chemical plants, genetic engineering, within which: "[m]ost of these risky enterprises have catastrophic potential, the ability to take lives of hundreds of people in one blow, or to shorten or cripple the lives of thousands or

millions more.” (p.3) Although the idea of control is valuable in terms of taking responsibility towards technologies, social determinism “is an inadequate theory that is too optimistic, even utopian, to prevent technology from getting out of control.” (Bailey, 2005, p. 14)

To conclude this part, social determinism has valuable points in bringing back into discussion human choice and responsibility in relation to technology. However, one thing remains still blurry: strictly seen, as I understand it, it can be argued that social determinism paradoxically *restricts* society even more than in technological determinism, because society makes itself accountable for misuse of a technology as well as for malfunction of a technology, while the latter (malfunction) is in technological determinism merely assigned to technology per se (see theory of society). Nonetheless, both theories lack a balanced account on how to make sense of the relationship between technology and society in addressing the distribution of responsibility and the underlying normative aspects in the materiality of technologies respectively.

Still today, both presented views on technology is widespread and common, thus the name “standard account” which STS studies oppose to. Where does STS lead us to now?

3.2 (Social) Constructivism

In theory, deterministic ideas of technology may blossom – but also just to a certain point. In the 1970s and 1980s empirical research into both science and technology has unravelled that “each technology comes into being via a contingent process of social interaction” (Verbeek, 2005, p.101) to underline that neither science nor technology are neutral, but based on a context which are “[...] inherently value-laden, multifaceted and complex [...]”(Cutcliffe, 2000, p, 114)

What emerged out of this increasing awareness is the perspective called *social constructivism*, with one of the chief proponents of this view Wiebe Bijker, Professor of technology and society at Maastricht University, Netherlands. Building on the *sociology of scientific knowledge* (SSK), Bijker developed together with Trevor Pinch the theory *Social Construction Of Technology*

(SCOT) to “contrast the standard image of technology that was largely 'technological determinist'.” (Bijker, 2001, p.26)

Without going too much into detail, SCOT opposes technological determinism by showing through various empirical case studies that first, technologies are not neutral, because they are the results of complex processes involving diverse (cultural, social, economical, political, etc.) mutual influences in shaping artifacts (concepts of *social relevant groups*, *technological frame*), and second, that technologies are contingent, since the process could have developed differently depending on the underlying power relations or other social dynamics (concept of *interpretative flexibility*: “it could have been otherwise - yet not everything is possible”).⁹

Now, in the case of welfare robotics, following the SCOT approach, one would pick one artifact such as Paro the therapeutic robot, and follow a multidirectional analysis, in first defining which are the relevant social groups (e.g. elderly, relatives, caretaker, designer, etc.), which meanings do they attach to the artifact (e.g. elderly see the artifact differently than carers; while occupational therapists might see in Paro an other offer for dementia care, the elderly would see in Paro a pet, companion, or mechanical doll, etc.), and how this results into a social shaping of Paro (e.g. designers provide Paro a more fluffy texture, because elderly seemed to be less attracted to touch it). Thus, according to the SCOT approach one can map out the heterogeneous elements contributing to the social yet contingent character of technologies. Yet, in how far does SCOT offer space to engage with the complexity of technology's role in society?

In trying to understand the role of technology in society concerns directed to the SCOT approach were pointed out. For instance, according to Verbeek, “[r]educing technology to social interactions [...] fails to do justice to the active role played by technologies themselves.” (Verbeek, 2005, p.102) Although it should be made clear that SCOT *does* acknowledge through the concept of *contingency* that technologies are to a certain extend constrained to their material condition (e.g.

⁹ A well-known historical study on the social shaping of technical artifacts is the case of the bicycle's development to the modern bicycle we know and use today, in: Bijker, W.E. (1995). *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change*. Cambridge, Mass.: MIT Press.

“You cannot make this classroom fly, even if we all agree to it” (Bijker, 2010, lecture). Moreover, through the concept of *obduracy*, SCOT also acknowledges the social limitation of shaping technologies¹⁰. Yet, the concepts of *contingency* and *obduracy* do not offer the necessary space to analyse the normative consequences of dealing with technologies and therefore it might be well argued that SCOT does not focus (and does also not proclaim to do so) on the active role played by technologies themselves. This may be interpreted as a limitation of SCOT, because after all the active role of technologies is crucial to understand not at least for developing ethics in engineering design among others. Thus, the need for an extended understanding of technology's normative role in society is given. How then to approach normativity in relation to technology?

It is argued, that the study of the normative dimension of technologies requires the inclusion of a philosophical reflection, because living in an increasingly technological culture implies the philosophical question of what counts to human or material agency. Indeed, social and material spheres are blurring and dissolving in our conceptions and, however, human or not human, there *is* a deeply rooted need to understand the many layers interwoven into this socio-technological complexity. How to make sense and analyse human and material agency and the underlying normativity without slipping into social or material determinism?

Actor Network Theory (ANT) has been proposed by the French philosopher and anthropologist Bruno Latour. Although Latour was not in the beginning concerned with questions of neither normativity nor philosophy of technology “following other types of concepts and interests” (In Ihde, 2003, pp.19)¹¹, he later on exemplified in *Pandora's Hope* (1999) through his four meanings of technical mediation how certain characteristics of the human- non- human are collective. With regard to a famous example of the gun, Latour strongly opposes both views (technological and social determinism) by claiming that “neither people nor guns kill” (Latour,

10 See for a thorough discussion on SCOT's concept of obduracy in Hommels, A. (2005). Studying Obduracy in the City: Toward a Productive Fusion between Technology Studies and Urban Studies *Science, Technology & Human Values Summer 2005 30: 323-351*

11 See for further insights in the interview chapter with Latour held by Robert Crease, Don Ihde, Casper Brunn and Evan Selinger in: Ihde, D. (2003). *Chasing Technoscience: matrix for materiality*. Indiana University Press.

1999, p. 179) meaning that responsibilities for action are equally shared between the different *actants - human and non-human actors*. The usage of the concept translation¹² elucidates that you are a different person when holding a gun in your hand – it shifts, drifts and modifies your goals and intentions. For Latour it makes no sense to base his ontology on “old-fashioned modernist assumptions”(ibid) (sociologist/materialist views) and therewith going subject/object distinctions, but rather introduces a radical and new ontology based on symmetry, semiotics and the collective¹³.

Nonetheless, the normative questions implied in material hermeneutics¹⁴ “what roles play technological artifacts in human interpretations of reality?” seem not to have gained the necessary room of consideration neither in SCOT nor in ANT. While Bijker leaves philosophy to the philosophers (2010, lecture), in SCOT we hardly find traces of technological mediation as a mutual, co-constitution of subject and object; rather SCOT describes the intermediary relation in terms of a *socio-technical ensemble*, which however stresses the social side of the relationship with technologies. In turn, ANT provides a rather meso picture of how actors are linked to and influence each other in terms of power relations in a network, etc., yet does not go into the micro perspective how humans themselves are constituted in the relation to an artifact. I will return to a more close comparison of ANT and postphenomenology in the following subchapter.

In this chapter I argued that living in a technological culture implies the need to come to terms with the question which role technologies play in our lives by including the aspect of normativity and philosophical investigations within material hermeneutics. In this way, we can broaden our understanding in how far technologies are not neutral but active mediators in specific

12 In this respect, Latour describes a process – a series of goals, steps and intentions- by introducing his concept of *translation*. By this he means “displacement, drift, invention, mediation, the creation of a link that did not exist before and that to some degree modifies the original two.” (1999, p. 179)

13 With regard to ANT, many scholars questioned the underlying symmetry of human and non-human agency, because it implies no distinction between human and non-human actors . Pickering (1993), for example, questions the idea of *semiotics* in this respect since “semiotics imposes an exact symmetry between the human and material realms.” (p.375) Pickering refers to the 'headache-causing' implications regarding *intentions*: “We humans differ from nonhumans precisely in that our actions have intentions behind them [...]” (p.375) See for further discussion, e.g. in Pickering, A. (1993). *The Mangle of Practice: Agency and Emergence in the Sociology of Science*. Ch. 25 (pp. 373 – 393)

14 *Material hermeneutics* is a “specific philosophical movement away from studies of texts to studies of things and artifacts.” (Olesen, 2011, lecture)

use contexts. I announced in the introductory chapter that postphenomenology as a philosophical theory of technology offers a certain perspective and conceptual tools to deal with questions of material hermeneutics. What does postphenomenology deal with? Can it be a helpful framework for my case study?

3.3 Postphenomenology

In general postphenomenology deals with “philosophical analysis of the structure of the relations between humans and their life-world”¹⁵ and *hermeneutics* as a practice of interpretation and explanation in the realm of philosophy of science and technology.¹⁶

Don Ihde, distinguished professor of philosophy of science and technology, developed postphenomenology as an offshoot of phenomenology, and is particularly interested into material hermeneutics, perception and the mediation of perception in and through technologies. Later, Peter-Paul Verbeek, associate professor of philosophy, elaborates on Don Ihde’s work but adds the dimension of “how artifacts mediate people’s *actions* and the way they live their lives.”¹⁷ So while Don Ihde is known for his framework on technological mediation of *perception*, Verbeek includes this in his work but is rather focusing on the mediation of *action*.

While perception and action seem to be inseparable, in postphenomenology this distinction is drawn to be able to discern the diverse mediations a technological artifact has on our *existence* and *experience* in the world.¹⁸ Since the basic assumption is that our existence and experience is a *relational* phenomena, in postphenomenology technologies are conceptualised as mediating in these relations - relations conceptualised as mutual, and subjects and objects as constitutive. With postphenomenology one analyses the kind of relations and engagements that take place around,

¹⁵ Verbeek, (2006), p.363

¹⁶ Ihde, (1998), p. 41

¹⁷ Verbeek (2005), p. 366, my italics

¹⁸ Existence or *being-in-the-world* is analysed in terms of action (existential dimension), while experience or *how-the-world-is-present-to-us* in terms of perception (hermeneutic dimension). (Verbeek, (2005), p.147)

with and through mediating technologies.

Postphenomenology and ANT share a very close perspective on the (basic) assumptions and relations between subjects and objects, because both “deal with subjects and objects, not as pregiven entities that assume relations with each other, but as entities that are constituted in their mutual relation.” (Verbeek, 20005, p. 163) This statement seems straightforward, yet it requires a closer reflection to understand postphenomenological's concept of technological mediation. *Technological mediation* refers to the mutual co-constitution of subject and object in specific praxes; thus it means that technological mediation is *not* about how technology mediates between independent pre-existing subject-object oppositions. Crucially, it is to be understood as a relation between subject and object as already always existing and not as a result of both. Latour says: “Objects and subjects are made simultaneously.” (in Verbeek, 2005, p. 164), and Verbeek claims something similar: “[...] subject and object [...] are always already intertwined thanks to the intentional engagement of the human beings and world [...] and by emphasising that subject and object *constitute* each other. Not only are they intertwined but coshape one another. ” (p. 112, italics in original)

However, in this respect, ANT and postphenomenology diverge in their focus, elaboration, and analysis due to their different motivations and interests. While in postphenomenology the world is understood in terms of relational phenomena and material hermeneutics based on subject-object constitution, in ANT the world consists of networks and power relations based on symmetry, semiotics and the collective. Although postphenomenology explains through technological mediation that subjects and objects constitute each other, it “does not eliminate the fact that it always thinks in terms of a distinction between the two [...]” (p. 164), while ANT does not draw this distinction in analysis by maintaining subjects and objects as both human and non-human throughout in his ontology. The distinction, however, becomes relevant if one seeks to understand how a subject is constituted with an object in particular cases, how a person perceives its presence

in the world via technological artifact and how the world is present to a person. Thus, the particularity of such context dependency in which subject and object constitute each other defines the relevance of analytical scrutinization through a postphenomenological lens.

As mentioned before, ANT adopts a rather meso organisational view on how the actors are linked in a network – hence, the very connections between the actors are remaining rather open for exploration and analysis in postphenomenological terms: “Latour views these connections simply as “associations”, as a kind of cement between actants. [...] The postphenomenological perspective examines the connection between the short networks in a more detailed way: in terms of experience and behavior, [and Heidegger's concepts of] readiness-to-hand and presence-to-hand.” (pp. 165)

I will use postphenomenology as a theoretical framework for the analysis, because it is indeed these particular connections - between the person with dementia, caretaker, and the mental commitment robot - that I aim at analysing in terms of perception and action; for which postphenomenology offers helpful concepts to find out how dementia and technology are constituted, and which kind of dementia model is supported encountered in the second chapter.

As indicated above, for the analysis I will focus on two perspectives of mediation: the mediation of perception (by Ihde) and mediation of action (Verbeek). Without going too deep into the history of postphenomenology, I will refer to influences of classical philosophers, namely Heidegger and Merleau-Ponty, in order to provide examples for better clarification.

3.3.1 Mediation of perception and action

The chapter *Postphenomenology* of Verbeek's book *What Things Do* (2005) discusses diverse relations of mediation in detail. Both, mediation of action and perception, are based on the idea that the role of technologies can only be understood by the relations humans have with them. First, it is important to clarify the difference between *unmediated* and *mediated* perceptions. Generally speaking, we can only make sense of the world in terms of interpretations, thus, our perceptions are always to a degree mediated. Yet, in postphenomenology, *unmediated* means “unmediated by artifacts.” (p.125)

The concept of *technological intentionality* underlines the normative character and role of technologies, therefore: “[t]hings [...] are not neutral “intermediaries” between humans and world, but *mediators*: they actively mediate this relation” (p.114, italics in original) in which each is constituted and situated. In Ihde's sense, intentionalities determine how “human beings can be present in the world, and the world to them.” (p.116) An examples for this are medical imaging technologies, such as ultrasound, which have a direct influence on the experience of pregnancy and on an unborn child¹⁹. Elaborating on technological intentionality, Verbeek argues that artifacts have a certain directness, they provoke or stimulate a specific way of doing or using things. This refers to the concept called *script* originally introduced by Latour and Akrich to describe the influence of artifacts on human action: “Like the script of a movie or a theater play, artifacts prescribe their users how to act when they use them.” (Verbeek, 2006, p. 366) A famous example for this is that of a speed bump which has the script to slow down with the car when you get closer to it.

Building on the concept of *technological intentionality* (mediation of perception) and *script* (mediation of action), the next step is to make clear that technologies themselves are not mediating relations all alone or predominantly, in order not to fall prey to technological determinism. Rather

19 See for further insights of the mediation of experience and morality of ultrasound in Verbeek, P. P. (2008). *Obstetric Ultrasound and the Technological Mediation of Morality: A Postphenomenological Analysis.*, Springer.

technologies are embedded in a specific “use context” (Verbeek, 2005, p.117), they are *something-in-order-to*, and depend on by whom, where, when and how they are used. Assuming now that the users are doing all the mediation, would then underestimate technologies mediating capacities to influence human perception and action (pitfall of social determinism). From this follows that there is no inherent essence; technologies “are what they are only in their use.” (ibid) This context-dependency as a key concept is termed by Ihde as *multistability*. It stresses that technologies have different degrees of stability depending on their use-context. Let us examine now the diverse mediations in more detail.

3.3.1.1 Mediation of perception

This subsection will address following concepts relevant for the later analysis: *relations of mediation (embodiment and hermeneutic)*, *amplification and reduction*, and *alterity relation*, which I will present in this sequential order.

What does Ihde mean with *perception*? In postphenomenology, we depart from the assumption that technology is understood in terms of Heidegger's *something-in-order-to*, perception as such is based on the relation between humans and their world in terms of *experience*. In turn, experience is always the experience-of-something, “the perceiving itself cannot be done, for to perceive is to perceive *the world*.” (p.122, italics in original) Hence, perceptions and experience are relational and conceptualized in terms of intentionality. But how is the relation between technologies and humans to be understood? Ihde discerned different forms of relations:

Relations of mediation entails that humans do not directly perceive, sense, experience with or through our body the world but only do so indirectly via an artifact. Relations of mediation is an umbrella term for two other forms, namely *embodiment*²⁰ and *hermeneutic relations*²¹. The crucial

²⁰*Embodiment relations* are “[...] when I take technologies into my experiencing in a particular way by way of perceiving through such technologies and through the reflexive transformation of my perceptual and body sense.” (Ihde, 1990, p. 72) For example, when looking through a pair of glasses, the glasses are not perceived as such, but the environment, however, is perceived differently than without looking through them. Hence, the two most crucial

difference between embodiment and hermeneutic relations is that with the former we perceive the world through/via an artefact (e.g. when using a hammer), while with the latter we do so *by* it (e.g. thermometer).

The concept *amplification and reduction* enables to analyse the manner in which perception-mediating artifacts are present. This concept refers to how technologies amplify some aspects of reality while reducing others (Verbeek, 2006, p.365). Ihde's example for amplification and reduction is that of an infrared camera: it amplifies the healthiness of a tree but does not bring into light other parts of the tree.

To summarise, in hermeneutic relations we look *at* or *upon* the artifact itself, the artifact is very focused upon, contrary to embodiment relations, within which technologies are quasi transparent in our relations to them. To summarise, *relations of mediation* in both forms of *embodiment* and *hermeneutic relations*, indicate how technologies transform our perceptions and experiences of the world. How then can a direct relation between human beings and technologies be conceptualized?

3.3.1.1.2 The ambiguity of alterity relations

Ihde offers the concept of *alterity* relation to describe and understand the direct relation one can engage with technology. The concept of alterity relations is in my view the most ambiguous human-technology relation in Ihde's work. It is a kind of relation to which Ihde (1990) refers by posing the question: "How and to what extent do technologies become other or, at least, *quasi-other*?" (p.98, italics in original) This form of mediation reflects a particular underlying human

aspects of an embodiment relation are that technologies become quasi *transparent* and have an *instrumental intentionality*. (Verbeek, 2005, p. 126) Yet, this is not to say that the artifact in its materiality has to be necessarily transparent as the example of the glasses may suggest. What is decisive is that the artifact *becomes* transparent in our perception when being used for a specific goal, like using a hammer (Heidegger's example. As Verbeek points out, embodiment relations are "the equivalent of Heidegger's readiness-to-hand [or in original *Zuhandenheit*]" (Verbeek, 2006, p.365) in which the artifact becomes an extension of the human body.

²¹*Hermeneutic relation* does not enable an access to the world as such, but it requires a specific form of interpretation, in which the technological mediation is a process of interpretation; hence the name hermeneutics which entails *reading*. Here, Ihde gives the example of a thermometer. By looking at the temperature, we need to read and interpret, thus we indirectly relate to the world.

curiosity, fascination but also strangeness in how we directly relate to technologies without using them as an indicator for something (as in hermeneutic relations), or as something that withdraws our attention (embodiment relation). Indeed, what is a quasi-other?

Unfortunately, at this point I ran into a cul-de-sac in the alleys of postphenomenology as I was not able to find a tangible definition in Ihde's or Verbeek's books listed in the bibliography. When thinking in terms of Ihde's 'perception' his famous examples such as the thermometer, stethoscope, telescope, glasses, infra red camera, etc. are examples which show all more or less how a human being experiences in his embodiment and hermeneutic relations of *how-the-world-is-present-to-us* the altered sensory perceptions merely in terms of: what do I see more or less (concept of *amplification and reduction*). This might work well with embodiment and hermeneutic relations to a certain extent; yet in case of alterity relation it requires a further level of reflection and sophistication: in order to understand the mediated perception, in my view, one needs to address the question of what is the 'content of relationship' we have with technologies? To make it more precise: in how far do emotions play a role in relating directly to technologies?

Amazement, wonder, anxieties, fear, etc. are emotional phenomena which are not only triggered by technologies, but also which were already present when imagining and designing technologies. It is observable in interactions with certain technologies how humans show their emotions via verbal and non-verbal communication and how these get enhanced or weakened by both, by the stimulating technology and the imagination and projection of the human into the technology. Many fields are dedicated to this kind of study, such as Human-machine or Human-Robot-Interaction (HMI & HRI)²². With regard to postphenomenology in this respect, it seems to

22 From the angle of HRI, one of the leading figures is Kerstin Dautenhahn, Prof. of Artificial Intelligence in the School of Computer Science, Faculty of Engineering and Information Sciences at University of Hertfordshire. She has her main take on social robotics in studying social behaviour in order to contribute to the possibility of achieving a common ground in which humans and robots may co-exist harmoniously: “[o]ur mission is to look at how such a robot should be programmed to respect personal spaces of humans. [...] [T]hey should behave in a way which is compatible to humans, I want them to be integrated in human society, a "multi-species" society.” The field of HRI thus mainly devotes its interests in studying the context of social robotics, its design methods and systems components (Dautenhahn, et al., 2007, p. 103), and thus lies in between of engineering, social and cultural studies – for which a postphenomenological inquiry would be fruitful for and contributing to both, HRI and

me that the concept of alterity relations has much more to offer than the assertion that humans tend to engage into an alterity relation with technologies. Moreover, throughout the readings it appears that on the concept of alterity relations it has not been as thoroughly elaborated on as on the other relations and forms of mediations, which I experience with my case on a robot technology in care situations as a limitation of postphenomenology, or to put it in positive terms: as a chance to offer my ideas and empirical findings in this respect.

When approaching the question of what a *quasi-other* is, I suggest we first try to understand what is the 'content of relationship', by asking what does the direct interaction with an artifact *mean* to someone in a particular use context, how can it affect personal relationships, and what does it trigger in us emotionally? Also to think of what can a technology in alterity relation offer us in our understanding of ourselves, the others and our environment? Since we are in the realm of mediations of perceptions, I argue emotions need to be addressed as well, unless we ignore the emotive relation to perceptions. Detaching ourselves from the emotive relation with technologies places us to the confines of a rational understanding of sensory perceptions as a 'simple' cause-and-effect explanation. This leads to a rather one-sided understanding of what makes alterity relations so special and ambiguous – namely, the underlying emotive glue holding the direct relationship between technology and the person together. In proposing to reflect on the role of emotions within the direct relations we enter with technologies, we need first to make a small detour and come to terms with how emotions can be conceptualized, and second how emotions are related to perception.

There is something distinctive about how emotions are connected for instance to ideas, values, behaviours, rules and judgements. Reflecting about emotions, especially in scientific practices and academic thinking, trigger commonly the idea that emotions belong to irrational realms. Looking back in history, to name just two, David Hume and René Descartes, distrusted

postphenomenology.

emotions and condemned them to the territory of animals due to their ‘deceiving’ dangers or seductions. Although changes of conceiving and studying emotions in academia have altered over time²³, still today many sciences give emotions a rather cold shoulder. Here I found insight by Damasio (1999) *The Feeling of What Happens* in his chapter *Feeling and Knowing* as a counter example. Although Damasio is a Professor of Neuroscience, he interestingly developed a theory about the relationship between human emotions, rationality and the underlying biology. He maintains that human emotion goes beyond the satisfaction of biologically determined instinctive drives but have a (social) relational aspect to them: “Human emotion is not just about sexual pleasures or fear of snakes. It is also about the horror of witnessing suffering and about the satisfaction of seeing justice served.”(p. 35) Relating to care practices in this regard, emotions play a crucial role in understanding how a person is doing and feeling and how to (re)act accordingly. Emotions in care settings can thus be further specified into *empathy* and *reciprocity* which are human features essential for the development of what can be understood as ‘good care’ in terms of Mol et al., since - after all - care is not only about receiving but also giving (Mol, Moser, Pols, 2010, p. 13).

Since I imported now the reflection on emotions as a *relational* phenomena into the realms of Don Ihde’s mediation of perception, we now need to find a bridge which relates emotions first back to the (conscious and unconscious) act of perceiving and, secondly to alterity relations (our direct relation to technologies). Martha Nussbaum, an American Philosopher, goes into a similar direction in her conception of perception as I try to go here. According to her, perception is a response which has in itself non-intellectual components, too: “Perception is a complex response of the entire personality, an appropriate acknowledgement of the features of the situation on which action is to be based, a *recognition* of the particular.” (1986, p. 309, italics in original) Hence, emotions as a “unity of thought and emotion” (p. 308) are not only relational from a person to other

²³ For instance, Martha Nussbaum’s (1986). *The Fragility of Goodness* uses Greek tragedy and Aristotelian reflections to confront emotions, passions, bodily limitations as parts of human reason and human fragility.

persons or the outside world but also always inherent when perceiving the world - be it via or without a technology. How can we import this insight into the relation between emotion and perception with regard to our direct (alterity) relation to technologies? In other words, which role do emotions play in our direct relations to technologies? Which concrete examples can be found?

3.3.1.1.3 Emotions in relation to technology

In understanding the role of emotions in relation to technology, Lee Worth Bailey (2005) has in this context an inspirational contribution for he engages in his book *The Enchantments of Technology* with diverse interpretations of our emotional relationships with technologies from the perspective of humanities:

Interacting with machines [...], we expect the imagination to be under the control of reason and will, but it is a slippery character. As soon as we feel charmed, feel fun, feel as if we are being drawn in human relationship, we are in emotional and imaginative, not rational, territory.

Many artifacts offer the possibility to engage with them in an alterity relation, some are more obvious (dolls, autonomously moving objects, robots, in short: life-imitating technologies), while some are less²⁴.

Let's turn back to the example of robots. Without falling prey to determinist ideas, the connection between *quasi* and *other* raises attention, because it challenges our understanding of what counts to living and material characteristics. This ambiguity is enhanced by the fact that humans tend to enter into a relationship with technologies in *anthropomorphic* ways, which is the projection of human (usually positively associated) properties to artifacts, such as *smart* phone, *intelligent* design, etc. These projections and emotions are partly triggered by the kind of independence many technologies possess and by the interaction one can enter with them.

²⁴ Such as a volleyball - yet, for example, think of the film *Cast Away* (2000) directed by Robert Zemeckis in which the volleyball "Wilson" serves the lonely protagonist, Tom Hanks, on the isle as personified friend and companion.

Today, the fascination with robots is not exhausted, on the contrary, since the last decade the field of robotics is booming especially by the emergence of so-called *social robots* (Dautenhahn, 2007, p. 103). The current emotional turn in robotics is constituted by the above outlined long development from mere static (e.g. a puppet) and reactive (e.g. television) towards “autonomous, physical, pro-active, dynamic [objects] designed with the general purpose of engaging users in social interaction”. (Marti et al. 2005, p. 69) This growing development of social artifacts and the current emotional tendency, exemplify how we are increasingly entering into alterity relations with artifacts in diverse working and living spheres: care institutions, private homes, public institutions and service sector in general.

Seen in this light, the argument to define the relevance to expand and refine postphenomenological inquiry of alterity relations into further reflection on the role of emotions is raised. There is the need for exploration and inquiry in empirical case studies, which might provide insight into, first: how and why we are increasingly building personal relationships with artifacts, such as robots in care practices? And second: how can the emotional relation to such technologies be conceptualised and studied?

The relevance of such investigation can be further strengthened when including the view that our direct relations with technologies are not only mediating the way we perceive and act but the way technologies, especially those we engage to in alterity relations, can change the way we see ourselves, others and our environment. This point is stressed by Sherry Turkle (2005) who is a clinical psychologist and Professor of the Social Studies of Science and Technology at MIT, and one of the most notable authors in critically investigating the 'subjective side' of people's relationships with computational artifacts, especially social robots:

Technology catalyzes changes not only in what we do but in how we think. It changes people's awareness of themselves, of one another, of their relationship with the world. The new machine that stands behind the flashing digital signal, unlike the clock, the telescope, or the train, is a machine that “thinks.” It challenges our notions not only of time and distance, but of mind. (pp.18)

For if we think of Paro, the fluffy baby seal robot, it evokes a range of emotions when looking and interacting with it, yet it remains often unquestioned that Paro does not have emotions or no understanding of a life-cycle such as birth or death: let us face it in this way - it is a learning computer in a body of a cuddly toy. Yet its very presence and appearance challenges us to see robots as something more, as “evocative objects.” (Turkle in Wilks, 2010)

In the later analysis, I will attempt to incorporate my critique as a fruitful contribution to how an analysis on mediation of perception can look like in an empirical case study. In the following, we will turn to how artifacts mediate people's actions.

3.3.1.2 Mediation of action

In mediation of action Verbeek reinterprets concepts by Latour and Akrich within which I will present the concept of *script* and Verbeek's concept of *invitation and inhibition*.

As explained above in *mediation of perception and action*, the concept of *technological intentionality* stresses that artifacts have a certain directness, which in terms of a *script* means that artifacts trigger a specific way to respond to. To give an own example, many robots invite to a personal interaction, by evoking the impression of “play with me” (e.g. Sony’s robo-dog AIBO) or “learn with me” (teaching softwares incorporated in a robot design). Verbeek concludes that “[a] script is thus the program of actions or behavior that an artifact invites.” (Verbeek, 2005, p.10) What Verbeek stresses here is the notion of *invitation*. With his concept of *invitation and inhibition* Verbeek builds upon and bridges Latour's *script* and Ihde's *amplification and reduction*²⁵.

As in *amplification and reduction* the perception is mediated by an artifact, the action is mediated or translated in *invitation and inhibition*: “The scripts of artifacts suggest specific actions

25 This conceptual move of Verbeek earns particular recognition. In *Chasing Technoscience, Matrix for Materiality* (2003), the interviews between Ihde, Latour and other scholars exemplify a tension between Latour's and Ihde's understanding and recognition of their works (see also in Ihde's (2002) *Bodies in Technology*, ch.6 *Failure of the Nonhumans*). Verbeek's move in connecting concepts from both works seems thus to be a challenging endeavour to such extent that: “[a] first problem in translating Latour's vocabulary is generated by his express aversion [...] to the idea that his work could be congealed into a theory.” (Verbeek, 2005, p. 161)

and discourage others.” (Verbeek, 2006, p.367) Both, mediation of perception and action share the concept of Ihde's *multistabilty* as a baseline: “Technological mediation appears to be context dependent and always entails a translation of action and a transformation of perception.”(p. 368)

So far, as I argued, in comparison to the diverse perspectives presented, postphenomenology offers a rich theoretical framework to analyse how artifacts, such as Paro, is mediating in particular use contexts. However, some concerns need to be addressed here as well.

First, Paro, as a welfare robot, calls for particular reflection in care settings as well as in technology and dementia studies. The intriguing thing is that an artifact like Paro is much more ambiguous and complex compared to the well-known examples of a hammer, thermometer, stethoscope, etc. These examples are undeniably helpful to understand key concepts of postphenomenology, but the current technological development includes increasingly objects which are not static and reactive but autonomous and pro-active. Especially with the advances in Artificial Intelligence more complex technological examples would offer a contemporary adequate basis of understanding the mediating capacities of current technologies. In my case study on Paro, Ihde's concepts on mediation of perception brought me to a point in which I had to decide to stretch the concepts (e.g. alterity relation, and embodiment relation, see in my further analysis) in order to be applied for a socially interactive robot such as Paro.

Second, as mentioned before, unfortunately, so it appears, there is not as much reflection and elaboration on alterity relations as on other relations and mediations. This is in my view peculiar and raises the need to engage with Ihde's basic explanations of this kind of relation of perception. This can be explained by the current technological development which seems to be developing to artifacts with which we increasingly enter in alterity relations, exemplified by the mentioned current emotional turn in robotics.

Finally, I am wondering about this question: how can an empirical study of (care) practices merge with a postphenomenological analysis? Since I was running into some troubles during my

case analysis, I included concepts borrowed from care studies such as Mol, Moser, Pols, Kitwood, etc. In explaining how technological mediation is constitutive in care practice I needed further concepts beyond multistability to show *how* the mediation could be made possible in practice (by tinkering, for example). In this regard, Verbeek's elaboration on Ihde's work - especially with the turn to the things themselves – still needs to bridge the gap between philosophy to empirical work, which are also relevant for STS with its roots in empirical studies.

4. Case study: A therapy robot in dementia care practice

Though belonging to the rough categorisation of 'Western countries', every country has different ways to organize and regulate care systems. While for example in the USA care systems belong mainly to the private realm, in Denmark health care and elder care is primarily a public responsibility funded by taxes and levies, which has a “strong tradition of decentralized responsibility for health and care tasks.” (Hansen, et al., 2010, p. 149) The health care sector is organized in 5 regions which main responsibilities are the hospitals, while the 98 municipalities have the responsibility of elder care and handicap assistance. (ibid) Hence, Paro’s availability in care institutions depends on the different regulations that it has to undergo first (e.g. public/private funds). Since I will focus on the Paro-in-use situation of two nursing homes in Aarhus, Denmark, as a qualitative study, my empirical work does not aim to provide a comparative and general insight of Paro use between countries.

To round up, the frame of analysis is the interaction with Paro in two elder care institutions. My findings are based on my field study, as outlined and explained in the first chapter reflected upon during the forthcoming analysis. The theories I will be building on are postphenomenology, and insights by Mol, Moser and Pols and Kitwood's person-centred approach, presented in the second and third chapter. My role in this field is termed as participant-observer borrowed from the field of ethnography.

4.1. Field study: In the nursing homes of Aarhus

What I call in this thesis *nursing home* or *care centre* is called in Danish *Lokalcenter* described in their leaflets as a “health clinic for area residents and local staff of the centre”. Both nursing homes provide next to residential places so-called day care activities which are “offered to parents of vulnerable citizens and their close relatives.” The purpose is twofold: to give citizens an

opportunity to maintain and train functional ability, both mentally, physically and socially; and to provide close relatives the opportunity for relief. This offer includes the opportunity to participate in groups with different objectives and content, such as activities with musical, creative, practical or physical content and Paro interactions. In the following, I will use the terms of nursing home, care centre and Lokalcenter interchangeably, and I will distinguish them as Lokalcenter A and B. Now, please let me take you for a while to the nursing homes I visited, where Paro is currently in use.

4.2. Entering the nursing homes

When I entered the nursing homes, I was positively surprised by the welcoming attitude among elderly and caretakers, so there was no real need of 'relational warming up'. I expected caretakers not having much time for me, and elderly feeling ambivalent about my presence or the purpose I went there. Yet, except for one hour 'exclusively' dedicated for me and my interviews, carers involved me into their usual activities and I followed them in whatever they had to do for the time being. They always introduced me to the elderly, who in turn were anything than ambivalent towards me, I may say they were pleased and even curious about who I am, where I am from exactly, and what I am doing here, etc. I only revealed partly my purpose of research, namely, that I am a student interested in how Paro is used in this nursing home. In contrast to the carers, I did not mention my interest on dementia care to the elderly, because it seemed to me inappropriate in facing the elderly with their condition and to make them seem to be merely a subject of study; the carers, however, were told by my interest in dementia care, because they would enable me to gain insight into how they cope with dementia and how they use Paro as a therapeutic device for dementia care during our interviews.

It was 09.00 am in the morning somewhere in the outskirts of Aarhus. When I first entered the common room in Lokalcenter A, the first thing I saw was Paro half covered with a blanket lying in a kind of dog basket on the common room table. It looked like it was 'sleeping'. To my surprise, I was surprised about how I felt by seeing it for the first time. I must have looked puzzled, because it triggered in me even in its “off”-status a feeling of acting more cautious, and admittedly my immediate consequent thought was: “Come on, you fool, by now you should



know better...” - a thought which stroke me back as well in my later reflections about this encounter, because why should I *not* be surprised when seeing Paro? Does all the reading about it disenchant and prevent me to experience its (emotional) effect in an actual encounter? It does not, and acknowledging this here is important, since there *was* an ambiguous feeling triggering reactions and reflections in me and I could observe similar reactions with the elderly and sometimes the caretakers, too. However, the reactions developed into different actions and attitudes, as we will see in the following.

4.2.1 Part one. The elderly relation to Paro

What can be observed when the elderly interacted with Paro?

Text Box 1.

Some of the elderly cuddled Paro by holding it close to their body. They either had Paro on their lap or hold it directly on their chest and had Paro's face close to their own face, one Lady kissed Paro. They widened their eyes, talked to and about it, and offered Paro to others to hold it, and since I was 'new' among them, they offered it to me as well. Rejecting this offer would have been rude, as I felt, so I did the same (except the kissing part). Other elderly, who saw Paro or the interaction of others with Paro, seemed to be amused, but at times also annoyed. One elderly man, when he recognised Paro, he made a gesture with his hand as if throwing something away behind his shoulder accompanied by his exclamation "Affff!" and then turned away from Paro by showing his 'cold shoulder'. He silently observed at times the interaction with Paro and the others but did not join the interaction at any time.



What does this mean in terms of postphenomenology? Which relation can be found here?

Paro's mediation of perception

Straightforwardly and zoomed out, the interaction with Paro can be 'reduced' and translated to Ihde's model:

I → Technology

Elder → Paro

The mediation of perception is as Ihde terms *alterity relation*, which is the direct relation between a person and the artifact. The elderly are looking directly *at* Paro, they communicate to and about it, and they offer it as an object to be shared. Paro is the focus of attention and is not used as *something-in-order-to* like a tool (as in embodiment relation), neither is Paro an object which needs particular 'reading' or understanding: Paro does not evoke the impression that it can show you something about the outside world, like a thermometer for instance (as in hermeneutic relations), but it still mediates the experience in a hermeneutic sense of *how-the-world-is-present-to* the elderly in the nursing home, because it would make a difference if Paro is there or not.

The alterity relation is enhanced by the fact that Paro offers the possibility to engage with it in anthropomorphic ways. Paro is *personalized* by giving it a name and gender, even a personality: "It's Sally, it's a she, and she is always so nice and cute." (elderly introducing to me Paro aka Sally) It offers to engage with it in rather long-term relationships, since Paro is used on a regular basis and has its described 'personality'.

To my previously stated concern of how the relation between the elderly and Paro can be analysed in terms of emotions, I have following to contribute: first of all, I like to add another arrow in the above outlined model, since I explicitly content that what makes the relation to Paro so 'special' is that it becomes a shared object for sharing emotions: it is something that many people can engage with and that in turn may contribute to emotional reactions such as joy, surprise, pride or also to embarrassment, jealousy, fear and anger (on which I will elaborate on later more thoroughly). Hence, the crucial aspect of object-'sharing' is in the case of Paro an observable sharing of and exhibiting emotions. The interaction with Paro made emotions of the persons in the room very visible. So, what I found intriguing is the underlying emotional performance, and the value of reciprocity.

I ↔ Technology

Elderly ↔ Paro

With *reciprocity* I associate human 'virtues' in Aristotelian's sense²⁶ as closely related to *empathy* and *compassion*. All three nouns are part of what is valued as 'good' in care in general, not only for dementia care. With a nod to Mol, Moser and Pols (2010) view, care is not about the one receiving care to be confined in a passive role (p.8), instead reciprocity *involves* rather than excludes care-giving and care-receiving practices as a collective. Hence, reciprocity is performed in social interactions and ways of sharing and doing things together. It goes much more beyond a rational understanding of sensory perceptions - it blends in emotions, which are not vague and intangible but in this situation observable in concrete, because: “[...] emotions use the body as their theatre.” (Damasio, 1999, p. 34)

This can be further triggered and enhanced by Paro: the role of the elderly from *being someone needing care* has the possibility with Paro to expand and adopt the role of *someone caring for* – by leaving for a moment aside moral contestations about the artificial nature of the cared-for artifact. So beyond sharing emotions, I argue that the persons reacting positively towards Paro shared a sense of *responsibility* towards Paro, that of caring for something.

What I like to point out at this moment already is simply this: whatever Paro in its materiality is or is not, the elderly gain one more possibility to express and share their feelings and thoughts by interacting with it, as Turkle claims as an “evocative object” (Turkle in Wilks, 2010, p.3). To express and share feelings is undeniably valuable in dementia care, since through Paro the

26 Reciprocity (in original *antipeponthos*) is in Aristotle's understanding ethical relations. He argues that human beings are naturally endowed with the capability to give and take in social terms. (in Becker, L. C. (1986). Reciprocity. Chicago: University of Chicago Press.

person's *abilities* such as caring for something come to the fore, while their disability about remembering certain things do not play any role in Paro interaction. Paro contributes to situations in which the only thing which counts is the living in the moment. It is in Kitwood's sense and approach to dementia which can be seen as person-centred.

Yet, this is not the full picture, I presented so far, because not everyone is fond of Paro. While treating Paro as something which needs care, attention, and a joyful feeling of sharing responsibility; for other elderly Paro is an object similar to a toy, which would be rather childish to engage with in interaction, even more to show signs of affection and responsibility to it. Interestingly a gender difference plays a apparently a role in how people relate to Paro, as the designer pointed out in one of their articles:

As for the comparison by gender, females tended to evaluate higher than males. Paro is meant to interaction like a baby animal and women are encouraged to be nurturing; thus, women give more relational interpretations (which would see the seal as lively), while men tend to look at the artifact mechanically. We consider the results reflected the trend. (Shibata et al., 2009, p. 455)

The caretakers I interviewed disagreed to this explicit gender differences and pointed out that there is something to which many persons, whether women or men, can relate to Paro in different ways:

M: It makes these baby-noises. But it can be seen as well as a pet. This works better with men.

A: I have seen a man who loved Paro because it reminded him of his dog he once had. But I don't think there is much of a big difference. [...] babies or pets are usually immediately accepted by elderly.

So for the ones who do not like Paro, the emotional response to Paro is in any case rather expressing avoidance or even disguise – or as I hinted at before, embarrassment or anger. These emotions I could observe for instance by the elderly's changing of body postures (sitting far away from Paro, showing the back), facial muscle tension (similar to when biting into a lemon), or by avoiding to engage into interaction with others holding Paro. It can be argued that the reason for this negative reaction is because they start seeing others who interact with Paro in such empathic ways as being different to their own state of mind. This assumption of mine, however, asks for critical moral

reflections in a further study.

To summarize, reciprocity can be triggered and may modify the social structure or constellation in the care setting: while some engage with Paro and share it among each other, others exclude themselves and rather watch, if at all. Thus, while Paro offers to cultivate reciprocity it leads at the same time to altering group dynamics. If this is good or bad is not easily judged upon, since it is context dependent and needs further systematic empirical inquiry. However, the response to Paro, be it positive or negative (whatever positive and negative means for anyone in this context), reveals how elderly either accept or reject to enter in an alterity relation with Paro, in either *taking-and-giving* or *offering-and-refusing* Paro. This in turn confirms that Paro offers an alterity relation to engage in to different ways and emotional degrees.

Paro's mediation of action

How can the above described interaction with Paro be interpreted in terms of mediation of action? The described anthropomorphism is triggered by Paro's ambiguous *script* which says something like “Interact with me emotionally”. Unfortunately Paro has no clear-cut script as other well known artifacts, which is due to its ambiguous 'nature' and the fact that Paro is still a novelty. However, anthropomorphism is according to my view triggered by two striking features: Paro's appearance and actions. First, Paro has a baby seal look and its texture is fluffy; and secondly, Paro acts autonomously and has internal states (such as being tired, active, etc.) and responds to sounds and light impulses. These characteristics impact on our perceptions and *invite* to interact with Paro emotionally leading to physical interaction such as stroking, caressing, embracing, which is enhanced by Paro's feedback (positive noises); but the same characteristics *inhibit* to treat Paro bad such as hitting, which is again enforced by Paro's feedback (louder crying noises raising awareness among others).

However, in practice we can find limitations of Paro's script. It can be argued that the script I

described as “interact with me emotionally” has been *too well* inscribed into the artifact, that elderly take on feelings of responsibility towards Paro which may lead to ambiguous and unpredictable outcomes. For instance, Paro's appearance of a baby seal, evokes the need to care for it, within which feeding is a constitutive part. This is even strengthened by the functional design to battery charge Paro through its mouth. The battery charger looks like a baby pacifier (in Danish “sut”). One carer explained to me:

Anna: You need to battery charge him in the mouth with this sut. This....thing, the pacifier? And that's not good. Because the Paro we got here, the Lady thought she needs to feed him, and squeezed in some cookies one day.

Maria: So one might easily think that you can feed him, and that's not good. Because it damages the loading place, Paro cannot be battery charged well any more.

Interviewer (me): That's a problem then.

Anna: Yes, that's a problem, really. Although he looks quite cute with the pacifier.

Another example for the limitation of the script is that elderly feel encouraged to put Paro into water, which can be related to its close resemblance of a real seal. Hence, the limitation of Paro's script to engage with it in emotional ways triggered by its design may result into damaging and breaking Paro involuntarily. This has of course a strong negative impact on the elderly: elderly who are so deeply engaged in an alterity relation with Paro, a breakdown or malfunction of Paro is not perceived in *mechanical* but in *social* terms, similar to when we harm or hurt an animal or living being involuntarily. With this point I may oppose Ihde (1990) who differentiated in alterity relations the way we relate with a technology as opposed to living beings, e.g. animals. Ihde compares the way humans tend to feel or behave when riding a horse and driving a car. Both he says “give the rider/driver a magnified sense of power” (p.99), however despite any training, the horse will never be as obedient as a car:

[...] in the car, a malfunction “resists” my command – I push the accelerator, and because of a clogged gas line, there is not the response I expected. But the animate resistance of a spirited horse is more than such a mechanical lack of response – the response is more than malfunction, it is *disobedience*. (ibid)

The underlying assumption here is that we assign another kind of responsibility to an artifact than to

a living being, which might well be true for a numerous range of other artifacts. Yet with Paro, characterised as a social or therapeutic robot, the case is strikingly different: it is about how the person *takes on* responsibility to her- or himself, instead of assigning responsibility to it. Although the elderly feel as well a sense of power, this power is closely related to a sense of being responsible for the artifact. If Paro has a malfunction, it is not perceived as if it is “resisting” a response the elderly expected. It is also not interpreted as a provocative action of disobedience. To the contrary, in relation to Paro, a malfunction is perceived by the elderly as incapability to care for Paro, as having failed in being the elder one in looking for Paro. This effect is of course opposed to Paro's purpose leading to confusion, sense of guiltiness and sadness.

D: They are so sensitive the demented, and they use a lot of energy to control themselves because they can feel that everything is so much, that they can't remember, and they are so sensitive in interactions. They react very fast.

From the view point of a person-centred approach, this potential negative effect harms the person's well being and self-confidence in immeasurable ways. In this sense, Paro's script is pointed out here as being not fully achieving the scope to protect the integrity of a person with dementia.

So far we have encountered the ways how Paro mediate perception and action with regard to the elderlies only. I have pointed to some strengths and weaknesses of Paro's mediation of perception – engagements in terms of taking on responsibility, and ways of expressing empathy, compassion and reciprocity but on the other side the expression of avoidance and delusion – and the same for Paro's mediation of action – the invitation to engage with Paro emotionally, yet this emotional bond may have ambiguous outcomes: feelings of responsibility can either lead to a fulfilment of a person to provide care but also to disappointments triggered by Paro's functional design (pacifier and seal appearance).

What we found out so far is still a tiny fraction in understanding the ways Paro mediate perception and action in these nursing homes. After all, Paro as autonomous as it already is, it is not able to come alone to the elderly. Paro is usually carried by the caretaker to the elderly. Hence,

alterity relation is not the only relation playing a role here. I argue that the other relations I will describe in the following are contributing to the experience of the elderlies alterity relation as a constitutive part. Please let me take you now to the caretakers' relation to Paro.

4.2.2 Part two. The caretakers relation to Paro.

In this part, a new 'actor' appears in this relation: the caretaker. With the new actor, come new constellations, relations and mediations influencing and constituting each other. The different view points between carers and elderly are due to many factors, in which I do not tempt to point them all out, since it is impossible to count for the differences and consequences of age, profession, condition, etc. However, in relation to Paro one big difference is crucial to be pointed out: for the elderly, Paro comes together with the carer; for the carer, however, Paro comes out of a box. So, what can be observed when the carers interact with Paro? In practice, it looks like this:



Text box 2.

Caretaker Anna picks up Paro which is situated in the caretakers office. Anna walks up the floor with Paro in her arms, Paro is still switched off. Then she enters together with Paro into the elderly's common room (of course only in case Paro is not already put there before by her or her colleagues). The elderly are sitting dispersed, it is rather quite, two were chatting. Anna holds Paro close to her chest, by holding it as a baby. She starts talking to the elderly by saying things like: "Oh, look, what we got here...". Some elderly look up and get interested. Then Anna switches almost invisibly Paro on by pushing a button between Paro's backside paddles. Paro opens its eyes, closes them again, opens again slowly – it seems sleepy. Then it makes some squeezing noises. Anna looks at Paro, strokes it, looks then to the elderly. She asks them if they would like to hold Paro as well. Anna approaches one of the elderly, the one who looks like most interested, and then reaches Paro and waits until the elderly takes Paro.

What happens thereafter, is what I described above in Part I, and is influenced by what Anna did in this situation just described. Let us now unfold the situation in terms of postphenomenology in addition to care concepts by Mol. So how can the relation between carer and Paro be described in terms of technological mediations?

Mediation of perception and action: perceiving and tinkering

In the beginning, the caretaker and Paro are physically in contact and the carer carries Paro towards the elderly. This can be translated to Ihde's following illustration:

(I - technology) → world

However I need to clarify what I mean by 'world': the world that I refer to is the world of the elderly in the specific situation and context in the care centres' common room, hence my illustration looks like this:

(Carer - Paro) → (world/situation of the) Elderly

What I am arguing here, is that in this specific constellation, and from the view point of the caretaker, Paro's mediation of perception is an extended version of an embodiment relation. In Ihde's sense, an embodiment relation is e.g. when one looks through a pair of glasses: one does not perceive the artifact as such but it helps the person to perceive the world better. In case of Paro interaction, the embodiment relation is rather more close to Heidegger's example of the hammer, in which the hammer withdraws our attention in our goal to put a nail in the wall. However, both examples are equivalent to Heidegger's readiness-to-hand and offer a good departure to analyse the relation between caretaker and Paro with regard to the elderly. In order to explain this relation of mediation I need to provide examples from practice and thus refer to mediation of action as well.

To begin with, for the caretaker the most important thing is to care for the elderly to ease their lives and to reduce the distress of the dementia condition as much as possible within which empathy, reciprocity and compassion are indispensable. While the caretakers take on the responsibility to care for the elderly, they think of various opportunities and offers they can make use of in dementia care practice, be it by using technologies, or having a walk in a park etc. - hence, approaching the elderly in mediated and unmediated ways.

Crucially, for the carer, the focus is not Paro in care practice, the focus are the elderly. In practice, Paro becomes for the caretaker quasi invisible: the carer uses Paro by holding it to her chest and by directing Paro with its face towards the elderly – most of the time, the carer does not look at Paro but looks at the elderly, and when she does look at Paro it is to create a relation to the elderly, as it will become apparent in the following. While stroking Paro she still keeps watching their reactions. When the elderly are smiling and seem interested and curious the carer understands this by means of verbal and non-verbal communication. The carer acts accordingly, dependent on the elderly. This can be illustrated by another situation, which an occupational therapist described to me:

E: [...] and then when I saw the person does not like Paro, and you can see that, I said “Wow, hello,” and then I turned with Paro away, kept talking to her, put him outside and then I went back to her and do something else. If it is better for the person without Paro then it is our task to secure that.”

What is described here can be linked to Mol, Moser and Pol’s (2010) concept of tinkering referred to in the second chapter:

In practice however seeking a compromise between different goods does not necessarily depend on talk but can also be a matter of practical tinkering of attentive experimentation. In care then qualification does not precede practices but forms a part of them. The good is not something to pass a judgement on in general terms and from the outside but something to *do* in practice as care goes on. (p. 13)

In this context, tinkering means that the carer needs to be attentive and cautious in interpreting the reactions of the elderly when offering Paro. The carer tries several things: presenting Paro first in the 'off modus', switching it on when she thinks it is appropriate, putting Paro on the table or giving it directly to the hands of an elderly, or hiding Paro in turning away when a bad reaction occurs, etc. This tinkering has a strong impact on the relation between the carer and the elderly. If the carer does not tinker sophisticatedly enough with Paro, the elderly can get upset or even angry at the carer but not necessarily at Paro. Let us first try to find out what Paro means to the carers: what is the underlying 'content of relationship'?

For carers, Paro is also cute and has beautiful eyes, yet something which only looks and acts cute does not imply that it is of much help in a care ward. Rather, the carers are interested in what Paro has to offer for dementia care. So the content of relationship is mostly *pragmatic*. Paro is seen as a tool and opportunity to deal with dementia, as *something-in-order-to* ease the lives of others. Paro invites the caretaker to bring it into a situation in which the elderly go through difficult moments of distress, anxiety or restlessness. With Paro in this situations, the carer get another opportunity to reach the person with dementia, to calm him or her, and to provide some good moments. Due to its functionality, Paro stays active for only 20 until 30 minutes. Then the battery is

low and needs to be recharged. This invites caretakers to use Paro for a specific amount of time, which they seem to find helpful in order to not demand from and overload the elderly too much:

Interviewer: So when she is restless, what can you do with Paro in that situation?

A: It can stop these 20 minutes where she was restless in sitting at a table. And then I say: 'Look what I got here.' And then she says: 'Ooooh.' and smiles. He is good at these situations.

M: You have to use your imagination and creativity because each person is different, it is various things that can make them happy. But for almost of them it is only for 20 minutes or so then they have to rest or do something else. It is very much important to not demand too much from them. Actually you must not demand anything. But what you can do is maybe to distract them and give them a good hour.

On a less positive side, Paro might invite caretaker to leave the elderly alone with it, since the elderly might enjoy the interaction with it also alone. This is strengthened by Paro's functionality to react to outside stimuli autonomously, to trigger response and to engage into a long-term relationship (by memorizing the name given and reacting to it). So it requires responsibility and understanding from the caretaker how to deal with dementia and how to put Paro in use:

M: But I think it is very very important that you have great knowledge of these people that need Paro and that you don't think that you make them inactive, like thinking "if I give them Paro then they will be busy with themselves." No, that's bad. You don't make them inactive and passive. You need to be with them or look for them constantly.

So in this spirit, to use Paro as a mere tool does not lead to good care either. As the caretakers pointed out several times, the attitude and engagement of carers is a crucial aspect. As Maria stressed, you have to use your imagination and creativity, with or without Paro at hand. In postphenomenological terms, the intention to use an artifact is thus constituted by both: the *present-at-hand* artifact and the person using the artifact.

A: Paro, it is one more opportunity. But to really take care of elderly, you have to open up, you have to give something of yourself.

M: You have to like it.

A: You have to like it and you have to find it exciting to work with elderly people especially with dementia. Where you constantly have to be a 'gold-digger'.

A: Yes.

M: To make their day worth living. [...] Paro alone doesn't change anything. It is constantly work, constantly talking with people having dementia, and as I said before, you have to like your work with dementia. And some might learn to like it, but some never start to like it.

Through a postphenomenological lens, this phenomenon is in Ihde's terms *multistability*: “a technology can have several stabilities, depending on the way it is embedded in a use context.”²⁷ (Verbeek, 2006, p. 365) The caretaker together with her approach and engagement in her way of doing things (tinkering) and using things such as Paro, are actively mediated by Paro: the technological mediation constitutes the carer, Paro and the elderly in a specific way in practice, similar to a fusion, they merge together when the carer is tinkering and experimenting with Paro. Hence, Paro alone does not change anything, but the experience without Paro is also a different one for the carer and elderly in care practice.

However, another relation needs to be mentioned with regard to the carer's relation to Paro. Interestingly, the carer sees Paro primary as tool and her relationship to Paro as pragmatic. Yet it occurs that the carer slips at times also into an alterity relation with Paro:

Carer ↔ Paro

The caretakers described this as a result of the whole Paro interactions with the elderly, in which one gets used to talk to Paro, and does so unconsciously right after the session, when putting Paro “back to its bed” in the office by saying something as: “Oh you are a good boy, aren't you...?”. This relation is included here to show that there are diverse relations possible diverging from carer to carer.²⁸ It must be noted here, that the alterity relation between carer and Paro is much weaker, labile and transitory than the alterity relation between elderly and Paro. Yet, it is an emotional relation which should not be overlooked since it reveals how carer's engage into care activity and take the offers at hand (such as Paro) very seriously – or they do not use Paro at all and thus do not

²⁷ Verbeek, (2006), p. 365

²⁸ A: “[...] It opens up many hearts for demented. But it also do it for us sometimes, more in the beginning. The first time I got to [the nursing] home with Paro...where I work. There we have two corridors and in between a garden space. And I could see the garden. And then there was one of my colleagues, took Paro and went to the elderly who sat in the other side, in the living room, to show Paro. And then, when she got back, she went over the garden, and I looked at her when she walked, and when she walked over the garden, she started talking with it! [collective laughing. Then A. imitated her colleague in a different voice] 'Oh yeah, you are nice, aren't you.' Yes, yes, so it has an effect on almost everybody. And I remember when I was at this Paro-certificate course, we were about twenty five women and everyone got a Paro to unpack it, and there were noises as if there were many small babies and mothers...'Ooow, uuuh, look at it,' and so on. So that whole effect with Paro, I don't know if it is spiritual or how to call it, but it creates a feeling that goes straight to your heart.”

have any visible alterity relation to Paro.

So far, we found out that the caretaker can have ambiguous relations to Paro: at times it can be a weak and unconscious form of alterity relation. More prominently, however, is the extended form of embodiment relation, since it includes all three: the carer, Paro and elderly as constitutive parts. The carer has in this relation a pragmatic way of viewing Paro, as *something-in-order-to* elevate the distress of the elderlies for a while; the elderly are the focus of caretakers' attention, and the elderlies reactions are what the caretaker wants to see by using Paro. She achieves in receiving reactions by tinkering with Paro, experimenting with it in various ways, which show Paro's multistability. This is the way I understand the mediation of perception and action in this particular context with Paro. In practice, there is not one way to use Paro, and there is not one ideal elderly or one ideal caretaker. Together they form a particular constitution, in which the image of dementia is mediated not only by the technology but also the way the persons involved use or offer to use it.

4.3 Before leaving the nursing home

The elderly were gathering in the common room, the caretakers prepared an activity called “reminiscence”, they decorated the table, made coffee, and prepared bread for the elderly and me. The elderly sat down and in the meanwhile Paro 'rested' on the table next to us, in its 'off-mode'. Some elderly when passing by Paro, gave it a stroke, or did not seem to notice it at all. The center of activity was now somewhere else. It was there were the people were gathering. Doris, the



caretaker, started to sing a Danish song and some of the elderly tuned in. I was sitting with them at the table and was probably the only one who did not know what to do. I tried humming, and realized that the elderly next to me enjoyed my action and smiled. I realized soon after, that the evocative object was not Paro anymore, but me. The carer introduced me kindly again, and the elderly showed interest and curiosity by smiling and looking to me in order to engage with me in a dialogue.

[German conversation]

Mr. Hansen: I lived in Berlin for some time, I was there a journalist.

Me: Oh, nice! Where did you live in Berlin?

Mr. Hansen: Not really in Berlin but close by.

Me: How far was it from Berlin, maybe I know the place?

Mr. Hansen: Well,...[pause] it depends how fast you drive with the car.

What the elderly long for, equally to anyone in implicit ways and different degrees, is social contact and warmth. It became clear that the elderly need at times an incentive to establish a contact or to find a way out of their bad moments, and here I think the use of Paro as a social activity in groups adds a new value to reflect on how we can create interpersonal relationships in dementia care wards. In Moser's terms, care attitudes are not ideal or abstract but physical and concrete. (in Mol, Moser, Pol, 2010, p.5) Not Paro alone, but care practice in general should be an object of collective reflection.

4.4 Bridging technology and dementia studies

As stated before, reductionist theories such as technological determinism and the neuropathological or symptom-based account on dementia cannot be easily dismissed or blamed, because, indeed, it does seem from 'the outside' that technology follows a trajectory and that individuals of society have no real option to do something about it; with dementia, when its symptoms are very obvious in a person, the danger to slide back to a neurological account of the disease is (unfortunately) given, since the symptoms catch the first attention, through which it might be difficult to see the person as a whole in the first place.

Not only relatives as caretakers but also professional carers have often a challenging time in tinkering and finding new ways to deal with dementia and to see through the symptoms the person 'behind'. There are different ways to approach the person with dementia, as we have seen one can either try to treat the person as if dementia belongs to normal ageing, or to systematically encounter dementia in focusing on how to better stop brain degeneration by shifting hope to a not yet available medical cure. Likewise, technologies in general and those developed for dementia care such as Paro, trigger ambivalent views and feelings and discussions on morality, democracy and human nature. With a nod to Hacking, doubting classifications and their effects on the persons so classified are timelessly relevant not at least because these classifications impact on the nature of (therapeutic) care provided. The ways of viewing and dealing with dementia and technology has thus become increasingly questionable, due to our time and being characterized as “technological culture” (Bijker, 1999, p.1) and “hypercognitive culture”(Downs in Hughes, 2006, p. 245).

The analysis on Paro has shown different ways of dealing with dementia, especially caring for dementia in practice. As I pointed out, there was not one homogeneous group, among the elderly there were different degrees of dementia stages, different ages, gender, and reactions towards Paro.

Caretakers had also different ways of experimenting with Paro and ways of communicating with the elderly – while all carer primarily saw Paro as a pragmatic tool, some among them admitted that they catch themselves or other caretakers talking to Paro usually when bringing it back to their office, thus technologies may seduce to enter with them into alterity relations for various reasons. Without doubt, Paro has an effect on the care wards I have visited.

However, this is not to imply that it would be dramatically different without Paro, since I have witnessed how elderly and caretaker followed other activities beyond Paro as well, such as the “reminiscence” activity. Yet, Paro, in being there available, in being ready-to-hand, caretakers are aware of the need to tinker with many offers and opportunities to deal with dementia, so they feel encouraged to use Paro in specific situations, when a person shows signs of restlessness and anxiety for which medical solutions are not at hand. As I argued, this does *not* lead automatically to a mechanical, robotised dementia care ward - believing this, would fall prey to a pessimistic form of technological determinist ideas of robots marching into elder cares, substituting caretakers, and therewith dehumanize elder care. Likewise, an overly optimistic technological determinist idea of a robotised dementia care ward may be reflected on more than once or twice: a condition like dementia, which compromises a person, a social net, and relational identity behind the neuropathological symptoms would not receive the human contact, warmth, empathy and compassion needed in a fully mechanised care ward. Social isolation deteriorates the condition rapidly. As I understood it, especially with a socially interactive robot: where one can find a robot in a care ward, persons are not far away from it. Thus a purely mechanised vision of a care ward remains in my understanding in the confines of utopian/dystopian views.

The analysis on Paro has provided arguments mostly in favor for a person-centred approach and thus against reductionist views on technology and dementia: first, Paro is not a stand-alone success, in postphenomenological terms, Paro is multistable. This became apparent in at least two situations: by tinkering with Paro, the caretakers co-influenced the perceptions and actions of the

elderly on Paro and contributed by doing so to Paro's success or failure; the other situation is when Paro was switched off, and hardly any of the elderly paid attention to or 'missed' Paro while another activity took place in the same room. The concepts of multistability and tinkering contribute to the understanding of a person-centred approach, in highlighting how dementia can be enacted upon by an artifact and its users.

This led me to the second argument against both reductionist views: using Paro is similar to engaging into an inherently social activity, more specifically, the activity of care. Due to its baby look and fluffy texture, Paro evokes feelings to look for it, to take care *for*, to share it among others, in which Paro becomes in Turkle's sense an evocative object. Here I pointed at Paro's opportunity to cultivate reciprocity and to express empathy and compassion in non-verbal and verbal ways. A downside is that Paro invites as well to *overtake* responsibility, which can be a worrisome experience for the elderly in case of Paro's malfunction or breakdown, because as I explained the relation between elderly and Paro can develop into a 'deep' alterity relation, in which a malfunction can be seen as of social rather than of mechanical kind. Yet, I argue that Paro has the functional capabilities and design to engage with it easily in anthropomorphic ways, in which the person with dementia is not reduced to her or his condition or symptoms, rather a person with abilities and social strengths are amplified. The elderly seemed to realize and enjoy these moments and instances but it did not seem that they assigned these joyful moments only to the merits of Paro, but also to the engagements of the others surrounding and engaging in the Paro interaction. Yet again, a downside is there, namely the elderly who are not fond of Paro seem to exclude themselves from the Paro-interacting group – they might start seeing others who interact with Paro as being different to their own state of mind, which in turn asks for critical understanding and attention of caretakers to be aware of these diverging group dynamics during Paro interactions.

The third argument against the mentioned reductionist views in this context, is the view and relation between caretaker and Paro: as I argued, the caretaker is not primarily interested in Paro but

in the opportunities it offers to reach the elderly in tinkering with Paro (hence, my interpretation of an embodiment relation). Paro is the carer's way to express his or her availability to care with a variety of mediated but also unmediated ways. As the caretaker pointed out, in situations of anxiety and restlessness, Paro is not the only option to care for this state of feeling, they use either other technologies (e.g. dementia dolls) or go out and have a walk in the park, have coffee, a chat, etc. This point is in so far important to understand again that Paro is not *the* solution or the only thing which counts in dementia care in being in being *ready-to-hand*. This finds again resonance with Kitwood's person-centred approach to dementia, since my interpreted form of embodiment relation contributes to the view that carers need to be empathic and have a sophistication of understanding in order to see the signs of the symptoms and then find with the elderly together out which method, activity or use of technology would be for the moment most appropriate. This implies that the carer is aware of the mediating capacities of particular technologies, probably most likely perceived through tinkering with them.

Finally, postphenomenology offered helpful conceptual tools to translate my observations in the care wards into a theoretical insights. The active mediating role of Paro became apparent throughout my study, and also how Paro was multistable in different situations. Yet, postphenomenology, in being in the realms of philosophy of technology, I encountered difficulties to bridge the gap between theory and practice. Since I myself enjoyed largely an STS perspective so far, postphenomenology seemed to be less flexible and adaptive to empirical findings than for instance in a SCOT analysis which puts large emphasis on thick description and a multidirectional analysis. The relations of mediation within postphenomenological confines seem at times mono-dimensional for exploring and studying the different relations which are observable (e.g. the triangular relationship between caretakers – elderly – technology – care ward; but also the relations between the caretakers, elderly themselves). A last point of theoretical reflection on postphenomenology is, as I argued in the subchapter 'The ambiguity of alterity relation', the few

conceptual possibilities offered by Ihde and Verbeek to study alterity relations – which I see as a limitation not only for my case study but in general to the increasing development of autonomous technologies being designed to engage with in emotional and social ways. Therefore, I argue, not only a *material turn towards the thing* is needed for philosophical and empirical reflections but an *emotional turn towards materials* is calling for further reflection and studies, not at least because we are living as well with complex emotions in the complex material world of human life.

5. Conclusion

The relevance of this thesis lies in the possibilities it offers to those who are interested and act in the world of technologies and dementia. Since increasingly sophisticated and so-called social robot technologies have trespassed thresholds to homes and care institutions, the need to understand what robots *do* and how they mediate our perceptions of others and actions, e.g. ways of doing things such as taking care for someone is raised. Moreover, dementia seems for many a condition beyond our lives, yet the cases of dementia are increasing along with the demographic shift and so the need to find care alternatives and supplements to ease this development is also given.

The aim of this thesis is to study and explore current theoretical approaches in both technology and dementia studies, and to grasp forms of technological mediations of the robot, Paro, affecting the social and working relations involved in dementia care. My overall motivation for this study was driven by theoretical and empirical reflections, which I hope to have presented just and appropriate. Finally, my ambition was to try to bring technology and dementia studies closer together in showing the ways how subject and object are constituted in concrete situations in dementia care practice and where their differences lie.

So what I did in this thesis was to trace and articulate the ways of how technologies and dementia are dominantly understood by means of explanatory models, theories and concepts, which I juxtaposed and then pointed to their implications for persons living with dementia but also society at large. By means of Paro, the therapy robot, in two Danish care wards it became apparent that Paro is not a threat to dehumanize dementia care in mediating relations between carers and elderly, since the use of Paro implies a certain care context in which it can act and is constituted by carers, elderly, their views on each other and their ways of expressing in verbal and non-verbal ways. With or without Paro as a tool, the caretaker I observed strive to create better situations and moments for the elderly in using their imaginations and knowledge about the persons and about the dementia

condition.

With regard to moral contestations about the artificial nature of Paro and its inability in having true feelings, of understanding the lifecycle of living beings, or that its design pretends that it is something (a real animal) which is not and therewith jeopardize elderly and their dignity: this analysis has not gone into this direction. However, in this respect, in my analysis I have only implicitly pointed to my own view point, which is similar to the caretakers I interviewed: whatever Paro in its materiality is or is not, the elderly and caretaker gain one more possibility to express and share their emotions, to engage in reciprocity and compassion and to live in the moment together. Yet, the inclusion of Paro in dementia care wards requires sophisticated tinkering and knowledge about dementia condition so that caretakers can offer Paro in a fruitful and not harmful way in terms of personhood.

I have shown how the role and contribution of Paro is to mediate the elements of care such as reciprocity, empathy and compassion which became apparent during care and Paro interactions. Thus Paro adds a new way of dealing with dementia and is an object which can make care visible, present and accessible in various ways. The use of Paro foregrounds the embodied, practical, material and social elements of care. This foregrounding offers a new picture of persons with dementia, as socially able persons rather than merely disabled or cognitively impaired persons. Caretakers, relatives and others alike are also enabled to see, hear and interact with a person with dementia in new ways. They are offered another possibility to find out if it works out with Paro or not – Paro is not everything in dementia care practice, it is one among other possibilities. Hence, neither dementia or technology are confined to follow a strict trajectory of life. Both enable and constrain our perceptions and actions, and do so in mediating ways by positioning the person together with the technology and the carer from the margins to a more central place.

With regard to my case study, I came to understand that the technology which is in many cases described as enhancing the quality of life, even a sophisticated, cute, welfare robot like Paro

cannot fulfil this promise alone if the underlying image of and dealings with dementia do not draw the person more apparent than the symptoms. Thus, in this thesis I argued that instead of evaluating artifacts with care potentialities in terms of their conditions of possibility and their 'nature' of materiality, we should rather come to terms with our own conceptions on dementia and technologies which are crucial to understand how we relate to and build on what we are already confronted with. In short: robotising dementia care depends on the conception of dementia and technology and the acknowledgement that both are constitutive in care practices.

6. Bibliography

- Bailey, L.W.
(2005). *The Enchantments of Technology*. University of Illinois Press.
- Basting, A.D.
(2009). *Forget Memory: Creating Better Lives for People with Dementia*. The John Hopkins University Press.
- Becker, L. C. (1986). *Reciprocity*. Chicago: University of Chicago Press
- Behuniak, S., M.
(2011). *Ageing and Society*. Cambridge University Press .
- Bijker, W.E.
(1995). *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change*. Cambridge, Mass.: MIT Press.
- Bijker, W.E.
(2001). Understanding Technological Culture through a Constructivist View of Science, Technology, and Society. In S. Cutcliffe & C. Mitcham (Eds.), *Visions of STS; Counterpoints in Science, Technology and Society Studies*. Albany: State University of New York Press.
- Cash, M.
(2003). *Assistive technology and people with dementia*. Cambridge University Press.
- Chapius, A.&Droz E.
(1958). *Automata. A Historical and Technological Study*. B.T. Batsford LTD. London.
- Cutcliffe, S. H.
(2000). *Ideas, Machines and Values: An Introduction to Science, Technology and Society Studies*. New York: Rowman & Littlefield Publishers, Inc.Edwards.
- Damasio, A.
(1999). *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. Vintage Books, London.
- Dautenhahn, K.
(2007). Methodology and themes of human-robot interaction: a growing research field. *International Journal of Advanced Robotic Systems* 4 (1) pp.103-108. In-Tech.
- Esiri, M. & Nagy, Z.
(2002). Neuropathology. *Psychiatry in the Elderly*, 3rd edition, pp. 102 – 124. Oxford: University Press.

- Hackett, E.J., et al.
(2008). *The Handbook of Science and Technology Studies*. Third Edition. MIT Press.
- Hacking, I.
(1999). *The Social Construction of What?* Harvard University Press.
- Hommels, A.
(2005). Studying Obduracy in the City: Toward a Productive Fusion between Technology Studies and Urban Studies *Science, Technology & Human Values Summer 2005 30: 323-351*.
- Hughes, J.C., Louw S.J., Sabat S.R.
(2006). *Dementia: mind, meaning and the person*. Oxford University Press.
- Ichbiah, D.
(2005). Roboter: Geschichte Technik Entwicklung. Historischer Überblick. *Roboter der Zukunft*, pp. 493 – 539. Knesebeck Verlag.
- Ihde, D.
(1990). *Technology and The Lifeworld: from garden to earth*. Indiana University Press.
- Ihde, D.
(1993). *Philosophy of Technology: An Introduction* (1st Edition). New York: Paragon House.
- Ihde, D.
(1998). *Expanding Hermeneutics: Visualism in Science*. Northeastern University Press.
- Ihde, D.
(2002). *Bodies in Technology*. Electronic Mediations, Vol. 5. University of Minnesota Press.
- Ihde, D.
(2003). *Chasing Technoscience: matrix for materiality*. Indiana University Press.
- Kitwood, T.
(1997). *Dementia reconsidered: the person comes first*. Open University Press.
- Latour, B.
(1999). *Pandora's Hope. Essays on the reality of science studies*. Harvard University Press.
- Mackenzie, D., & Wajcman, J. (Eds.)
(1999). Introductory Essay: The social shaping of technology. In, D. Mackenzie & J. Wajcman (Eds.), *The Social Shaping of Technology* (pp. 3-26). Open Univ. Press, 2nd ed.
- Marti, P., et al.
(2005). Experiencing the Flow: design issues in human-robot-interaction. Article on *Joint sOc-EUSAI conference*.
- McGinn, R.
(1991). *Science, Technology and Society*. Englewood Cliffs, NJ: Prentice Hall.

- Mol, A.
(2002). *The body multiple. Ontology in medical practice*. Duke University Press.
- Mol, A.
(2008). *The Logic of Care. Health and the Problem of Patient Choice*. Published by Routledge.
- Mol, A., Moser, I, Pols, Y.
(2010). *Care in Practice. On Tinkering in Clinics, Homes and Farms*. Transaction Publishers.
- Nussbaum, M.C.
(1986). *The Fragility of Goodness: Luck and Ethics in Greek Tragedy and Philosophy*. New York, Cambridge University Press.
- Oudshoorn, N & Pinch, T.
(2003). *How Users Matter: The Co-Construction of Users and Technologies*. MIT Press.
- Perrow, C.
(1984). *Normal accidents: living with high-risk technologies*. Princeton University Press.
- Pickering, A.
(1993). *The Mangle of Practice: Agency and Emergence in the Sociology of Science*. American Journal of Sociology. Vol. 99, No. 3, pp. 373 – 393.
- Reichhardt, J.
(1978). *Robots: Fact, Fiction and Prediction*. Penguin BooksLtd, Harmondsworth, Middlesex, Great Britain.
- Rubin, H. J., & Rubin, I.S.
(2005). *Qualitative Interviewing. The Art of Hearing Data*. (2nd edition). London: Sage, pp. 1-38.
- Seal, C.
(1998). *Researching Society and Culture*. Sage Publications.
- Shibata et al.
(2008). Cross Cultural Studies on Subjective Evaluation of a Seal Robot. In *Advanced Robotics*, vol. 23, pp. 443–458.
- Slatman, J. et al.
(2009). Project proposal: *Technology and Bodily Experience: Developing Remote Care for Elderly People in a Social Learning Network*. Maastricht University, Faculty of Health, Medicine and Life Sciences, Dep. Health, Ethics and Society.
- Smith, M.R. and Marx, L.
(1994). *Does Technology Drive History? The dilemma of technological determinism*. Cambridge MIT Press.
- Sismondo, S.

(2010). *An Introduction to Science and Technology Studies*. Second Edition. Blackwell Publishing.

Suther, M.
(1997). *Small World*. Diogenes Verlag AG Zürich.

Turkle, S.
(2010) in Wilks. *Alone Together: Why We Expect more from Technology and Less from Each Other*. New York: Basic Books

Verbeek, P. P.
(2008). *Obstetric Ultrasound and the Technological Mediation of Morality: A Postphenomenological Analysis*. Springer

Verbeek, P. P.
(2005). *What Things Do*. The Pennsylvania State University Press.

Verbeek, P. P.
(2006). *Materializing Morality. Design Ethics and Technological Mediation*. *Science, Technology Human Values* 31; pp. 361 – 380. Sage Publications.

Wood, G.
(2002). *Edison's Eve: a magical history on the quest for mechanical life*. Faber and Faber Limited, London.

Additional learning sources:

Bijker, W. E.
(2010). Lecture on *Science, Society and Technology Studies*. ESST course, module 1: Introduction in Science, Society and Technology Studies. Maastricht University.

Mesman, J.
(2010). Lecture on *Doing ethnographic fieldwork*. ESST course, module 2: Science in Action. Entering the laboratory.

Olesen, F.
(2011). Lecture on *Material Hermeneutics*. ESST course, second semester: Analysing Infrastructure, Organisation and Agency. Aarhus University.

BA Course book (2008/2009). *Brainspotting: Contemporary Perspectives on Mind and Body*. Bachelor program Arts and Culture, Faculty of Arts and Social Sciences, Maastricht University.

Research Internship (07/10 – 08/2010). Project *Voorbij autonomie en taal - naar een Disability Studies' perspectief op dementie* coordinated and supervised by Dr. Ruud Hendriks at Faculty of Arts and Social Sciences, Maastricht University.

Internet sources:

Danish Technological Institute. Official website. (n.d.). *Project – Robotic Seals for Welfare and Comfort* (2008-2010). Retrieved on 12th of March 2011 from <http://www.dti.dk/inspiration/26231?cms.query=paro>

Danish Technological Institute. Official Website. (n.d.). *Robotic seal's therapeutic effect on care*. Retrieved on 12th of March 2011 from <http://www.dti.dk/specialists/26034?cms.query=paro>

Harmon, A. (2010). *A Soft Spot for Circuitry*. The New York Times. Retrieved on 10th of March 2011 from http://www.nytimes.com/2010/07/05/science/05robot.html_r=3&pagewanted=1

German Ministry of Education and Research (BMBF). Official website. Retrieved on 10th of March 2011 from <http://www.bmbf.de/de/4657.php>

Paro therapeutic robot. Official website. Retrieved on 10th of March 2011 from <http://www.parorobots.com/>

Wada, K., et al. (2008). *Robot Therapy for Elders Affected by Dementia. Using Personal Robots for Pleasure and Relaxation*. *Magazine.embs.org*, Retrieved on 15th of March 2011 from http://pulse.embs.org/Past_Issues/2008July/Wada.pdf

Online newspaper articles:

Henderson, M. (2002). *Robot seal leads way to tomorrow's world*. The Times. London.

Lah, K. (2009). *Cuddly Therapy: A Robot Seal That Heals*. CNN: Edge of Discovery. Retrieved on 10th of March 2011 from <http://www.cnn.com/video/#/video/tech/2009/04/15/eod.lah.robot.seal.cnn>

Tergesen, A. & Inada, M. (2010). *It's Not a Stuffed Animal, It's a \$6,000 Medical Device*. The Wall Street Journal. Retrieved on 10th of March 2011 from <http://online.wsj.com/article/SB10001424052748704463504575301051844937276.html?KEYWORDS=paro>

7. Annex.

7.1 Post-reflections

I had only a very theoretical idea what it means to create an identity through social relations, especially how this identity can be created if one person seems to be with his or her thoughts in a different place as in the case of dementia and other cognitive diseases. In the beginning, the readings on dementia revealed for me that I had rather what we might call symptom based idea of dementia. It was astonishing to find out how a 'pathology' which seemed to be far away from myself, merged into something, which has implication, not only for medicine, demented and their relatives, but actually for everyone in the wider public. Soon it became clear that the way we see people with dementia can be described as decisive for the way we see ourselves and other people. I think to really accept and more important to process this image was the first challenge I faced.

The lack of practical understanding was to a certain extent diminished by the three day visits of the Aarhus nursing homes. The experience in the nursing homes took theory at times closer to, at times further away from practice, yet it stimulated and motivated a lot to understand what I had read before about care practice and dementia studies by Hughes, Sabat, Mol, Moser, Pols, etc. When I was first confronted with people with dementia, for a short time I slipped back to the image I had before starting the discussion on dementia. I had to find out that it was quite difficult to see a person as a whole when symptoms can be very present with some elderly. The more astonishing it was then to observe how the caretakers grasped through these symptoms and interacted with the person 'behind'. I believed, I had understood the literature already before I went to the nursing homes, but now I also was faced with the meaning of what I had read juxtaposed to what I saw. It challenged me to process the image of dementia in terms of person-centred approach.

With these new practical insights, I now had a ground to turn back to reflect on an analysis on Paro in care practice. However, there was at least one more thing to learn before an analysis of Paro could bear fruits. Understanding the postphenomenological approach was another challenging part of this study. While I have been familiar with approaches in the field of STS and more thoroughly with SCOT, the approach described by Ihde and Verbeek demanded a different evaluation of the role of technology in our society. The perspective on technology as an active mediator in particular praxes, provided a new way to engage with technology studies in terms of normative reflections so attractive for fields like care. In the end the postphenomenological approach helped to identify the ways Paro mediates in our dealings with persons with dementia, and showed how carers, elderly and Paro, as well as dementia caring practices were constituted by each

other. Here discussions with my supervisor Prof. Dr. Finn Olesen (Aarhus University), and my internship on disability studies and assistive technologies last summer (2010) with Dr. Ruud Hendriks (Maastricht University) and my partner Alexander Feldhaus helped a lot to reflect on the approach.

Before having left Denmark, I was invited by the Danish Technological Institute (DTI) in Odense, who arranged the field study in the care wards in Aarhus in the first place, to participate at a one day seminar on Paro, in which I had the opportunity to present my findings I had until that day (22.08.2011). I received a certificate on Paro which is usually given to caretakers in order to be allowed to teach their colleagues how to use Paro. The seminar offered many interesting issues to follow on (questions such as: how can a 'proper use' of Paro be defined?; Which political motivations and interests are driving Paro distribution in Europe?; How do caretakers cope with Paro instructions?, How does it effect work organisation in care wards?, etc.) in a further study.

In the end I can say that this study year in general has helped me very much to understand the difference between theory and practice in many different ways. Understanding concepts isolated in a book, or applying them when confronted with the reality within institutions, are but two different pairs of shoes.

7.2 Paro Certificate received by the Danish Technological Institute