THE
SITUATED SELF
identity in a world of Ambient Intelligence

Het gesitueerde zelf

identiteit in een wereld van Ambient Intelligence

Proefschrift

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There are lots of good grounds for doubting the kind of analysis about to be presented. I would do so myself if it weren't my own. It is too bookish, too general, too removed from fieldwork to have a good chance of being anything more than another mentalistic adumbration. […] Nonetheless, some of the things in this world seem to urge the analysis I am here attempting, and the compulsion is strong to try to outline the framework that will perform this job, even if this means some other tasks get handled badly.

—— Erving Goffman, 1986: 13

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Preface

Writing a dissertation is often perceived to be quite a lonely job. In my experience this was far from the case. Over the last four-and-a-half years I have worked together with a variety of people, both in academia and outside. Many of them have contributed to the final result which lies before you, some only marginally, others in great detail, and yet others somewhere in between.

I would like to thank the following people: first and foremost, my PhD supervisors, Prof.dr. Jos de Mul and Prof.dr. Valerie Frissen, not only for their inspiration and motivation, but also for their life lessons and for teaching me how to be a researcher. My meetings with them always left me feeling (re)invigorated and enthused, and they where there for me whenever I felt stuck – which, as a result, never lasted for very long. Moreover, working with Jos and Valerie was great fun. I will never forget the many hours spent laughing out loud at the veritable 'tennis match of jokes' that arises whenever Jos and Valerie are in the same room. Thank you both, for being the fun-filled, enthusiastic, and inspirational supervisors you have been over the last four-and-a-half years. I hope we will continue working together on a regular basis in the years to come.

Second, I would like to thank dr. Mireille Hildebrandt, with whom I discussed several early drafts of the chapters to come, and whose probing questions helped me to sharpen the arguments contained in them. Mireille's ringing laughter and keen interest made our exchanges highly enjoyable, and I look forward to having many more of those in the future.

Furthermore, I would like to thank my friends Karin Aalderink and Ruben Buys, for being my ushers ('paranimfen', there is no better translation I'm afraid) during the public defense of this dissertation on 23 April 2009. Karin is one of my oldest and dearest friends and I am grateful that she was willing to literally stand beside me on this special day. I thank Karin for all the years of friendship that lie behind us and look forward to many more years to come. Ruben was one of my fellow PhD students at the Faculty of Philosophy and has become a real friend over the last couple of years. We saw each other almost every day and therefore it seemed no more than logical to me that he ought to be the other person at my side throughout the

ceremony. I thank him for saying yes, and more importantly, for being the friend he has come to be.

I would also like to thank Prof.dr. Joshua Meyrowitz of the University of New Hampshire and dr. Ann Branaman of Florida Atlantic University, who both took the time to see me and discuss my research with me when I visited with them in the spring of 2008. As specialists in their own fields both contributed fundamentally to shaping and sharpening the arguments developed in this dissertation, and both helped me find answers to issues I had be struggling with for quite some time.

I thank Prof.dr. David Velleman for offering me a Visiting Scholar position at New York University (NYU) in New York City after the completion of this dissertation and am eager to start my new research project there.

Many thanks also to the staff and the PhD students at the Faculty of Philosophy, for reading and commenting on earlier versions of many of the chapters – in various stages of completion – and for providing me with critical questions. I also thank the interdisciplinary research group in which I have participated: Technology, Behavior and Use (TGG).

This research was funded by two organizations: TNO and the Center for Public Innovation. I thank them for giving me the opportunity to conduct it and write this dissertation.

And then there were those outside academia, my friends and family, who have supported this project and who have (sometimes even unknowingly) contributed in a myriad of ways to its final result. Especially, I would like to thank my wife Jonna, who has provided me with all the support a person could ask for. She was always interested in my ideas and challenged me on many an occasion to develop my arguments in more detail. But more importantly, her gentle love and abiding ways provided me with a rock-solid foundation to work from. I cherish you and look forward to growing very old and very grey with you. Last, but not least, I would also like to thank my parents, Ad and Cockie van den Berg, and my sister, Tessa van den Berg, for being the interested spectators in the background, and for cheering at all the right times. I feel lucky to be part of such a loving and wonderful family.

Bibi van den Berg
Rotterdam, January 2009.

Part I

1

Setting the stage

Ambient Intelligence and identity

> Many gods have been done away with, but the individual himself stubbornly remains as a deity of considerable importance. (Goffman, 1982: 95)

> To be a construct does NOT mean to be unreal or made up; quite the opposite. (Haraway, 1999: 46)

1.1 Introduction

Exactly a century ago, in 1909, the British novelist E.M. Forster, known for his famous books *A Room With A View* (1908), *Howard's End* (1910) and *A Passage To India* (1924), wrote a short story about the technological future, entitled *The Machine Stops* (reprinted in Forster, 2001). In this story the earth has become uninhabitable and people have resorted to living deeply underground. Their world is packed with technology – one could even say it has become technologically mediated to the core. The human beings inhabiting this underground world live alone, each in their own room, a room that provides them with everything they may need or want: there are, in the words of Forster, "*buttons and switches everywhere – buttons to call for food, for music, for clothing.* […] *The room, though it contained nothing, was in touch with all that* [they] *cared for in the world.*" (Forster, 2001: 94) One universal, centralized computer, called 'the Machine', provides them with all that they desire. The only book available in this world is the 'Book of the Machine', a manual in which

to find what button to press whenever a specific need emerges. Travel has become unusual and unnecessary, since *"thanks to the advance of science, the earth was exactly alike all over."* (Forster, 2001: 98)

Two characters are introduced in the story: a woman called Vashti, and her son Kuno. They live on opposite sides of the earth and communicate – as does everyone – only through a videophone system that is part of the Machine. The story starts with Kuno contacting his mother through the videophone system, requesting her to undertake a two-day journey by air-ship so that she can visit him in his room. This is an unusual request and Vashti only reluctantly agrees to it. When she arrives Kuno tells her he has been threatened with 'Homelessness', the punishment given to those who have visited the earth's surface and have therewith disobeyed the government's order to stay underground permanently. It turns out he has become somewhat of a rebel in the Machine civilization. Kuno tells his mother he has severe doubts about living in the Machine-mediated world, a world of *"artificial air, artificial light, artificial peace"* (Forster, 2001: 112). Particularly, he has come to fear the way in which people worship the Machine and he expresses his concern regarding the fact that, although the Machine was originally made by man, somehow it seems as though it is out of man's control now. Although Vashti is shocked by her son's words and dismisses them as dangerous, in the next couple of years he is gradually proven right in his worries, both with regard to the humans' escalating loss of control over the Machine, and their increasing reverence towards it. More and more, the Machine becomes a force on its own, out of everybody's power.

At this time Kuno is transferred from his room on the other side of the globe to one near his mother. He contacts her through the videophone system and expresses his concern that things are spinning out of control, and that the end of the world is near, saying: *"The Machine stops."* (Forster, 2001: 117) Vashti does not understand what he means by that phrase and ignores it. But as time goes by Vashti and her friends start noticing small defects in the Machine's services: strange sounds appear in the musical symphonies it plays for them, there are noises in the walls of the rooms, artificial foods are moldy, the beds in which they sleep do not materialize when summoned, and so on and so forth. For some time these errors are mumbled on yet accepted as part of the Machine's normal workings – humans have become so deferential to the Machine that it doesn't occur to them to resort to action for mending the Machine or protesting against its ever more frequent breakdowns. No

one can explain the Machine's defects; it simply appears to start falling apart. In the end, of course, Kuno is proven right and the Machine stops completely: "*...there came a day when, without the slightest warning, without any previous hint of feebleness, the entire communication-system broke down, all over the world, and the world, as they understood it, ended.*" (Forster, 2001: 120) Only those human beings who had secretly lived on the surface of the earth during the age of the Machine survived the collapse of its civilization, and it is up to them, concludes Forster, to create a new world in which the mistakes of the age of the Machine are avoided in the future. As Vashti and Kuno are reunited in their dying moments they realize how far man has strayed from his own essence and how far removed they have become removed from the natural world man once inhabited.

Forster's message in this story is clear: he is worried about the rapid and massive development of all kinds of technologies emerging in the world around him at the dawn of the twentieth century, a time in which the first successful telephone conversation took place (1876) and in which Thomas Edison developed the first commercially practical light bulb (1879). A time, also, in which the first human flight by airplane – over a distance of 120 feet – was conducted by the Wright brothers (1903), and in which Reginald Fessenden broadcasted the first radio program (consisting of him playing *O Holy Night* on the violin and reading a section from the Bible) (1906). Technological developments of all manner and shape were under way everywhere, and plenty of optimistic stories about their abilities and possibilities were told. Forster's *The Machine Stops* takes the opposite stance: it displays concern regarding the loss of control the author feels will inevitably result from all these technological developments.

In itself Forster's techno-pessimistic worries in the story and his portrayal of the eventual demise of a technologically saturated civilization are not remarkable – examples of such stories exist from well before his time (with Mary Shelly's *Frankenstein* (1818) often cited as the first example), and many have been created since. Hollywood, too, has produced an abundance of techno-pessimistic stories, including *The Matrix* (1999), *Artificial Intelligence: A.I.* (2001), *Minority Report* (2002), *I Robot* (2004), and *Wall-E* (2008), to name but a few examples from the last decade. Each time the plot of such stories follows a similar story line: human beings create technologies intended to facilitate and support their lives, but eventually the technology gets 'out of control', and the creators have to fight hand and

foot to regain control over their own creation, so that they may reclaim the power they have lost. Forster's story, then, fits neatly into a long line of 'techno-dystopian' storytelling.

However, what is highly remarkable about Forster's *The Machine stops* is the degree of foresight it displays. One of the difficulties of science fiction writing is making predictions regarding future societies and technologies. For any futurist story to be interesting and worthwhile to read for longer than just a few years after its publication it needs to capture some of the ideas and fantasies of its own time and extrapolate these into the future with a level of both accuracy and fun, such that readers in that future, when the fantasies of the past will have either been realized or else forgotten altogether, will be able to understand and appreciate the author's presentation of what is by then the actualized future, their own time. Forster has accomplished this feat in a remarkable way. Although we still inhabit the world above ground and 'the Machine' has not become the centralized computing system that we all depend on, this story, written in 1909, describes technologies such as television, videophone (or videoconferencing), and medical technology to diagnose and treat disease, long before any of these technologies were invented even in their most rudimentary form. Forster speaks of instant messaging and artificially created foods, neither of which were to emerge for decades to come. He describes a world in which something resembling the internet is used to find and share knowledge, more than half a century before the internet was created. Moreover, equally remarkable are some of Forster's social and societal predictions: *The Machine Stops* effectively describes a networked society, in which people use different kinds of technology to interact with others, and mediated communication has become as widespread as face-to-face interaction, or in some cases has even replaced the latter. Although perhaps Forster overstated the extreme individualism, and the reverence (or even religiosity) towards technology, we have in fact come to inhabit a world that is thoroughly saturated with technologies.

In this dissertation we will leap from the current world towards our own technological future. We will look into a current-day vision of the technological world of tomorrow, called *Ambient Intelligence*. This vision was developed at the end of the 1990s by Philips, a Dutch multinational in consumer technology, lighting and medical technology. The Ambient Intelligence vision was subsequently embraced by the European Commission as Europe's technological paradigm for the world of the

near future.

In this chapter I will introduce the subject matter of this dissertation. I will present the research question that has instructed this research (paragraph 1.2) and then briefly introduce its two key concepts: 'Ambient Intelligence' (paragraph 1.3) and 'identity' (paragraph 1.4). Any research discussing modern technologies will have to explicate its stance towards technological developments and its conception of the relationship between technologies and societies. This issue, too, will be taken up in paragraph 1.3. In a similar vain, in the paragraph after that (1.4) I will present my perspective on identity, and explain why identity has become an important theme in social scientific and philosophical research over the course of the twentieth century. After that I will discuss two issues the reader of this dissertation needs to bear in mind while reading this book, both of which relate to the current-day status of Ambient Intelligence as a *vision* rather than a materialized paradigm (paragraph 1.5). In the last section of this chapter I will present the main argument of this dissertation and give a brief summary of the chapters to come (paragraph 1.6).

1.2 Research question

The central research question of this dissertation is this:

> *Does Ambient Intelligence affect human identity,*
> *and if so, in what way(s)?*

Several elements of this question should be clarified before we can begin to answer it. First of all, there is the notion of Ambient Intelligence. What does this vision entail exactly? What are its key ideas and who are its key players? The next chapter of this dissertation will answer these questions. For now, a short introduction will suffice – I'll briefly summarize some of the key ideas in the Ambient Intelligence vision in the next paragraph (1.3).

The notion of identity also needs further clarification. There is a wide array of identity theories and perspectives, each of which highlight different aspects or factors of this diffuse and complex notion. In the third chapter of this dissertation I will develop a perspective on identity that can be summarized under the heading '*the situated self*'. I argue that identities are always *situated*: *who* we are, is closely linked

to *where* we are and *with whom* we interact. My perspective on identity can be labeled as interactionist and builds on the work of Erving Goffman. A very short introduction to my perspective on identity will be given in paragraph 1.4.

1.3 Ambient Intelligence: Envisioning the technological world of tomorrow

'Ambient Intelligence' is the name a vision of the technological world of tomorrow that was originally developed by Philips, a multinational in consumer electronics (and other technologies), and that was subsequently adopted by the European Commission as an important driver for technological development in the European Union. The Ambient Intelligence vision describes a world in which technologies are seamlessly integrated into large networks that allow for natural and easy interaction with users anywhere and anytime. Technologies, the vision proclaims, will be woven into the fabric of everyday life in such a way that we will not even notice their presence (Weiser, 1991: 66), nor their incessant workings to support our everyday doings. Human beings, it is argued, are placed at the heart of technological design in the Ambient Intelligence vision and taken as the center to which technologies should adapt. To realize this user-friendly world of so-called 'ubiquitous computing' Ambient Intelligence technologies have five specific characteristics. First of all, they are *embedded* – they are hidden from view in walls, floors, pieces of furniture, and items of clothing, in our homes, our workspaces and in our public domain. Second, networks of technologies will recognize the users that are present in any given environment and will respond to their specific context-related needs and wants – they will be *context-aware*. Third, the services and information provided by technologies will be *personalized*: they will be adjusted to a person's specific wishes, desires, and preferences. These preferences will be stored in 'user profiles' that can be interpreted by the technology to provide users with exactly the kinds of information they may want. Fourth, the technologies will be *adaptive* – they will be able to learn from users' past choices, preferences and responses and adjust their own behaviors in light of these experiences. And last but not least, they will be *anticipatory*: they will be able to "*anticipate your desires without conscious mediation*" (Aarts and Marzano, 2003: 14). Without having to give explicit commands the technologies surrounding us will provide us with just the right

services at just the right time.

Now, to be sure, this very brief description of Ambient Intelligence's main ideas raises more questions than it answers. What will the world of tomorrow look like, with all these proactive, intelligent and personal technologies? What do we mean by 'adaptive, context-aware, anticipative' technologies? In the second chapter of this dissertation I will give an extensive overview of this vision, but for now I will present a scenario envisioning the use of Ambient Intelligence technologies to familiarize the reader with the feel of its main ideas.

It is four o'clock in the afternoon. Dimitrios, a 32 year-old employee of a major food-multinational, is taking a coffee at his office's cafeteria, together with his boss and some colleagues. He doesn't want to be excessively bothered during this pause. Nevertheless, all the time he is receiving and dealing with incoming calls and mails. […]

Dimitrios is wearing, embedded in his clothes […], a voice activated 'gateway' or digital avatar of himself, familiarly known as 'D-Me' or 'Digital Me'. A D-Me is both a learning device, learning about Dimitrios from his interactions with his environment, and an acting device offering communication, processing and decision-making functionality. Dimitrios has partly 'programmed' it himself, at a very initial stage. […] He feels quite confident with his D-Me and relies upon its 'intelligent ' reactions.

At 4:10 p.m., following many other calls of secondary importance – answered formally but smoothly in corresponding languages by Dimitrios' D-Me with a nice reproduction of Dimitrios' voice and typical accent, a call from his wife is further analysed by his D-Me. In a first attempt, Dimitrios' 'avatar-like' voice runs a brief conversation with his wife, with the intention of negotiating a delay while explaining his current environment. […]

[However, when she calls back once more] his wife's call is […] interpreted by his D-Me as sufficiently pressing to mobilise Dimitrios. It 'rings' him using a pre-arranged call tone. Dimitrios takes up the call with one of the available Displayphones of the cafeteria. Since the growing penetration of D-Me, few people still bother to run around with mobile terminals: these functions are sufficiently available in most public and private spaces […] The 'emergency' is about their child's homework. While doing his homework their 9 year-old son is meant to offer some insights on everyday life in Egypt. In a brief 3-way telephone conference, Dimitrios offers to pass over the query to the D-Me to search for an available direct contact with a child in Egypt. Ten minutes later, his son is

videoconferencing at home with a girl of his own age, and recording this real-time translated conversation as part of his homework. All communicating facilities have been managed by Dimitrios' D-Me, even while it is still registering new data and managing other queries. (Ducatel, et al., 2001a: 5)

This is an excerpt of one of four scenarios that were developed by the Information Society Technologies Advisory Group (ISTAG), one of the main advisory groups for technological developments of the European Commission. In this scenario we find all the characteristics of Ambient Intelligence technologies that were described above. Dimitrios is wearing a piece of technology, called a D-Me, embedded in his clothing, which as we have seen is the first characteristic of Ambient Intelligence technologies. His D-Me is context-aware: it recognizes the fact that Dimitrios is in a public environment and has taken a break from work, so it adjusts its behaviors to match the setting, screening his phone calls for him. Also, we read that Dimitrios has personalized the D-Me – he has programmed it and it responds to him according to his personal preferences. Moreover, his D-Me is adaptive: it learns from Dimitrios' previous responses and changes its own behaviors in light of what it has learnt. Finally, the D-Me is anticipatory – it selects phone calls for Dimitrios and mimics his voice to handle the phone calls Dimitrios is not to be bothered with. Only when really urgent calls come in the D-Me will forward them to Dimitrios.

With the briefest of glimpses of the Ambient Intelligence vision in place, there are still a number of other issues regarding the notion of 'technology' in general that need to be addressed. In the next paragraphs I will explain what the notion of technology designates exactly in this dissertation (1.3.1), and what my perspective is on studying social change in light of technological developments (1.3.2).

1.3.1 What do we mean by 'technology'?

In his insightful article called *What is technology?* Stephen J. Kline investigates what we mean when we speak of 'technologies'. Kline says that at the end of the twentieth century we talk about 'technologies' almost as much as we talk about the weather, but our use of this term is quite diverse and muddled. This is why we need

to clarify what the term 'technology'[1] means. There are three common uses of the term 'technology', says Kline, and one more implicit use.

First, technology refers to

> *manufactured articles* – things made by humans that do not occur naturally on earth, for example: refrigerators, eyeglasses, atom bombs, paints, automobiles, pianos, paper, rubber, glass, aspirin, penicillin, airplanes, copying machines, furniture, roads, rifles, printing presses, boots, bicycles, and on and on. (Kline, 2003: 210)

In short, when we speak of technologies, we often refer to *artifacts*, to non-natural, that is man-made objects and systems.

Second, 'technology' is sometimes used to designate what Kline calls 'sociotechnical systems of manufacture', that is "[a]*ll the elements needed to manufacture a particular kind of hardware, the complete working system including its inputs: people; machinery; resources; processes; and legal, economic, political and physical environment.*" (Kline, 2003: 210-211). Thus when we speak of the 'technology' that is needed to manufacture refrigerators (or any of the other examples of artifacts in Kline's quote above) we do not only mean the hardware (its components), or the hardware + the factory, or the even hardware + the factory + the people needed to build the refrigerator, but rather the entire system that is involved in the creation of refrigerators.

A third, and often more implicit use of the term 'technology' refers to what Kline calls the '*sociotechnical system of use*'. Technologies are not only *manufactured* (as sociotechnical systems as we have seen), but also *used* as such. And their use also fits into sociotechnical systems. For instance, the cars we build are used in relation to a larger system in which we find a whole set of interconnected manufactured technologies, including roads and gas stations, but also traffic rules and laws

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[1] What Kline doesn't mention, but most ordinary dictionaries do, is the fact that the word 'technology' derives from the Greek '*τεχνολογία*' ('technologia'), which in turn comprises of the words '*τέχνη*' ('*techne*', which means 'craft', 'art' or 'skill') and '*λογία*' ('*logia*', which means 'to speak' or 'discourse'). 'Technology' refers to a combination of artifacts and the skills and knowledge needed to create them. For the etymology of the term 'technology' see for instance the Wikipedia entry on the subject: http://en.wikipedia.org/wiki/Technology [last visited on 2 December 2008].

regarding ownership. When we use a car, we "*use the combined system (the autos plus all the rest) to extend the human capacity for moving ourselves and our possessions about – transport.*" (Kline, 2003: 211)

Last, 'technology' can be used to designate all the "*knowledge, technique, know-how, or methodology*" (Kline, 2003: 211) we use to accomplish a task. We speak, for instance, of the 'technology' needed to complete a job or a chore. This last meaning can also be traced back to the original Greek meaning of the word as discussed in footnote 1.

Unwittingly summarizing all four of the meanings described by Kline, Jos de Mul defines 'technology' as:

> What we call technology is […] a conglomerate of technological artifacts, specific forms of knowledge and capabilities on the part of the agents involved, the necessary geographical and social infrastructure, economic interests and societal norms and values. (De Mul, 2002: 30, translation by BvdB)

In this dissertation I will focus on *information and communication technologies* (or *ICTs* for short). Ambient Intelligence technologies roughly fall under this label. ICTs and Ambient Intelligence technologies are understood as technologies in all four of the meanings described above. They are collections of *artifacts* that fit within *sociotechnical systems of manufacture and use* and require and generate *knowledge* and *skills*. ICTs include (mobile) phones, computers, PDAs , mp3 players, televisions, and so on and so forth. Four constituting characteristics set this type of technologies apart from other technologies. First, ICTs are *multimedia*. They combine written text with (moving and still) images and sounds, and use the same digital code as a source for all of these forms of output, which facilitates their manipulability and the ease with which they can be copied and transformed into something else (De Mul, 2003: 113-116). Second, ICTs are characterized by *interactivity*: they actively engage users to respond to them (for instance by clicking on links or typing commands), after which the technologies themselves adjust their own responses to the input given by the user. Third, ICTs can be used to simulate *virtual worlds*, "*digitally produced reali*[ties] *which are potentially indistinguishable from the real in human perception*" (Raessens, 2002: 126, translation by BvdB). Last, ICTs are characterized by their *connectivity*: almost all current-day information technologies can be hooked up to the internet and may thus

become part of the global network of computer technologies. (Raessens, 2002: 129).

Within the domain of information and communication technologies, more specifically, I will focus predominantly on those technologies that are intended for the *consumer market.* Over the past years more and more technological developments have been gathered under the umbrella of Ambient Intelligence. A number of different domains in technology development label their work as 'Ambient Intelligence', including medicine and health, infrastructure, consumer electronics, and robotics . In this dissertation I have chosen to focus predominantly on consumer electronics. The main reason for this choice is the fact that consumer electronics in itself is already quite a large domain – it includes technologies that are used in the home, in the office, and in public spaces, and ranges from mobile technologies to embedded systems. A second reason is that both medical technologies and robotics form quite a distinctive domain, with discrete applications on the one hand, and separate issues and questions on the other. Therefore they fall outside the main argument of this thesis. Only when directly relevant will these two domains be discussed throughout the following chapters.

1.3.2 Technology | society

Any dissertation discussing the social aspects of a technology or technologies – whether they be mobile phones, computer technologies, the internet, or any other digital or electronic technology – needs to make clear its stance towards technology research and technological development. A wide range of perspectives on technological development and its social consequences have emerged throughout the twentieth century. In this paragraph I will very briefly sketch the resulting theoretical landscape and position myself on the map thereof.

A first distinction to be made is that between '*techno-optimism*' and '*techno-pessimism*' – or, as I call them, between '*technothusiasm*' and '*technoglum*'. 'Technothusiasm', also known as 'utopianism', is the idea that technological developments will generally have positive consequences for society and individual human beings. It need not surprise the reader that representatives of technology industries, such as Philips in the case of Ambient Intelligence, see the advent of technologies as a predominantly positive prospect. A technothusiast stance may be expected from them, if only for purposes of convincing skeptical or techno-careful

audiences.

'Technoglum', or 'dystopianism' is the radical opposite of technothusiasm. Techno-pessimism is a stance taken by those who are critical of technological developments, either in general or in relation to specific technologies. Forster's short story *The machine stops*, which I discussed at the beginning of this introduction, is an example of a technoglum response to the technological developments of the late nineteenth and early twentieth century. Technoglum interpretations of technological development often point out that all of the promises of a better future that the technothusiasts present – for instance, more autonomy, control, flexibility, and better means of communication – might also be understood quite differently: one could argue that the relentless and all-encompassing 'technological colonization' of our world contributes to a loss of control, an increase in inflexibility, and the diminishment of autonomy. As Don Ihde points out techno-pessimists often believe that "*once created and put in place, technology* [...] *takes on a life of its own and becomes* <u>autonomous</u>." (Ihde, 1990: 6, emphasis in the original) But the technoglums may also have other fears. For instance, one could argue pessimistically that the addition of constantly more technologies to our everyday lives leads to too many choices, overwhelming and paralyzing us rather than making our lives better (see for a critical discussion Verbeek, 2005: 36 ff.). In all cases, techno-pessimists point out time and again that as the relationship between human beings and technological artifacts becomes more and more entwined technology's influence will have a negative impact on our lives.

Technothusiasm and technoglum can be understood as the two extreme poles of a scale on which a third position, which we may label '*techno-pragmatism*', forms the middle ground. A techno-pragmatist stance, in my view, entails primarily that we *take seriously* the technological developments around us, and view critically yet constructively the mixture of good *and* bad effects they may have. A good example of a techno-pragmatist book is *Everyware: The dawning age of ubiquitous computing* by futurist Adam Greenfield (Greenfield, 2006). Greenfield shows that while visions of the technological future can be very alluring, it is important to look with interest at the changes – social, economic, political, cultural, personal – they may bring about. He heeds some clear warnings about the technothusiasm that may surround such visions, yet at the same time he manages to avoid the pitfall of wiping it off the table in a single sweep by claiming that its materialization would be all for the worse. His

main point is that there is an acute need for us to think carefully and thoroughly about the many facets of the development of such technological visions – a perspective I wholeheartedly support.

The technothusiast and the technoglum stance each have their merits, but both need the other to be balanced out – in their one-sidedness each overlooks the complexity and nuance of technological development and the practical effects of such developments on everyday contexts. The changes brought about by technologies in our everyday lives are too complex and too diffuse to label them singularly or straightforwardly as good *or* bad – technological change is always a 'mixed bag' of both good *and* bad consequences. What matters is the fact *that* things change – as Joshua Meyrowitz writes: "*Whether the effects of* [electronic] *media on our society are good, bad, or neutral, the reprocessing of our physical and social environment is revolutionary.*" (Meyrowitz, 1985: 117)

Moreover, valuing a technological vision such as Ambient Intelligence in a good-or-bad dichotomy doesn't do justice to the fact that such a vision consists of an immense variety of technological artifacts, systems, and applications – some of which, undoubtedly will provide positive contributions to our everyday lives, while others raise questions regarding their usefulness or even the desirability of their realization. Nor does it do justice to the fact that technological artifacts have a wide variety of consequences in different situations. As Peter-Paul Verbeek rightly notes all too often technology has been viewed as a distinct, unified and singular system, as "*'Technology' with a capital T*" (Verbeek, 2005: 4). Instead, a wide array of different technological artifacts exist[2], each of which has different effects in different situations – obviously, technological artifacts that are a valuable contribution to our everyday lives in some situations may be a harmful addition to them in others, and even in the same situation one could argue that one and the same device may have both good and bad effects. Describing technologies from a solely or even predominantly optimist or pessimist perspective is therefore an oversimplification of reality that ought to be avoided.

In summary, my aim in this dissertation is to take a techno-pragmatist stance:

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[2] This is why, following Verbeek's example, throughout this dissertation I prefer to speak of technolog*ies* in the plural form – provided the rules of grammar and style allow it.

to give a critical yet constructive analysis of some of the developments currently under way in the realm of technological developments. I do not wholeheartedly enthuse on all aspects and predictions of Ambient Intelligence, yet at the same time it seems unwise to simply dismiss this vision as mere fantasy or science fiction. I aim to take the Ambient Intelligence vision seriously as one of the possible outlines for our technological future, and I anticipate its realization and coming to full blossom with a heartfelt interest.

With this first distinction between 'technothusiasm', 'technoglum' and 'techno-pragmatism' in place, more needs to be said on the various approaches to studying the social effects of technologies and my own position therein. Broadly speaking, three different approaches may be distinguished: 'instrumentalism', 'determinism' and 'constructionism'. I will describe each of them in turn.

Instrumentalism

Instrumentalists claim that technology in itself is neither good nor bad, it's what we *do* with the technology that makes it good or bad (or a mixture thereof). The technology itself is neutral – it is merely an 'instrument', a means to an end. Adherents to this perspective see technology as the total sum of all the instruments available to human beings, there to relieve them of their tasks and labors. These instruments as such are value-free – only by using technologies (for better or for worse) do we create values that will surround them from that point onwards.

As a representative of this take on the social effects of technologies I quote Stefano Marzano, the CEO of Philips Design and one of the key contributors to the Ambient Intelligence vision. He expresses the instrumentalist stance *'pur sang'* by saying: "[T]*echnology is, in itself, a force for neither good nor bad. Whether it works positively or negatively depends on what we decide to do with it*" (Marzano, 2006: 36)[3].

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[3] Just for purposes of comparison: the European Commission's advisory group on new technologies and the information society (called ISTAG) has a rather different perspective on the social effects of technologies. This advisory group is one of the other most important players in the Ambient Intelligence debate, alongside Philips. The advisory group writes: *"ICT is a 'constitutive technology': that is, it constitutes – becomes part of – the things to which it is applied. Digital technologies don't*

Determinism

The second perspective regarding the effects of technologies on societies is called 'determinism'. Technological determinism refers to the idea that technology is a force in its own right, beyond the control and grasp of human beings, a sphere that will develop and spread according to its own inherent and fundamentally ungraspable momentum. Note that technological determinists may be either optimists or pessimists (Nye, 2006: Chapter 2). Optimistic determinists believe, for instance, in the existence of an "*intrinsic technical efficiency*" which will lead us to adopt those technologies that are "*intrinsically best*" (MacKenzie and Wajcman, 1999: 19). Yves Punie notes that technothusiast determinists often argue that "*what is technically possible will be materialized*" (Punie, 2004: 173, translation by BvdB). Technologies and technological development in their view seem to be a 'natural force' (Nye, 2006: 19) with a predominantly positive outcome in terms of results.

Pessimistic technological determinists, on the other hand, warn against the dangers of the out-of-control technologization of our societies. They point out, for instance, that technological developments have accelerated to such a degree that human beings and societies have lost (or soon will lose) grip of their evolution or their containment. The technological momentum that has thus emerged will eventually have a negative impact on, or even destruct, the core values of our societies and the central elements of what makes us human: principles such as community spirit, human worth and human autonomy.

Constructionism

In the last decades of the twentieth century a third general stance towards the relationship between technology and society was developed, in response to both the instrumentalist and the determinist perspectives. This third perspective consists of a number of different schools that may be gathered under the umbrella of *constructionism* – these schools include the Social Construction of Technologies

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just enable us to <u>do</u> *new things, they* <u>shape</u> *how we do them.*" (ISTAG, 2006: 2, emphasis in the original). As we will see below this is a *constructionist* stance.

(SCOT), the Social Shaping of Technology (SST) and Actor Network Theory (ANT)[4].

As said, the constructionist approach emerged partially in response to the other two stances. It has criticized the *instrumentalist* position for the fact that it overlooks the *conditionality* and *contextuality* of technological development and its embedding in social practices. Technologies and the processes of technological development are contingent to a large degree, both in terms of the kinds of technologies that are developed and the specific form or shape they take – they are born out of "*conflict, difference, or resistance*" (Bijker and Law, 1992: 9) in specific historical, political, economic, and socio-cultural settings. Also, rather than being neutral artifacts used for good or bad, technological artifacts *alter* the social practices into which they are introduced, say the constructionists: technologies actively help to reshape and transform these practices. As Wiebe Bijker and John Law remark:

> Technology does not spring, *ab initio*, from some disinterested fount of innovation. Rather, it is born of the social, the economic, and the technical relations that are already in place. A product of the existing structure of opportunities and constraints, it extends, shapes, reworks, or reproduces that structure in ways that are more or less unpredictable. And, in doing so, it distributes, or redistributes, opportunities and constraints equally or unequally, fairly or unfairly. (Bijker and Law, 1992: 11, emphasis in the original)

A second criticism of the instrumentalist position refers to the *neutrality* of technological artifacts. By claiming that technologies in themselves are neither good, nor bad, but simply neutral the instrumentalist overlooks the fact that technological artifacts 'steer' or influence human beings with regard to their *use*. Don Ihde calls this '*technological intentionality*'. He writes: "*Technologies, by providing a framework for action, [...] form intentionalities and inclinations within which use-patterns take*

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[4] Each of these schools has its own distinctive approach, but discussing their differences extensively unfortunately falls outside the scope of this dissertation. I will focus predominantly on what these schools have in common. For a more detailed and complete description of their similarities and differences, please see the first chapter of *The social shaping of technology* (MacKenzie and Wajcman, 1999) and the first chapter of *Shaping technology/Building society* (Bijker and Law, 1992). In this dissertation I will discuss just one difference between these three constructionist approaches (see the next paragraph, called 'Avoiding the pitfalls of instrumentalism, technological and social determinism').

dominant shape." (Ihde, 1990: 141) Technologies '*invite*' to certain patterns of action or strengthen certain '*tendencies*': "*Technologies ask for a certain way of interacting with them, as it were, they have an 'intention' with their users.*" (Achterhuis, 1997: 153, translation by BvdB) This does not mean that people are literally forced in certain directions by the technologies they use. What it means, simply, is that technological artifacts in their form and shape always contain a pull in the direction of this kind of use rather than that.

The constructionists have not only critiqued the instrumentalist stance; they have also pointed out weaknesses in the *determinist* position. Here the first criticism is the fact that determinism simplifies the complex processes of '*mutual shaping*' (cf. Frissen, 1994; 1997; 2004), influencing and constituting that take place between technologies and societies. Constructionists explain that the relationship between technologies and societies is, in fact, far from simple. For one thing, on the one hand technologies contribute to altering and transforming human practices and behavioral patterns, and they have clear regulative and organizational qualities, that steer us, for instance, towards greater patterns of efficiency. But on the other hand technological systems and artifacts also leave a certain amount of room for the ascription of meaning, and some freedom regarding their use. Wiebe Bijker has called this '*interpretative flexibility*': the fact that "*different groups of people involved with a technology can have very different understandings of that technology*" (MacKenzie and Wajcman, 1999: 21) and "*radically different meanings*" thereof (Oudshoorn and Pinch, 2003: 3). This is particularly so during the first phases after the introduction of new technologies, when they start to find their way into the ordinary lives and everyday practices of individuals and social groups. After some time, those new technologies get assimilated into specific social and cultural settings – their meanings then become more clearly defined and their uses more delineated. Bijker calls the gradual vanishing of interpretative flexibility '*stabilization*' (Oudshoorn and Pinch, 2003: 3). The notion of interpretative flexibility brings to light one of the most important shortcomings of the technological determinist position, a position in which technology and society are separate spheres with their own momentum, and in which technology's trajectories are outside human control. The determinist position cannot adequately explain how technologies are taken up, adopted, shaped and molded by the social worlds into which they find their way. Technologies are not blind forces that dictate their own use and application by forcing themselves into existing

structures and patterns in society. Instead, they can be adapted in different ways by different cultures and groups of people within cultures.

Constructionists also criticize the determinist stance for the fact that it overlooks the role of *users* in the adoption and domestication of technologies. Technological determinists, both the optimists and the pessimists, view the users of technological artifacts and systems as passive receptacles who either dumbly yet approvingly accept the introduction of new technologies into their lives, or alternatively, numbly yet obediently suffer the results of technology's unrelenting momentum and the destruction of their central values and key practices. In either interpretation the user is viewed simply as the receiving end. The user as an active, creative participant in the adoption process, is overlooked (Punie, 2004: 174).

Avoiding the pitfalls of instrumentalism, technological and social determinism

But constructionism itself, or rather specific types of the constructionist approach to the relationship between technology and society, have come under attack as well. The adherents to Actor Network Theory argue that some of the other constructionist schools, especially the advocates of the Social Construction of Technologies perspective (SCOT), have so rigorously attempted to avoid the pitfall of technological determinism, that they have ended up taken a position that is its radical opposite, yet also a pitfall that ought to be avoided: *social* determinism. SCOT, more than the other constructionist approaches, attaches too much value to the *social factors* that play a role in technological developments, and too little on the technological factors. Thus, it makes technological developments seem too voluntaristic. In *social* determinism, the critique runs, technological developments and their effects on society are viewed too one-sidedly as the result of a specific socio-cultural and economic constellation, without considering the force that these technological developments in themselves can also have on the socio-cultural constellations into which they find their way. Thus, for instance, technological developments, are reduced to being the clear-cut result of a particular "*dominant capitalistic society and its exploitative and repressive means.*" (Punie, 2004: 174, translation by BvdB) As Don Ihde points out: "*Social scientists frequently take some form of* [a social determinist] *position, arguing in effect that what really counts in technological development is some set of decisions by a power elite.*" (Ihde, 1990: 4)

In a social determinist perspective the technology itself is not the main point of focus; it is the social *system* that produces a specific technological constellation that is critically evaluated. Nevertheless, as with technological determinism in social determinism, too, technology is conceived (too much) as a system that is outside the control of human individuals and profoundly impacts the social organization of societies.

What the three general perspectives on the relationship between society and technology show is that it is incredibly difficult to describe this relationship accurately and fully, without falling into the trap of either technological determinism, or its complete opposite, social determinism; and without either giving technology too much power or too little. What we need to do is to go back and forth constantly between the role of technological artifacts and those of human beings in technological developments. To me, while bearing in mind the necessity of avoiding the pitfall of social determinism, the constructionist stance is still the most fruitful one. It aims to develop a nuanced picture of the complex interaction between technologies and societies. It emphasizes, first and foremost, that technologies, as social constructs[5], "*emerge as the expressions of social forces, personal needs, technical limits, markets, and political considerations. […] …both the meanings and the design of an artifact are flexible, varying from culture to culture, and from one time period to another.*" (Nye, 2006: 49).

It is the constructionist perspective that I adopt in this dissertation, with a slight

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[5] When using the word 'social' I align myself with the interpretation of that notion as it is presented in Actor Network Theory (ANT), an summarized by Bruno Latour: "*I have argued that most often in social sciences, 'social' designates a type of link: it's taken as the name of a specific domain, a sort of material like straw, mud, string, wood, or steel. In principle, you could walk into some imaginary supermarket and point to a shelf full of 'social ties', whereas other aisles would be stocked with 'material', 'biological', 'psychological', and 'economical' connections. For ANT […] the definition of the term is different: it doesn't designate a domain of reality or some particular item, but rather is the name of a movement, a displacement, a transformation, a translation, an enrollment. It is an association between entities which are in no way recognizable as being social in the ordinary manner,* <u>except</u> *during the brief moment when they are reshuffled together. […] …social, for ANT , is the name of a type of momentary association, which is characterized by the way it gathers together into new shapes.*" (Latour, 2005: 64-65, emphasis in the original) These 'momentary associations', to be clear, are '*networks*' in ANT's terminology.

preference for Actor Network Theory, because constructionism attempts to cast the investigative net as wide as possible to include a broad range of factors that are relevant in the mutual shaping of the intricately and indispensably interwoven spheres of 'society' and 'technology'[6]. Also, whereas instrumentalism may easily fall into the trap of technothusiasm, and determinism in either the technothusiast or the technoglum pitfall, constructionism's emphasis on contextuality, and on the everyday and real-life practices of technology use, lead it away from these extremes and plant it firmly in the domain of techno-pragmatism. It is less normatively inclined right from the start, which makes it into a perspective that can point out the many shades of grey rather than either the blacks or the whites of technological development.

1.4 Identity

In the previous paragraph I have briefly introduced the Ambient Intelligence perspective and I have clarified my take on technology and society-technology relations for this dissertation. The second concept to be clarified in my research question is the notion of 'identity'. What do I mean when I speak of identity (or identities)? Why is it relevant to study this concept, in general and more specifically in relation to technological development? These questions will be addressed in this paragraph. Mapping out the domain of identity research I will start with the latter: why study identity, and why study identity and technological change?

Throughout the twentieth century a wide variety of 'identity theories' were developed – the notion of identity gained prominence as a subject of study in various disciplines, including psychology, philosophy, sociology, gender studies and so on and so forth. Since identity is also the core subject of this dissertation, it is interesting, first of all, to explain why this concept has come to have the prominent place it now occupies both in academia and in popular culture.

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[6] Hence the title of this paragraph: 'Technology | society' – the pipe (|) between the two terms is the most graphic expression I could find to express the fact that society and technology *hinge* on one another in a forever revolving way.

1.4.1   Why study identity? The need for identity theories

In *Identity in the globalizing world* Zygmunt Bauman attempts to find an explanation for the proliferation of 'identity theories' in philosophy, social science and psychology in our current times (Bauman, 2001). He argues that the reason why this is so is contained in the fact that with the advent of modernity identity as a concept has changed in fundamental ways. The rise of modernity has changed our conception of the world and ourselves from a 'given' into a 'project'. While in premodern times we conceived of the natural and the social world as predestined 'Divine creation', for us to be accepted as is, the advent of modernity led to a whole new perspective on the world: a world to be shaped and molded into whatever form we human beings figured would most suit our (rationally construed) ends and needs. So, too, with identity, says Bauman. In premodern times identity was viewed as a 'given', but like everything else modernity turned identity into a 'life project' (Bauman, 2001: 142). And the key concept in this development, according to Bauman, was the notion of individualization:

> ...'individualization' consists in transforming human 'identity' from a 'given' into a 'task' – and charging the actors with the responsibility for performing that task and for the consequences (also the side-effects) of their performance; in other words, it consists in establishing a 'de jure' autonomy (though not necessarily a *de facto* one). [...] Needing to *become* what one *is* is the feature of modern living... [...] Modernity replaces the *determination* of social standing with a compulsive and obligatory *self*-determination. (Bauman, 2001: 144-145, emphasis in the original)

Bauman then continues his analysis by describing the ways in which the 'project' of identity has been approached *within* modernity in different ways, throughout different eras. For example, in early modernity the key task for establishing an identity was to come to belong to a particular social circle or class. Whereas class came with birth in previous ages in early modernity merit and active social participation became the key engines of creating a 'place for oneself' in a given class. However, says Bauman, in our current ages, which he labels '*liquid modernity*' such striving for *a* place in society is no longer enough. The following quote, though lengthy, is too accurate and too recognizable to be paraphrased:

> ...the 'problem of identity', haunting men and women since the advent of modern

times, has changed its shape and content. It used to be the kind of problem which pilgrims confront and struggle to resolve: a problem of 'how to get there?' It is now more like a problem with which the vagabonds, people without fixed addresses and *sans papiers*, struggle daily: 'Where could I, or should I, go? And where will this road I've taken bring me?' The task is no longer to muster enough strength and determination to proceed, through trials and errors, triumphs and defeats, along the beaten track stretching ahead. The task is to pick the least risky turn at the nearest crossroads, to change direction before the road ahead gets impassable or before the road scheme has been redesigned, or before the coveted destination is moved elsewhere or has lost its past glitter. In other words, the quandary tormenting men and women at the turn of the century is not so much how to obtain the identities of their choice and how to have them recognized by people around – but *which* identity to choose and how to keep alert and vigilant so that *another* choice can be made in case the previously chosen identity is withdrawn from the market or stripped of its seductive powers. (Bauman, 2001: 147, emphasis in the original)

No wonder, is Bauman's logical conclusion, that identity theories have sprung up all around us in recent times (Bauman and Vecchi, 2004: 16-17). With identity having become a life-long project, a problem to be addressed by each and every individual, and one filled with difficulties and anxieties at that, it is not surprising that social science, philosophy and psychology have jumped at the opportunity of charting this research domain. Bauman argues that the focus on identity has gone too far, in the sense that it has come to replace interest in domains like the community and politics. And identity theories contribute to this focus.

Although his analysis of the central role of identity in our current age is both accurate and acute, I disagree with this latter conclusion. In my view what social science, philosophy and psychology have attempted to do in their investigations of the notion of identity is not to add to an existing, overly strong focus on identity at the expense of other and more important themes, but rather to take it upon themselves to try and underpin and understand the broadly felt and recognizable identity quest of our times. Furthermore, what these identity theories attempt to do is to contribute to resolving our individual trials and tribulations on this front.

The latter is in fact one of the main reasons why the current work before you deals with this theme – with this most pregnant and actual of questions, central to the lives of each and every one of us in modern times. Identity is, I agree with

Bauman, one of the most important 'issues' of our times – not only as a result of the immense displacement and redistribution of people, goods, and wealth that have emerged in the recent decades of globalization, but also in light of social, economic and religious processes of realignment, redefinition, and reshaping that have affected nation states, institutions, cultures, social groups and individuals the world over. All of these consequently feel a need to (re)consider their identities, to redefine their senses of self and to persistently, no constantly, answer this vital question: 'who am I?' The book before you takes up that question, 'who am I?', and attempts to shed light on processes of self-expression, self-development and self-experience in light of *technological change* – another one of those whirlwind developments of late modernity that so fundamentally contributes to shaping our everyday lives.

1.4.2 Identity and new technologies

New technologies entering societies change those societies and their workings. Evidence of this can be found throughout the history of technological development, from the advent of writing to the introduction of print and on to our own days of digital technologies. When writing was introduced in oral cultures this changed the way information was stored, transferred and retrieved. Similarly, with the spread of the printing press in the fifteenth century the proliferation and range of spreading information was changed: the printing of books suddenly enabled large amounts of people to have access to information they never could acquire before. Likewise, the 'digital revolution' of the late twentieth century altered patterns of mobility and affected the portability, transferability and spread of information in profound ways.

But the impact of new technologies on societies is not one-directional. New technologies have a bearing on societies, but societies, in their turn, affect technologies as well. Various studies from the realm of SCOT and SST have shown that users integrate technological artifacts into their lives in ways that were unforeseen by the designers and producers of these products – they *domesticate* these artifacts, which involves

> ...quite literally a taming of the wild and a cultivation of the tame. In this process new technologies and services, by definition to a significant degree unfamiliar, and therefore both exciting but possibly also threatening and perplexing, are brought (or not) under control by and on behalf of domestic users. [...] [The

> technologies] become familiar, but they also develop and change. [...] As such, domestication is fundamentally a conservative process, as consumers look to incorporate new technologies into the patterns of their everyday life in such a way as to maintain both the structure of their lives and their control of that structure. (Silverstone and Haddon, 1996: 60)

Technologies, then, do not simply 'land' in societies – their integration into the everyday lives of users and social groups involves, as we have seen above, a process of mutual shaping. Over the past decades research on the social aspects (in both directions) of different forms of technology has gradually found a place within the social sciences and the humanities. For example, studies have been conducted regarding changes in social patterns relating to the introduction of the personal computer, or the rise of the internet, or the advent of the mobile phone. Various aspects of the social world have been highlighted in these studies. Some focused on the changes brought about through technologies in patterns of communication and interaction, and showed for example what the differences are between face-to-face and virtual interactions. Some dealt with the political aspects of new technologies and brought attention to issues like the (re)distribution of power, race, and gender in relation to their advent. Others looked into the distribution of access to information – the 'information highway' – and the consequences of computer and internet (il)literacy – the 'digital divide'. Yet others investigated the impact of violent television series on children's behavior, or compared real-life and virtual practices of dating and building or maintaining friendships.

All of these studies show, in their own field and in their own specific ways, how important it is to closely monitor the advent of technology and the personal and social consequences it has. There is relevance – or even acuteness – to studying technological trends and the social, political, and economic changes they entail, precisely because technologies become part of the most mundane and habitual practices of our everyday lives. They move into the core of our daily goings-on in the world, and as such come to be elements of the basic structure of our lives. Hence it is worthwhile to study closely what changes they bring in their wake.

Now, as we have seen at the beginning of this paragraph, *identity* has been a topic of much scientific and popular debate in the last decades of the twentieth century. Philosophers and social scientists in recent years have also researched the matter of identity in the context of new technologies (cf. Castells, 2004; Gergen, 1991;

Turkle, 1984; 2007). For instance, the rise of networked technologies has contributed greatly to enhancing facilities for people to connect with others beyond the boundaries of their physical world, thus profoundly altering their ways of connecting to and communicating with others. Using information and communication technologies, it has been pointed out, allows people to have new ways of and new channels for expressing their identities to others (Turkle, 1984; 1996). More than in the old days constructing and expressing (aspects of) selves has become a matter of *choice*: we can choose the people we want to interact with and the networks we want to participate in. And in these networks we can choose more than before what parts of ourselves we want to make visible. These facts, in turn, have a bearing on people's self-conceptions. Identities, thus, it seems, are affected in numerous and important ways by the advent of modern technologies.

Considering these findings it is logical and important to raise the question of identity in relation to visions of the technological future such as Ambient Intelligence. This research focuses on Ambient Intelligence, since it can currently be considered one of the central pillars of technological development for both businesses and government in Europe. The political, strategic and economic importance of the Ambient Intelligence vision gives this research clear actuality.

It seems fair to assume that the changes our everyday lives have undergone over the last decade in light of technological development will only be sped up and taken further with the materialization of this new technological paradigm. Therefore, we may assume that Ambient Intelligence, too, will have a profound influence on our identities. Studying Ambient Intelligence's influence on identity is important, since technologies in all likelihood will come to play an increasingly important role in our everyday lives. This means that it is relevant to carefully analyze the consequences this may have for the construction and expressions of selves – all the more so, since there is, as we have established above, such a pressing demand for understanding and underpinning the modern 'identity quests' of individuals and groups.

At the same time, thinking through the impact of Ambient Intelligence technologies on our self-perception and reflexivity in this early stage of the development of this vision may enable us to formulate recommendations for both technology developers and governments having to respond and contribute to its materialization.

1.4.3 What is identity?

This dissertation takes an *interactionist* stance towards identity. Interactionism as a distinctive branch of identity theories emerged in the early twentieth century. George Herbert Mead (1863-1931) was the founder of what later came to be known as *symbolic interactionism*, the most well-known interactionist school of thought. Symbolic interactionism was gradually expanded and consolidated into a veritable social theory by scholars such as Herbert Blumer and Tamotsu Shibutani and eventually became one of the most popular sociological perspectives of the twentieth century – some even go so far as to claim that over time all of sociology has become "*interactionist in its conceptual makeup*" (Maines, 2003: 5).

Erving Goffman is often labeled a symbolic interactionist as well, although he himself states that while, being a Chicago School scholar in the high days of Meadian and Blumerian sociology, he was deeply influenced by symbolic interactionism's research subjects and approach, he also diverges from this school of thought in such fundamental ways as to make the label[7] 'symbolic interactionist' rather vacuous when applied to his work. Either way, the point I want to make is this: roughly, one can view interactionism as a tree, with symbolic interactionism functioning as the stem, and the Goffmanian school as one of the most well-known branches. I use the term 'interactionism' to describe the entire tree, but align myself predominantly with the Goffmanian offshoot. Yet since Goffman's work shares some of the roots of symbolic interactionism a number of the ideas from the latter can be found in my work as well.

So what does Goffman's interactionist conception of identities consist of? Roughly summarizing his main argument one could say that identities are constructed and expressed in and through *interactions* between people. Whenever people engage in interactions with others they go through the following cycle: they formulate an interpretation of the '*definition of the situation*' – i.e. they attempt to

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[7] Goffman, many commentators have noted, has a general tendency to resist labeling and at times even actively undermined the attempts of others at incorporating him in this or that school of thought (cf. Goffman's consistent objections to interviewer Jeff Verhoeven's attempts at understanding 'where he fits in' in academic sociology: Verhoeven, 1993). Over time, apart from a symbolic interactionist he has been called a "*post-modernist*" (Battershill, 1990), a "*latter-day Durkheimian* [...], *a structuralist* [...], *or a semiotician...*" (Riggins, 1990a: 1) to name but a few labels. We can only guess whether (and if!) he would have identified with any one of them. Also see footnote 55.

answer the question 'what is going on here?' (Goffman, 1986: 8; Meyrowitz, 1985: 24; 1990: 67; 2005: 24), what behavioral repertoire is expected or called for here, both for themselves and others? Based on that definition they choose a certain *'role'* to play. Assuming that role they then engage in *'performances'* or *'presentations'*, with the aim of convincing the observers "*to take seriously the impression that is fostered before them. They are asked to believe that the character they see actually possesses the attributes he appears to possess...*" (Goffman, 1959: 17). The performer himself, in turn, may judge his performance somewhere on a scale between to extremes: on the one hand fully believing in the impression he is fostering – Goffman calls this a *'sincere'* performance – or, on other hand, not believing in his own performance at all – a so-called *'cynical'* routine.

When roles are frequently portrayed and consistently valued by both the audience and the performer himself a person may come to identify with that role to such an extent that it becomes part of his self-image. Goffman summarizes his conception of identity by quoting the Chicago School sociologist Robert Ezra Park, who says: "*In the end, our conception of our role becomes second nature and an integral part of our personality. We come into the world as individuals, achieve character, and become persons.*" (Robert Ezra Park, quoted in Goffman, 1959: 19-20) Identities, then, are not essences – ready-made, up for grabs – that we display in front of others. Rather, they are *constructs*[8], and more precisely, they are the social *result* of interactions with other people. Identities are constructed in social interactions, and hence are dynamic and open-ended. They may change over time, and a person may have conflicting sides to his or her identity – through identification with and internalization of conflicting roles in different situations one may display

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[8] Interactionism is a constructionist perspective. In constructionism, as we have also seen in relation to technological development, the goal is to show that certain phenomena and practices, which appear to be 'natural' or 'universal', on closer inspection turn out to be 'constructed' – they are the creations of a specific group, culture or society. Generally, two types of constructionist thinking are distinguished: constructi*onism* and construct*ivism*. Sheila McNamee explains that more often than not these two are viewed as opposing perspectives, whereby construct*ivism* focuses on internal, cognitive processes, while constructi*onism* focuses on discourse and social interaction (McNamee, 2004). When labeling my own work in terms of this division, it is obvious from my interactionist take on identity and my focus on discourse that I align myself with the constructionists rather than the constructivists.

selves that are incoherent and complex, yet nevertheless exist alongside each other in one and the same person. Identities, thus, are multidimensional, multifaceted, variable, and changeable. At the same time, though, there are social constraints both on the performance of roles and the construction of selves. Thinking of identities as constructs may seem to imply that we are entirely free to create our selves at will – that by choosing whatever role we want, we may actually become whatever we want. This, however, is not the case. We choose our performances on the basis of our interpretation of the 'definition of the situation', a definition that is thoroughly imbued with ideas on social rules, the appropriateness of behavior, and the limits within which one's performance 'ought' to stay if one wants it to be labeled as befitting the situation and the expectations that apply there. Ann Branaman summarizes these ideas as follows:

> The self is a social product in two senses. First, it is a product of the performances that individuals put on in social situations. There is no essence that exists inside an individual, waiting to be given expression in social situations. Rather, the sense of self arises as a result of publicly validated performances. Yet, secondly, even though individuals play an active role in fashioning these self-indicating performances, they are generally constrained to present images of themselves that can be socially supported in the context of a given status hierarchy. (Branaman, 1997: xlvi)

Identities, then, are the result of interactions with other people, which at the same time form their constructive source and their constraint. They are not solid properties, and there is no such thing as a 'core self', but rather an evolving network of various relational roles. Moreover, identities are not a given, but "*a dynamic, <u>emergent</u> aspect of collective action.*" (Schlesinger, quoted in Morley and Robins, 1995: 46, emphasis in the original)

This dissertation sets out to uncover whether Ambient Intelligence will affect the construction and expression of identities, and if so, in which ways. There are numerous perspectives on identity with which one could tackle that question. The main reason why I've chosen an *interactionist* conception of identity is this: *if* Ambient Intelligence is going to have an impact on the construction and expression of our identities in everyday life, we are most likely to see these effects *in and through our interactions with Ambient Intelligence technologies*. It is *in* and *through* the interactions that we may have with Ambient Intelligence technologies that we may

reasonably expect the most readily identifiable influences. This is not to say that no other effects are conceivable or that no other approach could have been taken. I have chosen this road because it appears to be the most straightforward one – and in light of Ambient Intelligence's current visionary (as opposed to materialized) status, on which I'll say a little more below, choosing the most straightforward road seems to be the best way to go.

1.4.4 Goffman on technology?

As I've explained in the previous section Erving Goffman's interactionism is the most important guide to my discussion of Ambient Intelligence's possible effects on identity. Now, for readers who know Goffman's work this may come as a bit of a surprise. I have chosen to use the work of a sociologist who himself only rarely mentioned the technologies of his days (radio, telephone, television) in his works – he never even showed much curiosity towards technologies or technological developments at all. In the words of Joshua Meyrowitz:

> ...even when Goffman mentions electronic or other media (often as literal footnotes to his work), he seems to view their effects as unusual or amusing, and, in most cases, as peripheral to the core of social action... (Meyrowitz, 1990: 86)

Arguably, the role of all kinds of technologies was indeed more 'peripheral to the core of social action' in Goffman's days – say roughly between the late 1950s and the early 1980s – than it is in our current, highly technological times. However, there is a more simple explanation for his lack of interest in them. For Goffman the most interesting domain of sociological research was that of *face-to-face interaction* – for him the truly interesting micro-sociological research material was to be found in small-scale everyday situations of co-presence. Hence it is logical that mediated interactions, such as those conducted via telephones but also through letter-writing, explicitly fell outside his field of interest (cf. Goffman, 1963: 14; Meyrowitz, 1990: 85).

Despite Goffman's own restriction to the realm of face-to-face interactions I argue that his work may very fruitfully be used to describe and come to understand the dynamics of mediated interactions as well, both human-human and human-technology ones. The reason for this is the fact that Goffman's work has enough of a

tentative, probing and open character to allow others to apply his ideas in territories into which he himself never ventured. As Greg Smith writes in the introduction to *Goffman and Social Organization*:

> Goffman regarded his ideas as provisional and exploratory in character, tools which might prove useful in the construction of more rigorous sociological descriptions and explanations. His ambition was always to provide the markers and signposts which might permit more detailed mappings of the new terrain. (Smith, 1999: 8)

Perhaps it was Goffman's explicit intention, then, for others to use his work as a stepping-stone from which to move into new domains. The openness and flexibility of Goffman's work, along with its conceptual richness and its identifiably capturing of everyday life situations, certainly make it an ideal candidate for application to and cross-fertilization with other, related and even unrelated areas of research – which, in fact, has happened many times over the last decades, as a long list of publications shows (cf. Höfflich, 2005; Jensen, 2006; Ling, 2002; Manning, 1996; Meyrowitz, 2003; 2005; Miller, 1995; Warfield Rawls, 1989; Ytreberg, 2002). For this dissertation, the most inspiring application of Goffman's ideas to a 'non-Goffmanian theme' is Joshua Meyrowitz's *No sense of place* (Meyrowitz, 1985), which for the first time convincingly showed that Goffman's ideas can be applied to questions regarding the social and behavioral effects of technological change. In this dissertation, I apply some of Goffman's key ideas in a new way and into a new domain: the technological world of tomorrow, as envisioned in the Ambient Intelligence vision.

But there is an even more important reason for using Goffman's work in this dissertation. In the current stage of technological development mediated interactions, such as telephone conversations, differ in quite significant respects from face-to-face interactions – for instance, in the case of a telephone conversation the caller and the callee cannot see one another, which means that a very significant part of the communicative repertoire of exchanging signals is lost to both parties. Only having auditory information to go on has an impact on the ways in which, to speak in Goffman's terms, performances may be conducted and impressions fostered. Now, what is interesting about Ambient Intelligence is the fact that it envisions forms of communication that mimic face-to-face interactions to a much larger degree than do our current information and communication technologies. To return to the example

of a telephone conversation: in the technological world of the near future we may expect telephone conversations to consist of both auditory and visual information. For instance, the caller and the callee could see each other via camera recordings displayed on a locally available screen, or – mimicking real-life presence even more closely – a 3D hologram of the caller may be projected into the space where the callee finds himself, and vice versa. This would remove some of the stark differences between current-day mediated and face-to-face interactions. After all, making a phone call in a world of Ambient Intelligence we would now have access to (almost) all the information that we would also have when actually being physically present in the same place.

These two facts combined – technologies' ever more accurate mimicking of face-to-face interactions and the adaptability of his research on face-to-face interaction – make it almost logical to turn to the person who put face-to-face interaction on the map as a viable sociological research domain (Smith, 1999: 2), the quintessential sociologist of co-mingling, which, of course, is none other than Erving Goffman.

1.5 Two important notes: Determinism and prediction

Before finishing this chapter with an overview of the chapters to come and a summary of the main argument of this dissertation, two points need to be clarified. Both of these relate directly to the research question formulated in paragraph 1.2: does Ambient Intelligence affect human identity, and if so, in what way(s)? First, using the verb 'to affect' might lead the reader to interpret this research in *deterministic* terms, despite my siding with the constructionist perspective on technology-society relations. Using this verb could give the impression of my suggesting that there is a one-way direction and a fully determining 'impact' that technologies have on users' lives. It may even suggest that users are powerless, passive receptacles merely accommodating technologies into their lives, or that users do not have any freedom to resist technologies nor room for creative and unexpected uses of technological artifacts. Also, it may suggest that society and technology can be distinguished as separate 'spheres'.

I want to make it clear that none of these things are in fact intended here. As I have argued above I believe that whenever new technologies find their way into the everyday lives of ordinary users complex processes of domestication and mutual

shaping are set in motion (Frissen, 2004; Silverstone and Haddon, 1996), in which users' daily patterns of action are altered by the addition of these technologies to their everyday lives, while at the same time the technologies themselves are shaped by the users' domestication of them. Technologies do not one-directionally or deterministically 'impact' individuals or societies. And technological and social spheres cannot be distinguished clearly: "...*it is mistaken to think of technology and society as separate spheres influencing each other: technology and society are mutually constitutive.*" (MacKenzie and Wajcman, 1999: 23) When studying the changes brought about by the addition of specific technological artifacts to the everyday lives of ordinary users, be they computers, televisions, or mobile phones, as I have argued above, taking a mutual shaping perspective is the most fruitful approach in my eyes – studying not only what the technology's 'impact' on our lives is, but also including how we, both as individuals and as societies, in turn, shape these technological artifacts.

So why use the verb 'to affect', which may have such a deterministic ring to it, in the question that is central to this research? And why mention only one half of the mutual shaping process – the 'impact' of Ambient Intelligence on identities, but not the other way around – in this research? The answer is this: Ambient Intelligence currently is still in the phase of being only a *vision* of the technological future, rather than a materialized paradigm. This means that, for now, it is impossible to research how users appropriate Ambient Intelligence technologies in everyday contexts. After all, these technologies don't exist yet, apart from the odd laboratory prototype and a few rather rudimentary commercial forerunners here and there. Investigating users' domestication of Ambient Intelligence is simply not possible yet – that should and hopefully will be done in years to come as this vision is realized. I have chosen to use the verb 'to affect' not to suggest that the 'impact' of Ambient Intelligence will be simple, straightforward or unidirectional, but only to emphasize the fact that *it will have profound consequences for our everyday lives*. Suggesting that technologies will have social effects can, at worst, be labeled '*soft determinism*'[9]. I am suggesting

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[9] I distance myself from '*hard determinism*', since "[a]*s a simple cause-and-effect theory of historical change, technological determinism is at best an oversimplification. Changing technology will always be only one factor among many others: political, economic, cultural, and so on.*" (MacKenzie and

only "*that technology's social effects are complex and contingent*", but as MacKenzie and Wajcman rightly remark this "*is not to say that it that it has <u>no</u> social effects.*" (MacKenzie and Wajcman, 1999: 4, emphasis in the original).

Now, the second aside to be raised here is related to the first one – it refers to the idea of *prediction*. It is this: the research matter of this dissertation bears a challenge – and one that I've struggled with for quite some time as I've conducted this research – which is the fact that Ambient Intelligence *doesn't exist yet*. As said above: it is still in its visionary stage and while the first steps have indeed been taken towards its realization[10] we are a long way yet from living in an actual Ambient Intelligence world. This raises a number of obvious yet complicated questions: how does one research the impact of something that doesn't exist yet? How does one avoid focusing on aspects of the vision that may, in the end, never be realized?

To be sure, there is always a gap between visionary ideas, created in a space of infinite possibilities, and their eventual materialization within the constraints of markets and the social world on the one hand, and physics and technological possibilities on the other (cf. Nye, 2006: Chapter 3). However, while we can label this as a complication for the work conducted in this research, there is also a different way of viewing things. By studying the current Ambient Intelligence discourse, as presented by the major players in this field (principally Philips and the advisory boards on technological developments of the European Commission) and by thinking

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Wajcman, 1999: 4)

[10] At the beginning of 2005 the first rudimentary examples of the Ambient Intelligence vision were introduced to the public through consumer electronics stores in the Netherlands and other European countries. These included the 'Aurea' or 'Ambilight' television, the 'Innergize' solarium and the 'Wake up light'. 'Aurea' is a television set with lights embedded into its outer rim – these lights take on the dominant color of the pictures displayed on the television screen and project these colors onto the wall on which the television is mounted. This is intended to intensify the television viewing experience. 'Innergize' is a solarium with a 'theme': when set, for instance, to the 'beach theme' the machine will not only produce the sound of lapping waves and soft winds, but also the smell of seawater and sun-warmed sands, while of course also providing the user with the ordinary functionality of a solarium: tanning. The 'Wake up light' is an alarm clock that mimics the rising of the sun and allows users to wake up gradually, which is argued to improve a sense of restfulness. While incorporating some of the characteristics of the Ambient Intelligence vision, all of these examples are still a considerable way away from the vision as it is presented in its ultimate form.

through some of the consequences of its materialization, this research contributes to the *actual* development of this vision, and therein even aides in *enlarging* the gap I described above. After all, the gap between vision and reality emerges because the technologies and systems described in the vision are materialized *within the constraints* of the real world. Conducting research on the possible consequences of the ideas portrayed in the vision may lead to changes of these ideas and changes in the materialized form they eventually get.

1.6 Main argument and chapter outline

In this paragraph I will roughly summarize the main argument of this book and briefly discuss each of the chapters to come. In order to get a better understanding of the research domain under review in this dissertation the next part of this book (Part 2 – Chapters 2 and 3) will be devoted to describing and evaluating the two main domains of this research: 'Ambient Intelligence' and 'identity'.

Chapter 2: Ambient Intelligence

In Chapter 2 I will provide the reader with a general discussion and evaluation of Ambient Intelligence, the vision of the technological future developed by Philips and endorsed by the European Commission. In this chapter I will present an overview of the key literature that has been written with regard to this vision and present a picture of its most important characteristics. I will show what the technological, social and political context is in which we should view its emergence and I will describe its origins and relations to other visions of the future (most notably ubiquitous computing) and to other perspectives on technology development. Ambient Intelligence, I will show, can be understood both as a continuation and extension of ideas instigated and developed in other, earlier, technological paradigms, and as a vision that diverges from those paradigms in several respects. For instance, Ambient Intelligence is 'old' in the sense that it incorporates trends in technology design that can be found in other, older technological paradigms as well, such as a focus on user centered computing, 'natural' and unobtrusive interfaces and a combination of networked, mobile and locative technologies. At the same time, Ambient Intelligence is also 'new' in several respects, for instance in the sense that it

focuses on the market of *consumer electronics*, and aims to create technologies for the home, the office, and the public domain – rather than, for instance, developing technologies for the workplace only. Also, it diverges from other paradigms by being, as some claim, quite 'European': it proposes to contribute to remedying a number of socio-economic and political issues that are relevant for the European context.

A vision such as Ambient Intelligence raises a great number of social, legal, political, and ethical questions – too many, in fact, to be addressed in one single book. At the end of the second chapter I outline a few of them and briefly discuss what sort of concerns may emerge if the Ambient Intelligence vision were to be realized. These include, for instance, concerns regarding citizens' privacy and security: Ambient Intelligence technologies are envisioned to be present literally everywhere, and to monitor and store users' information at all times, which obviously raises some urgent questions with regard to the safety of such technological systems, or data protection, or the (unseen!) creation of user profiles, or the duration of data storage, and so on and so forth. Another matter that I discuss at the end of the second chapter is the idea that technologies in the Ambient Intelligence vision may become embedded, hidden from view, in all kinds of surfaces and objects. It seems only a matter of time before the human body, as 'final frontier', will become one object among the others in this quest for embedding. I will review the first steps of this development by discussing an example of research on the incorporation of computer chips that has been conducted at the University of Reading in the UK.

Chapter 3: Identity – the 'situated self'

With a firm grasp of Ambient Intelligence's key ideas, key players, context, history, practices and issues in place, we can move towards addressing the notion of *identity*. Since identity is a diffuse and complicated concept I will use the entire third chapter to explain what my interpretation of this notion consists of. As said before, I will use an interactionist conception of the expression and construction of identities. The key argument is that identities are closely bound to the *situations* we find ourselves in – who we are, is related to *where* we are, and to *who else* is present there. Simply put: I display a different 'persona' based on where I am and play different roles in different settings – roles that are in line with my 'definition of the situation', as we have seen above. Goffman's ideas on 'staging' identities (the so-called '*dramaturgical perspective*') will be my starting-point in this chapter. For him,

as we have seen, the self arises as the residue of all the social interactions human beings have in specific situations – situations in which people assume specific roles and conduct performances for the 'audience' present, which are in line with those roles. Role-playing is this clearly related to the particular context in which one finds oneself. While we hardly identify with some of the roles we play in the course of our everyday lives, there are others that we come to identify with very strongly. Thus, there emerges a hierarchy of roles from which a person chooses a specific one (or a combination of roles) in each situation. Obviously, the higher a role is in this hierarchy, the more committed we will be to it, and the more strongly we will identify with it – the more likely we will be to say 'I *am* this and that kind of person'.

Chapter 4: Scripts

In the last part of the book (Part 3 – Chapters 4 through 6), we come to the goal of this dissertation: finding answers to the research question that I've formulated above. Building on the ideas developed the previous part I will show how identities, understood as the internalization of performed, situated roles, may be changed in light of technological developments as sketched in the Ambient Intelligence vision. In Chapter 4 I will argue that the introduction of Ambient Intelligence technologies to specific everyday situations has an impact on the situated '*scripts*' that people use to come to a 'definition of the situation' – an idea of 'what is going on there'. I will argue that whenever a person enters a situation he will use 'cues' in that situation to come to terms with what role(s) he may play in that situation. Scripts come in many different forms and guises, including social and symbolic scripts, physical and architectural ones, legal scripts, informational ones and so on and so forth. Generally, the definition of the situation that we formulate for ourselves, and that we use as the basis for choosing ourselves a situated role, are quite stable and clear – for instance, when I enter a supermarket 'what is going on there' is generally rather similar from one supermarket situation to the next, and hence choosing a role there and playing out a part of my self is relatively straightforward. Also, in a 'supermarket situation' there is a rather limited amount of roles that one can choose from – 'being a customer' or 'being shop personnel' are the primary ones.

Now, interestingly enough, adding information and communication technologies to existing situations has proven to affect 'what goes on' in them, in some cases rather profoundly so. For instance, adding mobile phone technologies to

public spaces such as train compartments or restaurants has had an impact on the scripts present there. For one, these technologies enable behaviors in such situations that were not possible there before – i.e. making personal or work calls. As a result, the 'audience' present in such situations is also exposed to new behavioral and interactional phenomena. Much interesting work has been done on the situational changes brought about by mobile technologies in particular, shedding light on phenomena such as '*absent presence*' (Gergen, 2002) or '*managing multiple front stages*'[11] (Ling, 1997; 2002; 2008).

Ambient Intelligence technologies, I will argue in Chapter 4, will change some of the scripts and the definitions of situations that we use as to choose a situated role in a similar vein. Based on some of their main characteristics, most notably their ubiquitous presence, the fact that they provide us with personalized services, and, moreover, that they do so in an anticipatory fashion, I argue that the definition of what is going on in specific situations may become expanded in scope in some situations, but also diminished in others. Ambient Intelligence technologies enable us, even more than current-day mobile technologies, to display new behaviors in places where such behaviors were not conceivable before – but at the same time in some situations they also prevent us from displaying behaviors that were in fact quite common there in previous times. Moreover, they enable us to (temporarily) adopt alternative, nested definitions of the situation relating to our own preferences and patterns of action in relation to the technological artifacts with which we may be engaged. In conclusion, since there is a clear connection between the roles one plays in various situations and one's identities, changing scripts in light of technological developments, such as presented in the Ambient Intelligence vision, has a direct bearing on the construction and expression of selves.

Chapter 5: Reference collectivities

In Chapter 5 another aspect of (technologically mediated) situations and their effect on identities will be addressed. One of the key ideas of the interactionist perspective on identity construction is the notion of '*reference groups*' (or, as George Herbert Mead calls them the '*generalized other*' (Mead, 1925; Mead and Morris,

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[11] See also footnote 108.

1934). We use reference groups, says the interactionist, as a kind of external conscience – whenever we engage in interactions with other people, we view our own behaviors through the eyes of others and hence pass judgment on our actions. This judgment in turn plays a role in our self-evaluations and in the identity hierarchy that I mentioned above. The 'others' that play the most prevalent role in this process are, obviously, the groups of people that one identifies with most strongly, one's 'reference groups'. In Chapter 5 I will argue that since we will come to live with Ambient Intelligence technologies in a highly intimate fashion, and since these technologies will have a number of characteristics that enable them to mimic human social behaviors to an ever larger degree, Ambient Intelligence technologies may come to function as reference groups comparable to the human ones we use in expressing and constructing our identities. In all likelihood we may expect reference groups of the near future to become a mixture of both human agents and technological artifacts. This is why in Chapter 5 I propose to replace the notion of 'reference groups' with that of 'reference *assemblages*'.

Chapter 6: Findings and food for further thought

In the last chapter of this dissertation I combine the findings of this research and draw a number of conclusions. But that is the not only thing I do in Chapter 6. The Ambient Intelligence paradigm is still in its early infancy in terms of both its materialization and the scientific analyses of its social, economic, legal, political, and cultural consequences. This dissertation hopes to provide a small contribution to filling the latter gap, but obviously can only do so much, at least in any detail. I end the last part of this chapter with some food for further thought, some issues and questions that I think deserve our attention in the emerging world of Ambient Intelligence.

1.7 Ready, set, go!

The groundwork for this dissertation has been laid in this chapter. I have presented the main research question, briefly introduced its central themes, and positioned myself in both the realms of identity theory and technology studies. I hope the importance of the task before us has become clear throughout this chapter: some

rather important changes may be expected to emerge in light of the materialization of the Ambient Intelligence vision, and therefore it is worthwhile to think through some of its (social) consequences. As Adam Greenfield says:

> The stakes, this time, are unusually high. A mobile phone is something that can be switched off or left at home. A computer is something that can be shut down, unplugged, walked away from. But the technology we're discussing here – ambient, ubiquitous, capable of insinuating itself into all the apertures everyday life affords it – will form our environment in a way neither of those technologies can. There should be little doubt that its advent will profoundly shape both the world and our experience of it in the years ahead. (Greenfield, 2006: 6)

It is time to get to work – to get started on the first task before us: finding out more about the Ambient Intelligence vision. What is it exactly? What are its key ideas? Who are its main players? And what will the technological world of tomorrow look like? These are the questions I will address in the following chapter: 'Ambient Intelligence: Envisioning the technological future'.

Part II

2

Ambient Intelligence

Envisioning the technological future

[Ambient Intelligence's] presence in our lives will transfigure our notions of space and time, self and other, citizen and society in ways what we haven't begun to contemplate. (Greenfield, 2006: 3)

2.1 Introduction

Imagine a house in which no ordinary object is what it seems: with a simple voice command a wall can be turned into a large television screen, or with a swipe of the hand a tabletop can become a display to read mail. Imagine a house in which the bathroom mirror is more than just a reflective surface – it is also a digital 'health assistant' that advises users on weight management, dietary habits, on dental care and exercise programs. Imagine a house in which the windows are 'smart' enough to change the amount of sunlight they let through depending on the weather conditions outside – less sunlight on a bright day, more on a cloudy one. Imagine a house that 'recognizes' the person entering it and automatically adjusts the lighting, the heating, and even the background music to this person's preferences. Imagine a house with electrical equipment that 'thinks for itself': a microwave that 'knows' the cooking time and temperature of the foods you prepare in it, a washing machine that warns you for running colors when you put a red sock into the white laundry, a fridge that keeps

track of the groceries you might need and even has the ability to stock up on such goods by contacting the nearest supermarket and having these products delivered to your door. It sounds like something out of the 1960s TV cartoon series *The Jetsons*, which portrayed the adventures of a family living in the far future – but it's not. Until June of 2008 this house actually existed[12]. It was called *Living Tomorrow*, a 'home of the near future' in Amsterdam, the Netherlands. In this house one could admire a number of technological systems, artifacts and applications that designers and developers of consumer electronics anticipate will enter our homes in the next decades. One of the contributors behind this project was Philips, a Dutch multinational in consumer electronics, lighting and medical technologies. With *Living Tomorrow* Philips wanted to show the public the materialized form of its latest vision: *Ambient Intelligence* (or AmI[13] for short). Lindwer *et al.* summarize the vision of Ambient Intelligence as follows:

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[12] In June of 2008 *Living Tomorrow* was closed to the public. A new project under the same name was opened in Brussels, Belgium. However, Philips, one of the key players in *Living Tomorrow* in Amsterdam, no longer participates in the Belgian project.

[13] The most obvious abbreviation for Ambient Intelligence would have been A.I., but that short form has come to be reserved for Artificial Intelligence, so the extra 'm' was inserted. An additional reason could be that 'ami' in French means 'friend'. Hence the abbreviation suggests that Ambient Intelligence technology should not be perceived as threatening, but rather as 'friendly' or 'humane' instead. Although Philips has never referred to this apparent linguistic link, in the policy documents of the European Union on Ambient Intelligence it is suggested that the reference to the French word for 'friend' was indeed intentionally and consciously chosen (cf. Burgelman and Punie, 2006: 33). However, at the same time none of these documents claim explicitly that Ambient Intelligence technologies should, or would, or could, become our 'friends'. Rather, the linguistic link is consistently explained in a rather roundabout and somewhat cryptic formulation. In a report entitled *That's what friends are for* (which seems to suggest that indeed the abbreviation 'AmI' was chosen in an explicit attempt to 'humanize' the technologies proposed in this vision) Ducatel *et al.* write: "*The idea of Ambient Intelligence is that if, as seems inevitable, we are going to be increasingly surrounded by such devices then for the health, comfort and sanity of human society, we had better develop intelligent intuitive interfaces capable of recognising and responding to human needs of individuals in a seamless, unobtrusive and often invisible way. That is why we worked with the abbreviation of Ambient Intelligence as AmI – it should signal a move beyond concepts such as 'user-friendliness'* [...]. *AmI should be based on a more seamless and humanistic notion such as a people friendly information society.*" (Ducatel, et al., 2001b)

Ambient Intelligence (AmI) is the vision that technology will become invisible, embedded in our natural surroundings, present whenever we need it, enabled by simple and effortless interactions, attuned to all our senses, adaptive to users and context and autonomously acting. High quality information and content must be available to any user, anywhere, at any time, and on any device. (Lindwer, et al., 2003: 1)

This vision was conceptualized in the late 1990s and its time of realization is estimated between 2010 and 2020. A whole new range of technological products will enter our homes and offices, and even public spaces will be transformed by them. The member states united in the European Union, since the 1980s eager to "*become 'global players' alongside American and Japanese conglomerates*" (Morley and Robins, 1995: 3) in terms of media and technology development, quickly realized its potential and the European Commission embraced this vision as one of its focal points for policy and strategy with regard to technology development. From that moment onwards the idea of Ambient Intelligence has gained prominence in a wide range of debates on the future of technology and the future of (European) societies. Industrial players, scientists and politicians alike have shown interest in this perspective.

In this chapter I will give an overview of the main ideas of the Ambient Intelligence vision. I will discuss some of the key visionary texts in which this vision was first presented, such as Philips' *The new everyday: Views on Ambient Intelligence* (Aarts and Marzano, 2003), and a report written on Ambient Intelligence by the Institute of Prospective Technology Studies (IPTS), called *ISTAG Scenarios for Ambient Intelligence in 2010* (Ducatel, et al., 2001a). I will start by giving a general overview of the vision and discuss Ambient Intelligence's five key characteristics (paragraph 2.2 and 2.3 respectively). After that I will discuss this paradigm in a broader context of both social and technological developments: I will trace back some of its historical roots and describe some of the research fields that have influenced or contributed to this vision (paragraph 2.4). Ambient Intelligence, like any new paradigm, is part of a widely branched web of other paradigms with similar ideas and perspectives, yet at the same time it has a number of distinctive qualities and characteristics that set it apart. In paragraph 2.5 I will show where Ambient Intelligence diverges from related paradigms. Then I will discuss a number of examples of Ambient Intelligence devices or networks (paragraph 2.6). After that, I

will look into some of the technological assumptions underlying the Ambient Intelligence perspective, followed by some of its assumptions regarding society and human beings (paragraph 2.8). I will end this chapter with a broad overview of social questions that emerge in light of this perspective – questions that will not be treated extensively in this thesis, but only for lack of time and space, not importance (paragraph 2.9).

2.2 Ambient Intelligence 101

'*Ambient Intelligence*' (AmI) refers to a vision of the technological future that was originally developed at the end of the 1990s by Philips, a company for consumer electronics from the Netherlands. The European Commission endorsed this vision and it has since become one of Europe's central paradigms for technological development[14]. Henceforth it has developed into an important developing field in the EU, of concern for both Europe's policy and strategy, and its technology industries. But how did this vision emerge? What does it consist of? What are the key drivers and the main constituents of this vision? And what are the central characteristics of the technologies envisioned in this paradigm? How do they differ from the technological devices and networks of our current age? These questions will be addressed in this paragraph.

The Ambient Intelligence vision of the technological future brings together a number of separate ideas. First of all, there is the idea that separate technological devices will be integrated into large, interoperable networks "*...to form digital electronic networks of intelligent devices that are integrated into their surroundings and provide information, communication services and entertainment wherever they are.*" (Aarts and Marzano, 2003: 12) This is an extension of the already existing idea of technological networks – only the networks will become *ubiquitous* in a world of Ambient Intelligence. The individual devices that now clutter our homes and offices will become interconnected to form large integrated systems that operate and

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[14] For a brief introduction into the European Commission's political involvements with the Ambient Intelligence vision, see *Ambient Intelligence: De technologische toekomst van de Europese Unie?* (in Dutch) (Van den Berg, 2008a).

communicate seamlessly. This integration of separate appliances is needed, according to the Ambient Intelligence perspective, because in the future our interaction with technological devices will increase substantially and become progressively more complex. In order to make life in such a world agreeable and enjoyable the Ambient Intelligence vision proclaims that many of the different 'boxes' we have in our homes these days (TVs, radios, computers etc.) should be replaced by multifunctional, dynamic, integrated systems.

A second important element of the vision of Ambient Intelligence is that it aims at integrating separate sensory perceptions into *an immersive experience*. Imagine a room for playing computer games. In this room the walls can be turned into large video screens, or the entire room can even be turned into a holographic projection[15]. A surround sound system is integrated into the ceiling and a ventilation and heating system can simulate a storm or mimic tropical temperatures. There are lights that can adjust their colors based on the 'atmosphere' needed at any given point in the game. All of these elements – the images, the lights, the hot and cold air, and the sounds – are adjusted to the storyline of the game, engaging multiple perceptual abilities of the player. The goal is to integrate all of the sensory elements into one experience, and hence to *intensify* it – when the entire room constantly changes its appearance, the

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[15] Holographic projection's most famous example is probably that of Princess Leia asking for help ("*Obi-Wan, you're my only hope*") in George Lucas's *Star Wars, Episode IV: A new hope* (Lucas, 1977). In Gene Roddenberry's television series *Star Trek* (Roddenberry, 1966) we encounter holography in a fashion quite similar to Philips' proposal of the reality fusion game: the '*holodeck*'. The Wikipedia entry on the holodeck describes it as "*an enclosed room in which objects and people are simulated by a combination of replicated matter, tractor beams, and shaped force fields onto which holographic images are projected*". For the full entry see: http://en.wikipedia.org/wiki/Holodeck [last visited on 20 January 2009]. Although using holographic projection may seem to be in the far future, various early examples of 3D projection have recently emerged. In 2007 Great Britain's Prince Charles 'appeared' as a 3D projection at a conference on climate change to give a speech, which he ended by saying "*I'm now going to vanish into thin air, leaving not a carbon footprint behind*" (Perry, 2008) (see the following YouTube movie on the Prince's hologram appearance and some other examples of holographic appearances: http://nl.youtube.com/watch?v=wphytMJ_F_A [last visited on 20 January 2009]). Recently, at the American Presidential Elections in 2008, CNN used holographic projections of their correspondents, scattered across the country, to report on the election 'in person' in the studio in New York (see this YouTube clip from CNN: http://nl.youtube.com/watch?v=v7fQ_EsMJMs [last visited on 20 January 2009]).

experience of the game becomes immersive. The user playing such a *'reality fusion game'* (Aarts and Marzano, 2003: 314) will feel like he is literally *in* the gaming environment[16].

The definition of Ambient Intelligence that was presented in the introduction (see page 59), enumerates the main features of the Ambient Intelligence vision – it states, among other things, that users living in an Ambient Intelligence environment should be able to access information and communication services anywhere and at all times. This entails three types of functionality. First of all, users will be able to communicate with others wherever they are. The rise of mobile technologies in the last decade of the twentieth century and the first decade of the twenty-first can been viewed as an early stage of this functionality. In a world of Ambient Intelligence, though, more 'channels' and a wider variety of devices will be available for users to communicate with others. Second, users will be able to communicate with technological devices in a number of ways. As with user-to-user communication this in itself is not a new thing – we also 'communicate' with the current generation of information and communication technologies: we type in written commands, click and scroll with mice and other pointing devices, and in limited cases early forms of voice commands are being introduced. However, in the near future the range of human-communication options will be increased. Voice commands will become more prevalent, as will communication through bodily motion and tactile information. At the same time the technology's abilities to 'respond' to users will broaden, thereby promoting forms of communication that mimic human-human communication to a larger degree. Third, Ambient Intelligence technologies are intended to provide their full range of functionality literally anywhere. Users should be able to access locally and personally relevant information, communication services, and entertainment wherever they go, whether at home, at work, or in public spaces. To facilitate this last form of functionality Ambient Intelligence systems will not only have to be fully interoperable[17], but they will also have to be able to communicate between themselves

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[16] Since the element of immersion plays a role in virtual reality environments as well, Ambient Intelligence is often related to virtual reality. This seeming relation is incorrect, though. In paragraph 2.5.3 I will show why this is so.

[17] For a more extensive discussion of the interoperability of technological artifacts in a world of

– they will have to 'work together' to meet users' specific, location-sensitive needs and wishes, to optimize the number and types of tasks that can be fulfilled at any one time for the user, and to ensure the best possible quality of content is delivered to the user.

One of the first questions to arise in light of this latter point is this: how do we access the technological systems that are embedded in each location or space as we move about in our everyday world? The Ambient Intelligence vision proposes that we have a so-called '*access key*' (Aarts and Marzano, 2003: 145) that we can use to connect to the Ambient Intelligence network present in any space, be it private or public. The access key may take the form of a handheld computing device, a personal digital assistant (PDA), a mobile phone, or a piece of technology embedded in our clothing – or ultimately even our bodies. Aarts and Marzano write:

> Instead of bringing several products with dedicated applications on a journey, one could have an 'access key' that knows how to unlock virtual doors to whatever may become relevant. We could describe this as a 'mobile window' through which we see things in different ways depending on what we want to look at. A mobile device then becomes an intelligent agent that helps access only the functionality specifically of interest to you. (Aarts and Marzano, 2003: 145)

The 'access key' is literally the 'key' that enables users to access situationally and personally relevant information anywhere. Now, to be able to provide users with location-sensitive and personalized information the access key will have to have two abilities: for one, it will have to store information about our past preferences and needs, about the choices we made in (similar) previous situations, and the responses we gave to specific instances of service offered by the technology in the past. This means elaborate '*user profiles*' will be built and stored on the access key (and, in all likelihood, also in other places – if only for the sake of keeping backups). Practical as this idea may seem, there are a number of wide-ranging consequences and issues surrounding this requirement, for example with regard to data protection, privacy and security, data mining and users' (in)abilities to access, alter or remove their profiles.

Also, in order for the concerted actions of the access key and the locally

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Ambient Intelligence, see paragraph 2.9.1.

embedded technologies to be successful, the access key will also have to *give off* some information about the user, his[18] wishes and needs, his (interpreted) actions and so on and so forth – if the surrounding systems have no knowledge of a user's activities, preferences and needs, it will be impossible for them to work together with the access key to come up with the kind of information that might be of interest to this person at that time. Receiving the proper information entails giving the other party something to go on first. This, too, has serious consequences for issues such as privacy and security, the distribution of personal information, often more likely than not without the user being aware of the fact, and the invisibility of computer-computer interactions. I will return to these important matters in paragraph 2.9.

2.3 Five characteristics

The features put forth in the Ambient Intelligence vision, such as those pertaining to the 'naturalness' (or intuitiveness) of human-computer interactions, the concealment of technologies into the background of everyday contexts, and the combination of technologies to create multidimensional sensory perceptions and immersive experiences, have led Philips to define *five characteristics* of Ambient Intelligence technologies. These are presented in the introductory pages to *The new everyday* (Aarts and Marzano, 2003).

2.3.1 Ambient Intelligence technologies are embedded

The first characteristic of technologies in a world of Ambient Intelligence is that they will be *embedded*, i.e. hidden from view in the backgrounds of our homes, offices, and even public spaces. The central idea is that by concealing them any object can become the 'carrier' of technology. By embedding them the technologies will become invisible to the user, and therefore, according to Philips, in the future our

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[18] For reasons of brevity I use only the male pronoun when referring back to nouns whose gender is unspecified, such as 'the user'. I do not intend to suggest that a world of Ambient Intelligence will (or should!) be populated by men only. I kindly ask the reader to add 'or she' in his (or her!) mind whenever only 'he' is used.

homes will look much more like those of the past than those of today (Aarts and Marzano, 2003: 9; Marzano, 2006: 42)[19]. The '*age of the box*' (Aarts and Marzano, 2003: 12) is nearing its end. This means that "[h]*ousehold objects from shower stalls to coffee pots*" (Greenfield, 2006: 1) and "*from tyres to toothbrushes*" (ITU, 2005: 1) may be redesigned so that all of these mundane, everyday artifacts can provide us with "*an intricate dance of information about ourselves, the state of the external world, and the options available to us at any given moment*" (Greenfield, 2006: 1). In practice this means that a "*new dimension* [will be] *added to the world of information and communication technologies (ICTs): from* anytime, any place connectivity for anyone, *we will now have connectivity for* anything..." (ITU, 2005: 2, emphasis in the original).

The central argument for embedding technologies that is presented is the idea that people do not want their homes or offices to be cluttered with technological devices, but at the same time they do want an increasing amount of such systems to relieve them from their (repetitive, cumbersome or boring) tasks and duties. We would be able to enjoy the optimal functionality of a complex web of devices working together to 'improve the quality of our lives', without being confronted with the physicality of a large amount of machines and devices. Also, hiding technologies from view, the proponents of embedding technologies say, would enhance the naturalness and unawareness of our interaction with them. We could therefore gather more and more technological devices and systems in our daily environments, without being overwhelmed by our interactions with them ('*information overload*'). Companies selling such technologies, of course, see a veritable goldmine emerging, and under the flag of 'technology push' come up with the most amusing product concepts. Just for the fun of it, here are some of them:

> The ultimate dream is that the Ambient Intelligence home will be packed with exciting yet unobtrusive gadgets, such as [...] virtual fish tanks, electronic paintings, and electronic wallpaper that adjusts to the mood of the occupants...

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[19] Interestingly enough, as early as 1983 the architect Roy Mason, involved in the development of the '*Xanadu smart house*' in Florida wrote: "*What is really futuristic about an architectonic house like Xanadu* [...] *is not the way it looks but the way it works. In this sense,* the house of the future will be more like the houses of the past than like the houses of today." (Berg, 1999: 308, emphasis added)

(Aarts and Marzano, 2003: 176)

Or how about this one:

...a football shirt that can show the goals from the team's latest match, shirtsleeves that display SMS messages, or children's clothes that change colors when they are 'tagged' in a playground game. (Aarts and Marzano, 2003: 160)

What these quotes show is that the notion of embedding opens up virtually *any* surface and *any* object to the possibility of inserting technology. Now, to be sure, the term 'embedded computing' has existed for a few decades already and refers simply to the fact that systems designers and developers use computer technology inside devices. For example, modern cars all carry onboard computers, which technicians call 'embedded' computing devices, because one technological device – the onboard computer – is used inside another – the car. In the Ambient Intelligence vision this notion of embedding is used in a related, but extended sense: it is taken to its limits, by basically removing all limits in the choice of which objects to embed these technologies in.

There are two paradoxes in the argument for embedding technologies, though. First, there is the paradox of hiding technology from view, while at the same time 'technologizing' possibly *every* conceivable object in homes, offices and even in public spaces. As we have seen, Ambient Intelligence aims at embedding technologies, so that homes of the future look more like homes of the past than our current homes. But do they really? The examples of Ambient Intelligence applications presented above (coffeepots, shower stalls, toothbrushes, clothing, and 'virtual fish tanks') show that in the near future literally (almost) every single object in the home or the office may be infused with technology. This means that there is technology everywhere, giving all sorts of information and output. Devices and surfaces that are 'silent' in the current home (and were so in the home of the past) will suddenly be 'active' in the home of the future – and with all of these objects providing us with a constant stream of information, services and entertainment there is no escaping the technological sphere. This means that although the *boxes* are removed from view, the technology is more 'in our faces' than ever before. Hiding all the wires and the boxes from view does not entail, as Philips seems to suggest, that there will be less of a 'technology feel' to the future spaces we will be occupying. Rather, I would argue, quite the opposite. The home of the future will be *stuffed* with technology ("*packed with*

exciting yet unobtrusive gadgets" as we saw in the quote on page 65), and users will know it, too. Paradoxically, the home of the future will be like the home of the past in the sense that all the boxlike technologies are gone, but it will be unlike the home of the past in every other respect – it will be filled to the brim and literally buzzing with technology.

Second, there is the paradox that Ambient Intelligence aims at a user-technology interaction that is as natural as possible, while at the same time it strives to hide the technology from view as much as possible. These two goals seem to be at odds with one another. For if we don't *see* the technology we are interacting with, how can we use it in a natural way? The Ambient Intelligence vision aspires to create an invisible technological sphere, that fulfills a number of tasks for the user, without him or her being aware of it. But how can we have a 'natural interaction' with something that we do not notice? Both of these paradoxes will be discussed more elaborately (and in different forms) at the end of this chapter, and will return also in chapters to come.

2.3.2 Ambient Intelligence technologies are context-aware

Above I argued that Ambient Intelligence technologies should be able to provide users with location-sensitive services. This means that users will receive information, entertainment and communication options that are adjusted to fit the context they are in – the 'right kind of information at the right time'. Ambient Intelligence technologies, particularly those that travel with the user, will therefore have to be able to 'sense' where the user is, what he is doing, and who else is there. That is why *context-awareness* is another important characteristic in the Ambient Intelligence vision. Technologies in this vision would have to be location-sensitive, which could be accomplished, for instance, through GPS (Global Positioning System). Also, they should be able to detect and interpret a user's actions in each context, and they should be able to exchange information with other devices in the same room or area. When the user carries a portable device, this device should be 'aware' of the changes in the user's environment, whenever he or she enters a new room or place.

2.3.3 Ambient Intelligence technologies are personalized

A third characteristic of technologies as presented in the Ambient Intelligence vision is that they should be *personalized*. This means that they are envisaged to be able to recognize a user's preferences and act upon them. Simply put, whenever a person enters a situation or takes up a new activity, the technology will respond to the user's personal needs and preferences in relation to that situation or activity. For example, in a world of Ambient Intelligence when a person comes home from work after a long and tiring day, the house's joint technologies should be able to recognize the owner and his specific needs and wants in that situation, and, in response, it should be able to provide the user with personalized services to meet those wishes and desires, by making adjustments to the environment in the house – for instance, turning up the heating, adjusting the lighting and putting on the user's preferred background music.

Now, interestingly enough there are two different meanings to the term 'personalization' that are used interchangeably (and rather carelessly) in the Ambient Intelligence vision. First, personalization means that *technology* will adjust its behavior to the personal preferences and needs of individual users. Different technology users have different demands with regard, for instance, to the amount of information they want to receive through technological channels – even today we see that some people cannot get enough of all the 'technological interruptions' that a host of different devices and channels provide them with throughout the day, whereas others would rather be left alone as much as possible. Ambient Intelligence technologies are intended to be able to sense these kinds of differences and to adjust their behaviors in light of them. They will be personalized in the sense that they will modify the content, the type of services, and the level of technological engagement with users based on their personal needs and wants.

Second, personalization in the Ambient Intelligence vision means that *spaces* and *objects* are personalized by the technology. We have seen this in the example at the beginning of this paragraph: a person enters his home, and in recognition of his preferences the technology makes adjustments to the heating, the lighting, the background music, and so on and so forth. And such personalization is not limited to the home or the office – in one of the '*ISTAG scenarios*' we see how Ambient Intelligence technologies may provide us with personalized spaces everywhere, even when we travel:

> After a tiring long haul flight Maria passes through the arrivals hall of an airport in a Far Eastern country. She is travelling light, hand baggage only. When she comes to this particular country she knows that she can travel much lighter than those days less than a decade ago, when she had to carry a collection of different so-called personal computing devices (laptop PC, mobile phone, electronic organisers and sometimes beamers and printers). Her computing system for this trip is reduced to one highly personalised communications device, her 'P–Com' that she wears on her wrist. [...] [When she gets to her hotel...] [h]er room adopts her 'personality' as she enters. The room temperature and default lighting are set and there is a display of selected video and music choices on the video wall. She needs to make some changes to her presentation – a sales pitch that will be used as the basis for a negotiation later in the day. Using voice commands she adjusts the light levels and commands a bath. Then she calls up her daughter on the video wall, while talking she uses a traditional remote control system to browse through a set of webcast local news bulletins from back home that her daughter tells her about. They watch them together. (Ducatel, et al., 2001a: 26-27)

What this scenario shows is that in the technological world of the near future our travels through and actions in different settings will be accompanied by personalized manifestations of communication, information and entertainment, which are expressed in the environments we find ourselves in. Thus, a non-descript and non-personal hotel room on the other side of the globe is turned into a 'personal' one (or at least one with a few 'personal touches') through the use of technologies – a number of settings are adjusted to Maria's personal preferences, a video call enables her to participate in the daily rituals of her home life while she is not physically present there, and a range of music options is automatically set to match Maria's personal profile.

Rudimentary forms of 'personalization' in the *technological* sense are already emerging in today's consumer electronics: we can adjust the behaviors, responses and sometimes also the looks of our computing technologies up to some extent – think of changing settings on a computer (to be given reminders at a certain time, to hide pop-up windows, to run scripts), of adjusting the looks on a computer screen (a personal background picture, icons and colors to match your taste), or of making adjustments to one's mobile phone (ringtones, skins). What the scenario above shows is that a new meaning of personalization is added – *spaces*, too, will adjust their appearance and even their 'behavior' to our context-dependent preferences.

2.3.4 Ambient Intelligence technologies are adaptive

If Ambient Intelligence systems should provide 'personalized' services (in both senses of the word), this means that such technologies should be *adaptive*: they should be able to *learn* from the interaction with their users and change their behavior in light of the user's past expressed preferences. Adaptivity means that the technology should be able to 'grasp' a user's response as a combination of a number of factors. The first factor is *context*: where is the user and who else is there? Is there interaction with other people or not? The second factor is *activity*: what is the user doing and how can the technology provide him with support in the activity (if that is what the user would want)? The third factor is *circumstances*: what other experiences has the user just had or is he anticipating? What mood is he in – is he tired or energetic, does he want to be entertained or left alone, and so on and so forth. All of these factors should be taken into consideration as the technology progressively builds up a large 'profile' of the user's preferences, wants and needs, thus creating another factor to be calculated into the equation: *history* – what did the user want in similar previous situations and how did he respond to what the technology offered? It is apparent that the only way in which Ambient Intelligence technologies could learn these things is when they would have long-term, intimate contact with the user. Only then could they gradually deduce the user's preferences and construct a good form of interaction with the user based on his responses. One of the crucial questions that arises in relation to making Ambient Intelligence a success in practice is whether (or to what extent) people are going to accept this fact – of being watched and monitored always and everywhere, particularly knowing that all the information gathered thus is stored into profiles and used to make predictions for future behaviors as well. Both Philips and the European Union acknowledge this issue as one of the fundamental issues to be tackled (cf. Aarts, et al., 2002: 249).

2.3.5 Ambient Intelligence technologies are anticipative

The last characteristic of Ambient Intelligence technologies is the idea that Ambient Intelligence systems should be able to *anticipate* what a user's needs and wants might be in different settings and situations, without the user having to make

his wishes explicit. These systems should not just be responsive to users; they should be able to see their needs and wants coming, maybe even before the user knows, or so the argument goes. This aspect of Ambient Intelligence is by far the most far-reaching. It means, among other things, that systems will be given a large responsibility in managing and maintaining a user's information sphere. The technology, using a complex set of algorithms that 'capture' the user's preferences into one or more profiles, will decide what information is relevant, useful and even meaningful for the user in his current situation; the responsibility of finding, filtering and processing this information is removed from the user and placed squarely on the shoulders of the technology. It is the technology that will decide what is significant, and interesting, not the user. Now, one could argue that this is already the case in many information processing systems that we use today – think of search engines as just an example. Search engines provide us with a filtered list of links concerning our search query, ordered by a ranking of relevance that is the result of a number of (invisible and immensely complex) algorithms. But there is a fundamental difference between this sorting and sifting to what is suggested in the Ambient Intelligence vision. The difference is that although a search engine provides us with a list of links that is filtered and ordered in ways that are outside of our own control (and, more often than not, our awareness), it is up to *us* to then go and choose which links to follow, which websites to access, and which information to view. In order to reduce complexity and prevent 'information overload' in a world of Ambient Intelligence this last step is removed – it is the technology that now decides for the user what information to display.

Summarizing, Ambient Intelligence technologies have the following characteristics: they are *embedded*, *context-aware*, *personalized*, *adaptive* and *anticipative*. After this discussion of the key features of technologies as presented in this vision, we will now turn to its origins and history.

2.4 Ambient Intelligence: Roots and *raison d'être*

The Ambient Intelligence vision, we have seen, emerged at the end of the 1990s. In part, it can be understood as a response to, or a progression of a number of technological developments. In part, it can be understood as a reaction to a number of socio-economic and demographic developments. In part, also, it can be understood

as an opportunity for Europe to create a vision of the technological future to distinguish herself and set herself apart from the technological industries of both the United States and Japan. In this paragraph we will look into the *context* in which the Ambient Intelligence vision came into being. I will discuss some of the technological and socio-economic trends and developments that preceded this vision and without which it would not have emerged (paragraph 2.4.1). After that, I will sketch a brief history of the *concept* 'Ambient Intelligence' (paragraph 2.4.2), and I will present what is generally argued is its most important forerunner, *'ubiquitous computing'* (paragraph 2.4.3). Lastly, at the end of this paragraph I will discuss some the main research domains that have contributed to this vision (paragraph 2.4.4).

2.4.1 Technological and social prerequisites

Understanding the Ambient Intelligence vision on the future of technology means placing it in a broader perspective of both technological developments on the one hand, and cultural, economic and social issues on the other. In this paragraph we will look into some of the technological and socio-economic trends[20] that have paved the way for this vision, and form the backdrop against which it has emerged.

Technological trends and developments

Without the realization of a number of key technological developments in the past decades the idea of Ambient Intelligence would never have seen the light. Several so-called *'enabling technologies'* , gathered under the umbrella of this paradigm, form the technological backbone of Ambient Intelligence technologies. These technological developments include, at the most fundamental level, the spread and proliferation of the internet in the 1990s[21], which is correlated also to the start of

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[20] As we will see in paragraph 2.7, various technological trends have emerged over the last decade that are *not* part of the Ambient Intelligence vision, or are even in sharp contrast with the technological world that is presented in this vision. In this paragraph I discuss only these trends that are in fact of importance to Ambient Intelligence.

[21] A vision quite similar to Ambient Intelligence makes the importance of the internet as an enabling technology explicit in its name: '*the Internet of Things*' (see for example: (ITU, 2005)).

distributed and networked computing, one of the cornerstones of the Ambient Intelligence vision and of vital importance to its materialization. Also, the ongoing trend of miniaturization of computing technologies on the one hand, and the explosive enhancement of their computing power on the other, contributed greatly to the birth of various visions of the technological future, among them the one that is the subject of this thesis. As Adam Greenfield accurately concludes, the cheaper computational power becomes, the more likely it is that people will start wondering what objects and environments they could add it to:

> When computational resources become so cheap that there's no longer any need to be parsimonious with them, people feel freer to experiment with them. They'll be more likely to indulge 'what if' scenarios: what if we network this room? This parka? This surfboard? (Greenfield, 2006: 30)

A third important trend concerns the development of sensor technology and RFID tags (ITU, 2005). RFID stands for Radio Frequency IDentification, and "*is a generic term for technologies that use radio waves to automatically identify people or objects.*" (Svendsen, 2006: 176). The use of RFID tags is often explained by comparing them to a forerunner with a comparable function: the barcode (McCullough, 2004: 80-81). Barcodes are used to identify batches of products throughout the transport chain, from their production all the way to the consumer. RFID tags can be used for similar goals, but there are some marked differences. The use of RFID tags enables producers to provide products with an individual code, instead of creating one barcode for an entire batch of products. By providing individual products with an RFID tag to identify them individually, and by reading this information at every stage of the transport cycle, it becomes possible to minutely track and trace their whereabouts, and hence to optimize demand and supply chains. The American chain of department stores Wal-Mart, for example, now requires all of its suppliers to use RFID tags for the transport of their deliveries precisely for this reason. This will contribute to the emergence of a new economy: the '*now-economy*' (Bohn, et al., 2005: 4). An additional benefit of using RFID tags over barcodes is that various types of extra information about the product may be stored on the tag, for example its expiry date, its ingredients, and, in the case of foods, even how to prepare them.

As Svendsen's definition shows RFID technologies may not just be used for

objects, but also to identify people. In the past couple of years a number of transport systems in large European cities have been equipped with this type of technology. The '*Oyster card*' system in London and the '*public transportation chip card*' ('OV chipkaart') in Rotterdam, the Netherlands, are just two examples. RFID is considered to be one of the leading enabling technologies for all kinds of applications in the near future.

Another important technological trend is that of '*converging technologies*', the convergence of such formerly disparate fields as nanotechnology, cognitive science, Artificial Intelligence and biotechnology. In the words of Malcolm McCullough: "*Nanotechnology takes embedded systems to the practical limits of smallness, with microns-wide devices that we would have difficulty understanding as chips. Biotechnology aims to integrate these with living systems.*" (McCullough, 2004: 73) Ambient Intelligence both draws on and contributes to this trend.

Last, the development of different types of interfaces, supplementing the existing 'button paradigm', is vital in the emergence of the Ambient Intelligence vision and other comparable visions of the technological future. These new types of interfaces, with such lofty names as '*haptic interfaces*' or '*tangible media*' (Greenfield, 2006: 40-41) respond to, for example, voice commands, they detect bodily motions, and use different types of physical information as input for their actions (cf. McCullough, 2004: 85).

Socio-economic trends and developments

In the previous paragraph I discussed a number of enabling technologies that have been crucial in the development of the Ambient Intelligence vision, and will have a part in its materialization. But technological developments were not the only factors that played a role in its emergence. In this paragraph I will point out a number of socio-economic issues in the European Union that have contributed to the Commission's endorsement of this perspective, and discuss some of the 'solutions' Ambient Intelligence is expected to bring with regards to demographics and cultural issues.

One of the central issues facing the European Union, and many parts of the world, in the next decades is that of a large shift in the demographics of its population. The theme of the '*aging society*' is high on the agenda of both the European Commission and many of the individual member states. Questions

regarding the maintenance of the social support system and the rising costs of healthcare are central in the discussion of Europe's near future (ISTAG, 2003: 9). Ambient Intelligence is often named as a potential contributor towards solutions for some of these questions (cf. Friedewald and da Costa, 2003: 152; Friedewald, et al., 2005: 224; Greenfield, 2006: 29 & 103-106). Particularly, the development of Ambient Intelligence healthcare applications is viewed as a key factor in this context. When elderly citizens are surrounded by technologies that monitor their wellbeing in their homes, facilitate a number of chores in and around the house, and provide them with various communication channels with others, this is expected to enable them to live independently longer, and use fewer medical facilities than they currently do:

> AmI provides many opportunities to support an aging population... [...] An AmI environment is a responsive and proactive environment that enables easy participation of the individual in their own healthcare management, including communication with professional carers, friends, family and the wider community. (ISTAG, 2003: 10)

Ambient Intelligence also plays a vital role, according to its adherents, in what ISTAG calls the transformation '*from mass society to a networked society*' (ISTAG, 2006: 8). Over the past decades the traditional nuclear family has become supplemented with an increasing variation of other lifestyles. Josephine Green, one of the contributors to Philips' *The new everyday* writes:

> Linear lifestyles that follow established norms and accepted patterns of behaviour are giving way to more individualized ways of being and living. We are beginning to create our own 'mosaic' lives, made up of a kaleidoscope of simultaneous or sequential relationships, careers or lifestyles. [...] ...the decline of old forms of belonging, such as local communities, church, family and nation state, means that we are searching for alternative forms of belonging and support. As we 'elect' communities based more on shared beliefs and values than geography, so our identities become more fluid as we participate in different groups, locally, globally, physically and virtually. The emerging fluid networks mean that the personal and the social is in a constant state of becoming. (Green, in: Aarts and Marzano, 2003: 23-24)

Ambient Intelligence, with its key emphasis on personalization, with its extensive possibilities for virtual communication and with its always-on

characteristics, is expected to be an important 'instrument' in an ever more individualistic and nomadic social reality.

Another domain in which Ambient Intelligence is anticipated to contribute is that of *civil security* (ISTAG, 2003: 10). In the post-9/11 era surveillance and the relinquishing of personal freedom for the (alleged) benefit of improved public security are central themes for any society – the terrorist attacks in Madrid and London have pressed this point home for the European Union all the more. Ambient Intelligence technologies are often cited as possibly vital contributors to obtaining high levels and types of control aspired by both law-enforcement agencies and secret services, as well as by *"politicians eager to seem tough on terror"* (Greenfield, 2006: 110). At the same time this is one of the most contested and resisted aspects of this technological vision: *"One of the central questions in the social acceptance of ambient intelligence is whether people will be able to adapt to the feeling that their environments are monitoring their every move…"* (Aarts, et al., 2002: 249). We will come back to this point below[22].

A further relevant socio-economic trend is Europe's aspiration to become the leading *knowledge-based economy* in the world. In Europe's policy and strategy agenda the Ambient Intelligence vision has been conceived as a vital contributor to meeting the Lisbon Goals. These goals were formulated at the Lisbon Council in 2000, and stipulate that Europe should strive for becoming *"the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion."* (quoted in Burgelman and Punie, 2006: 18) In *Shaping Europe's future through ICT* ISTAG writes:

> To succeed in tomorrow's knowledge-based economy and society, we have to equip people of all ages with the knowledge and skills necessary to cope with continuous change in their private and professional lives.
> ICT will make a reality of lifelong learning for all. New eLearning technologies offer learners greater flexibility, easier access to information and the opportunity to match learning to their specific needs and circumstances. (ISTAG, 2006: 10)

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[22] See paragraph 2.9.

Because the attainment of a knowledge society, with fair and equal opportunities for all, is so crucial in the eyes of the European Commission one of the four scenarios in the '*ISTAG scenarios on Ambient Intelligence in 2010*' is devoted entirely to 'social learning' in an Ambient Intelligence environment (Ducatel, et al., 2001a: 7).

A last socio-economic trend to be mentioned here was dubbed the '*experience economy*' by strategists Joseph Pine II and James H. Gilmore (Pine and Gilmore, 1999). In their landmark book entitled *The experience economy: Work is theatre & everyday business is a stage* Pine and Gilmore argue that in business and economics traditionally a distinction was made between three different consecutive sources of value: 'commodities', 'goods', and 'services'. The authors explain how this consecutive value chain works by discussing an example: coffee. At the level of 'commodities' there are the coffee beans, which as a raw product have a low economic value. After these are sold to a manufacturer, who grinds them and puts them into a bag (goods), the ground coffee is then sold for a much higher price. And when this ground coffee is made into an espresso at a café and sold to a customer (service) the price again has gone up significantly. When the café not only serves the espresso but also sells mugs and other branded merchandize, so we can remember that special cup of coffee for years to come, it sells an '*experience*' rather than a mere service. Pine and Gilmore argue that the time has come for many businesses to introduce this new level into their business models. They write:

> Experiences are a fourth economic offering, as distinct from services as services are from goods, but one that has until now gone largely unrecognized. [...] When a person buys a service, he purchases a set of intangible activities carried out on his behalf. But when he buys an experience, he pays to spend time enjoying a series of memorable events that a company stages – as in a theatrical play – to engage him in a personal way. (Pine and Gilmore, 1999: 2)

Pine and Gilmore argue that businesses in the current ever more competitive global economy need to find new resources to draw customers and stay ahead of the competition. Transforming their business to selling 'experiences' instead of goods or services can give them just that kind of competitive edge. Customers also demand new things from businesses in an age in which affluence rises and consumer choice is so vast that product parameters other than the traditional ones (such as price and

quality) become relevant. What businesses need to do, therefore, is to stage and sell 'experiences', which is "*not about entertaining customers*, [but rather about] <u>engaging</u> *them*" (Pine and Gilmore, 1999: 30, emphasis in the original). One of the ways in which this can be done is by *immersion*: the customer "*physically (or virtually)* [becomes] *part of the experience itself.*" (Pine and Gilmore, 1999: 31)

Pine and Gilmore clearly see a place for consumer electronics and all kinds of new technologies in the creation and maintenance of the 'experience economy'. Already on the third page of the book they argue that "[n]*ew technologies encourage whole new genres of experiences*" (Pine and Gilmore, 1999: 3) and many of the examples discussed in the book either rely heavily on all kinds of technological mediation or are entirely constituted by them. Gilmore and Pine give a host of ideas on how to create experiences that are as memorable as possible. One of the elements they describe is that of creating experiences that '*engage the five senses*' – "*The more effectively an experience engages the senses, the more memorable it will be.*" (Pine and Gilmore, 1999: 59)

Philips has explicitly taken the ideas presented in *The experience economy* to heart in the development of the Ambient Intelligence vision and openly recognizes Pine and Gilmore's book as a source of inspiration in imagining new business strategies on the one hand, and specific product examples on the other (cf. Aarts and Marzano, 2003: 114, 217, 263; Van Doorn, et al., publication date unknown: 4). The most obvious implementation of the idea of the experience economy can be traced back to Ambient Intelligence's emphasis on creating *immersive environments*. As we have seen above, one of the fundamental aspects of many Ambient Intelligence technologies is that they aim at engaging multiple senses at the same time, thereby creating experiences that are more captivating and engaging than most of our interactions with current technologies[23].

But Pine and Gilmore's ideas have had an impact on other aspects of the Ambient Intelligence vision as well: the notion of personalization reflects their emphasis on creating customized or '*consumer-unique value*' (Pine and Gilmore, 1999: 70). Thus an emerging socio-economic trend, a response to a globalizing economy and the new customer demands that accompany that development, have

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[23] See paragraph 2.2.

not only been incorporated into, but even given a central place in the Ambient Intelligence vision.

In this paragraph I have shed some light on the technological and socio-economic environment in which the Ambient Intelligence vision first emerged – I have discussed a number of enabling technologies that form the backbone of this vision and I have presented an overview of some of the socio-economic issues for which Ambient Intelligence hopes to become a (factor in a) solution. Now it is time to delve a little deeper into the *history* of this vision: where did it come from and when did it first emerge? What were the main precursors of this vision and what fields of science and research have contributed to it? These questions will be addressed in the next paragraphs.

2.4.2 Ambient Intelligence: "Invented here!"

One of the first questions that needs to be addressed when delving into the history of a vision such as Ambient Intelligence regards the origin of the *concept* itself: when did the name 'Ambient Intelligence' emerge, and who invented it? When I was researching this question I discovered – as is the case with many inventions – that multiple stories exist concerning the birth of the notion of Ambient Intelligence, and that consequently multiple groups claim ownership for this invention. Both Philips and representatives of the European Commission's technology advisory board (ISTAG) and its research institute on technology (IPTS)[24] claim to be the inventors of this term. The commonly occurring 'not invented here'-syndrome in this case should be rephrased as the 'invented here!'-syndrome, with each presenting a different storyline concerning the origin of the Ambient Intelligence vision. Let's look at both stories.

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[24] ISTAG has been mentioned a couple of times before in the previous pages. This abbreviation stands for the 'Information Society Technologies Advisory Group' – a group of experts that is nominated by the European Commission and commissioned to provide them with advise on technologies that may contribute to the realization of the Information Society. IPTS stands for the Institute of Prospective Technological Studies, one of the seven scientific institutes gathered under the umbrella of the Joint Research Centre (JRC) – an institute that conducts research on socio-economic policy questions regarding (amongst other things) technology.

First, there is the story told by ISTAG and IPTS. In preparation of the Fifth Framework Programme[25] (FP5), the Information Society Advisory Group (ISTAG) published a vision statement in which we find the following goal: the European Union must "*start creating the* ambient intelligence landscape *for seamless delivery of services and applications in Europe relying also upon test-beds and open source software, to develop user-friendliness, and develop and converge the networking infrastructure in Europe to world-class.*" (Weyrich, 1999: 2, emphasis added) No mention is made of Philips, nor of the origins of the concept of Ambient Intelligence – the notion was introduced as if it were already a commonly understood and shared perspective.

Burgelman phrases things even more explicitly and argues that IPTS is in fact the inventor of the Ambient Intelligence vision. He writes that when IPTS was commissioned by the European Commission to "*draw up a European vision of the future for the information society* [...] [this] *resulted in a rather wide-ranging vision, called Ambient Intelligence (AmI)*" (Burgelman, 2008: 237, translation by BvdB). No mention is made of Philips in relation to the invention of this term or of the vision. Quite the contrary: on the next page of the chapter Burgelman claims that Philips adopted the Ambient Intelligence vision after it was invented by IPTS. He writes: "*Because of its content and the reputation of ISTAG, the vision spread quickly. Primarily in industry, and more specifically at Philips, which very soon integrated the AmI-vision into her own.*" (Burgelman, 2008: 238, translation by BvdB)

Second, there is Philips' version of the story. In their introduction to *True visions: The emergence of Ambient Intelligence* Aarts and Encarnação make a point of explicitly discussing the origins of the notion of Ambient Intelligence. They claim that this concept "*was developed in 1998 in a series of internal workshops that were commissioned by the board of management of the Philips company.*" (Aarts and Encarnação, 2006: 6) Following its birth in these internal workshops, it was first

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[25] As of the early 1990s the European Commission uses so-called 'Framework Programmes' (FPs) to present its policy and strategies with regard to the funding of research and (technological) development in Europe. Each Framework Programme comprises a period of 4 years. The Ambient Intelligence vision was first mentioned in FP5 (1998-2002), and gained a more central role in both FP6 (2002-2006) and the current FP7 (2006-2010).

presented to the outside world at the 'Digital Living Room Conference', held on June 21, 1999 in Dana Point, California (USA) by Roel Pieper, then a member of the board of Philips Electronics. The first publication on Ambient Intelligence entitled *Ambient Intelligence: Thuisomgevingen van de toekomst* ('Ambient Intelligence: Home environments of the future') (Aarts and Appelo, 1999) appeared in the same year in *IT Monitor*, a Dutch popular science magazine on information science (De Ruyter and Aarts, 2004: 204). In their discussion of the history of Ambient Intelligence Aarts and Encarnação also mention the European Commission and its incorporating Ambient Intelligence into their central policy. But they present a rather different timeline than ISTAG. According to the authors "[f]*ollowing the advice of the Information Society* [Technologies] *Advisory Group* [...] *issued in 2001, the European Commission used the vision for the launch of their sixth framework (FP6)...*" (Aarts and Encarnação, 2006: 7).

In an earlier book chapter, dated 2002, Aarts *et al.* go so far as to claim that the notion of Ambient Intelligence goes back still further in history. They argue that the Philips Pavilion at the 1958 World Fair, held in Brussels, Belgium, was actually a forerunner of this technological vision of the future (Aarts, et al., 2002: 236). At this particular World Fair Philips presented a building called '*La Poème Electronique*'[26] ('The Electronic Poem'), inside which visitors could experience the first-ever multimedia presentation – a combination of sounds, lighting, colors, images, and voices. Since there was a close link between the architecture of the building, the acoustics, the composition of the music and the projection of the images, Aarts *et al.* suggest, albeit implicitly, that this was indeed a very early form of an 'ambient intelligent' design.

It seems evident that this latter claim – finding the origins of Ambient Intelligence in the Philips Pavilion of 1958 – is a bit of a far stretch, although without a doubt this building and the ideas it contained are of great historical value, both for Philips and for the history of technological development. However, comparing the other two storylines regarding the birth of Ambient Intelligence as a concept is less

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[26] For pictures of this beautiful piece of architecture designed by Le Corbusier, and for more information, see http://www.medienkunstnetz.de/works/poeme-electronique/ [last visited on 27 August 2008].

straightforward. What we may safely conclude is that the idea of Ambient Intelligence first emerged at the end of the 1990s, was developed into a full-fledged vision by both Philips and the advisory groups of the European Commission – each of whom contributed to different aspects of the vision, and all of whom are vital players in bringing it into realization. Philips and other companies in the European technology industry need the political and strategic endorsement of the European Commission in order to be able to develop (and eventually market) this vision, while at the same time the European Commission needs the industry in order for its Information Society goals to be met – an alliance between politics and business is of crucial importance for its materialization.

After the diffuse yet interesting story (stories) of the birth of the concept of Ambient Intelligence, it is time to look at its most important precursor: a vision of the technological future that was developed in the United States at the beginning of the 1990s – almost a decade before the Ambient Intelligence vision.

2.4.3 Ubiquitous Computing

The roots of Ambient Intelligence can be traced back to an older perspective, called *ubiquitous computing*. Significant similarities can be found between these two visions. In the late 1980s and early 1990s a visionary researcher called Mark Weiser, working at Xerox PARC[27] in the USA, wrote a number of articles in which he laid the foundations for this new perspective on computer technology[28].

Weiser's starting-point was a sense of dissatisfaction with computer technology as it existed and was being developed at the time. He argued that technology

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[27] These days Xerox PARC is called the 'Palo Alto Research Centre'. This research facility combines knowledge from the fields of physics, computing and social sciences to transform scientific ideas into workable technologies. One of the leading companies funding this centre is Xerox Corporation; hence the (old) name Xerox PARC. Some of the most famous technologies that have been developed at PARC are "*…laser printing, distributed computing and Ethernet, the graphical user interface (GUI), object-oriented programming, and ubiquitous computing.*" (See their website at http://www.parc.xerox.com/about/ [last visited on 21 August 2008].

[28] For a short history of the emergence of ubiquitous computing, see *The origins of ubiquitous computing research at PARC in the late 1980s* (Weiser, et al., 1999).

developers were too focused on the technologies, the machines and devices that they created, and too little on the people having to use them. Designers and engineers focused exclusively on technical capabilities and possibilities[29], on things like computing power and speed, and had neglected the 'human side' too much. Weiser noted that ordinary users were often struggling to use computing technologies. These technologies were not user-friendly, and required large amounts of skill and knowledge on the part of the users. More often than not using computer technologies took a lot of effort and perseverance, and many computer technologies required reading thick manuals or taking extensive courses to uncover even their most basic workings. Weiser argued for a design paradigm that put *people* at the center instead of technologies, a design paradigm in which the focus should be on human-computer interactions that were easy, fun, 'natural', and 'unobtrusive'. Technologies should not complicate and clutter our lives, but make them easier instead. What he strived for were "[m]*achines that fit the human environment instead of forcing humans to enter theirs*", because this "*will make using a computer as refreshing as taking a walk in the woods.*" (Weiser, 1991: 75)

It is obvious, from my description of Ambient Intelligence above, that the latter has adopted this so-called '*user-centric*' perspective on technology as well. In the following quote on Ambient Intelligence we can hear the echoes of Weiser's design paradigm:

> In AmI, technologies are deployed to make computers disappear in the background, while the human user moves into the foreground in complete control of the augmented environment. AmI is a user-centric paradigm, it supports a variety of artificial intelligence methods and works pervasively, nonintrusively, and transparently to aid to user." (Remagnino and Foresti, 2005: 1)

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[29] Donald A. Norman warns (computer) technology designers for what he calls the deadly temptation of '*creeping featurism*': "*…the tendency to add to the number of features that a device can do, often extending the number beyond all reason.*" (Norman, 1988: 173) As an example of this phenomenon he discusses the word processor he uses on his (1988!) computer, which comes with "*a 340-page reference manual, plus a 150-page introductory manual intended for first-time users (who probably can't understand the reference manual until they have first read the learning manual).*" (Norman, 1988: 173)

The ultimate goal for Weiser was to create technologies that were so unobtrusive that they would literally move into the background of our experience. Weiser called this type of technology '*calm technology*' (Weiser and Brown, 1996: 1). One of Weiser's most-often cited expressions, summarizing his view on technology is this: "*The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.*" (Weiser, 1991: 66) Two central ideas of Weiser's ubiquitous computing paradigm are captured in this statement. The first, we have seen above, pertains to the fact that interacting with technologies should have a 'natural' feel – it should be so easy that we hardly notice we're even using a technological device. That is the first meaning of 'disappearing'. But 'disappearing' also has a second, related meaning in this context (Araya, 1995: 232). Technologies may literally be removed from view, that is embedded into objects and environments. Both literal invisibility and natural human-computer interaction were intended in Weiser's paradigm. As Tolmie *et al.* rightly remark in the spirit of Mark Weiser, "*...a computer that behaved as computers currently do and required the same form of interaction but which could not be seen or heard could be* <u>more</u> [difficult to use]*,* <u>more</u> *present than before.*" (Tolmie, et al., 2002: 404, emphasis in the original). It is obvious from my discussion of Ambient Intelligence up until this point in the chapter that both meanings of the notion of 'invisibility' were adopted in the Ambient Intelligence vision.

Weiser and his colleague John Seely Brown argued that the history of computing technology could be divided into three eras (Weiser and Brown, 1996: 1). First, there was the '*mainframe era*', lasting roughly from 1960 to 1980 (Punie, 2005: 141), in which many people shared a single computer. Then, after the invention of the PC in the early 1980s we entered the '*personal computer era*', in which each person used one computer. This period lasted roughly from 1980 to 1990 (Punie, 2005: 142). The third phase, according to Weiser and Brown, was the '*ubiquitous computing era*', in which each person uses many computing devices. Yves Punie, who has contributed to several of the key documents on Ambient Intelligence from both ISTAG and IPTS, divides the era of ubiquitous computing it into two phases: a phase of "*multiple computing devices (2000 onwards)*" and one of "*invisible computing (2010 onwards)*" (Punie, 2005: 142). After all, although we have been living in a world in which each of us uses many different computing devices every day (from computers, laptops, PDAs and mobile phones, to microwaves, coffee makers, and cars), more

often than not these cannot be captured under the label ubiquitous computing as of yet, since they are not invisible in both of the senses presented above.

2.4.4 Other influences on Ambient Intelligence

Although ubiquitous computing is consistently named as the most important source of inspiration and visionary precursor of the Ambient Intelligence paradigm, the latter could not have come about without the contributions of various research fields. In this paragraph I will very briefly discuss three of them. My goal is to shed light on the web of technological developments and fields that form the background for this vision.

Human-Computer Interaction (HCI) | Human-Centric Computing

One of the most important research domains to contribute to Ambient Intelligence, both in its visionary phase, and in its current phase of early materialization is *Human-Computer Interaction* (HCI). HCI researchers investigate the ways in which human beings respond to interactions (in the broadest sense of the word) with computing technologies. In this field computers are studied as *participants* in the interaction (Fogg, 2003: 16), rather than as simple tools to perform tasks. Researchers attempt to uncover in which ways the computer's behavior may influence users, both in their conscious and in their more implicit responses. In Chapter 5 entitled '*Intelligent Ambience*' I will discuss an example of HCI research, a series of empirical studies conducted by the *Social Responses to Communication Technology* group at Stanford University, which resulted in the so-called '*Media Equation*' (Reeves and Nass, 1996)[30]. In this research Clifford Reeves and Byron Nass showed that human beings tend to display a host of *social responses* to computer technologies – responses they normally would normally only reserve for their interactions with other human beings, that they are unaware of, and more importantly, that they *deny* displaying when confronted with their own behaviors.

One of the main goals of Human-Computer Interaction is to improve the user-friendliness of computing technologies. Just like the vision of ubiquitous computing

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[30] See Chapter 5, paragraph 5.6.3.

HCI as a research field also emerged as a response to the impractical and complicated architectures of many information and communication technologies in the past decades. Human-Computer Interaction aims at improving the software, the hardware and the interfaces of computing technologies, in order to create devices that are easy and natural for humans to use.

When reading the Ambient Intelligence discourse it seems that findings from Human-Computer Interaction have been a source of inspiration for the Ambient Intelligence vision. Like this field of computer research Ambient Intelligence states that it takes the user to be the central factor in the design process. Interfaces and devices ought be natural and easy to interact with according to the vision. And like Human-Computer Interaction, Ambient Intelligence, too, takes computing technology to be a participant in the interaction process between user and machine. The technologies are not viewed as 'mere' tools to get things done, but as participants in socially rich communications.

Within Human-Computer Interaction as a research field we find a number of approaches for the *design* of technological artifacts. Two of these are often cited as core elements of the Ambient Intelligence vision: '*human-centric computing*' (Aarts and Marzano, 2003: 15) and '*user-centered design*' (Aarts and Marzano, 2003: 42-45; Aarts and Encarnação, 2006: 5) – also called '*user-oriented design*' (Punie, 2005: 149). Since there is a lot of overlap between human-centric computing and user-centered design I will discuss them together here.

These design philosophies are summarized in the following slogan: "*Technology has to meet the wants of the user and not vice versa.*" (Aarts and Encarnação, 2006: 10) The user should be involved actively in the design process of any technology, its proponents argue, so that technologies meet their demands and fit into their everyday practices. This is achieved by involving the user in "*a number of consecutive design cycles in which the designer iterates concept design, realization and user evaluation*" (Aarts and Marzano, 2003: 15).

The Ambient Intelligence vision states that it has adopted this method as one of its core strategies. Burgelman and Punie write:

> Right from the start, the AmI vision explicitly focused on people, not on technologies. People need to benefit from services and applications supported by new technologies in the background and they need to be given the lead in the way systems, services and interfaces are implemented. (Burgelman and Punie, 2006:

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It has been argued that Ambient Intelligence's focus on human beings as the center around which design processes should revolve is a new idea. In *Ambient Intelligence: From vision to reality*, for example, ISTAG writes that while previous paradigms, such as ubiquitous computing, focused predominantly on bringing forth the "*next generation*" of computer technologies, Ambient Intelligence focuses instead on "*users in their environment*" (ISTAG, 2003: 6). I would argue that this claim is false – from my description of ubiquitous computing above it has become clear that Weiser, while indeed envisioning a next generation of computing technologies, did so from the starting-point that the user should be the center of focus in every technological design. I have shown, even, that this was the reason he developed his ubiquitous computing vision in the first place. What is different, though, is that human-centric computing and user-centered design as design methods have matured since the early days of Weiser's programmatic first attempt at revolutionizing the world of computing technologies. While Weiser's vision can be regarded as laying the groundwork for design philosophies such as user-centered design, in the mean time they have advanced to become the more mature design approaches that were incorporated into the Ambient Intelligence vision.

Almost all the key documents on the Ambient Intelligence vision claim that findings from Human-Computer Interaction and the design philosophies of human-centric computing belong to the central approach and way of working of this vision. However, as we will see below, when studied closely one can raise some questions about the extent to which Ambient Intelligence has truly adopted this paradigm into its design perspective[31].

Affective computing

In 1997 Rosalind Picard, a professor of Media and Arts at the MIT Media Laboratory, published a groundbreaking book that instigated a new line of research in computing technology, entitled *Affective computing* (Picard, 1997). She argued that the existing conception of computer technologies – as the ultimate 'rational

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[31] See paragraph 2.8.

machines', using calculations to perform their tasks without being hindered by emotions – was in need of adjustment. After all, human beings are both rational *and emotional* beings, and for computers to interact with humans in as rich and meaningful a way as possible these machines should be able to detect human emotion and be able to respond emotionally (to some degree) as well. She writes:

> Emotions not only contribute to a richer quality of interaction, but they directly impact a person's ability to interact in an intelligent way. Emotional skills, especially the ability to recognize and express emotions, are essential for natural communication with humans. [...] ...I will lay a foundation and construct a framework for what I call '*affective computing*', computing that relates to, arises from, or deliberately influences emotions. [...] Affective computing includes [...] giving a computer the ability to recognize and express emotions, developing its ability to respond intelligently to human emotion, and enabling it to regulate and utilize its emotions. (Picard, 1997: 2-3, emphasis in the original)

As our interactions with computing technologies will only increase in the future, says Picard, it is important for researchers to come to understand the workings of human emotion and the role emotions may play in human-machine interactions. At the same time, it is worthwhile to attempt providing computing technologies with the ability to recognize emotions in humans and to respond appropriately to these emotions, preferably by showing some emotion in response.

Picard's work has been a source of inspiration for many computer scientists and designers since and it has resulted in a blossoming field of research, not only at MIT but in various research centers around the world. Philips also explicitly refers back to it as a source of inspiration in several texts on Ambient Intelligence (cf. Aarts and Diederiks, 2006: 13; Aarts and Encarnação, 2006: 5).

2.4.5 Other offshoots

As we have seen, Ambient Intelligence has benefited greatly from, and indeed borrowed a host of its key ideas from its forerunner ubiquitous computing. But Ambient Intelligence was not the only offshoot of this influential paradigm. Over the years a number of different visions, perspectives, and research fields have emerged that used ubiquitous computing as their starting-point, but focused on different aspects of this vision. These offshoots are often mentioned as either competing

paradigms to Ambient Intelligence or as sub-domains of or complementary visions to it. In this paragraph I will give a brief overview of two of them – as with the last paragraph the goal is to show how Ambient Intelligence fits into a network of other theories and perspectives.

Smart homes and domotics

'*Domotics*' (from the Latin word for home, '*domus*'), also known as '*smart homes*', is a research field that aims at improving the living environments of human beings by improving and diversifying the technological features in these environments. This means that all kinds of functionalities in the home are enhanced through or supplanted with technological devices. Think for instance of automatic door openers, remote controls to open or close curtains, lights that switch on automatically whenever a person enters a room, or a system that monitors the resident's movements to make sure he or she has not fallen down or gotten injured.

There are clear similarities between domotics and Ambient Intelligence – both aim at implanting technology into the living environment to enhance the functionality and optimize the living conditions in it. Both use the argument of providing autonomy for elderly citizens as one of their 'raisons d'être'. But while domotics focuses exclusively on the home environment, Ambient Intelligence aims at creating technological applications and devices for home environments, work environments and public spaces.

Wearable computing

Already in the 1980s and 1990s different research institutes around the world started conducting research on '*wearable computing*', or '*wearable technology*'. In wearable computing the idea is to integrate mobile technologies, such as mobile phones or mp3 players into clothing. This means, for example, that electrical wiring is woven into the fabric of, say, a jacket, that several devices may be connected into a small network through the fabric of that one jacket, and that these devices can be accessed through a single display, which is also integrated in the jacket. And last but not least: all of it ought to be washing-machine proof.

The main reason for wanting to develop such technologies is explained as follows in *The new everyday*:

As the technology offering the core functionality of devices shrinks, we can disconnect this functionality from the physicality. Once a device is so small that the size of the components does not dictate a physical form factor, we can start to think of physicality in a way that is most enabling to the total user experience. […] The physical carrier, the interface and gateway to underlying functionality, might be integrated in one of the most essential elements that people always carry with them, such as jewellery, clothing or even their own body. (Aarts and Marzano, 2003: 144)

Or in simpler terms: think back to Greenfield's quote that I presented when discussing the technological trends of miniaturization and enhanced performance[32] - when computing resources are small, cheap and widespread enough it's only a matter of time before designers start thinking up different scenarios of what to 'computerize' next: rooms, furniture, so why not clothing, or ultimately, why not even our own bodies…?

In the last couple of years the first examples of wearable technologies for the consumer market have appeared. Among the first ones, in 2003, was a co-production between the snowboard company Burton and Apple: a snowboard jacket "*with narrow-gauge wiring threaded down the sleeves to a wrist-mounted control panel*" (Greenfield, 2006: 51), soon followed by a co-production between Burton and Motorola, the '*Audex*' jacket, in which several mobile devices could be hooked up through Bluetooth. In this jacket a control panel is embedded in the sleeve, stereo headphones are set in the hood, there's a built-in microphone for hands-free calling, and even a rechargeable battery pack in one of the pockets.

But entertainment value and ease of use are not the only goals in creating wearable technologies – another explicit goal is to create healthcare related applications: technologies that can monitor bodily functions (McCullough, 2004: 129), for example for elderly people or people with specific conditions, such as heart arrhythmia. By wearing clothing (underwear or a shirt) with embedded sensors a person's medical condition can be observed by doctors and other healthcare professionals from a distance, and were anything to change in that condition a 'smart shirt' could even directly contact the hospital.

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[32] See page 73.

In these last paragraphs I have shown that Ambient Intelligence is part of a web of paradigms and research fields that have a lot of overlap in terms of both their origins, their goals, and their focus. Ambient Intelligence, it seems, has not emerged in a vacuum, but rather should be understood as one branch of a much larger perspective on technological development and the technologies of the near future. Ambient Intelligence, then, is not as radically new as it may appear at first.

However, we would be oversimplifying things if we would think that Ambient Intelligence is nothing new under the sun. There are some marked differences between Ambient Intelligence and the other visions, approaches and research fields presented here. In the next paragraph I will show in which ways the Ambient Intelligence vision breaks away from other perspectives and puts new issues on the agenda.

2.5 Breaking away from other perspectives

As we have seen the Ambient Intelligence vision is not a paradigm that has come about in isolation, nor is it completely unique in its approach and ambitions. Yet there are some marked differences between Ambient Intelligence and the other perspectives and approaches discussed. For one, the mixture of different features that has been put together in the Ambient Intelligence vision gives it the air of a new proposal in some respects, to say the least. Also, Ambient Intelligence is said to be a typically 'European' approach and thereby it sets itself apart from other, similar perspectives. In this paragraph I will show in which ways the Ambient Intelligence vision is new and different from the perspectives discussed before.

2.5.1 What is new? Ambient Intelligence: A vision for consumers

One of the first things to note about Ambient Intelligence as a novel paradigm is its focus on creating technologies for the *consumer market*, and creating them on a massive scale. In *Ambient Intelligence*, one of the earlier book chapters on the vision by Emile Aarts *et al.* the authors write:

> The major new thing is the involvement of the consumer electronics industry.
> Most of the earlier developments are aimed at facilitating and improving
> productivity in business environments, and it goes beyond saying that these

developments have played a major role in the development of ambient intelligence. The next step, however, is to bring ubiquity and ambient intelligence to people and into people's homes. (Aarts, et al., 2002: 243)

This is undeniably a novel approach. When we compare the Ambient Intelligence vision to Mark Weiser's founding articles on ubiquitous computing, for example, it becomes clear that the latter, indeed, was primarily aimed at improving work environments – all of the examples and product suggestions that Weiser proposed consisted of technological solutions to workplace situations. For example, Weiser discussed so-called '*active badges*', "*clip-on computers roughly the size of an employee ID card*" (Weiser, 1991: 68), which could open up an employee's agenda on any computer screen in their vicinity and allow access into exactly the right office spaces. Also, '*scrap paper*' could be replaced by '*scrap computers*' called '*pads*', an "*antidote to windows*" because they could be used in the same way one would use a stack of papers: spread them out on a table, shuffle them, pile them or use them as reminders for upcoming tasks (Weiser, 1991: 69). And Weiser envisions message boards ranging in size from "*active Post-It notes*" to "*the equivalent of a blackboard*" (Weiser, 1991: 68).

All of these examples show that Aarts *et al.* are right: Weiser indeed focused primarily on creating applications for the working environment. As we have seen Ambient Intelligence intends to bring technology into the home environment and into the public domain as well. Since it is the first vision of the technological future to do so, and therewith to focus on the consumer market, this presents a clear break with previous paradigms.

2.5.2   What is new? Ambient Intelligence: A 'very European' perspective

We have seen that Ambient Intelligence is part of a network of perspectives and visions on technology development, and that it strongly resembles some of them – most notably it predecessor ubiquitous computing. It could even be argued that Ambient Intelligence is basically the same thing as ubiquitous computing – it is the European name for the same vision. In the words of Yves Punie:

The different terms may imply […] a geographical preference, hence the term AmI is prevalent in Europe, while ubiquitous computing is more common in the USA and Japan. (Punie, 2005: 142)

However, some of its adherents argue that the use of the term Ambient Intelligence does not merely designate a geographical preference, but that it can be actually set apart from other paradigms as being 'very European'. As early as the 1980s Europe (read: the European Commission) was interested in creating its own media sphere, apart from the United States and other media conglomerates. The challenge in those days was to develop a European broadcasting domain. Throughout the 1990s the Commission came to include information and communication technology as a second domain in which to develop its own European approach. In *Spaces of identity: Global media, electronic landscapes and cultural boundaries* David Morley and Kevin Robins investigate the ways in which cultural identities are affected by changes brought about in light of the emergence of both global media and new communications technologies (Morley and Robins, 1995). The book describes the ways in which these changes affect Europe and the European identity. The opening pages set the tone for the changes Morley and Robins describe:

> The European Union has become increasingly conscious of the potential role of the new communications technologies in laying the material supports of (possible) pan-European markets and audiences, and in defining a sense of what it means, in this day and age, to be a 'European'. Its policy increasingly recognises that culture is at the heart of the European project [...]. The EU has identified the audiovisual and other communications industries as key instruments in the creation of a sense of European cultural identity. (Morley and Robins, 1995: 2)

On the one hand this endeavor of creating a specifically European technological sphere for communications and media is driven by economic motives – starting at the end of the 1980s Europe has strived to become a large economic player in the technology industry, alongside the other two giants, Japan and the United States – Morley and Robins write: "*The clear objective of the European Community has been to bring into existence the European equivalents of Sony and Time Warner.*" (Morley and Robins, 1995: 17) On the other hand there are social and cultural reasons as well: by creating one European media sphere the European Commission hoped to "*improv*[e] *mutual knowledge among European peoples and increase*[e] *their consciousness of the life and destiny they have in common.*" (Morley and Robins, 1995: 3) At the same time such a separate media market would enable Europe to resist "*being swamped by American culture*" through television and other media

exposure, as an antidote to the "*perceived threat of 'cocacolanisation'*" (Morley and Robins, 1995: 44). Both of these elements, the promotion of internal cohesion and the emphasis of Europe's difference from other Western cultures, should contribute to a stronger sense of a distinct European identity. The European Commission, according to Morley and Robins, aims at "*ideologically* [mobilizing] *the gravity of Graeco-Roman cultural tradition. What is being invoked is a common history and destiny grounded in the presumption of the moral, political, aesthetic and scientific superiority of the European continent.*" (Morley and Robins, 1995: 51)[33]

We can view the Ambient Intelligence vision in light of Europe's attempt to create its own, distinct sphere of communications, media and technology. It fits into Europe's struggle for cohesion and a shared sense of what it means to be European, into the trends that Morley and Robins sketched above. In fact, in some of the vision's key documents this claim is made explicitly. Burgelman and Punie write that Ambient Intelligence is a technological vision that offers "*Euro-specific responses to the main societal, social and economic challenges of Europe.*" (Burgelman and Punie, 2006: 32) Some of these challenges we have already seen before, such as Europe's aging population (which, by the way, is really not so much of a 'European' problem, but more of a problem for large parts of the world), and its endeavor to create a competitive knowledge-society in which opportunities and skills are equally distributed. Others include "*the maintenance of languages, cultures and life styles in an enlarged Europe*" and an "*increasing demand for personal mobility*" (Burgelman and Punie, 2006: 25). Ambient Intelligence can be argued to break away from other paradigms, and most notably ubiquitous computing, in the sense that it contributes to solving some 'very European' challenges.

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[33] Throughout their book Morley and Robins question the viability of the strive for a unified sense of European identity on a number of occasions, focusing, for instance, on several of the regional cultures that have consistently resisted being incorporated into various nation states (or in case they have been incorporated, attempt to make this undone – for example the Basques and the Scots). The influx of peoples from non-European cultures in the last decades is discussed as another factor that puts strain on the project of creating a cohesive European identity.

2.5.3 What is new? Ambient Intelligence: Real-world experiences enhanced

Another new factor in the Ambient Intelligence vision is the emphasis on and a quest for *immersive experiences*. Technologies in this vision are intended to enhance or intensify real-world experiences, rather than, for instance, transporting users to different (non-existing) worlds, such as is the case in *virtual reality* (or VR) technologies. Mark Weiser, the founder of the ubiquitous computing vision, already envisaged this trend for immersion. He explicitly presented his own perspective in diametrical opposition to the goals and aims of virtual reality. He writes:

> Perhaps most diametrically opposed to our vision is the notion of 'virtual reality,' which attempts to make a world inside the computer. Users don special goggles that project an artificial scene on their eyes; they wear gloves or even body suits that sense their motions and gestures so that they can move about and manipulate virtual objects. Although it may have its purpose in allowing people to explore realms otherwise inaccessible – the insides of cells, the surfaces of distant planets, the information web of complex databases – virtual reality is only a map, not a territory. It excludes desks, offices, other people not wearing goggles and body suits, weather, grass, trees, walks, chance encounters and in general the infinite richness of the universe. Virtual reality focuses an enormous apparatus on simulating the world rather than on invisibly enhancing the world that already exists. (Weiser, 1991: 66)

Jos de Mul argues that virtual reality technologies and environments have three main characteristics (De Mul, 2003: 170-172; Müller, 2009: paragraph 4.3.3). First, virtual reality environments may be used to *interact* with other users, either people or computer-generated beings, for example through the use of avatars. Second, users can *navigate* through simulated worlds using, for example, virtual reality helmets to look around them, and gloves to manipulate objects. And third, in their most compelling and encompassing forms these virtual environments are meant to be *immersive* – they are meant to generate experiences that completely absorb the user into this simulated world.

Note that in both virtual reality and ubiquitous computing/Ambient Intelligence the notion of immersion plays a role, then. It is one of their intended goals to provide users with experiences that are truly absorbing. However, there is a big difference between the way in which this sense of immersion is envisioned to be created, and also in the way it is to be brought about. In virtual reality the goal is to (momentarily)

leave the real world behind and enter virtual worlds 'inside the computer'. In virtual reality the immersion takes place in a world that doesn't really, that is physically, exist. Virtual reality thus enables us to travel through worlds that may resemble the real world (e.g. a simulation of a building yet to be constructed), but it may also take us to the limits of our imagination by allowing us navigate worlds that could never be materialized in the real world (e.g. traveling the inside of the intestine, magnified 100 times, or walking around in a fairytale land).

But immersion as Weiser envisioned it, and as it has been given center stage in the Ambient Intelligence vision, aims at something else entirely: it aims at creating immersive experiences *in the real world*, predominantly through simultaneously addressing multiple sensory channels, thus aspiring to intensify and enhance them and ultimately "...*blurring the line between the real and the unreal*" (Aarts and Marzano, 2003: 314). In paragraph 2.2 I described an example of an Ambient Intelligence gaming environment, in which all kinds of different aspects of the atmosphere of an entire room are adjusted to match the storyline of the game that is being played – for instance, the walls are turned into massive projection screens (or camera's may even run a 3D or holographic projection of the gaming environment), the lighting is adjusted, and so is the temperature, the ventilation, and the sound level. Thus, the aim is not to immersive oneself in a non-existing world, as is the case in virtual reality, but rather to immerse in a world that *does* exist – and to strengthen and augment the perceptual and tactile experiences of that world as much as possible.

Weiser, in contradistinction from virtual reality researchers and developers, envisaged creating a technologically enhanced world in which users remain firmly rooted throughout their experiences. While the focus in other paradigms for technological development (including ubiquitous computing) has come to be on realizing office technologies, or technologies for the home environment, the Ambient Intelligence vision has incorporated the idea of immersive, real-world experiences, and has made it one of its key objectives. We may conclude that Ambient Intelligence is new, then, in the sense that it places emphasis on creating (more) *complete* (i.e. multi-perceptual) and *life-like* experiences, removing the technology from view to eliminate the disturbing limitations (in terms of borders and boxes) it may raise.

2.6 Some examples of Ambient Intelligence technologies

Now that the main characteristics of technologies from the point of view of the Ambient Intelligence vision have been described, it is time to look at the more practical side of this concept. What examples and prototypes of Ambient Intelligence systems have been developed so far?

There are two main sources of information concerning the practical application of the Ambient Intelligence vision: first, books such as *The new everyday* (Aarts and Marzano, 2003) and *Ambient lifestyle* (Aarts and Diederiks, 2006), in which a wide array of examples are discussed and some prototypes are presented both in words and in pictures. The second source is less concrete and doesn't present examples of Ambient Intelligence technology to be realized in any literal form, yet it is much wider in scope. It is the first report that IPTS wrote on Ambient Intelligence, called *ISTAG: Scenarios for Ambient Intelligence in 2010* (Ducatel, et al., 2001a). We will look at both of these in turn.

2.6.1 Philips: Prototyping Ambient Intelligence

Over the past years Philips has published various books in which we get a peek of what technological developments are to come. The most important ones are *The new everyday*, which was published in 2003, and *Ambient lifestyle*, published in 2006. Both of them give an overview of a number of projects that Philips has started in recent times to realize the vision of creating a world of Ambient Intelligence. At their R&D facility called the 'High Tech Campus' in Eindhoven, the Netherlands, Philips has built three test labs for research into consumer behavior and consumer needs, and for testing Ambient Intelligence prototypes. After briefly describing these facilities I will then move on to discussing two examples of Ambient Intelligence technologies that were developed in the last decade.

In 2002 Philips opened the first test lab, a single two-story house, called the '*HomeLab*' , built to conduct feasibility and usability studies on all sorts of products that fall under the umbrella of Ambient Intelligence (De Ruyter and Aarts, 2004: 205). The house consists of a living room, a kitchen, a bathroom, two bedrooms and a study – all of which are equipped with cameras and microphones to register the behaviors of test subjects staying in the home. Most subjects stay at the house for short tests of only a few hours, but it is fully equipped to accommodate longer stays of

up to several weeks. Adjacent to the living room there is a control room, in which all the data gathered from the house (video and audio footage) are collected and stored.

After a few years Philips decided to complement the HomeLab with two other experiential laboratories: *'CareLab'* , and *'ShopLab'* – the three test labs together were henceforth named *'ExperienceLab'* (Aarts and Diederiks, 2006: 48-53). In 'ShopLab' researchers and designers aim at gaining insight into people's shopping behaviors in relation to "*personalized ambient atmospheres*" (Aarts and Diederiks, 2006: 53) – think of, for example, systems that may detect a shopper's personal product interests and provide him with personalized suggestions and information in the shopping environment. 'CareLab' focuses predominantly on 'elderly care': "*A senior apartment block has been built, equipped with an advanced distributed sensor infrastructure that can extract context-aware and personalized information from the inhabitants* (Aarts and Diederiks, 2006: 53). This information may then be used to deduce, for example, whether the inhabitant has fallen down and may need medical assistance.

New Nomads and Photonic Textiles

As we have seen one of the main features of the Ambient Intelligence vision is that it aims at embedding technologies into walls, furniture, clothes and so on. *'New Nomads'* was Philips' first program for wearable computing, in which different kinds of portable computing devices were integrated into clothing (Aarts and Marzano, 2003: 346-349; Marzano, 2006: 42-43). There are roughly two approaches to embedding technology into clothing, or rather, there are two *degrees* of embedding. On the one hand one may aim at linking existing individual portable devices, such as mobile phones, walkmans or mp3 players into one interconnected system inside a jacket or a bag, for instance through a Bluetooth network. In that case the volume on the mp3 player may be turned down automatically, for instance, when the user receives a call on his mobile phone. An example of this form of embedding was discussed in paragraph 2.4.5 on page 89: the *Audex* jacket developed by Motorola and the snowboard brand Burton. Philips developed a similar *'audio jacket'*, "*an expressive item of streetwear for young people*" (Marzano, 2006: 43) into which a number of different audio and mobile telephony functionalities were inserted.

But the embedding of technologies into clothing may go one step further still. It may include *literally* embedding the technology into fabrics, thereby turning them

into '*conductive textiles*' (Marzano, 2006: 43). In *The new everyday* a number of examples are mentioned of what we could do with such textiles:

> We can envisage textiles that transform their structure, counter allergens, shield against electromagnetic smog, apply a host of medical therapies, release fragrance, moisturize, and contain electronic networks and miniature electronic processors and communications technology. These may be textiles that can respond to human and environmental conditions, creating clothes that adapt to different temperatures, have the ability to heat and cool, to sense a host of biometric indicators through a series of integrated sensors and respond with a range of applications to enhance human behaviour. (Aarts and Marzano, 2003: 153)

The Ambient Intelligence vision has aimed from the start at accomplishing both levels of embedding: creating clothing in which existing technological artifacts can be used in a network that becomes active as soon as (and for as long as) the garment is worn, and textiles in which the technology is woven into the fabric itself.

Recently, Philips has developed another line of product prototypes in the category of wearable computing, a line of products in which integrating *lighting* in the fabric is the key objective (cf. Aarts, 2008: 225-226). '*Photonic textiles*' are fabrics in which "*flexible arrays of multi-colored light-emitting diodes (LEDs)*" are embedded, "*without compromising the softness of the cloth*", thereby bringing "*these inert objects to life.*" (Aarts and Diederiks, 2006: 145) In simpler terms: LEDs are embedded into items of clothing, the fabrics of furniture, curtains and so on and so forth, and these LEDs may change colors and collectively create shapes, so that they can form messages or symbols, for instance, or change their appearance based on the time of day or the location the user is in. By also embedding other electronic technologies into the same textiles the latter may become truly interactive: "*the textile can be (wirelessly) connected to other electronic devices, allowing the exchange of information. Interactive light patterns can be generated for the purpose of sending messages or generating personalized ambiences*", says Philips (Aarts and Diederiks, 2006: 145). Highly convenient for teenagers in a club too shy to approach that one person who's caught their eye – or, as Philips calls it, a good medium for "*branding and self-expression*" (Aarts and Diederiks, 2006: 145).

Living Memory and Pl@net

A second example of Ambient Intelligence technology is the '*Living Memory*' project (or LiMe for short) which ran from 1997 to 2000 and was commissioned by the European Commission (Aarts and Marzano, 2003: 340-343; Marzano, 2006: 43-44). In this project Philips collaborated with a number of universities and other technology companies. The project investigated the formation and maintenance of communities, both online and offline, in a neighborhood in Edinburgh, Scotland. Researchers placed interfaces at important locations throughout the neighborhood, for examples in shops, libraries, cafés, and at bus stops. People visiting these locations could use the interfaces to leave messages for others, write down ideas or memories related to that place, or access the information others had left behind – anything "*ranging from 'help wanted' signs and flyers found on local notice boards to local cinema advertisements.*" (Aarts and Marzano, 2003: 341) Over time, the researchers say, this collective database of information formed a 'memory' of the neighborhood – it allowed its inhabitants

> to maintain – or even create – the same sort of community feeling that once existed in villages. [...] Community networks of this sort could be useful not only in consolidating neighborhoods, but also other types of communities, both large and small. Within companies, for instance, they could help to promote a sense of community among staff, many of whom work from home, or at widely separated branch offices. Schools, colleges, or churches could benefit similarly. And in the case of families, such a network could help to keep distant family members in touch... (Marzano, 2006: 44)

The follow-up of the Living Memory project was called '*Pl@net*', which ran from 1997 until 2002. In this project the interfaces of the Living Memory project were complemented with mobile phones with a Bluetooth connection so that information that was left behind in a specific location, say a café table, could be stored and taken elsewhere by users through 'drag and drop' functionality. Also, the element of personalized information was developed further: the information that was presented to users in each location was matched to the user's personal preferences as these were stored in profiles, based on previous choices and wants, in their mobile phones.

2.6.2 ISTAG: Ambient Intelligence scenarios

While a technology company such as Philips has the resources and capabilities to build concrete examples and prototypes of Ambient Intelligence technologies, the European Commission's main advisory groups, IPTS and ISTAG, do not. What they have developed instead are a number of *scenarios*, not intended to be materialized literally, but to sketch images of the technological world of tomorrow. In the *ISTAG Scenarios for Ambient Intelligence in 2010* (Ducatel, et al., 2001a), which belong to the main corpus of Ambient Intelligence vision, four scenarios are presented that were intended to "*offer provocative glimpses of futures that can (but need not) be realised.*" (Ducatel, et al., 2001a: 1) In contrast with the stand-alone prototypes and examples created by Philips, which I have discussed above, these Ambient Intelligence scenarios present *environments* in which a number of technologies are available that work together towards a single goal. A first scenario, for instance, focuses on enhanced mobility in our working lives and describes examples of technologies that would enable us to work practically anywhere in the world – for instance, due to ubiquitous communication and the interconnectedness of systems in a global network. In this particular scenario we encounter Maria, who travels to a Far Eastern country for a work meeting, and whose 'hotel scene' I quoted in paragraph 2.3.3 on personalization.

Another scenario focuses on the future of car travel. In this scenario we learn how a woman called Carmen arranges for a ride from her home to work – car sharing being an obvious choice in light of solving issues of rush-hour traffic and congestions – through an Ambient Intelligence system that searches

> the trip database and, after checking the willingness of the driver, finds someone that will pass by in 40 minutes. The in-vehicle biosensor has recognised that this driver is a non-smoker – one of Carmen['s] requirements for trip sharing. [The driver arrives on time and] [w]hen Carmen gets into the car, the VAN system (Vehicle Area Network) registers her and by doing that she sanctions the payment systems to start counting. A micro-payment system will automatically transfer the amount into the e-purse of the driver when she gets out of the car.
> In the car, the dynamic route guidance system warns the driver of long traffic jams up ahead due to an accident. The system dynamically calculates alternatives together with trip times. One suggestion is to leave the car at a nearby 'park and ride' metro stop. Carmen and her driver park the car and continue the journey by

metro. On leaving the car, Carmen's payment is deducted according to duration
and distance. [...] Carmen arrives at her job on time. (Ducatel, et al., 2001a: 6)

As with the first scenario, here, too, an Ambient Intelligence environment is sketched, in which a number of different systems are present, working together to create a traveling experience that is as efficient and a simple as possible for the user, Carmen.

These scenarios provide us with a peek into the future, they provide us with a sense of what a complete Ambient Intelligence experience could look like, and in that sense, they are valuable contributors to the Ambient Intelligence vision.

2.6.3 From prototype to product: A note of caution

For those who have not been confronted with future visions of technology before, the ideas presented in books such as *The new everyday* and *Ambient lifestyle* or a report such as the *ISTAG Scenarios* may seem mind-blowing or eccentric – and sometimes both of these at the same time. Seeing them, many people might wonder what it would be like to live in a world of Ambient Intelligence, in which technologies will come to play such a central role in our lives. Seeing prototypes in real life, for example in a home of the future such as *Living Tomorrow* in Amsterdam, the Netherlands, they might ask themselves whether they would *want* to live in a world of Ambient Intelligence, as it is presented there. I guess the word 'wonder' with its double meaning – 'being in awe' and 'being unsure' at the same time – best describes the mixed emotions they might have. I for one certainly did.

In the past four years, as I worked on this dissertation and lectured about the Ambient Intelligence vision for a variety of audiences, people who were first confronted with a description of this vision, or with pictures of some of the prototypes, inevitably asked questions such as 'Do we really need these kinds of technological gadgets?' and 'Do we want live in an environment that is so drenched in technology?' My response to these questions has always been the same: of course, it is important to be critical and ask questions about technological visions such as these, but we should be careful to brush them aside as outlandish and unwanted fantasies too easily. For one thing, it is difficult for users to envisage what future technologies they are going to want or need in their lives (cf. Frissen and Punie, 2001). The introduction of various new technologies in the past decades, most notably the

personal computer and the mobile phone, has shown that while consumers (and even the industry) originally view such products as 'luxury' goods, to be owned only by a technologically savvy minority, they apparently provide users with possibilities that are so worthwhile that they soon turn into indispensable technologies in the everyday lives of almost every consumer. From luxury products they become perceived to be 'basic necessities' in the collective consciousness in a period of mere years – living without them becomes inconceivable even to those who only a few years earlier rejected such technologies as mere 'gadgetry'. The introduction of the mobile phone is a clear example of this trajectory. This process, too, will possibly take place with regard to some Ambient Intelligence technologies. While it might be hard to conceive living with such technologies now, I am inclined to think that elements of this vision will be materialized in some way or other, and that we will come to find uses for – and discover previously unknown needs for – at least some of the technologies that spring from it.

Moreover, there's an even more important argument to not to brush aside this vision too easily. Whenever confronted with a vision of the future – be it a technological vision of the future or any other kind – we should keep in mind that there is always a gap between what is envisioned and what is (eventually) realized. We should therefore be a bit cautious in taking such visions too literally, and a bit generous in judging their predictive value – for who knows, really, what the (technological world) of tomorrow will come to look like in practice? Visions are *visions* (and not *realities*) precisely because they set lofty targets and aim high. They are always adjusted as they mature and materialize. This means that for the vision at hand, too, it is safe to assume that there will be at least *some* discrepancies between the ways in which Ambient Intelligence is envisioned now, in its early stages, and the ways in which it will end up looking and working in reality. This is why, also, it is somewhat risky to explain a vision by describing its prototypes and examples – what these examples show may not become the dominant technological paradigm in the end. And this is why, moreover, judging pictures of prototypes as if they were the reality to come per se is to confuse the examples for the (yet unknown) facts.

Now, again, by presenting these two points I do not mean to say that we should be uncritical of the vision of Ambient Intelligence, nor of prototypes that are presented as exemplary of the vision in this stage. Rather, our criticism should aim at other levels. It should be aimed predominantly at the *discourse* of the Ambient

Intelligence vision. When we focus too much on the examples sketched in this stage of the development of Ambient Intelligence, instead of the underlying discourse, we may fall into the trap of over-focusing on the *effects* while underestimating the *driving forces*. This is why, despite the expressiveness of examples, I have and will keep on focusing predominantly on the theoretical framework that forms the basis for this new technological paradigm.

2.7 Intermission: Ambient Intelligence in the spring of 2009

So far I have given an overview of the key elements of the Ambient Intelligence vision, as these were presented in the founding documents of this vision by Philips and the European Communions' advisory groups. I have positioned the Ambient Intelligence paradigm in relation to other technological perspectives and in relation to large technological and socioeconomic trends. And we have seen a few examples of Ambient Intelligence technologies.

But what has become of the Ambient Intelligence vision in the years between its launch at the end of the 1990s and the composition of this dissertation at the end of 2008? What parts or aspects of the vision have been realized, and which have not? And also, which technological trends have emerged in the mean time that were *not* foreseen in the Ambient Intelligence vision?

Over the past decade a number of ideas that are presented in the Ambient Intelligence vision have gradually materialized. I noted above that RFID technology, for instance, has come to be used in a wide variety tracking and tracing systems. Transport systems such as London's Oyster Card are only one application thereof. Also, many people have come to use their mobile telephones as 'access keys' to get locally relevant information and have access to communication networks almost everywhere. It is easy to imagine how the functionality of mobile phones could be enhanced in the near future to meet all of the requirements that are presented in the Ambient Intelligence vision concerning the access key.

However, while some elements of the Ambient Intelligence paradigm have materialized (in more or less rudimentary forms), at the same time there are several technological trends that were not incorporated into this vision, but which have nevertheless come to play a vital role in the ICT landscape of the first decade of the new millennium. The most obvious example is Web 2.0. The use of social software,

the joint involvement of large networks of individuals in the creation and distribution of all kinds of digital, networked applications (think of YouTube and Flickr), and the booming growth of internet communities such as Hyves, LinkedIn, Facebook and Friendster all have no place, nor have they been foreseen in the Ambient Intelligence vision. Now, obviously technological forecasting is a difficult task indeed, and perhaps therefore we should observe kindly the fact that the creators of the Ambient Intelligence vision didn't see these trends coming. However, I suspect that one of the reasons why they have missed it is related to one of the vision's core underlying assumptions. This is why I now want to turn to a critical analysis of some of the (hidden) assumptions of the Ambient Intelligence paradigm.

2.8 Questioning Ambient Intelligence: Some assumptions

Some assumptions in the Ambient Intelligence vision will be discussed here. First, we will look into the way in which *human beings* are portrayed in this paradigm. After that, I will discuss Ambient Intelligence's underlying assumptions regarding the social world in which humans operate on a day-to-day basis and I will present Ambient Intelligence's assumptions about society at large.

2.8.1 Human beings in the Ambient Intelligence vision

As we have seen the Ambient Intelligence vision explicitly claims that human beings should be in the center of attention in the development and application of technology. This vision has appropriated 'user-centric design' as its core method. Its proponents emphasize the focus on human beings as the alpha and omega of their paradigm – as the key factor that not only sets Ambient Intelligence apart from other visions of the technological future (which, as we have seen, is not entirely true, since ubiquitous computing, too, took human beings to be the center of the design process), but also as the main reason why Ambient Intelligence technologies will become a success.

However, there is a paradoxical perception of human beings in these statements. It is true that human beings, as users, are the center of focus within the Ambient Intelligence discourse. After all, it consistently states that the technologies are to be designed and developed in such a way as to optimize the ease of use, the

naturalness of human-technology interaction and the invisibility of their presence or their workings. The lessons of ubiquitous computing and Human-Computer Interaction make themselves felt in the Ambient Intelligence discourse. Therefore, one may conclude that the individual human being is taken very seriously in this vision – he is the main material needed to realize this vision. Lisa Stuardi of Philips argues:

> our research starts with the people themselves, seeking to preserve and record their unique attitudes and behaviors, treating each person as an individual instead of a data point. In an era of mass-customization and the need to feel 'uniquely me', this outside-in approach allows us to be truly design around the user. (Stuardi, in: Philips, 2006: 12)

At times, however, it also seems that human beings are *not* taken seriously by the vision of Ambient Intelligence. In the world of the future human beings are viewed as simple nodes or links in a communication and information network of interconnected devices and systems, of which these human beings only form the 'output layers'. The paradox presented here is clear: on the one hand the Ambient Intelligence vision puts human beings center stage, and emphasizes time and again the primacy of humans over technologies in terms of importance. Humans should always be, the vision states, the 'main ingredients' in a world of Ambient Intelligence; on the other hand, they might just be only that: the main ingredients, losing a certain amount of control and autonomy to technological systems that treat them as mere links in their global-scale reach, as raw materials rather than the unique, individual beings they are.

2.8.2 Humans as (non-)social beings in the Ambient Intelligence vision

Moreover, in the Ambient Intelligence vision human beings are presented as highly *individualistic*, even atomistic units, spending the biggest part of their everyday lives by themselves, in constant interaction with technologies. In many of the examples Philips provides us with we see people in interaction with technological devices – people *alone*, that is. Hardly ever do we see groups of people doing something together, and using technology in the process.

I argued above that the fact that Ambient Intelligence did not foresee (and hence did not include) some of the most important socio-technological trends of the

current decade was because of its assumptions regarding human beings, and the social worlds they inhabit on a day-to-day basis. The social dimension, we have seen above, is lacking to a serious degree in the Ambient Intelligence paradigm[34], and this has implications both for its materialization, but also for its general success as a vision. It also raises questions regarding the alleged user-centeredness of Ambient Intelligence designs. Do human beings really take center stage in this vision, when in fact a central feature of their everyday lives is overlooked in this fashion?

Some commentators to this vision have argued that this atomistic conception of human beings is unavoidable in a vision such as this. It is inherent in the main goals this vision aspires to accomplish. Take 'personalization', for example. The Ambient Intelligence vision tells us a home in the near future will be able to recognize the person (we'll call him 'A') entering it, and in response will adjust a number of aspects of the atmosphere in the house based on this person's preferences – for example, a change in temperature, lighting, and a special selection of music. Now, imagine a second person (we'll call him 'B') entering the same house – a person with very different preferences than A. Say for instance that A likes rock music while B likes classical music, or that A likes bright lighting whereas B likes dimmed lighting. What will happen? How will the technology be able to meet the personalized needs and wishes of both people at the same time, if, that is, both people want to be in the same room? Now, with music choices I'm sure it will be possible to find a solution that both people find acceptable[35] – say, for instance that although A prefers rock music and B prefers classical music, both also occasionally listen to Irish folk songs; then that choice would be a solution that would suit them both – although, of course, one could raise the question of whether this would still truly be a 'personalized' change to the home environment, since neither person gets to listen to his preferred choice, and both end up with second-best (if that, at all). But let's assume that regarding the music issue it would probably be possible to find solutions that both would approve

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[34] One could argue that technological developments such as Web 2.0, which rely heavily on and explicitly tap into the social dimension of our everyday lives could be conceived as an inadvertent response to the omission of the social dimension in the Ambient Intelligence vision.

[35] I thank my supervisor, professor doctor Jos de Mul, for an inspiring discussion on this subject, in which he raised this particular music example.

of. However, when the technology has to find a compromise between two widely varying room temperatures for A and B, since A likes living in a very cold room, whereas B likes it to be very warm, then it becomes clear that finding a suitable compromise is not always an option. Two scenarios then remain: either both parties are unhappy and the notion of personalization does not come off, since the average between the two extreme temperature choices makes both feel uncomfortable, or the system does personalize the space to accommodate one person's wishes, say A's preference for low temperatures, which will result in B being unhappy, or even leaving – and then we're back to an atomistic, highly individualistic (and unrealistic!) conception of how human beings go through the motions of their everyday lives. 'Personalization', as we will see time and again throughout this dissertation, is one of the most problematic concepts in the Ambient Intelligence vision, precisely because it overlooks the *social* character of much of our existence.

And there is an even deeper problem in the atomistic, personalized world that Ambient Intelligence presents us: there is an assumption that the preferences of individual human beings *can be known* (either by the person himself, the technology, or both), and that each individual person at each moment in time has *clear, distinct* preferences that can be deduced and acted upon by the technology. But how often is that the case? Perhaps the biggest problem with the notion of personalization as it is presented in the Ambient Intelligence is that it promises us to realize and materialize our individual preferences whenever we want, wherever we want. However, more often than not what an individual's preferences are is not quite clear, not to the person himself, let alone to some technology that has to deduce it. More often than not, we have a rather muddled, vague, and complex set of preferences all at once, rather than a clearly delineated idea of what we want precisely, then and there. In social contexts, as we will see throughout this dissertation, the idea of having clearly marked and fully expressed preferences is even less realistic. Since it seems that the promise of personalization is in fact one of the main 'selling points' for Ambient Intelligence, these doubts regarding the realism of its chances of materialization are a fundamental problem indeed.

2.8.3 Society in the Ambient Intelligence vision

It may be clear by now that the world as envisioned in the Ambient Intelligence

paradigm will differ from our current world in a number of ways. All proponents of this vision argue that Ambient Intelligence will more likely than not change fundamental aspects of the human world as we know it – it may even change our outlooks on what it means to be human and on what constitutes a good and healthy society. As we have seen above, its adherents embrace Ambient Intelligence (in part) for the serious societal benefits it promises. Ambient Intelligence is presented as (at least part of) a solution to such widely varying socioeconomic developments as the aging population in Europe, with its resulting increasing demands on healthcare and its shifting balance in the social security systems of the member states, the creation of a knowledge society with equal opportunities and equal access for all, and the maintenance of civil security within Europe's boundaries. Both Philips and the European Commission, we have seen, have ideas on how Ambient Intelligence could contribute to these socioeconomic trends. Many of these societal trends, and the proposed contributions Ambient Intelligence may have for them, have an intuitive appeal and it is praiseworthy that a company like Philips has used them (in part) as a point of departure for the development of a new technological vision. This shows that the company is aware of its societal responsibilities, but moreover acknowledges that technology can have a profound impact on the workings of communities and society at large. However, a few questions can be raised with regard to both the socioeconomic trends themselves and the solutions that Ambient Intelligence is supposed to make to these trends.

It is important to note that *all* of the societal trends that Philips and the European Commission's advisory boards (IPTS and ISTAG) discern have a relationship to technology, and more specifically to Ambient Intelligence. They do not include societal trends that cannot easily be mended by the spread of Ambient Intelligence systems, for example the increase in cultural variety and economic inequality that has resulted from the inclusion of ever more new member states into the European Union – or the political and societal debates surrounding the incorporation of (non-Western) foreigners into many of the European member states, which range from assimilation to cultural integration to multiculturalism – or the rise of various forms of religious fundamentalism both in Europe and outside of it – or of globalization and the new division of power in the world, to name but a random few. Now, one could argue that this is logical and forgivable, both for Philips and the ISTAG/IPTS reports on Ambient Intelligence. After all, Philips simply wants to sell

its new vision on technology, and may therefore legitimately limit itself to those societal trends that are relevant to the Ambient Intelligence vision. And IPTS and ISTAG were asked to provide the European Commission with information on the relevance of Ambient Intelligence for Europe's future, so it is understandable that these advisory boards focus only on those domains in which they may reasonably foresee Ambient Intelligence having an impact and/or needing policy responses from the Commission.

However, both Philips and IPTS/ISTAG present their analyses of Ambient Intelligence and its supposed contributions to socioeconomic developments as if these developments are *the* (only) issues to be addressed. Thus, it appears that Ambient Intelligence is an answer to all our problems, and this is clearly not the case (see the random set of trends not mentioned by Ambient Intelligence's proponents above). Also, in the way these trends are presented it appears as if Ambient Intelligence is an *answer* for every societal issue, whereas in fact, after closer examination, it turns out that it was really the *starting-point* for discerning and choosing these trends (as opposed to so many other) in the first place. Horse and carriage thus become reversed in the process.

2.9 A number of issues broadly sketched

> While developments in information technology never had the explicit goal of changing society, but rather did so as a side effect, the above-mentioned visions expressly propose to transform society by fully computerizing it. It is therefore very likely that this will have long-term consequences for our everyday lives and ethical values that are much more far-reaching than the Internet with all its discussions about spam e-mails, cyber crime, and child pornography. (Bohn, et al., 2005: 2)

In *Social, economic, and ethical implications of Ambient Intelligence and Ubiquitous Computing* Jürgen Bohn *et al.* discuss a wide range of issues that may emerge in a world of Ambient Intelligence, ranging from chances in the economy to ethical questions regarding privacy and security. They argue that Ambient Intelligence, more than any technological development before, will affect society in fundamental, and more likely than not unforeseen, ways. In *Everyware: The*

dawning age of ubiquitous computing Adam Greenfield makes a similar remark. He writes:

> ...everyware[36] will surface and make explicit facts about our world that perhaps we would be happier ignoring. In countless ways, it will disturb unwritten agreements about workspace and homespace, the presentation of self and the right to privacy. It contains an inherent, unsettling potential for panoptical surveillance, regulation, and 'rationalization'. Its presence in our lives will transfigure our notions of space and time, self and other, citizen and society in ways what we haven't begun to contemplate. (Greenfield, 2006: 3)

In this paragraph we will briefly touch upon some of the concerns that have been raised for a world of Ambient Intelligence. I will start with some of the technological concerns regarding Ambient Intelligence's materialization and then discuss a number of social/legal questions it needs to address. I present these issues to provide the reader with a sense of the horizon of the realm of (social) topics in which the development of the Ambient Intelligence vision should be understood.

2.9.1 Current technological bottlenecks

Realizing the Ambient Intelligence vision as it is presented now means that some serious technological bottlenecks will have to be overcome. First of all, in a world in which energy resources in general are a topic of debate, and in which environmental issues are high on the agenda, questions of *battery power* and *energy consumption* are highly relevant. For the Ambient Intelligence world of the near future, these questions are all the more pressing, since every single technological artifact envisaged in that world will consume smaller or larger amounts of power. Emile Aarts writes: "*Power limitations are probably going to impose the most demanding and challenging design objectives upon AmI environments.*" (Aarts and Diederiks, 2006: 33) Roughly, three different types of Ambient Intelligence devices may be distinguished, based on their power consumption: '*autonomous devices*', which empower themselves throughout their lifecycle, for example by using energy

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[36] Greenfield uses the term 'everyware' instead of Ambient Intelligence or ubiquitous computing, but the term designates roughly the same thing.

supplies to be found in the environment (such as sunlight or electromagnetism), '*nomadic devices*', which use rechargeable batteries, and '*stationary devices*' that are connected to the main power network of the building or open space in which they are embedded[37] (Aarts and Diederiks, 2006: 31). All three types have their own issues regarding power. In the case of stationary devices there is the problem of limiting energy consumption – large computing systems have high energy use, and in light of the current trend for energy saving it is important to find solutions for making them as energy efficient as possible. Two issues arise with regard to the power consumption of nomadic devices. The current generation of batteries has insufficient power to allow for tasks that consume significant amounts of power, such as playing high-quality video for extended periods of time (Aarts and Diederiks, 2006: 33). Also, "*the embedding of electronics in nomadic devices, such as wearables, tangible objects and small items of furniture, calls for batteries with non-conventional form factors that support foldable and bendable applications.*" (Aarts and Diederiks, 2006: 33)

A second technological bottleneck is the immense variety of *technological standards* and languages that has sprung up in the wake of the Ambient Intelligence vision. All of the key players, both those from the industry and those from the European Union, recognize the need for standardization as a key requirement for making Ambient Intelligence a success. In March 2006 the Information Society Technologies Advisory Group (ISTAG), the advisory group to the European Commission, pointed towards the urgency of this point by saying:

> For global leadership in tomorrow's ICT markets Europe must have leadership in standards as well. [...] ...we should foster openness in the standardisation environment, so to enable open tailored business models whilst avoiding consumer lock-ins. (ISTAG, 2006: 39)

This latter remark ('avoiding consumer lock-ins') refers to yet another, but related issue: that of *interoperability.* In a world of Ambient Intelligence, where persons are envisaged to use technologies anywhere and at any time, one of the key

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[37] Examples of autonomous devices are tags and sensors, of nomadic devices are mobile devices, and of stationary devices are fixed monitors or servers.

requirements is that technological artifacts are interoperable – that they can communicate with one another and can be used in any combination necessary to provide users with their services. As we have seen above in a world of Ambient Intelligence users will move through their everyday worlds equipped with an 'access key', which should enable them to access networks of technology that are embedded in each local setting they enter. However, if a user's access key is not fully interoperable he may be able to use it in some situations, yet not in others. In *Ambient Intelligence: From vision to reality* ISTAG writes: "*it would jeopardise the very concept of 'seamlessness' in the AmI environment…*" (ISTAG, 2003: 4). This shows that if the requirements of interoperability and standardization are not met, a truly 'ambient intelligent sphere' cannot emerge – instead, a world of "*islands of functionality*" (Edwards and Grinter, 2001: 260) will be the result. As the 'Internet of Things' report emphasizes "*Technological standardization in most areas is still in its infancy, or remains fragmented. […] Standardization is essential for the mass deployment of any technology.*" (ITU, 2005: 8)

2.9.2 Profiling | privacy & security | invisibility

One of the most fundamental concerns for a world of Ambient Intelligence is the notion of *profiling*[38]. As we have seen in this chapter, building user profiles in which a person's preferences are recorded and stored, is one of the key means for realizing Ambient Intelligence's envisioned reality: only through the use of user profiles can a truly personalized and anticipative technological realm be created. Without such profiles the Ambient Intelligence vision cannot realize the full potential it visualizes – profiles and personal data form the raw materials that users need to part with, in order to be provided with personalized services in return. So profiling is a '*sine qua*

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[38] Profiling involves the application of "*a set of technologies, which share at least one characteristic: the use of algorithms or other techniques to create, discover, or construct knowledge from huge sets of data. Automated profiling involves different* technologies *(hardware), such as RFID-tags, biometrics, sensors and computers as well as* techniques *(software), such as data cleansing, data aggregation and data mining. The technologies and techniques are integrated into profiling* practices *that allow both the construction and the application of profiles.*" (Hildebrandt, 2008c: 17-18, emphasis in the original)

non' for the technological world of the near future as presented in the Ambient Intelligence vision.

Yet, the notion of profiling brings with it a host of questions and issues. I'll list just a few of them. First, there is the notion of embedding technology in relation to profiling. The main question here is: how will users know whether they are being traced by technologies in any given situation, and how will they know what information about them is being captured and stored by cameras, sensors and other capturing technologies in each situation? This issue arises because Ambient Intelligence technologies will be embedded, and therefore largely *invisible*. As Abowd and Mynatt correctly remark it is vital that users be aware of the fact that technologies are tracking them and storing data about them, lest they keep a sense of control over these technologies and accept them as part of their everyday life (Abowd and Mynatt, 2000: 51). This means that although Ambient Intelligence *technologies* will be mostly invisible, their *workings* will have to be made visible in some way or other (at least some of the time), say Abowd and Mynatt. But this would defeat one of the main purposes of the Ambient Intelligence vision. Hiding technologies from view, both in terms of their physical form and their workings, is intended to enhance the ease of interacting with them, to make such interactions more 'natural' and 'less obtrusive'. Moreover, embedding technologies and making their workings invisible is intended to protect users against information overload in a world that is saturated with technological devices and systems. If technologies' workings are to be made visible for users, so that they know for instance when they are being monitored and what is being stored about them, one of the key features of the Ambient Intelligence vision is put overboard. More importantly, if technologies *are* going to warn users whenever they store information about them, then information overload indeed becomes a very realistic consequence, since as we have seen technologies will be *ubiquitous*. What this means is that in a world of Ambient Intelligence the notions of invisibility and visibility will have to be balanced very carefully – and moreover, that there will constantly be a tension between the two because of the requirements of profiling.

A related issue is the networked character of Ambient Intelligence technologies. Not only do such technologies create user profiles *locally*, that is, in specific situations, but these profiles are shared *between systems* and (hence) *across situations*. Information about individual users is thus gathered in one situation –

with or without the user knowing that this has happened and/or what has been stored, as we have seen – and then communicated from one (invisible) system to the next, outside the user's awareness. This means that another dimension of invisibility is added: users do not know what information is stored about them in each situation, nor do they know what information about them is used in the next situation to provide them with anticipative and personalized information and services in that context – rather, users don't have *any* insight into the (previous, current or mixed) deductions the technologies' anticipations are based on. And again: if we would demand for this information to be made explicit, it would defeat the purpose of technologies being unobtrusive, and information overload would surely be the net result. Here, too, we find a tension between hiding things (devices, information, profiles) from view to optimize a user's comfort and peace of mind on the one hand, and making explicit the workings, the 'memories' and the deductions of technologies on the other.

All of these points, moreover, are closely related to the issues of privacy and security in a world of Ambient Intelligence. The International Telecommunication Union (ITU) writes:

> One of the most important challenges in convincing users to adopt emerging technologies is the protection of data and privacy. Concerns over privacy and data protection are widespread, particularly as sensors and smart tags can track users' movements, habits and ongoing preferences. […] Invisible and constant data exchange between things and people, and between things and other things, will occur unknown to the owners and originators of such data. The sheer scale and capacity of the new technologies will magnify this problem. (ITU, 2005: 8-9)

Privacy and security are indeed two of the most debated issues in relation to the Ambient Intelligence vision. This is already the case in our current world, where we unknowingly leave numerous digital traces whenever we surf the internet; cameras track our movements in public spaces; bank card information, public transport passes, and mobile phone records can be used to follow a person's movements; and international air travel requires parting with many personal details. It is not surprising that concerns for privacy and security are even more serious for a world of Ambient Intelligence. Bohn *et al.* write:

> By virtue of its definitions, the vision of ambient intelligence has the potential to

create an invisible and comprehensive surveillance network, covering an unprecedented share of our public and private life... (Bohn, et al., 2005: 9-10)

Both Philips and other parties in the technology industry and the European Commission and its advisory boards are very aware of the vital importance of warranting individuals' needs for privacy and security – without this assurance it is unthinkable that Ambient Intelligence will be materialized as it is envisioned today, because the stakes are simply too high. Questions that arise relating to privacy in a world of Ambient Intelligence include: What information is being stored about users and where? Who gathers this information and who stores it? Who has access to the information and for what purposes? How long is this information stored – should we define a maximum amount of time for the storage of personal data[39]?

Yves Punie of IPTS summarizes some of the privacy issues that arise in a world of Ambient Intelligence in the following quote:

With Ambient Intelligence, the monitoring and surveillance capabilities of new technologies can be massively extended beyond the current credit-card and shopping records (e.g. consumer loyalty cards), Internet logs (e.g. e-mail, news postings, discussion forums) and detailed phone invoices. This is possible not only because this intelligent environment is able to detect and monitor constantly what people are doing in their everyday lives, both off-line and on-line, but also because of the possibility of connecting and searching isolated databases containing personal information. [...] It will be very difficult for people to find a place where they can hide themselves, where they will have 'the right to be left alone', the latter being one of the first (liberal) definitions of privacy... (Punie,

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[39] Proponents of this view refer to what they call 'the right to forget': they claim that before the advent of extensive storing facilities for all kinds of data through the use of computing technologies much information about a person's life or past actions tended to sink away in other people's memories over time, and even if it was contained in paper files the physical inaccessibility of such records, the stand-alone character of such files and the difficulties of searching through them contributed to the fact that much of a person's past was forgotten as his life progressed. Information technologies, with their easy search functionalities and interconnected databases contribute to the disappearance of this kind of forgetfulness – and hence it becomes necessary to think about artificial (legal, institutional) solutions for forgetting in a world of information technologies to recreate (some level of) the 'natural forgetfulness' of the past.

2005: 160-161)

For IPTS and ISTAG particularly, as advisory collectives to the European Commission, these worries are high on the agenda, as is research into the policy instruments that should be in place to safeguard citizen's privacy and security in a world of Ambient Intelligence. In articles such as *The virtual residence: Identity, privacy and security* (Beslay and Punie, 2002), reports such as *Digital Territories: Towards the protection of public and private space in a digital and Ambient Intelligence environment* (Daskala and Maghiros, 2007) and in a large project called *Safeguards in a world of Ambient Intelligence (SWAMI)* (cf. Alahuhta, et al., 2006; Wright, et al., 2006) a number of research groups have worked together to pinpoint the main areas of concern (legally, socially, culturally) for the European Union if the Ambient Intelligence vision were to be realized.

2.9.3 Where is the 'off'-button? Control and influence

As we have seen, the creation and storage of extensive user profiles leads to concerns with regards to privacy and security, all the more so in a world in which the technologies themselves will become invisible, so that users may be unaware of what is being recorded about them, when they are being traced, who records information about them, who has access to which data, and for how long such data will be stored.

A common thread in all of these concerns is the issue of *control*: who is the 'owner' of all the data collected by technological systems, and who can influence them? A minimum requirement to accommodate people's sense of control over technologies and profiles in a world of Ambient Intelligence could be, for example, to create possibilities for individual users to find out what information is stored in their profile, and who has access to that information. A more extended requirement could be to enable individual users to change their data or delete them. We can envisage cases in which this would be a good idea, for example, because a user feels the information that is deduced about him and stored in his profile is unjust, incorrect or unwanted. It is equally easy to imagine cases in which this would be a very bad idea, for instance when people start meddling with their social security number or their date of birth. Accommodating users' concerns with regard to controlling profiles and exerting power over the technologies that surround them is going to entail a complicated balancing act, both in terms of technological issues, and in terms of

social, legal, and practical ones.

A related issue is the fact that there are no 'off'-buttons in a world of Ambient Intelligence. Leaving aside the question of whether individuals will find it acceptable in the first place to live and work in an always-alert, always-surveyed environment, it is clear that here, too, the notion of control pops up: as we saw in the quote by Punie on the previous page it will become hard for people to hide themselves, to be outside the ever-vigilant eye of the networked systems that make up the Ambient Intelligence world. Greenfield points out that the lack of control humans have over technology has serious consequences for what may consequently happen in human-computer interaction. For one, users may *accidentally* engage a system, they may set things in motion without intending to do so. Second, they may be unaware of a "*system's extent, domain of operation, or ownership.*" (Greenfield, 2006: 66) They may be unable to understand the consequences of interacting with a system. Greenfield gives the following examples:

> I had no idea that this store tracked my movements through it and would mail me coupons for products I stood next to for more than ten seconds but didn't purchase. I didn't know that this toilet would test my urine for the breakdown products of opiates and communicate its findings to my doctor, my insurers, or law-enforcement personnel. (Greenfield, 2006: 66)

Another option is, says Greenfield, that users may be unwilling to interact with a system, yet "*have been compelled by simple expedience, by social convention, by exhaustion, by force of regulation or law to accept such an exposure.*" (Greenfield, 2006: 66) When using or interacting with technological systems is the only option to get certain things done and no (remotely convenient) alternative courses of action are open to them, unwilling users may have to resign to accepting a technologically mediated route against their will. Examples of this fact already abound in the current world, ranging from elderly persons having to use a bank machine to get cash or the internet to conduct banking transitions, to public transport users who feel uncomfortable at having their whereabouts when they use RFID tagged public transportation cards.

Since technologies in Ambient Intelligence environments are invisible, embedded and everywhere, one could argue that the possible consequences of a single human-technology interaction mushroom to such an extent that it becomes

(almost?) impossible for individual users to foresee what will result from every single choice they make in the here and now. As Adam Greenfield points out, this is all the more serious since Ambient Intelligence technology

is not something you can sit down in front of, intent on engaging. It's neither something that is easily contained in a session of use, nor an environment in which blunders and missteps can be Ctrl-Z'ed away. (Greenfield, 2006: 39)

2.9.4 Who is the user?

Another issue that emerges in a world of Ambient Intelligence, as Philips and the European Commission currently envision it, is a fundamental shift in the meaning of technology *use*. Adam Greenfield compares using current-day computer technology and the workings of an embedded computer system in a world of the (near) future. He writes:

The PC user actively chose the time, manner, and duration of her involvement with her machine, and also (assuming that the machine was portable) had some say in regarding where it took place. [...] ...the interaction fell into a call-and-response rhythm: users actions followed by system events. [...] Compare these facets [...] to [a world of Ambient Intelligence], in which the system precedes the user. You walk into a room, and something happens in response: The lights come on, your e-mails are routed to a local wall screen, a menu of options corresponding to your new location appears on the display sewn into your left sleeve. (Greenfield, 2006: 38)

He concludes that the notion of 'using' computer technologies is altered drastically in the technologized world of the near future – one could even argue that the notion of a 'user' disappears entirely. After all:

one no more 'uses' everyware [or Ambient Intelligence technology, BvdB] than one would a book to read or a floor to stand on. For many of the field's originators, the whole point of designing ubiquitous systems was that they would be ambient, peripheral, and *not* focally attended to in the way that something actively 'used' must be. [...] ...'user' also fails to reflect the sharply reduced volitionality that is so often bound up with [encounters with Ambient Intelligence technologies, BvdB]. (Greenfield, 2006: 70, emphasis in the original)

Not having to 'use' computing technologies anymore is one of the explicit goals of designing systems that are unobtrusive and natural in their interactions with human beings – such systems simply *do* things in response to humans, without explicit commands or instructions. Perhaps it would therefore be more appropriate to say that it is the *technology* who 'uses the user' in a world of Ambient Intelligence rather than vice versa. After all, the technology takes the person, his preferences and needs, as a starting-point for conducting tasks and operations – it is the technology for whom the human is the 'tool'.

What this argument shows is that new conceptions of human-computer interaction need to be developed to accommodate for the interactional changes Ambient Intelligence will bring about. In recent years much valuable work has been done on improving designers' understanding of users and the ways in which they accommodate (or domesticate) specific technological artifacts into their everyday lives. It has been pointed out time and again that technologies are always disruptive factors in the routines, rituals and practices they enter – they destabilize existing practices and environments and need to be appropriated and adapted to be given a proper place within them (Edwards and Grinter, 2001: 263). However, as this discussion shows a new layer of complexity is added to the already multifaceted design process: the notion of humans using technologies needs to be reformulated in fundamental ways when designing for a world of Ambient Intelligence. This, too, connects to the points addressed in previous paragraphs: having a sense of control and power, having some sense of being in charge of the technological environment people live and work in will remain vital parameters. But at the same time the requirements of unobtrusiveness and anticipation entail that notions of use and more in general of human-technology interaction will have to be reconceptualized.

2.9.5 Incorporating technological artifacts

In this chapter we have seen that Ambient Intelligence envisions new steps forward in making technologies more mobile: wearable computing in its various forms is the banner under which this project is undertaken, the creation of embedded technologies in clothing and accessories such as bags, glasses and so on and so forth. Various forms of creating wearable computing are envisaged, as we have seen – integrating existing mobile devices (mobile phones, mp3 players) into garments,

weaving technologies into fabrics, and using lighting (LED) in combination with other technologies to make textures 'interactive' and 'alive'. But Ambient Intelligence need not stop at embedding technologies into our clothes alone – why not use the human body instead? Futurist Adam Greenfield writes:

> Of all the new frontiers opening up for computation, perhaps the most startling one is that of the human body. As both a rich source of information in itself and a vehicle by which we experience the world, it was probably inevitable that sooner or later somebody would think to reconsider it as just another kind of networked resource. (Greenfield, 2006: 48)

Nothing in the vision of Ambient Intelligence excludes the rise of *'cyborg technology'*, although for now, as far as I know, none of its proponents have mentioned it as a specific goal. Over the past decades a few pioneers have made their appearance in the field of cyborg technology. First, there was Steve Mann, a professor at the University of Toronto, who is generally considered the inventor of the field of wearable computing. Since the late 1970s Mann has been building and (literally: permanently!) wearing computing devices, such as cameras on his head or inserted into his glasses that record everything he sees, and "*internet-connected shoes* [...] *which allow one to run with a jogging partner located in some distant place*" (Mann, 1997: 21) – devices, notably, that have gotten less bulky and ever more ingenious as the years progressed. In Mann's case wearable technologies are still literally that: they are devices that he carries on (the outside of) his body.

However, a foretaste of what might happen when technologies are integrated *into* the body is given by Kevin Warwick, a professor at the University of Reading in the UK. Warwick had two chips implanted in his arm in 1998 and 2002 as part of his research in cybernetics, which aims at enhancing human capabilities. With the first chip Warwick conducted a number of experiments in the building where he works: the chips communicated with several RFID-tags and whenever Warwick moved around the building his chip and the tags communicated and set a number of things in motion: doors opened when he approached, lights turned on when he entered a room, and computers switched on his website whenever Warwick passed by (note how in this experiment a lot of the functionality that is envisioned in an Ambient Intelligence world was actually created in real life!).

Wearing the chip left a big impression on Warwick, who felt a sense of control

and power like he'd never had before. He not only felt that his human capabilities had been enhanced considerably, but also quickly came to see the implant as a natural part of his body and being:

> The biggest surprise [...] was how I felt mentally. Very quickly I regarded the implant as being part of me, part of my body, just as much as my arms, toenails or skin. A wristwatch or jewellery you can be fond of and like, but they are separate from you, they are not part of you. With the implant it was clearly me. (Warwick, 2004: 85)

The chip was removed after a couple of weeks – an experience that left Warwick feeling rather empty:

> ...on the afternoon of Wednesday 2 September, the implant was removed. It was a very strange feeling. [...] ...my link with the computer was suddenly taken away. Perhaps the feeling between the computer and me had been a bit like Siamese twins. I felt as though a friend had died – very down and very sad. (Warwick, 2004: 86)[40]

Four years later the second chip was implanted. With this chip in his arm, Warwick performed a series of experiments. These included moving artificial devices, such as an artificial hand and a Lego robot over distance by moving his hand and arm, and, more bizarrely, moving the same artificial hand, which was situated in the UK via an internet connection while Warwick was in New York. Ultimately Warwick's wife, Irena, also had a chip implanted in her arm, and Warwick 'communicated' with her through these chips: when she moved her hand, a signal was sent trough the internet to Warwick's implant and he felt a pulse in his arm. Warwick forecasts that in the future we will be able to communicate our thoughts directly with other people

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[40] It is interesting that Steve Mann, who didn't even literally implant technologies into his body, but rather has worn them on the outside of his body incessantly for several decades, described similar feelings when having to go without his technological add-ons for a while. "*Mann* [...] *was subject of a notorious incident at the U.S.-Canada border, soon after the September 11th attacks, in which his mediating devices were forcibly removed by immigration authorities.* [...] *This sudden deprivation of the massive input he had become accustomed to was apparently a harrowing experience for Mann. He described it as one of deep disorientation and nausea.*" (Greenfield, 2006: 50-51)

based on principles like these.

Leaving aside judgment of the content of Warwick's experiments and his approach to the matter of cyborg technology, one thing is very clear from his work: with the technological possibilities increasing it seems only a matter of time before various kinds of implant technology will become available. Considering some of the key elements of the Ambient Intelligence vision such as embedding technology, emphasizing unobtrusiveness, and (further) developing wearable computing it seems hard to believe that eventually this would not lead to (at least some rudimentary) forms of incorporating technologies[41].

2.9.6 A new digital divide? (haves versus have nots): Equal access, equal skills

Another area of concern in a prospected world of Ambient Intelligence is that of the emergence of a 'new digital divide' (or new digital divides). In *The future of Ambient Intelligence in Europe: The need for more everyday life* Yves Punie of IPTS repeats that it is one of the Lisbon goals' explicit targets to create a competitive knowledge society with equal access and equal skills for all. Punie explains that the notion of a digital divide is complex in itself: it may apply to differences in access to information and communication technologies, but also to differentiation in skills and competencies, unequal possession of necessary resources (such as money and time), and diversity in the ways in which ICTs are used (Punie, 2005: 157). Contrary to what one might expect, as the ubiquity of technologies in a world of Ambient Intelligence might strengthen the existing digital divides and create new ones, Punie is hopeful with respect to the contributions Ambient Intelligence technology may have when it comes to dissolving the various digital divides. He argues that Ambient Intelligence

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[41] The notion of 'incorporating objects' has a considerable history in philosophy, most notably in phenomenology. In a famous example Maurice Merleau-Ponty describes how a blind man may come to extend his perceptual abilities through the use of a stick. He writes: "*Once the stick has become a familiar instrument, the world of feelable things recedes and now begins, not at the outer skin of the hand, but at the end of the stick.*" (Merleau-Ponty, 1962: 175-176) The blind man has thus 'incorporated' the stick into his perceptual schema. For a discussion of the many meanings of the notion of incorporation and the ways in which technologies may be incorporated, see Elke Müller's dissertation (Müller, 2009). In this section, incorporation is intended in its most *literal* meaning: factually inserting technological artifacts into the human body.

"*promises to remove some of the existing barriers to the acceptance of new technologies*" not in the least because it "*addresses certain issues that are at the core of the digital divide debate, i.e. user-friendliness, relevant (context-aware) services and natural interfaces.*" (Punie, 2005: 157)

However, true as these observations may be, a thoroughly technologized everyday living and working environment does have certain consequences in terms of the skills and capabilities it requires from users. As Edwards and Grinter rightly remark adding more and more technologies to for instance the home environment entails that individuals will (have to) become 'systems administrators'. They write:

> Indeed, the average home computer user now has to concern herself with chores that would seem familiar to a mainframe systems operator from the days of the high priesthood: upgrading hardware, performing software installation and removal, and so on. The advent of always-on broadband connections and in-house networks have finally brought to our homes the few systems administration tasks that had so far eluded us: network and security administration. These are chores that are overwhelmingly complex and understood by few [...]. What will the situation be when our homes are filled by complex technological artifacts that are meant to interoperate with each other and with the outside world? (Edwards and Grinter, 2001: 261)

Edwards and Grinter argue that even today many people do not know how to repair or maintain the individual appliances in their home environment – they call in an expert whenever a device breaks (or they go to the store to buy a new one) or they cannot get it to work properly. But how much expertise will individual users need in the near future to maintain even the simplest home networks of technology in a secure and safe manner?

Recently, in various European countries discussions have started regarding the (minimal) skills citizens should have to ensure safe and well-informed interaction with various kinds of information technologies. Much emphasis has been placed on 'media wisdom', which means having the skills to oversee the consequences of one's actions in relation to technologies, and having the strategic capabilities of finding one's way in a thoroughly technological world. It is clear that the skills needed for the use of and interaction with Ambient Intelligence systems will not develop spontaneously. Governments play an important role in making sure that all of their citizens have access to and share some basic skills to properly use Ambient

Intelligence technologies, lest there be consequences in terms of increasing social inequality, dissimilarity in power resulting from having information at one's disposal that others don't have, and the derivation of status and wealth from this advantage.

2.9.7 Pushing, pulling and setting limits: Techno-colonization

Mark Weiser, we have seen above, envisaged an age of '*calm technologies*' – an age in which technologies would no longer complicate and clutter our lives, but make them easier and more enjoyable instead. Aarts and Encarnação argue that this latter task is taken up explicitly in Ambient Intelligence. They write:

> Ambient Intelligence extends the technical foundation that was laid by former initiatives like *ubiquitous computing* [...]. These technologies triggered the diffusion of information technology for various appliances and objects of the everyday life. But now, Ambient Intelligence has to guarantee that they unburden – instead of burden – the user. This means, the approach of the former initiatives, which is more technology-oriented (innovations by *technology-push*), must be replaced by a more user- and scenario-oriented approach, respectively (innovations by *user-pull*). (Aarts and Encarnação, 2006: 11, emphasis in the original)

Users, we have seen above, must be at the center of the design process, the Ambient Intelligence vision argues, and should have an active role in developing new concepts and ideas – the starting-point of the design and development procedure should be the users' wishes and needs. Instead of the old idea of 'technology-push', which dictated basically that anything that *could* be made in terms of technology *should* be made (and marketed), it is the users who should now set the agenda for technology development. ISTAG, too, points out that Ambient Intelligence distinguishes itself from earlier visions and other perspectives through its emphasis on the transformation from '*technology-push*' to '*user-pull*' (ISTAG, 2003: 6).

Now, one can raise several questions regarding this claim. First of all, research has shown that it is rather difficult (if not outright impossible) to base one's product development in the technology industry predominantly on the wants and wishes of consumers, since consumers, when asked what product they are missing in their everyday lives, generally have a very hard time coming up with anything at all – not because they are not missing anything, but because it is simply incredibly difficult to

think of products and technologies that don't exist yet. So Philips' user-centered design strategy must always include at least *some* level of technology-push, in the sense that users need to be exposed to technological possibilities and probably even prototypes to start up the 'design cycle' in which their feedback, their needs and their 'user-pull' will be incorporated.

Second, at the beginning of this chapter I argued that the practice of embedding technologies into common objects in for instance the household enables designers to use an immense variety of new objects as novel platforms for design – an entire new horizon of possibilities is opened up by the fact that technologies can be embedded in basically *any* ordinary object. What this leads to, unsurprisingly, is that technology designers, in their enthusiasm (I have labeled it 'technothusiasm' before) regarding the possibilities their designs have to offer, sometimes come up with product ideas and prototypes that would bewilder probably the large majority of ordinary consumers, to put it mildly. The quotes that I discussed on page 65 of this chapter are a point in case: "*The ultimate dream is that the Ambient Intelligence home will be packed with exciting* [...] *gadgets, such as* [...] *virtual fish tanks, electronic paintings, and electronic wallpaper that adjusts to the mood of the occupants*" (Aarts and Marzano, 2003: 176) and "*a football shirt that can show the goals from the team's latest match, shirtsleeves that display SMS messages*" (Aarts and Marzano, 2003: 160). These are hardly clear examples of 'user-pull'. Rather, what they are examples of what has come to be known as '*I-methodology*' (Akrich, 1995: 173)[42], on which Oudshoorn *et al.* write:

> The I-methodology refers to a design practice in which designers consider

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[42] Although Madeleine Akrich does discuss the fact that the designer may take himself (the 'I'), his needs, capabilities and likes as both his starting-point and his point of reference in the design process for technological artifacts, nowhere in this article (or anywhere else, for as far as I have been able to verify it) does she actually call this 'I-*methodology*'. She calls it 'I...' instead. However, in later articles by other authors the term 'I-methodology' is used and accredited to Akrich – and it is claimed that she has coined it in this particular text. For as far as I have been able to reconstruct things, it seems that although Akrich was indeed the first to point out that designers use themselves as user representations, Oudshoorn, Rommes and Stienstra were the ones who (unknowingly?) coined the term 'I-methodology' in *Configuring the User as Everybody: Gender and Design Cultures in Information and Communication Technologies* (Oudshoorn, et al., 2004).

themselves as representative of the users […]. Akrich describes the I-methodology as the *'reliance on personal experience, whereby the designer replaces his professional hat by that of the layman'* […]. This is often an unconscious process: the designer is not aware of the fact that the user representation he or she is using resembles himself or herself. (Oudshoorn, et al., 2004: 41)

Now, using I-methodology and being a technothusiast in itself are not reasons for being suspicious of Philips' claim at striving for 'user-pull'. After all, in all likelihood the 'technothusiasts' are the best candidates for inventing new and original technological artifacts, since they know what the technological possibilities are and can envision uses and needs for products that your average customer may take some time to become convinced of. Philips as a company for consumer electronics has a history for marketing highly inventive and original products, some of which, truthfully, failed in the market (such as the CD-i), but others of which have turned out to be an immense consumer success (such as the compact cassette, the laser disc, the Compact Disc (CD), the Senseo coffee maker, and the Blu-ray Disc[43]). None of these products could have been developed without designers who were optimistic, enthusiastic and dared to think 'outside the box'; and more importantly, none of them could have emerged had Philips abandoned its 'technology-push' stance. All of them were marketed with an all-or-nothing strategy: either they'd become big hits or big failures. That is 'technology-push', if ever there was one.

Now, technology-push in itself, it should be obvious by now, is not necessarily a bad thing. While it is indeed important that users are involved in the design and development process of new technologies, so that these technologies may fit into their everyday lives as comfortably as possible, at the same time I argue a little 'pushing' is not only inevitable but even required, as we have seen above. What is essential for a world of Ambient Intelligence, however, is a constant and deliberate discussion of the *limits* of technology push, or, for that matter, 'user pull' – how far do we want to go in technologizing our world? How much of our world do we want to saturate with more and more artifacts that provide us with ever more services, ever more information, ever more entertainment? Of course, to some degree these questions have different answers for different individuals: some people cannot get

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[43] The latter was developed together with Sony, as was the Compact Disc (CD).

enough of technologies and would prefer to live life as thoroughly technologically mediated as possible, while others find the current technological saturation (Gergen, 1991; 1996) of everyday life too much to bear already, and would prefer to have as little to do with technologies as possible. To some degree, these are questions of a more general nature – questions worthy of debate for larger social collectives, including governments and institutions. They are, in either case, questions that need to be addressed, and keep being addressed as time progresses and Ambient Intelligence matures.

2.10 Ambient Intelligence and identity?

In this chapter I have introduced the Ambient Intelligence vision – a technological vision of the near future that was originally developed by Philips (or was it?) in the 1990s, but has since then spread not only to other companies in the technology industry, but has also been endorsed by the European Commission as an important part of Europe's technology development agenda for the next decades. I have introduced a number of the key elements of this vision. For one thing, technologies in this vision are envisaged to become ubiquitous, and they may be embedded into basically any (existing) artifact or surface, both in private and in public spaces. Also, central to the Ambient Intelligence vision is the idea that interacting with technologies should be easy, 'natural' and aimed at a user's specific needs and wants – hence there is a lot of emphasis on the technology's ability to provide personalized content and services, and moreover, to do so in an anticipative way, that is, without the user's explicit commands or requests. I have discussed the origins and background of the Ambient Intelligence vision, its relations to other visions of technology (most notably ubiquitous computing), and research domains such as Human-Computer Interaction (HCI) and human-centric computing. After that, I have shown where the Ambient Intelligence vision diverges from other perspectives – it is, for instance, a vision that focuses on consumer electronics for both the home, the office, and public space, rather than for instance the work environment alone. Subsequently, I have illustrated the presentation of this vision with a very brief overview of examples of what Ambient Intelligence might look like in practice.

Then I went on evaluate some of the foundations and ideas contained in this

vision – a constructively critical analysis of, for one, some of the hidden assumptions in this paradigm. In the last part of this chapter I presented the reader with a short overview of a number of concerns that are relevant in light of the developments and changes the Ambient Intelligence vision proposes. As an epilogue to this chapter I will now turn to the main investigative domain of this dissertation: the notion of *identity* and the possible effects Ambient Intelligence may have on the construction and expression thereof. Relatively little has been written about this subject as of yet. Various authors do mention that technological change in general, and Ambient Intelligence in particular in all likelihood will have an impact on identities. For instance, in *Ambient lifestyle* Josephine Green of Philips writes:

> In a relationship where the technology is embedded in our everyday environment we no longer 'consume' the technology but live side by side with it, as it supports and facilitates our daily living. Through this more intimate co-existence our identity becomes less about needs, 'what do I want', and more about expression and experience, 'how can I best take advantage of what I want to do in the way I want to do it', in any specific context, be it a home, a car, a public space, a hospital or a school. (Green, in: Aarts and Diederiks, 2006: 23)

The European Commission, too, is aware of the relevance of identity as a notion that may be affected by the advent of Ambient Intelligence. Daskala and Maghiros of IPTS write:

> ...governments and states wish to protect their citizens and create a state of security and trust, where identity is a significant building block. As a result, identification requirements in this emerging new world require 'handling with care'. (Daskala and Maghiros, 2007: 14)

These two quotes raise several interesting questions: for one, what do the authors mean by 'identity'? In the second quote 'identity' refers predominantly to '*identification*' – in this report Daskala and Maghiros describe the ways in which processes of identification (e.g. through biometrics, the use of chips and sensors, but also in virtual contexts ('virtual identities')) are affected by the emergence and spread of Ambient Intelligence technologies. Green, on the other hand, refers to identity in terms of '*self-conception*' – to how we may come to experience ourselves in a world of Ambient Intelligence. Two different aspects of identity are brought to the foreground here then.

Another question these two brief quotes raise is: *how* exactly does Ambient Intelligence have a bearing on both of these aspects of identity? Through what mechanisms, or *in what roles* exactly does technology in general and Ambient Intelligence in particular have an impact on who we are, or how we conceive ourselves?

In the chapters to come these are some of the questions that will be addressed. In the next chapter I will present my conception of identity in the current, high-technology age – summarized under the heading 'the situated self'. After that I will discuss some the ways in which Ambient Intelligence affects our situated self-expressions and the construction of our situated senses of self.

3

The situated self

A theory of identity and situation

> When seen up close, the individual, bringing together in various ways all the connections that he has in life, becomes a blur. (Erving Goffman, quoted in Battershill, 1990: 175)

> Maybe the most certain of all philosophical problems is the problem of the present time, and of what we are, in this very moment. (Foucault, 1982: 216)

3.1 Introduction

'Identity' is a highly complex and layered concept. Broadly speaking, three different dimensions of the term can be distinguished. First, 'identity' stems from the Latin word '*identitas*', which means 'sameness'[44]. This refers to the fact that objects or

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[44] In philosophical logic the notion of 'sameness' has two meanings. First, there is the idea of *qualitative identity*, which means that two items (objects, terms) resemble each other to a large degree, but are not necessarily exactly (or completely) the same. Thus, we may speak of the sameness of x_1 and x_2, as distinct from y_1. Second, sameness can mean *numerical identity*, which means that 'x' can be uniquely set apart from all other things (y, z), i.e. that x = x and only x. (I kindly thank dr. Tim de Mey for pointing out the difference between these two different meanings of the notion of sameness).

people can be recognized or distinguished *as individual objects* or *people*. Note that there is a *temporal* dimension in the notion of sameness: people and things display a certain amount of *continuity* or consistency over time. 'Identity' as 'sameness' refers to the fact that identities endure over time, i.e. that they are still there after a night of sleep and even after several decades of living.

Second, identity means *identification* – being able to ascertain who (or what) someone (or something) is. The identity of a thing or a person is what sets it apart from others, and alternately what links it up to others. Identity, then, is about *classification* and *association*: being this, rather than that, and belonging to this category or group, rather than that one. This is why identities are always relational. Identities are never 'simply there'. Rather, they are established in relation to others, both individuals and groups. And sometimes they are contested or challenged, by these others. The negotiation of identities involves power structures and politics. This is why Erving Goffman writes that only "against something [...] *the self can emerge*". (Goffman, 1961a: 320)

Third, and this is related to the previous point, as Richard Jenkins argues in *Social identity*, "*there is something active about identity [...]: it isn't 'just there', it's not a 'thing', it must* always *be established.*" (Jenkins, 2004: 4, emphasis in the original) Goffman calls it a "*stance-taking entity*" (Goffman, 1961a: 320). Identity is a *process*, not an essence. We cannot pin down an identity as some kind of localizable property or entity, but rather must treat it as something that is always active, always 'under construction', always becoming. In the words of Sheila McNamee:

> Identity, [...] is not an object to be examined but is a reality constructed in the interactive moment. It is an emergent by-product of persons in relation, each drawing upon his or her conversational resources (i.e. his or her network of relationship) as the moment unfolds. (McNamee, 1996: 149)

Last, identity is something that we *experience* as individual persons. Identity involves a sense of 'selfhood', it is our experience of *selves as selves*. This means that identity has a highly personal character (De Mul, 2005: 251-252). It involves our perception of ourselves as unique, distinct, original, singular human beings, with a specific personal history, a specific biography, and specific memories.

This brief introduction of the notion of identity shows that it is a multi-faceted, multi-dimensional and complex notion. In this chapter I will present my own

perspective on identity, which focuses to a large degree on the *social* dimensions of identity – on how identities are expressed and constructed through social relations and in interactions with other people and environments.

Now, any discussion on the question of what identity is, or how identities come about has to account for both *biological* and *social/cultural* influences in the matter. It will have to take sides in the age-old debate between (broadly speaking) 'nature' and 'nurture': are identities 'innate' or are they part of 'learnt behavior'? Do they stem from our genes or our upbringing? Let me begin by saying that I feel fundamentally uncomfortable with a division between nature and nurture, not only because any strict dichotomy makes me feel uncomfortable – life as we know it is always more 'frayed' than this – but mainly because obviously the answer is always: a little bit of both. Biological arguments that disqualify the importance of 'nurture' and state that 'genes are everything' are too simplistic, and the same goes for social determinist arguments that explain the world solely in terms of culture and strictly exclude the relevance of our biological beings. I am tempted to quote Dreyfus, who says of Heidegger's Dasein:

> ...Dasein is what, in its social activity, it interprets itself to be. Human beings do not already have some specific nature. It makes no sense to ask whether we are essentially rational animals, creatures of God, organisms with built-in needs, sexual beings, or complex computers. Human beings can interpret themselves in any of these ways and many more, and they can, in varying degrees, become any of these things, but to be human is not to be *essentially* any of them. Human being is essentially simply self-interpreting. (Dreyfus, 1991: 23, emphasis in the original)

So whether we choose to interpret ourselves as 'organisms with built-in needs', as 'complex computers' or in any of the other ways Dreyfus enumerates, the point is that it is just one of many possible interpretations. Moreover, nature and nurture are not opposites in a strict dichotomy, but rather the poles of a continuum. Any theory of identity should therefore not take either one of the two extremes, but rather clarify and justify where it positions itself on the scale between these two. The position one takes in this continuum has to be legitimized through its relevance with regard to the subject it applies to – this is a basic law of science, I would say. For example, calculating the distance from my office to the university cafeteria by using quantum theory is a less appropriate and relevant choice than using Euclidian geometry, and

therefore Euclidian geometry seems a better tool to fit the subject. Similarly, in social sciences and philosophy the road taken to look into a specific question has to fit the problem at hand. In identity studies this means that when studying a *social* phenomenon in relation to identity a *social* approach to identity is the better choice, whereas when investigating a biological problem naturalistic stances to identity seem more appropriate.

As for my own position, I focus on the social aspects of identity. I do not negate the importance of genes and brains in the construction of identities – after all, without the specific genetic and physical makeup we humans have, identities as we know them in all probability would not exist. However, for the current task at hand, that is, establishing whether identities are affected by technological changes (and in particular by Ambient Intelligence) looking into the relevance of genes and inborn character traits for identities does not seem to be the most fruitful approach, for two important reasons. First of all, Ambient Intelligence, like all other technologies, *belongs to the realm of culture* – it is an expression of what human beings, as cultural beings, can make and do, and doesn't have much to do with our biological beings (apart from the obvious general fact that has been pointed out above, viz. that it is our physical and biological makeup as is that has given rise to cultures in the way we know them). Since Ambient Intelligence belongs in the realm of the social, studying it on the basis of a socially oriented theory of identity seems the most valid choice.

Second, what we are interested in here is whether Ambient Intelligence technologies affect human identities, and if so, in which way(s) this happens. Therefore, the most logical approach to tackle these questions is to study what happens when, in everyday contexts, *human beings encounter and interact with Ambient Intelligence technologies*. This means that we will have to uncover in which ways *using* such technologies and being *engaged with* and *by* them has a bearing on the way people perceive themselves and express themselves. In the words of Bruno Latour:

> To be accounted for, objects have to enter into accounts. If no trace is produced, they offer no information to the observer and will have no visible effect on other agents. They remain silent and are no longer actors: they remain, literally, unaccountable. (Latour, 2005: 79)

This seems almost too prosaic to be spelled out, but on closer inspection that may not be the case. After all, what it reveals is a starting-point for an investigation of the possible *relationship* between Ambient Intelligence and identity. Researching the effects of Ambient Intelligence is conducted most fruitfully, I argue, by studying the way humans and technologies 'meet', or more precisely, by studying the way identities are affected through interactions between humans and Ambient Intelligence artifacts and environments.

In this chapter we will investigate how identities are constructed and expressed in and though *situated interactions*. My starting-point is that who we are, what sides of ourselves we show to others, varies from situation to situation. Two hypotheses form the basis for my perspective of identity: (1) who we are is closely related to *where* we are, i.e. the situation we find ourselves in, and (2) who we are is closely related to *who else* is present there.

In the first part of this chapter we will look into the importance of the notion of 'place' for the construction and expression if identities (paragraph 3.2). When we find ourselves in a private place, such as our home, we tend to display different sides of ourselves from when we are in more public places, such as an office, a shop, or out on the street. Geographers such as Nicholas Entrikin and Doreen Massey, and philosophers such as J.E. Malpas and Edward Casey argue that 'place' is highly relevant for identity, both in its construction, its expression and its experience. However, I will argue that although these 'place theorists' have convincingly shown that *where* we are is relevant to *who* we are, they have neglected several important elements with regard to the relationship between places and the expression and construction of identities. For one, with their emphasis on location they have overlooked the relevance of *time*. This is why I propose to speak of '*situations*', which I take to be a combination of a specific *place* with a specific *moment in time*, instead of 'places'.

What's more, 'place theorists' overlook the relevance of *social reality* in the construction and expression of identities – their descriptions of the relationship between human beings and the places they inhabit generally refer to single individuals, and not to groups of people, nor to the relevance of social cohabitation and interaction in man-place relations. Situational theories of identity, I argue, should accommodate for the fact that self-perceptions and self-expressions are intimately bound up to interactions with other people. Where we are is not the only

relevant parameter with regard to situated identities; *who else is present* is equally important.

In the second part of this chapter we will look into a cluster of identity perspectives that can be subsumed under the heading of 'interactionism', and which I will use to complement the shortcomings of place theorists' perspective on identity (paragraph 3.3-3.5). Interactionism is a strand of twentieth century social research that can be roughly viewed as a tree, of which 'symbolic interactionism' is the stem. George Herbert Mead (1863-1931) is generally recognized as the founder of symbolic interactionism (cf. 1986a; Baldwin, 1986b), which was further consolidated by authors such as Herbert Blumer and Tamotsu Shibutani. The interactionist tree has several branches that form offshoots of symbolic interactionism. One of the most famous branches of interactionism is Erving Goffman's micro-sociological approach. Goffman's interactionist perspective on identity will be the main exponent of interactionism to be studied in this chapter. Goffman argues that all interactions may be viewed as '*performances*' that we play out in front of others and ourselves. The '*roles*' that we play most frequently are the ones we come to identify most strongly – they come to be internalized as elements of our selves, eventually consolidated into self-conceptions, or 'personal identities', as Goffman calls them, "*like candy floss, becoming then the sticky substance to which still other biographical facts can be attached.*" (Goffman, 1968: 74-75).

Although both Goffman and other interactionists argue that the performances we choose to play in given situations may vary according to where we find ourselves, it is remarkable that they hardly elaborate on the exact relevance of situational environments. It turns out that whereas place theorists overlook the importance of interaction in the construction and expression of identities, and focus only on the importance of *where* we are, interactionists largely overlook the importance of the latter and focus predominately on *with whom* we are. Since I argue that both elements, where and with whom, are of crucial importance, place theory and interactionism will be combined at the end of this chapter into a perspective of the 'situated self': a situation-bound and interactional conception of identities (paragraph 3.6).

3.2 Self and place

The first hypothesis of this chapter is that <u>who</u> *we are is closely related to* <u>where</u> *we are*. Simply put: when I am at work I show different sides of myself than when I am at home, and when I am in a restaurant I present different aspects of myself from when I am paying for my groceries at the supermarket. I display a different 'persona' based on where I am. But how does this come about? What is the relationship between different places or situations and the various sides of myself (or persona) that I may choose to show?

3.2.1 Three dimensions of implacement

Any human experience unfolds against the background of a 'where', it is always situated in some particular place. Human beings are fundamentally *'implaced'* (Casey, 1993: 13). When reviewing the literature on 'place theory', as it emerges from philosophy and geography, it appears that the notion of 'implacement' has three dimensions. First, there is an *ontological* dimension. Our implaced perspective of the world refers to a "*way of being in the world*" (Cresswell, 2004: 20). It is closely related to our bodily orientation in the world. As human beings we have an upright posture, with eyes, ears and a nose approximately 5½ feet above the ground. We experience the world around us in terms of three dimensions relating to our bodies, viz. in front-behind, left-right, and above-below. Our bodies, moreover, are always at the center of these axes (Bollnow, 1956; 1960; 1967). They function both as our carrier in the world, as the 'vehicle' we have at our disposal to move ourselves around and performs actions, and as our central point of reference. Any experience we have is based on our bodily schemata, our bodily posture, and befits our bodily capacities. Thus, our bodily orientation shapes the way in which we experience the world (and ourselves within it). At the same time our experiences take root in the body as our center. Edward Casey concludes:

> As a 'lived' entity, a *Leib*, the body is not only situated but situating; no mere instance of a *natura naturata*, it is instead an exemplar of *natura naturans*, 'nature' in its active and dynamic aspect and thus something that 'holds sway'. To *hold* sway is precisely not to be under the sway of circumstances, passively positioned and pinned down by the course of external events but rather to have a hand in the determination of these circumstances themselves, including their

situatedness in space and time. (Casey, 1993: 116, emphasis in the original)

Because of our embodied way of being in the world 'implacement' also means "*a way of seeing, knowing and understanding the world.*" (Cresswell, 2004: 11). We see and know the world in a particular way due to the fact that we always find ourselves in a specific place, always understand ourselves and the world surrounding us against the background of the place we are in (Casey, 1993: 13). It is thus a "*condition of human experience*" (Entrikin, 1991: 1).

The second dimension of 'implacement' is *psychological* and refers to our everyday concrete interactions with the world we live in. We label things of greatly varying sizes as 'places' – from a rocking chair in front of the fireplace to one's house, and from the town we inhabit to the whole world (Yi-Fu Tuan, quoted in Cresswell, 2004: 20; see also: Gibson, 1986: 34). According to political geographer John Agnew we use the term 'place' whenever we refer to a combination of three elements: a particular '*location*' (a geographical 'somewhere'), a '*locale*' (the material setting of a location), and a '*sense of place*' (the meanings people ascribe to that particular location) (Cresswell, 2004: 7). The last element, the fact that place is *meaningful* is what sets it apart from 'space'. 'Space', geographers and philosophers agree, is the 'meaning-less in-between' of places. Spaces turn into places by the fact that people ascribe meanings to them. This is why 'place' is often described as 'lived space'[45] (cf. Buttimer, 1976: 280-282; Cresswell, 2004: 38). Human beings literally come to 'occupy' places (Heidegger calls this '*einräumen*') and then develop a sense of belonging there, that in turn, as we shall come to see below, reflects back on their sense of self. Imagine moving into a new room or a new house. One adorns it with

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[45] The meaning of 'lived space' as intended here should not be confused with Bollnow's notion of '*lived-space*' (with a hyphen). In his 1967 article entitled '*Lived-Space*' Otto Bollnow uses the term lived-[hyphen]-space to distinguish between '*mathematical space*' and the *non-reflexive concrete space of living*. Mathematical space is homogenous space, in which "*[n]o point and no direction is preferred to another; through a simple transformation one can make every point the coordinating zero point and every direction the coordinating axis.*" (Bollnow, 1967: 179) Lived-[hyphen]-space is the space we occupy in our everyday lives, in which no zero point exists, and in which our perceptions are embodied, as we have seen above. What Bollnow calls 'lived-[hyphen]-space' was discussed as the *ontological dimension* of place above. Lived space (with*out* a hyphen) refers to *meaningful* space, which is the *second* dimension of place.

one's belongings and adds all kinds of personal touches. In this process one inscribes one's own preferences, history, values and ideas into this previously unoccupied and empty space, thereby, the argument goes, turning it into a place with special meanings and connotations. A similar process can be observed when people name spaces, for example a street or an area, thus imbuing them with a meaning that turns them into places.

The third dimension of 'implacement' is an *anthropological* one. Implacement is of crucial importance in the way we understand ourselves as humans, and more particularly, in the construction and experience of identities. J.E. Malpas uses Proust's *Remembrance of Things Past* to explain how this works. Marcel, the main character of *Remembrance*, "*grasps his own life, and the time in which it is lived, only through the recovery of the places in relation to which that life has been constituted.*" (Malpas, 1999: 5) Malpas argues that places play an important role in the memories we develop over the course of a lifetime. We remember episodes of experience against the background of specific places. The memories we have, in turn, form the basis of the autobiography or narrative that we tell others and ourselves about ourselves. Malpas writes:

> ...the very identity of subjects, both in terms of their own self-definition and their identity as grasped by others, is inextricably bound to the particular places in which they find themselves and in which others find them, while, in a more general sense, it is only within the overarching structure of place as such that subjectivity as such is possible. (Malpas, 1999: 176)

Many place theorists add that there is a strong link between people's 'rootedness' in specific places, for instance the house in which they've grown up, or the city or country they live in, and their identities. We identify with the places we inhabit, and these places thus become part of our self-conceptions.

3.2.2 Implacement and in-timement

The three dimensions of implacement show that *where* we are plays a crucial role in the ways in which we understand the world around us, and our selves in it. But the phrase 'where we are' has more than one meaning: it refers not only literally to a place we may find ourselves in, but also to a *moment in time*. In using spatial references in the description of moments in time ('before this...', 'after that...', 'at this

point in my life...', 'at that place in time...') we show that implacement is not solely related to places and spaces, but also has a *temporal* dimension. This dimension is overlooked in most place-research. I argue that it is particularly relevant when studying the anthropological dimension of implacement, relating to identities. After all, we are not the same person throughout our lives – we develop ourselves and the ideas we have about ourselves, from one phase in life to the next. An adolescent has very different self-conceptions than a fifty-year old: accumulated experiences, different 'reference groups'[46], and the general passage of time account for that, among other things. Implacement, in its original meaning, refers to the fact that we are literally always somewhere, that is, in a particular place. I would like to add that, in a similar fashion, human experience is always '*in-timed*': at all times it plays itself out against a background of the passage of time, and within a series of moments. *When* we are somewhere is equally relevant to our self-expression and self-experience as simply where we are. In the words of geographer Doreen Massey, who is one of the few place theorists that does include the concept of time in her work on place: "*Every 'here' is a here-and-now.*" (Massey, 2004: 3; see also Massey, 2005)

Any experience we have is shaped and influenced by the *moment* at which it takes place, in two meanings of the words. First, there is the very practical fact that our actions in everyday life and our understanding of the particular contexts in which those actions take place are not merely related to being in some location, but also to being somewhere at a *specific moment of the day*. When I meet a man in a dark street in the middle of the night I am inclined to view the environment and his presence therein differently from when I encounter the same man on the same street in the middle of the day. Also, when I walk down a street in the middle of summer, on a hot and sunny day, enjoying the livelihood and sparkling sunlight, I experience it differently (and hence in all likelihood behave differently) than when I walk down the same street in winter cold, rushing to get home, hidden away in my big coat.

Second, on a more general level, the '*moment*' at which an experience takes place relates to the fact that we always find ourselves at some *point in our lives*. 'Being somewhere' means being somewhere physically, but it also means being in a specific phase of our lives, a specific 'location' on the line that runs from our births to

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[46] The concept of 'reference groups' will be discussed extensively in Chapter 5 of this dissertation.

our deaths, a 'place' in relation to our lifespan. For example, a ritual like giving each other Christmas presents is experienced differently as a child than as a parent, and again in another way as a grandparent, which explains the second feature of the role of time in human experience. Both the actual moment of time at which experiences take place and the broader context of the narratives of our lives in which they find their place play a role in the content of experiences and their validation.

In my view both *where* we are (place, location) and *when* we are there (moment) are relevant to what sides of ourselves we display, to who we are. This is why it is relevant to include the notion of '*in-timement*' in our understanding of the 'implaced' (or as I shall call it later 'situated') character of our everyday lives and of the construction and expression of identities therein.

'Implacement' and 'in-timement' form two conditions, two pillars that found our experience. Now, Edward Casey, who introduced the concept of 'implacement', doesn't disagree with this statement. He writes:

> Implacement itself, *being concretely placed*, is intrinsically particular. It is occasion-bound; or more exactly, it binds actual occasions into unique collocations of space and time. To be *here* in this room – to be 'herein' – is not only to be in the room down the hall or in a room in the next building. It is to be *somewhere in particular*: a peculiar somewhere in space that situates the 'somewhen' in time. Whereabouts pin down whenabouts. (Casey, 1993: 23, emphasis in the original)

He speaks of a '*collocation of space and time*' and of the fact that experiences are not just implaced, but rather '*occasion-bound*'. However, despite his acknowledgment that time is relevant in the particular experience one may have in a given place, he focuses almost exclusively on the where of our human condition – on the places of our experiences. To rectify this shortcoming I argue we should use the notion of '*situation*' instead of 'place'. The concept of 'situations' brings together both the elements of place and time: situations unfold at a specific moment in time and in a specific place. But they do more than just bring a slice of time and space together: situations constitute 'action spaces': a specific action pattern or interaction pattern may take place within this place-moment context, either between people, or between people and the setting itself (or a combination of both). Anthony Giddens argues that the overemphasis on 'place' is false precisely because of its lack of focus on the

interactional or active element of settings (as he calls situations). He writes:

> A setting is not just a spatial parameter, and physical environment, in which interaction 'occurs': it is these elements mobilised as part of the interaction. Features of the setting of interaction, including its spatial and physical aspects, […] are routinely drawn upon by social actors in the sustaining of communication... (Giddens, 1979: 207)

Settings, or situations, are made productive in interactions in a dynamic process of (inter)action. The notion of 'situations' incorporates three elements, then: place, moment, and action space. Situations are concrete everyday interactional settings. They can be defined as *ensembles of specific meaningful locales (places), and specific moments in time in which agents may come together within an (inter)action space to create a single 'slice of social reality'.*

This means that a specific 'slice of social reality' forms the décor within which a person can interact with others, interact with objects, do things etc. The situation places certain boundaries on the types of action patterns, the types of 'performances' a person may conduct within it. In the next chapter we will see how this comes about exactly. For now it is important to note that situations vary and that the roles we play in situations vary with them. In everyday life we move between situations, go from one situation to the next. As Paul Meadows argues, a 'situation' is a momentary context in which action patterns may unfold, while the totality of the situations we move between forms the background of our experience. He says: "[S]*ituations are analytical space-time 'stills' in a moving picture, momentary patterns within a temporal sequence.*" (Meadows, 1945: 356)

The variation of situations and the accompanying variation in the roles we play in them mean that there is a link between situations and identities in terms of self-expression. But, as I will argue below, this is not the only thing. The construction of selves comes about in and through situations as well. This is because identity is constructed through interaction, both with other people, but also with objects and environments.

3.2.3 Complementing place theory

As we saw above, identities are closely bound to places – they form a condition on which to build subjectivity and a source from which to derive meaning and a sense

of self. In the previous paragraph I have shown that it is not just place that is a fundamental category of human experience, and hence formative to identity, but also time. 'Situation' has thus been proposed to be the central experiential unit from which we derive a sense of self, and in which we express elements of that self. This approach is in line with our everyday experience of identities, in the sense that it allows for variation of identities across different situations. Identity, as Richard Jenkins rightfully argues, is too often taken "*as some<u>thing</u> that simply <u>is</u>*" (Jenkins, 2004: 5, emphasis in the original). Jenkins' use of emphasis in this short phrase shows that there are two problems with such a perspective: first of all, identity never 'is' – it is always a process, never wholly stable, but always 'in the make', constantly oscillating between 'being' and 'becoming'. Second, identity is not a 'thing' – it is many things, a whole set of self-images, roles, ideas, values, and so on and so forth. They range from explicit and conscious self-referring descriptions, used by the individual to set himself apart from and/or align himself with others, to (wholly) implicit displays of self. This is also why, in some respects, it is more accurate to speak of identit*ies* than of identity. After all, although most of the time most of us experience ourselves as having a unified, consolidated identity, in the practice of everyday situations we often take resort to a whole range of identities. Or, in the words of Jenkins: "*who we are is always singular and plural*" (Jenkins, 2004: 5)[47]. It is the plurality of our identities that will be emphasized in this dissertation.

The first hypothesis of this chapter was that who we are is closely related to where we are. Now it is time to turn to the second hypothesis: who we are is also closely related to who else is present there. At the beginning of the previous paragraph I gave a number of examples to show that we display different sides of ourselves in different situations. For example, we play different roles when we are at home from when we are at work or when we are in a restaurant. However, location is not the only relevant parameter here. When one is at home with one's family one tends to show different sides of oneself from when one is at home entertaining acquaintances or colleagues. And when one is at the office having a meeting with

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[47] Since I conceive of identity as a plurality of different situated roles I would have preferred to replace the singular 'identity' or 'self' with the plural 'identities' or 'selves' everywhere throughout this dissertation. However, at times simple rules of grammar or style do not permit me to use the plural form I point out to the reader that whenever the singular form is used its plurality is intended.

colleagues one tends to display a different persona from when one shows one's children around the office building. *Whom one is interacting with* is just as relevant as where one is, then.

I argue that identities are literally situated, that is, they come about and find expression in situational contexts, based on a combination of situational environments and interactional performances. Identities thus emerge in specific contexts (places) and are also related to who else is present in those specific contexts. They are bound up with interaction. To see how this works we will turn to interactionism, a philosophical/sociological perspective of two interrelated subjects: socialization and personality (Stryker, 1959: 111-112).

3.3 Self and interaction

Interactionism is a branch of social theory that emerged at the beginning of the twentieth century. George Herbert Mead is generally acknowledged as the founder of its 'root' paradigm: *symbolic interactionism.* His book entitled *Mind, self & society from the standpoint of a social behaviorist* formed the foundation of this perspective (Mead and Morris, 1934). Mead himself didn't consolidate his thinking into a consistent framework and never used the term symbolic interactionism. This was done by his followers, most notably Herbert Blumer (Blumer, 1969). Blumer was also the one who gave Mead's perspective its name. Later followers, such as Tamotsu Shibutani (Shibutani, 1987) and Sheldon Stryker (Stryker, 1959; 1980) developed the symbolic interactionist stance further. It gained a considerable crowd of followers in different scientific fields, such as sociology, social and developmental psychology, and philosophy.

Symbolic interactionism's point of departure is the idea that in the study of human socialization and personality the emphasis should be on human behavior[48], instead of introspection. Mead's thesis can be viewed as a response to introspective psychology, one of the dominant approaches to the human mind at the end of the nineteenth and the beginning of the twentieth century. Mead argued that a new perspective for studying the human mind should be developed because introspective

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[48] Although from a distinctly different starting-point than behavior*ism*, as we will see below.

psychology lacked sound scientific (i.e. objective) methods of investigation. Symbolic interactionism was his response to these shortcomings.

Mead started from the basic assumption that one of the soundest scientific ways to study the human mind was to investigate its most evident product: behavior. In contrast to behaviorism, another methodology that was developed around the same time to counter the alleged non-scholarly character of introspective psychology, Mead emphasized that the mind *can* in fact be studied scientifically[49]. Its workings are made visible in and through behavior, and more specifically, in and through human interaction. From the ways people act and interact we can deduce (scientifically valid) things about their minds. Mead argues that the mind is dependent on the use of language. Without language thinking is literally impossible, he claims. Language is a social phenomenon – it is both used and learnt in the social arena. When children acquire language through interactions with other people, they gradually develop a mind, symbolic interactionists argue. Before the acquisition of language children are a lot like animals – Mead even calls them as '*infrahumans*'.

> Infrahumans – at least the vast majority of them – seem to have a passive relationship with their environment. Behavior is usually instinctive (biologically programmed) or learned through imitation and experience. There is communication between infrahumans, but it is what might be called a conversation of nonmeaningful gestures, where the act of one organism becomes a cue for the response of the other. (Charon, 1989: 46-47)

Since having a mind depends on the acquisition of language, minds are dependent on interactions, both as a prerequisite for their existence, and in terms of their contents. Symbolic interactionism, then, is a perspective that aims to study human behavior as it emerges within social contexts and in social interactions between human beings. These social interactions form the basis of a study of the development of human identity/personality and the socialization of human beings in

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[49] Behaviorism claimed that the human mind is a 'black box' whose operations cannot be studied with objective scientific methods, since its disclosure always involved a strong subjective component. Therefore, the existence of the human mind could only be suspected as the origin of human behavior. The only thing to be investigated using sound scientific methods were the visible, objectively verifiable human behaviors that were observable, not the invisible workings of the mind.

groups of peers and kin, as well as larger communities, such as the region one lives in or the broader culture. In symbolic interaction, and in the other, later branches of interactionism that have developed[50], the construction of identity is viewed as an active, dynamic and life-long process, the coagulation of a resonance between the subject and the social interactions he or she encounters. This perspective is fruitful for the current purposes precisely because of its emphasis on the notion of situations.

In interactionism human identities, or 'selves'[51], as interactionists often call them, arise as the 'residue' of all the social interactions a human being has in situations. This explains why the self is at once stable and susceptible to change. At the beginning of this chapter we saw that one of the meanings of the word identity is its continuity over time. Identities are not fluid, cursory phenomena, but are relatively constant over longer periods of time. At the same time we have seen that identities are always a *process*, always need to be established, and are always

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[50] From this point forward in the text I will use the term 'interactionism' to describe both the symbolic interactionist stem of the interactionist tree and its various branches and offshoots, most notably Erving Goffman's micro-sociological perspective. I will henceforth only refer to *symbolic* interactionism when the idea or concept under discussion either explicitly stems from symbolic interactionism, or when it is not part of the body of theory in any of the other branches gathered under the umbrella of interactionism.

[51] There is much debate in interactionist and other social theories of identity regarding the *causal relationship* between the concepts 'self' and 'identity' – does our self give rise to one or more identities, or rather the reverse: does our identity lead to the presentation and expression of one or more selves? In *The production of selves in interpersonal relationships* Philip Blumstein (Blumstein, 2000) explains that generally we "*tend to think of the self as the basis of identity.*" (Branaman, 2000: 170) Our self, in this general conception, is expressed in various situated identities, which in turn affect the basic structure that is our (sense of) self. However, Blumstein argues that the causal relationship between self and identity ought to be conceived or in the opposite direction. According to him it is our identities that produce selves. Identities are 'presented selves', and in this fashion it is our identities that affect the self, rather than the reverse. Personally, I find the attempt to uncover a (causal) relationship between 'self' and 'identity' interesting yet somewhat too scholarly an exercise. If pressed to make a conceptual distinction between 'self' and 'identity' I would claim loosely that 'identity' refers to the *expression* side of who we are, whereas the 'self' refers to the *construction* and *experience* side of who we are. However, even this distinction seems a bit too rigid and too formal to me – in everyday life the words 'identity' and 'self' are used in much more muddled ways. This is why I will use the words 'self' ('selves') and 'identity' ('identities') interchangeably from this point onwards.

negotiated and/or negotiable. This is where the link with situations is most clear: in every new situation we enter we have to establish who (or what) we are, what sides of ourselves to show and what sides to hide, what 'roles' would be appropriate and/or desirable. Within a situation a person takes on a role and formulates expectations with regard to that role and the accompanying (range of) action patterns. Sheldon Stryker argues that this process can be labeled '*naming*':

> Persons acting in the context of organized behavior apply names to themselves […]. These reflexively applied positional designations, which become part of the 'self', create internalized expectations with regard to their own behavior. (Stryker, 1980: 54)

But the process of naming does not only apply to oneself. We also name the others around us in each situation and thus create expectations with regard to their behaviors. Erving Goffman calls the names we attach to ourselves and to others '*candy floss*': we use labels and self-descriptions to associate ourselves with some people (or some things) and mark us off from others. These self-descriptions, these names, function like sticky gooey stuff, which we thenceforth use to attach other biographical details to, other 'corroborating evidence' which sustains and strengthens those self-descriptions. Goffman writes:

> Personal identity […] has to do with the assumption that the individual can be differentiated from all the others and that around this differentiation a single continuous record of social faces can be attached, entangled, like candy floss, becoming then the sticky substance to which still other biographical facts can be attached. (Goffman, 1968: 74-75)

Selves, then, can be seen as the residue of all of the 'names we call ourselves' in connection with the situational experiences we accumulate over a lifetime. The process of naming over time leads to what Joel Charon calls a '*self-concept*'.

> The human being […] has a number of ideas *about* self, and these ideas affect what he or she does in a particular situation. Sometimes self-perception is called the individual's 'self-concept'. […] It is our 'picture' of ourself. To some extent this picture of self is stable over time and across situations; it is, on the other hand, somewhat situational. It is enduring and built up over time; it is also a 'shifting, adjustive process of self-presentation in social interaction'. (Charon, 1989: 73,

emphasis in the original)

Thus, we develop different 'identities' - different role patterns that we adhere to. Some of these are internalized in such a way that we become very committed to them (Stryker, 1980: 61); these are the aspects of our selves that remain relatively stable over time and cannot (or will not) be easily changed or abandoned. Despite their situational origin such roles become internalized in such a way that we start identifying with them more and more, which in turn leads us to choose such roles more and more often across different situations. Blumstein calls this process '*ossification*': "*Ossification means that we enact identities with great frequency and we* become *the person whom we have enacted.*" (Blumstein, 2000: 185, emphasis in the original) The relative stability we experience in our identities mentioned above derives precisely from this mechanism. Other roles, with which we identify less, are more fluid. As a result these can be adjusted effortlessly. Sheldon Stryker explains the difference in commitment between different roles (i.e. aspects of the self) with the notion of '*identity salience*':

> Discrete identities may be thought of as ordered into a salience hierarchy, such that the higher the identity in that hierarchy, the more likely that the identity will be invoked in a given situation or in many situations; this probability of invocation is what defines identity salience. (Stryker, 1980: 60-61)

Some parts of ourselves are cherished, both by ourselves and by others around us – these identities will rise in the '*salience hierarchy*' and gain a high level of commitment[52]. Identities that are less important will be abandoned more easily due to a lack of commitment. The same phenomenon could also be explained with the help of what Erving Goffman calls '*identity pegs*' (Goffman, 1968: 73-80). Identity pegs are hooks that people attach '*life history items*' to (Goffman, 1968: 74), such as names, roles and self-descriptions with which a person identifies himself[53].

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[52] In his typical ironic tone Goffman notes: "*Typically, a person will become deeply committed only to a role he regularly performs, and it is left to gallants, one-shot gamblers, and the foolhardy to become committed to a role they do not perform regularly.*" (Goffman, 1961b: 89)

[53] Goffman also uses the concept of identity pegs to explain how *other people* may use fixating mechanisms to consolidate or pin down one's self (or selves). We see this, for instance, in the following

3.4 The development of the self

How does the self come about in interactionist terms? In his main work entitled *Mind, self and society from the standpoint of a social behaviorist* (Mead and Morris, 1934) Mead created a developmental approach to the process of socialization that underlies the formation of the self. According to Mead the development of the self is closely bound up with the acquisition of language and other symbolic configurations used in human interaction. The self in his conception is not a given presence at the moment of birth, but rather a seed that slowly grows into a blossoming plant with the child's socialization into the different groups surrounding it. The self, as we have seen, is the result of this process of socialization. Note that socialization is not something that is limited to early age or childhood; rather, it is a life-long route – we are never done developing a self (or selves).

Mead divided the development of the self into three different stages. The first stage is the '*preparatory stage*'. This stage starts at birth and lasts roughly until the time children first start using language. Charon calls it the '*presymbolic stage of self*' (Charon, 1989: 67). In this phase children imitate the actions of others, but they don't interpret these imitations as being *meaningful* acts. The imitations do not contain a sense of understanding, and therefore they have no (symbolic) meaning.

The next phase is the '*play stage*'. In this stage children start assuming the roles of individual others in their play, for instance being a mother, a policeman, a detective, a shopkeeper and so on and so forth:

> The child says something in one character and responds in another character, and then his responding in another character is a stimulus to himself in the first character, and so the conversation goes on. (Mead and Morris, 1934: 151)

Usually children take on the roles of individuals that are important to them,

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practices: name-giving, handing out "*documentation that individuals carry around with them purportedly establishing personal identity*", but also composing a file, "*a dossier, usually contained [...] in a manila folder*" with information that identifies a specific person (Goffman, 1968: 77 and 75 respectively).

such as their mother, father, siblings etcetera. Their role-taking can also include imaginary others, such as their toy friends. It is important to note that role taking in this stage is of a *sequential* fashion: "*the child assumes the perspective of only one significant other at a time. [...] Play is an individual affair, subject to the rules of single individuals.*" (Charon, 1989: 68)

As they grow older children reach the third stage, the '*game stage*'. They learn how to participate in games. When playing a game the participants in the game have to be aware of their own role, but also of those of all the others partaking in it. Mead gives an example of a baseball game: when I play first base, I will have to know the range of acts that are part of my own role in the game, but I also have to anticipate all of the possible acts of others (Mead, 1925: 269). I have to understand my own position within the bigger picture of all the possible positions within the game.

When the child learns to participate in games in this way it becomes skilled at integrating different positions and roles within a group into one system and at judging its own actions from the point of view of this system. It discovers a view of itself from a third-person stance. Symbolic interactionists call this process the development of the '*generalized other*':

> The 'game' represents the organization and necessity of assuming the perspectives of several others simultaneously. [...] The child puts together the significant others in his or her world into a whole, a 'generalized other', 'them', 'society'. The self matures as our understanding of society matures... (Charon, 1989: 68-69)

Thus, in the game stage the child internalizes the rules and regulations of the social groups (society) it partakes in and the roles and expectations that emanate from these rules. In that process the child starts to look at itself from the perspective of society. Thus it makes its own behavior into an object, and it comes to judge its own behavior through the internalized perspective of the generalized other. This is when the self emerges, according to Mead. He defines the self as "*an individual who organizes his own response by the tendencies on the part of others to respond to his act.*" (Mead, 1925: 267) Both self-reference and self-validation involve the standpoint of the generalized other from hereon out. Mead defines the generalized other as follows: "*The organized community or social group which gives to the individual his unity of self [...]. The attitude of the generalized other is the attitude of the whole*

community." (Mead and Morris, 1934: 154)

In his description of the generalized other Mead is quite unclear about the composition of the group of others that functions as such. Is there just one generalized other for every individual or are there many, each functioning under different circumstances or in different situations? And is the generalized other a stable phenomenon throughout life, or does it alter on the basis of a person's experiences? These questions were taken up by Mead's followers. Tamotsu Shibutani added another stage to the development of the child: the '*reference group stage*' (Charon, 1989: 69-70). According to Shibutani there are *several* groups that perform the function of the generalized other in an individual's life. All of these contribute to different aspects of the rise and maintenance of the self. He calls them '*reference groups*'[54]: "*that group, real or imaginary, whose standpoint is being used as the frame of reference by the actor.*" (Shibutani, 1987: 257) Thus, there's not just one generalized other; there are as many generalized others as there are groups in society, and each individual relates to different generalized others under different circumstances, in different situations, and at different times in their lives (Hermans and Kempen, 1993: 105). Shibutani writes:

> There are as many reference groups for each person as there are communication channels in which he participates, and individuals differ considerably in their range of participation. Each lives in an environment of which he is the center, and the dimensions of his effective surroundings are defined by the direction and distance from which news comes to him. Each time a man enters a new communication channel – subscribes to a new periodical, joins a new circle of friends, purchases a television set, or begins to listen regularly to some radio program – he is introduced into a new social world. […] Each man's outlook is both shaped and limited by the communication networks in which he becomes involved. (Shibutani, 1987: 257-258)

The result of the internalization of the various perspectives of a person's reference groups is the emergence of '*self-judgment*', symbolic interactionists argue. Self-judgment refers to the perceptions we have of the way others judge us, the

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[54] Both the concept of the generalized other and that of reference groups will be discussed more extensively in Chapter 5 of this dissertation.

picture we construct of ourselves based on the perceived judgments of others regarding our actions, our attitudes and so on and so forth. Note that there is a double movement here: we interpret what we believe to be *others' opinions about ourselves*, and in turn use those interpretations to form an *opinion about ourselves*. The notion of self-judgment is closely bound up with that of the generalized other and of reference groups: when we participate in social groups, we build ideas of how to behave in them, which roles to take, which roles the other people have within a situation, and what the 'rules' of the situation consist of.

3.5 Erving Goffman: 'Staged' identity

One of the most interesting interactionist frameworks[55], to my mind, was developed by the Canadian-born sociologist Erving Goffman (1922-1982). Goffman's conception of identity diverges from the traditional symbolic interactionist interpretation thereof, as proposed by Mead and Blumer. For one, as Fontana argues,

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[55] There is some debate among scholars regarding Goffman's place within the fields of sociology and philosophy: was he truly a (symbolic) interactionist, or did he belong to other schools of thought such as American structuralism (cf. Gonos, 1977; Smith, 2006: 31-32), phenomenology, existentialism, modernism and postmodernism (Smith, 1999: 4-5)? Many Goffman commentators now agree that it seems inadequate, at least, to label Goffman as a 'symbolic interactionist'. Gonos goes so far as to argue that "*…Goffman's approach stands opposed to the central tenets and most basic assumptions of symbolic interactionism*" (Gonos, 1977: 855) and that, therefore, his sociological approach should be reconsidered in its entirety in light of this conclusion. Smith argues that "[c]*ategorizing Goffman as a symbolic interactionist is a formulaic classification which obscures his distinctive strengths.*" (Smith, 1999: 4) Goffman himself didn't do much to clarify his position within sociology and pledges neither alliance with nor a clear opposition against any of the sociological schools that dominated his time. In an interview with Jef C. Verhoeven in 1980 Goffman states that he could indeed be labeled a symbolic interactionist since he used "*…quite a general Meadian frame of reference that everybody of that period employed. Expanding the group to include those sorts of persons makes of the name something that doesn't signify much.*" (Verhoeven, 1993: 319). Later on in the same interview Goffman argues that categorizing sociologists in specific schools only emerged as a response to a clash between two very broad approaches to doing sociological research, viz. qualitative versus quantitative research. Labeling someone a 'symbolic interactionist' in the debate between these two strands of research simply means that one is on the more qualitative side of the equation. (Verhoeven, 1993: 330-331)).

Goffman differs from Mead in that he does not assume that the members of society present themselves to others in an unproblematic way. Instead, presentations of self are a very problematic enterprise, as each individual has to choose among various alternatives, often not clearly or rationally understood. [...] Blumer considers human beings as straightforward, honest, and cooperative participants in the construction of social order, while Goffman focuses on how people manage the impressions they make on others. (Fontana, 1980: 63)

This means that for Goffman social interaction and role-playing are not the result of straightforward exchanges between purely candid and sincere interactants, but that interacting can be a hazardous undertaking indeed. Strategy and strategic interaction are therefore, as we will see below, central aspects of Goffman's description of social interaction. At the same time, Goffman also emphasizes the fact that a large part of our social interactions follow patterns of a ritualistic nature, in which the shared goal is to respect everyone's part and everyone's face.

Second, Goffman conducted extensive field research in small, concrete interactional contexts, which he used to put the theoretical stance developed in classical symbolic interactionism in practice. Goffman's most famous work on identity is entitled *The presentation of the self in everyday life* (Goffman, 1959), in which he uses an interactionist perspective to put forth his vision of the self, and combines it with terminology borrowed from the world of theater. His perspective has come to be known as the '*dramaturgy metaphor*' (Jensen, 2006: 151) or the '*dramaturgical perspective*' (Branaman, 1997: lvix). Goffman uses the theater terminology both as a metaphor and as a literal description of the ways in which human beings interact and conceive of themselves and others. Precisely to what extent the dramaturgical perspective is meant literally and in which ways it is viewed only metaphorically will be discussed below.

But the dramaturgical perspective is not Goffman's only contribution to the analysis of identities; this analysis of the self was a much broader theme throughout his work – both Goffman's interests in total institutions (developed in *Asylums* (Goffman, 1961a)) and stigma (in a book entitled *Stigma* (Goffman, 1968)) revolve around the question of how people construct, express and manage their identities. As a more general introduction to his work a short overview of his key ideas will be given first, before we turn to his dramaturgical perspective of identity as developed in *The presentation of self*.

3.5.1 Four research domains in Goffman's work on identity

It is often argued that Goffman's work is difficult to position, both scientifically as we have seen above (see footnote 55), but also methodologically. Because of his highly descriptive and loose style of writing some would argue his books lack scientific rigor. More importantly, because of the sketchy nature of his work it is difficult to discover a real 'theory' in his work. Goffman describes everyday social settings and the interaction patterns in them in a prose that is highly accessible, but to some appears to remain somewhat on the surface since it is so descriptive. From one book to the next he focused on a wide variety of different themes, without immediately apparent connections between them. This makes his work as a whole all the more difficult to grasp. Also, he never consolidated his ideas into a coherent theoretical framework, nor explicated whether he used systematic methods or approaches to the objects of his study. However, at the same time it is precisely all of these things – his loose and engaging style of writing, his lighthearted treatment of a wide variety of highly recognizable everyday situations, and the acute verbal translation of his observations in micro-social everyday settings – that appeal to so many readers.

Viewing Goffman's work from a helicopter perspective Ann Branaman argues that there are four general domains in his work (Branaman, 1997: xlv-lxxxii): first of all, there is the *dramaturgical perspective* of the self. This is Goffman's 'theory'[56] of how identities are constructed. It will be discussed more elaborately below. The dramaturgical perspective is Goffman's most famous piece of work, which he developed very early on in his career in *The presentation of self in everyday life* (Goffman, 1959).

Second, Branaman points out, Goffman did a lot of research on the ways identities are shaped and affected by *institutions*, and more particularly by what he

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[56] I place the word 'theory' between commas, because, as argued above, one cannot really label any of Goffman's writings as 'theories', in the sense that they were never really consolidated into a theoretical framework, but rather consist of loose, sketchy, observational descriptions, larded with (beautiful!) conceptual notions. I kindly thank Professor Charles Raab of the University of Edinburgh for pointing this out to me.

called '*total institutions*', such as the army, but also mental institutions and prisons. Goffman argues that such institutions are "*forcing houses for changing persons; each is a natural experiment of what can be done to the self.*" (Goffman, 1961a: 12) Studying them gives us insight in several things. First, it provides us with ideas on what we call 'normalcy' and 'deviance', on how we define the differences between these two, and on how we define 'normal' social interactions. In the words of William Gronfein:

> For Goffman, 'normal' and 'mentally ill' behaviour lie on a continuum; they differ in degree rather than in kind. [...] ...the behaviour of persons institutionalized as a result of their putative mental illness may be used to illustrate 'normal' interactional behaviour. (Gronfein, 1999: 83-84)

Second, studying the ways in which identities are affected by (extensive) living in total institutions gives us insight into the requirements that ought to be met in the practical, physical and social arrangements in such institutions if we want to respect the value of individuals and provide them with opportunities to maintain at least a minimal sense of self and self-worth. In total institutions, Goffman writes, the inmates are "*stripped of the supports provided by the social arrangements of their home worlds and suffer a series of mortifications of the self.*" (Branaman, 1997: liv) These '*mortifications of the self*' take different forms: inmates in prisons and soldiers in the army are often stripped of their (full) name and only addressed by their last name or even merely as a number. They are deprived of most, if not all of their personal possessions, including 'identity markers' such as clothes. Also, in most total institutions the inhabitants are made to resemble one another, by shaving off or cutting their hair in the same ways and by making them wear institutional uniforms or outfits. Another element of the mortification of the self is brought about by what Goffman calls '*contaminative exposure*' (Goffman, 1961a: 23). He argues that individuals that do not live in institutions can shield aspects of themselves, actions, possessions and facts about themselves from others if they want to. They can choose what they want to expose to whom and what to keep to themselves. In total institutions this is not the case. Goffman gives a number of examples:

> During admission, facts about the inmate's social status and past behavior – especially discreditable facts – are collected and recorded in a dossier available to staff. Later, in so far as the establishment officially expects to alter the self-

regulating inner tendencies of the inmate, there may be group or individual confession – psychiatric, political, military, or religious, according to the type of institution. On these occasions the inmate has to expose facts and feelings about self to new kinds of audiences. [...] New audiences not only learn discreditable facts about oneself that are ordinarily concealed but are also in a position to perceive some of these facts directly. (Goffman, 1961a: 23-24)

All of these strategies are used to rob the inmate of a sense of self and self-worth, aimed at reshaping the self to become an easily manageable cog in the machinery of the institution. What Goffman attempts to show in *Asylums* is that despite the fact that total institutions use these techniques to reconfigure, reshape, and reorganize the self, this same self will always resort to a number of practices through which it may retain some of its self-worth:

> In *Asylums*, Goffman's view that selves are never completely defined by social situations and that individuals actively resist identification with the defiled and devalued selves that others would attribute to them receives its most sustained development. Here, Goffman discusses various strategies taken by individuals in response to the mortification of self endured in total institutions. [...] Goffman suggests that such institutions typically fail to capture the inmate's sense of self. (Branaman, 2003: 117)

This means, says Greg Smith, that "there are two conceptions of the self that repeatedly surface in Asylums. One is the self personified in the total institutions' definitions of appropriate role behaviour for the inmate; the other is a self that resists these definitions: the counterveiling self." (Smith, 2006: 103)

In a similar study as the one conducted in *Asylums* Goffman looks into the role of 'stigma' for the experience of identity (Goffman, 1968). He shows that identities may be greatly affected by stigma, because they affect the ways in which other people treat us, and the amount of respect we get from them. In both of these studies Goffman concludes that there are a number of *prerequisites for the maintenance of a respectable self.* One such prerequisite, Goffman argues, is the notion of '*territories of the self*', spatial claims, some of a very fleeting nature, others more enduring, that an individual may make as part of his interactions with other people (Goffman, 1982: Chapter 2).

A third important line in Goffman's work, says Branaman, is his analysis of

social life in terms of a division between three concepts: '*drama*', '*ritual*', and '*game*'. According to Goffman all social life can be understood in terms of the metaphor of drama. We will see this below, when discussing the dramaturgical perspective extensively. Suffice it to say for now that in Goffman's conception identities come about as the result of the 'performances' we play in our interactions with others. But in addition to the drama metaphor Goffman also uses two others: 'ritual' and 'game'. In his 1982 book entitled *Interaction ritual* Goffman claims that many of our everyday social interactions contain a number of ritualistic elements, ranging from greetings to begin and end the conversation, taking turns at talking, to using mechanisms such as tact and poise (Goffman, 1982). All of these elements together he calls '*face work*', which is aimed at ensuring smooth interactions between people in face-to-face situations. He writes:

> A person's performance of face-work, extended by his tacit agreement to help others perform theirs, represents his willingness to abide by the ground rules of social interaction. Here is the hallmark of socialization as an interactant. If he and the others were not socialized in this way, interaction in most societies and most situations would be a much more hazardous thing for feelings and faces. (Goffman, 1982: 31)

Rituals serve to protect all of the participants in an interaction from losing face, from displaying sides of themselves or behaviors that they would rather keep invisible to others. They are "*an effort on everybody's part to get through the occasion and all the unanticipated and unintentional events that can cast participants in an undesirable light*" (Goffman, 1982: 41). However, while there is always a ritualistic tendency in interactions so that participants can protect their 'faces', there is also an opposing tendency, which is that of playing games. Participants may play '*character contests*' in an interaction, "*interpersonal disputes over whose status claims and conception of proper treatment of self and other will be allowed to prevail*" (Branaman, 1997: lxxii). Or they may play '*expression games*', games in which a person attempts to get information from another person, while the other person attempts to keep this information to himself. And then there is what Goffman calls '*strategic interaction*': the participants try to maneuver through the interaction in such a way that the outcome is most favorable to themselves, based on a projection of the courses of action that the other person has, one's own self-conception and the

conception one has of oneself as seen through the eyes of the other. In strategic interaction, then, participants are not merely attempting to manipulate information, but also assessing various courses of action (Branaman, 1997: lxxiii).

Both rituals and games are part of every interaction. Branaman writes:

> A performance is simultaneously an expression of deference to the social order as well as a move in a strategic game, according to Goffman. We strategically chart our performances and courses of action and interaction, often with the aim of being a viable member of a morally cohesive social order. On the one side, the performance of morality requires strategy. On the other side, the ritual order constrains our performances and strategic moves. (Branaman, 1997: lxxiii)

The fourth and last important theme in Goffman's work relates to a more abstract "*analysis of social reality*" (Goffman, 1986: 2). This theme was dominant in the last phase of Goffman's work and is most explicitly addressed in *Frame analysis: An essay on the organization of experience* (Goffman, 1986). In this book Goffman tries to uncover the ways in which people ascribe meaning to the situations, the 'scenes' they enter and what they perceive as 'reality' within these situations. He uses William Thomas' concept of the '*definition of the situation*' as a starting-point for his investigations (Thomas, 1969: 42; Thomas and Janowitz, 1966: 160). Thomas and Goffman both claim that when people enter a new situation they "*face the question: 'What is going on here?'*" (Goffman, 1986: 8). In (either explicitly or implicitly) answering this question they ascribe meaning to the situation and find themselves a role to perform within it[57]. Goffman introduces the notion of '*frames*', of which he writes:

> I assume that definitions of a situation are built up in accordance with principles of organization which govern events – at least social ones – and our subjective involvement in them; frame is the word I use to refer to such of these basic elements... (Goffman, 1986: 10-11)

Frames are principles of organization in the sense that they allow us to label an

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[57] The concept of the 'definition of the situation' will be discussed extensively in the Chapter 4. In this chapter both the notion of the 'definition of the situation' and Goffman's analysis of such definitions in terms of 'frames' will be critically evaluated and complemented with the notion of 'scripts'.

activity or a situation as being this rather than that, as consisting of these relevant meaningful features rather than those. A frame can literally be understood to be a shell, like in a picture frame, created by the ascription of meaning, within which the activity or activities unfold. "*For example,*" Branaman writes, "*we might frame an activity as a hobby or an occupation. The way we and others relate to the activity depends on the way it is framed.*" (Branaman, 1997: lxxiv). The frame, then, is constitutive of the roles we may assume within a situation. It is the framework within which the action unfolds.

3.5.2 Goffman's dramaturgical perspective

As said, Goffman developed his dramaturgical perspective in his most famous book: *The presentation of self in everyday life* (Goffman, 1959). In search of an answer to the question 'what is identity?' he turns to everyday, small-scale social engagements between people. His point of departure is the idea that the complex question of what identity is, is best tackled by studying its expression and formation in concrete micro-social interactions between people. For Goffman identity *literally comes about* in and through social interactions – he calls it the '*dramatic effect*' of such interactions (Goffman, 1959: 252-253). Branaman phrases it thus:

> Going beyond Mead's claim that the self *arises* in the context of social experience, Erving Goffman makes the more radical claim that the self is a product of performance in social interaction. Goffman argues that self-presentation is a crucial determinant of one's very sense of self. In contrast to the common-sense view that self-presentation either expresses the self or a false image of the self, Goffman emphasizes that the self is shaped in the process of self-presentation. (Branaman, 2000: 170, emphasis in the original)

In the eyes of Goffman, identity is, one could say, the sum of all the roles we play in our lives. Thus, identity is not some innate quality, nor a physically localizable property. Our self can only be conceived in the roles we play. As Waksler argues, Goffman's self is "*in fact a multiplicity of acting selves.*" (Waksler, 1989: 3). Goffman writes:

> A correctly staged and performed scene leads the audience to impute a self to the performed character, but this imputation – this self – is a *product* of a scene that

comes off, and is not a *cause* of it. The self, then, as a performed character, is not an organic thing that has a specific location [...]; it is a dramatic effect arising diffusely from a scene that is presented, and the characteristic issue, the crucial concern, is whether it will be credited or discredited. (Goffman, 1959: 252-253, emphasis in the original)

Also, identity is not an essence in itself. There is no such thing as a 'core self'. As Fontana argues: "*Goffman stresses the fleeting nature of the self. The self is not a solid structure but a movable perspective, a process that evolves with the presentation and credibility of various performances.*" (Fontana, 1980: 67)

Goffman's central thesis is that when people engage in social interactions with one another, they conduct '*performances*': they assume a role and try to create as favorable an 'impression' as possible. Goffman calls this '*impression management*' (Goffman, 1959: Chapter 6). When people interact, whether they cooperate on some joint task or compete over something, whether they engage in active communication, or relate to one another in any other way, they always seize up the situation and decide which performance to put on within that situation. For Goffman, identities are the "*result of publicly validated performances.*" (Branaman, 1997: xlvi).

With his emphasis on role-playing Goffman's work has become part of a larger school called '*role theory*', of which Fontana writes:

Role theory says that individual behavior is shaped by social expectations, constraints, rewards, and punishments imposed by others. The performing individuals therefore understand and regulate their performance in terms of the others. According to role theorists, social performances bear a striking similarity in comparable situations, regardless of who the performers are. (Fontana, 1980: 64)

However, Goffman's conception of role theory "*turns* [it] *inside out by focusing on the performers themselves, not on the normative social constraints.*" (Fontana, 1980: 64) More importantly, he focuses on the ways in which people try to manage the impressions they give off to others, the ways in which they try to come across as being a certain person, try to convince others to see them in as favorable as light as possible. Goffman's focus on impression management can be (and has in fact been) labeled as rather cynical, since one could read his work as a description of the ways people attempt to *manipulate* the images others may have of them (Smith, 2006: 95).

One could interpret Goffman's world as a theater in which actors literally play out performances while hiding their 'true selves' behind a mask. However, such a reading of Goffman does not do justice to his work.

According to Goffman, 'cynical' performances are definitely possible. A person may feel he is playing a role that he himself doesn't really believe in or finds unconvincing. However, most of the time most people do believe in the performances they act out. Goffman labels performances of the latter kind 'sincere'. More importantly, when we choose a role, a mask, we try to live up to it and in doing so, we come to identify ourselves with that role. Through this identification, as we have seen above (see the notion of 'naming' on page 147), the self emerges. Goffman quotes the Chicago School sociologist Robert Ezra Park to show how this comes about:

> In a sense, and in so far as this mask represents the conception we have formed of ourselves – the role we are striving to live up to – this mask is our truer self, the self we would like to be. In the end, our conception of our role becomes second nature and an integral part of our personality. We come into this world as individuals, achieve character, and become persons. (Robert Ezra Park, quoted in Goffman, 1959: 19-20)

We develop our identities as the result of consistently choosing a number of masks that we put on in performances. This consistency emerges not just in an attempt by the individual to create a coherent self-image of and for himself, but also in relation to the audience: performers in an interaction are expected to perform in a way that is in line with previous performances, so that the image they show of themselves to others is regular and solid. This expectation arises out of a twofold objective: on the one hand there is a wish to make social interaction a smooth as possible, which can be most easily achieved when performers are 'in character' so that what Goffman calls a '*respectable self*' can be maintained. A second objective is that when participants in an interaction are respectful to the role-playing of others, this in turn allows them to project respectable selves as well. Goffman writes:

> During interaction the individual is expected to possess certain attributes, capacities, and information which, taken together, fit together into a self that is at once coherently unified and appropriate for the occasion. Through the expressive implications of his stream of conduct, through mere participation itself, the individual effectively projects this acceptable self into the interaction [...] At the

same time he must accept and honor the selves projected by the other participants. The elements of a social encounter, then, consist of effectively projected claims to an acceptable self and the confirmation of like claims on the part of the others. The contributions of all are oriented to these and built up on the basis of them. (Goffman, 1982: 105-106)

Greg Smith argues that in Goffman's perspective of '*interaction rituals*' there are two basic social rules that interactants should adhere to in order for interaction to be successful:

For mutually successful interaction to take place, persons must follow a rule of self-respect (they must conduct themselves in a way that shows some pride, dignity and honour) and a rule of considerateness (they must treat others tactfully). (Smith, 2006: 100)

Because it is important to present a consistent and coherent image of self, Goffman writes, a performer may sometimes strive for '*audience segregation*', "*so that the individuals who witness him in one of his roles will not be the individuals who witness him in another of his roles.*" (Goffman, 1959: 137) With segregated audiences for the presentation of specific roles performers can 'maintain face' before each of these audiences. Their image will not be contaminated by information from other roles performed by the same person, particularly not by information that may discredit a convincing performance (Goffman, 1959: 137). For example, a person whose professional role consists of displaying a role of authority, such as a political leader or a judge, may try to shield aspects of his private life from the public, such as the fact that in his relationship his partner is the one in charge and he is not an authoritative person at all when at home. He shields this information from those he may encounter in his professional life to prevent his professional authority being undermined by their knowing about this aspect of his personal life.

Moreover, it is important for performers to align the various actions in a performance with the image they are attempting to portray. Goffman says:

...it is important to note that in performing a role the individual must see to it that the impressions of him that are conveyed in the situation are compatible with role-appropriate personal qualities effectively imputed on him: a judge is supposed to be deliberate and sober; a pilot, in a cockpit, to be cool; a bookkeeper to be accurate and neat in doing his work. These personal qualities, effectively

imputed and effectively claimed, combine with a person's title, when there is one, to provide a basis of *self-image* for the incumbent and a basis for the image that his role others will have of him. A self, then, virtually awaits the individual entering a position; he need only conform to the pressures on him and he will find himself a *me* ready-made for him. In the language of Kennethe Burke, doing is being. (Goffman, 1961b: 87-88, emphasis in the original)

3.5.3   The dramaturgical perspective: Metaphor or not?

As we have seen in the previous paragraph Goffman uses a variety of concepts from the world of theater to describe the ways in which people construct and express their identities. One of the questions that often arises with regard to this dramaturgical perspective is whether it is solely meant as a metaphor, or whether Goffman literally argues that the world is a stage on which we perform roles that reflect back on our identities. Are all of the elements of drama that Goffman describes ('performance', 'impressions', etc.) intended literally, or is Goffman's dramaturgy metaphor truly only meant metaphorically?

Goffman himself is not very clear about this. There is one passage in *The presentation of self* which points towards the latter. In this passage Goffman describes the difference between 'stage acting', i.e. what 'real' actors do in plays and movies on the one hand, and the normal fabric of social interactions, consisting of performances, on the other. 'Stage acting', he argues, is not something any one of us can do just like that. It takes long training and quite a bit of skill. However, Goffman writes,

almost anyone can quickly learn a script well enough to give a charitable audience some sense of realness in what is being contrived before them. And it seems this is so because ordinary social intercourse is itself put together as a scene is put together, by the exchanges of dramatically inflated actions, counteractions, and terminating replies. Scripts even in the hands of unpracticed players can come to life because life itself is a dramatically enacted thing. All the world is not, of course, a stage, but the crucial ways in which it isn't are not easy to specify. (Goffman, 1959: 71-72)

The world itself, says Goffman, is not a stage for us to perform on 'of course', but social interactions are indeed made up of 'scenes' that we 'act out'. Although Goffman

claims, with this (admittedly somewhat opaque) passage, that his drama metaphor should not be taken too literally, at the same time he does not show where the limits of his metaphor lie.

And on one the last pages of *The presentation of self in everyday life* he explicitly argues that his stage metaphor is, in fact, only just that: a metaphor. He writes:

> In developing a conceptual framework employed in this report, some language of the stage was used. I spoke of performers and audiences; of routines and parts; of performances coming off or falling flat; of cues, stage settings and backstage; of dramaturgical needs, dramaturgical skills, and dramaturgical strategies. Now it should be admitted that this attempt to press a mere analogy so far was in part a rhetoric maneuver.
> The claim that all the world's a stage is sufficiently commonplace for readers to be familiar with its limitations and tolerant of its presentation, knowing that at any time they will easily be able to demonstrate to themselves that it is not to be taken too seriously. (Goffman, 1959: 254)

However, two pages earlier he has argued the following, which seems to contradict the previous passage:

> The general notion that we make a presentation of ourselves to others is hardly novel; what ought to be stressed in conclusion is that the very structure of the self can be seen in terms of how we arrange for such performances... [...] In our society the character one performs and one's self are somewhat equated... (Goffman, 1959: 252)

And consider the following comparison Goffman makes between staged characters in a theater and performances in everyday social interactions, which (most notably) follows almost immediately after the passage above, in which he argues not to take the drama metaphor too seriously:

> A character staged in a theater is not in some ways real, nor does it have the same kind of real consequences as does the thoroughly contrived character performed by a confidence man; but the *successful* staging of either of these types of false figures involves use of *real* techniques – the same techniques by which everyday persons sustain their real social situations. Those who conduct face to face interactions on a theater's stage must meet the key requirement of real situations:

they must expressively sustain a definition of the situation: but this they do in circumstances that have facilitated their developing an apt terminology for the interactional tasks that all of us share. (Goffman, 1959: 254-255, emphasis in the original)

These passages suggest that although the dramaturgy perspective may have been initially introduced as a metaphor we need to take it literally as well. Performances relate to selves in a literal way, Goffman says – the techniques of performances conducted by actors on a theater stage are the same as the 'interactional tasks that all of us share', performances form the basis of the 'very structure of the self', and our performances and selves are 'equated' in our society. Note that Goffman adds the word 'somewhat' when he speaks of our performances being equated with selves, once again raising the question of the limits of his metaphorical use of the dramaturgical perspective and toning down its literal meaning. Overall, I argue that these examples show that Goffman intended his perspective both as a metaphor and a literal description of social interaction. Social life consists of interactions, which can be understood in terms of elements of the theater: we play out performances, we assume roles, and we use the world as our stage, both as metaphor and as literal fact. What may have been intended metaphorically turns out to be an effective and elegant set of tools, an apt terminology, to analyze the structures of the social world in relation to the construction and expression of identities.

3.5.4 Staging the self

So how do performances relate to identities exactly, and how do people conduct such performances? According to Goffman there are several elements that are of importance in every performance. First of all, there is what he calls the '*front*' (Goffman, 1959: 22). This consists of attributes a person uses actively in the role he is playing. A waiter in a restaurant, for example, who serves a new customer entering the establishment, will use the customer's coat, which he hangs on a rack in the corner, as one of the attributes in the performance of his role as a professional attendant. Then he will show the customer to his table, pulling back the seat for the customer and handing him a menu to substantiate the expression he first created, and so on. The coat, the chair and the menu are attributes that affirm the waiter's

role.

A second element, says Goffman, is the '*setting*' (Goffman, 1959: 22): the background against which, or the environment in which the performance takes place. In the example of the waiter and the customer the performance of both the waiter and the customer take place in the context of a restaurant. This environment is incorporated into the performance of both individuals. It serves as the décor for the action taking place and channels the action space.

A last aspect of every performance is what Goffman calls the '*personal front*'. This is a person's own '*expressive equipment*', which Goffman calls

> the items that we most intimately identify with the performer himself and that we naturally expect will follow the performer wherever he goes. As part of personal front we may include: insignia of office or rank; clothing; sex, age, and racial characteristics; size and looks; posture; speech patterns; facial expressions; bodily gestures; and the like. Some of these vehicles for conveying signs, such as racial characteristics, are relatively fixed and over a span of time do not vary for the individual from one situation to another. On the other hand, some of these sign vehicles are relatively mobile and transitory, such as facial expression, and can vary during a performance from one moment to the next. (Goffman, 1959: 24)

Front, setting, and personal front are constructive elements of identities in the sense that they enable performers to play their roles within given situations and to come across convincingly in those roles. As we have seen before, he performances that are conducted most often are the ones with which we identify most, the 'names' we call ourselves most often. The three aspects of performances play are role in 'naming', too. Settings may be places we visit only once or sporadically, but they may also be environments we enter on a regular basis. Think for instance of a person's work place or home, or the home of friends or the supermarket around the corner. Such settings, and the front they provide, often form the background against which we perform certain roles. Thus both setting and front play a constitutive role in the descriptions we may use of ourselves (or that others around us may use), and hence become part of identity pegs. From Goffman's description of the personal front quoted above it is obvious that elements of our expressive equipment, too, may serve as identity pegs: both the more permanent and fixed characteristics of our person (such as gender, age, sex) and the more fleeting ones, such as vocal inflections or

bodily gestures, come to be recognized by ourselves and by others as belonging to us as specific and unique individuals. These three aspects of the way we 'stage our selves' directly and literally impact our self-conceptions, then.

But there are more elements of performances that should be mentioned in relation to the way we present ourselves to others. One of them is the fact that performances are often conducted *together with other people.* Goffman calls such a group of performers a '*team*'[58] and describes the prerequisites for a successful team performance. The most important prerequisite is that members of a team have to rely on the fact that none of them is going to "*give the show away or to disrupt it by inappropriate conduct*", which leads to a "*bond of reciprocal dependence linking teammates to one another*" (Goffman, 1959: 82). Teams are collectively responsible for the impression they give to the audience, and this is why they may want to keep several kinds of secrets to themselves, specific information which they will not want to divulge to the audience. Goffman mentions '*dark secrets*', which are incompatible with the image of self the team attempts to present to the audience (Goffman, 1959: 141), '*strategic secrets*', pertaining to "*intentions and capacities of a team which it conceals from its audience in order to prevent them from adapting effectively to the state of affairs the team is planning to bring about*" (Goffman, 1959: 142), and lastly '*inside secrets*', secrets that those 'in the loop' have knowledge of, and which set them

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[58] While Goffman initially introduces the concept of 'teams' to describe the joint performances of groups of people in front of an audience, later on in *The presentation of self in everyday life* he states that, since he aims at making 'teams' the basic unit of analysis for the rest of this book, individual performers, too, will come to be viewed in terms of teams – they constitute what he calls a '*one-man team*'. (Goffman, 1959: 85). Although this concept may seem a bit artificial at first, it actually, I would say, fits in cleverly with Goffman's broader framework on role-playing and the self in two ways. First, it aligns with Goffman's understanding of human identities as a multiplicity of selves: we are quite literally a 'one-man team' since our identities consist of various selves (a team) brought together in one agent. Second, it fits in with the fact that for Goffman even being alone in the room a person would still be performing a role. One could easily read Goffman's dramaturgical perspective in *The presentation of self* as a description of the role-playing that goes on *only when people are physically co-present*. However, the notion of a 'one-man team' enables us to understand a person's actions when he or she is alone in terms of performances and role-playing as well. In these cases the person is both the performer and the audience of his own performances, a psychological fact that may also be called the cycle of self-expression and self-evaluation that persons engage in whenever they express themselves.

apart as a group from those who don't.

Despite these mechanisms to consolidate the team performance Goffman argues that there are strategies that can be adopted to undermine such performances, either by team members or by the audience. Goffman calls them *'discrepant roles'* (Goffman, 1959: Chapter 4), and mentions a number of different ones, for example *'informers'* (for instance, spies, turncoats, traitors), *'spotters'* (such as cuisine critics in a restaurant or theater critics at a play), *'competing performers'*, and *'go-betweens'* (mediators that tell secrets of each of the parties to the other party, either malevolently or benevolently). Both teams and audiences thus play a role in the construction and expression of identities in the interactionist way: they contribute to socialization and to the internalization of behavioral patterns.

A last element of performances that should be mentioned is Goffman's distinction between *'giving'* and *'giving off'*. When performers play a role in front of an audience, either alone or as a team, they are, as we have seen, keen on giving the audience a good impression of themselves – what Goffman calls impression management (Goffman, 1959: Chapter 6). Agents strive for cooperation from their audience and will therefore always try to convey a message to the audience that is in line with the goal(s) they are trying to accomplish. Thus, the performers 'give' the audience signals that they believe will allow them to reach their goals. However, since no performance is absolutely perfect there are always certain unwanted gestures that seep through – these are unconsciously 'given off'. The combination of signals that are given and those that are given off make the message that gets expressed (Goffman, 1959: 2). This message is thus always a mixture between intended and unintended impressions.

3.5.5 The stage: Regions and region behaviors

As we have seen, identities can be conceived of as a series of roles that we perform in front of different audiences. At the beginning of this chapter I argued that identities are constructed with regard to two relevant parameters, that is, *where* we are, and *with whom* we are. The former was subsumed under the heading of 'situations', whereas the latter was called 'interaction'. Taken together, then, what we're after is *situated interaction*. We are different persons in different settings, but also in our interactions with different people.

Goffman expresses the situatedness of social interactions by arguing that there are different '*regions*' in which such interactions may take place. The definition of a region is "*any place that is bounded to some degree by barriers to perception.*" (Goffman, 1959: 106). Each region, he argues, calls forth different sets of behaviors, which he labels '*region behaviors*'. He states that the Anglo-American culture is fairly focused on living (and thus performing) indoors, which means that performances are bounded to a high degree[59]. Another important aspect of the Anglo-American culture is the fact that there are often strict limits to the amount of time a performance may take.

Goffman distinguishes between three different regions: '*front regions*', also called '*front stage*'; '*back regions*', or '*backstage*'; and '*the outside*'. In front regions individual or collective performances are staged in front of an audience. In contrast, a back region is a space where no one is watching the performer(s), for example within the privacy of the home environment. In such back regions performers can rehearse for future performances, rest, relax and let their mask down (Goffman, 1959: Chapter 3). Goffman remarks that the back region is used as "*a place, relative to the performance, where the impression fostered by the performance is knowingly contradicted as a matter of course.*" (Goffman, 1959: 112). Teams may use the back region for specific purposes, such as solidifying their bond by avoiding to threaten the image portrayed by the team onstage ('*team collusion*'), talking about what went well and what went wrong ('*staging talk*') and commenting on the ways in which team members may avoid undermining the performance ('*realigning actions*'), but also talking about (people in) the audience, usually in a belittling sense ('*treatment of the absent*'). The last region Goffman distinguishes is call '*the outside*', which is simply "*a residual one, namely, all places other than the two already identified.*" (Goffman,

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[59] At least, this was the case in the 1950s, when Goffman wrote *The presentation of self in everyday life.* However, with the advent of electronic and digital technologies, one could argue that Goffman's claim regarding the boundedness of situations has become in need of revision, or at least of some modification. In 1985 Joshua Meyrowitz already raised this point in relation to what he calls 'electronic media' (most importantly, television and radio) in *No sense of place* (Meyrowitz, 1985). His analysis of the changes brought about in the boundedness of situations will be discussed extensively in the next chapter, where the issue of boundedness will also be raised in relation to the advent of Ambient Intelligence. See Chapter 4, paragraph 4.5.2.

1959: 134)

Basically, Goffman's distinction between front stage and backstage can be rephrased in terms of the distinction between 'public behaviors' and 'private behaviors'. Note however, that according to Goffman even private or backstage interactions are social in the sense that they are imbued with social(ized) meanings. Any interaction (whether in public places or in private spaces) is drenched in social meanings and filled with social rules and images. Goffman says:

> whether we interact with strangers or intimates, we will find that the finger tips of society have reached bluntly into the contact, even here putting us in our place. (Goffman, 1968: 70-71)[60]

3.5.6 Is there a director in the room?

One of the most difficult questions regarding Goffman's conception of the self is whether there is a 'true self' or 'core self' behind all the masks. After all, even though the self is the result of publicly validated performances, as we have seen above, shouldn't there always be *someone* playing out the role, doing the performance? Isn't there always a self already present in every performed self? Or to rephrase the question in terms of the theater: *is there a director in the room*, who supervises and manages all the performances? Goffman scholars do not agree about the answer to these questions.

To begin with, Goffman himself doesn't do much to solve the 'director's problem', as I'd like to summarize the quest for finding a 'true' self behind the roles in his work. What he says about the matter in *Frame analysis* is this: whether there is a self behind the masks, is itself a socially constructed question. We pose the question of distinguishing between a role and the self in light of our cultural definition of selves and persona. He writes:

> In formulating a separation of some kind between person and role, one should in no way precommit oneself to notions about the 'essential' nature of each. There is a tendency to assume that although role is a 'purely' social matter, the engine that

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[60] See also my remark on the one-man team in footnote 58.

projects it – the person or individual – is somehow more than social, more real, more biological, deeper, more genuine. (Goffman, 1986: 269-270).

This conception is not correct. Rather:

Whatever a participant 'really is', is not really the issue. His fellow participants are not likely to discover this if indeed it is discoverable. What is important is the sense he provides them through his dealings with them of what sort of person he is behind the role he is in. (Goffman, 1986: 298)

What Goffman seems to say is that asking after the person behind the roles is the wrong question – it is a socially informed question based on a particular conception of self, that is, one in which the self is viewed as a unique, consistent autonomous entity, separate from and over against a world with which he may choose to interact. By arguing that this perspective of the self is invalid Goffman attempts to sidestep the question at hand: is there are director behind all of the roles we play? Although valid as a way of resolving the matter I argue that Goffman's response leaves us feeling somewhat unfulfilled – after all, even if we grant Goffman his point that our experience of ourselves as autonomous, unique individuals acting in a social world is socially constructed, it still remains a fact that most of us do indeed experience ourselves as such.

Andrea Fontana is one of the commentators who *does* discern a director behind all the roles in Goffman's work. She argues that there is a 'naked self' behind all the performances, behind the so-called 'social selves' (Fontana, 1980: 68-71). This naked self, she says, can be found in Goffman's work on total institutions. In *Asylums*, as we have seen above, Goffman investigates the ways in which total institutions, such as mental hospitals or the military, affect the identities of people entering them (Goffman, 1961a). Such institutions, it was said, aim at removing, or at least profoundly remodeling, the identities that people had before they entered them. Goffman states that people living in such institutions will attempt to display small challenges, which he calls '*distancing practices*' (Branaman, 1997: lxi) towards the institutionalized codes of conduct to reclaim "*some personal self*" (Fontana, 1980: 69). Fontana concludes that it is in total institutions that the naked self, as the *true* self behind all the roles, becomes visible. She writes:

These small acts of resistance are more than mechanisms of defense; they

constitute the naked self, a self hidden by the mask, a self unafraid of social sanctions and unashamed of social disappointment. (Fontana, 1980: 70)

She argues that particularly in desperate situations the 'social self' vanishes like snow before the sun and gives way to the 'real self', that people show their real faces under extreme circumstances. Despite the intuitive ring such a claim might have, it seems that Fontana is putting forth her *own* views on social life and role-playing here, rather than discussing Goffman's. What Goffman claims is not so much that the 'true self' behind the 'social roles' becomes visible trough distancing practices in total institutions, but rather *that total institutions can never completely succeed in completely controlling the identities of those that enter them.* His basic assertion with regard to the relationship between the self and social institutions is that the self will always attempt to conduct a balancing-act between identification with social organizations on the one hand and his own unique and individual stance on the other. Goffman writes:

The practice of reserving something of oneself from the clutch of an institution is very visible in mental hospitals and prisons, but can be found in more benign and less totalistic institutions, too. I want to argue that this recalcitrance is not an incidental mechanism of defense but rather an essential constituent of the self. [...] We always find the individual employing methods to keep some distance, some elbow room, between himself and that with which others assume he should be identified. (Goffman, 1961a: 319)

This means, he argues, that we should include this oscillation between identification and distance as a central element in the construction of identity. He argues that the self is always a "*stance-taking entity, a something that takes up a position somewhere between identification with an organization and opposition to it.*" (Goffman, 1961a: 320) This in no way entails that total institutions would force out a 'naked self' or a 'self hidden behind the masks', as Fontana claims. Instead, it entails that the self can never be fully identified with institutions, nor be completely separated from them. Fontana's argument falls through, then.

But is Goffman truly clear about the non-existence of a 'true self'? Ann Branaman says:

Goffman suggests, on the one hand that the self is entirely a social product, with no underlying personal core. On the other hand, he presents a dualistic image of

self when he argues that there is an unsocialized component to the self that drives the individual into and out of social intercourse and sometimes impels the individual to behave in ways out of keeping with social norms. (Branaman, 1997: xlvii)

This quote refers to a distinction that Goffman introduces in *The presentation of self in everyday life* between what he calls the 'all-too-human self' and the 'socialized self' . He mentions this distinction when discussing the fact that we must always put on consistent performances before an audience. Goffman writes that, while we are *biological* creatures "*of variable impulse with moods and energies that can change from one moment to the next*" we must at the same time "*not be subject to ups and downs*" when we present ourselves "[a]*s characters put for an audience*" (Goffman, 1959: 56), that is, as socialized or *performed* selves.

At the end of the same book Goffman introduces a different pair of concepts with a similar meaning: '*self-as-performer*' versus '*self-as-character*' (Goffman, 1959: 252). The 'self-as-performer' is the 'psychobiological self', consisting of drives, energies, and impulses, but mainly "*the motivational core which motivates us to engage in the performances with which we achieve selfhood*" (Branaman, 1997: xlix). The self-as-performer drives us to perform before others. The 'self-as-character' "*represents a person's unique humanity. It is the socialized self or the character performed* [...], *which is equated with self in our society.*" (Branaman, 1997: xlix)[61].

From these two oppositions it may appear that Goffman is claiming there is indeed a self behind the mask, a director behind the all the roles. However, says Branaman, Goffman only introduces the notion of the 'self-as-performer' to explain that human beings are *(psycho)biologically inclined* to interact with other human beings, and more specifically, that those interactions *take the form of performances*. Distinguishing between the 'self-as-performer' and the 'self-as-character' is only a

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[61] Goffman's definition of these two terms has always seemed counter-intuitive to me. I would have expected the 'self-as-*performer*' to be the (variety of) *performed selves*, whereas I would have expected the 'self-as-*character*' to refer to what in everyday language is called 'character', which designates (to most people) something that is innate, or at least largely related to their biological makeup. However, the opposite is true here. The word 'character' should be understood here in its meaning of a 'persona' that is, a role performed on stage, and the operative part of the word 'performer' is the end of it: perfor<u>mer</u>, the person *that performs*.

tool Goffman introduces to link up the biological persona with the socialized self – it is the latter he is after, though.

A last interpretation of the 'director's problem' is provided by the renowned Goffman scholar Philip Manning. He argues that Goffman's presentation of persons as manipulative, scheming actors, aiming to maximize the impressions they generate in front of others, entails that there is, in fact, a person behind all the masks: the person doing all the scheming. Manning writes:

> The overall view in *The Presentation of Self* is that of a world in which people, whether individually or in groups, pursue their own ends with a cynical disregard for others. On the rare occasions when audience and performer cooperate, both endeavor to return hastily to the shelter of their various masks and disguises and to avoid disclosing their inner selves. Here Goffman views the individual as a set of performance masks hiding a manipulative and cynical self. (Manning, 1991: 76)

Manning calls his perspective the '*two selves thesis*'. The two selves that Manning finds in Goffman's work, then, are the performed self (or selves) and the manipulator (the director) behind all the masks[62]. However, several commentators have argued that Manning's two selves thesis and his interpretation of Goffman's alleged cynical worldview don't do justice to what Goffman actually intended (cf. Chriss, 1999: 66-67; Smith, 2006: 102-103). While not actually solving the 'director's problem' himself James J. Chriss in fact provides us with, what I believe to be one of two viable solutions for this problem in Goffman's work. Chriss mentions, in passing,

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[62] According to Manning, there is an interesting historical development in Goffman's work regarding this cynical stance towards the management of impressions and the two selves. Goffman first published *The presentation of self in everyday life* in 1956, and then revised it for the second version, which was published in 1959. A few passages were added to this later version. Manning shows that some of the changes and additions to the 1959 version are highly relevant when trying to understand Goffman's conception of the self. According to Manning, whereas Goffman still believed that there were actually *two* selves (a performed self and a manipulator behind the performed self) in the 1956 edition of *The presentation of self*, in the years between the first and the second edition he actually changed his mind in this respect, and aimed at arguing that there was only a multiplicity of selves, with no director in the background, in the second, 1959 version. However, says Manning, he has not revised the 1959 version rigorously enough to truly remove the appearance of a cynical manipulating director behind the masks, and a lot of confusion is the result (Manning, 1992: 46 ff.).

that the two selves thesis might be understood against the background of the notion of '*role distance*', which Goffman developed in a later stage of his career, and on which he wrote a separate essay. In the next paragraph I will delve into this concept in more detail and show how it can be used to not only refute the two selves thesis, but to counter *any* interpretation of Goffman's work that posits a director behind all the roles. I will also show a second way out of the director's dilemma, by discussing the symbolic interactionist distinction between 'I' and 'me'.

3.5.7 Solving the director's dilemma, part 1: Role distance

In his 1961 essay entitled *Role distance* (Goffman, 1961b) Goffman discusses 'role theory' (or role analysis), a conceptual framework that principally, he says, builds on the work of the twentieth century anthropologist Ralph Linton. Goffman raises the following issue:

> It is a basic assumption of role analysis that each individual will be involved in more than one system or pattern and, therefore, perform more than one role. Each individual will, therefore have several selves, providing us with the interesting problem of how these selves are related. (Goffman, 1961b: 90)

This is precisely what is at stake in answering the question of whether there is a director behind all the roles. Contrary to role theory Goffman argues that we should investigate the issue of roles and role-playing from the perspective of the *situation*, or, as he calls it, from the perspective of the '*situated activity system*'. In each situated activity system there are roles for "*individuals in a particular position.*" (Goffman, 1961b: 93) For instance, in a surgery room where a team of medical professionals conducts surgery on a patient – an example Goffman discusses extensively in the second part of this essay – there are specific roles for the chief surgeon, the interns, the nurses, and the other specialists present.

Goffman argues that in situations there is a distinction between the '*typical role*' available for individuals there, that is the ideal-typical performance of a role, and the "*actual role performance of a concrete individual in a given position.*" (Goffman, 1961b: 93). This is so, on a very basic level, because each individual has a specific interpretation and his own unique execution of the role. But there is more to it than that. Individuals may also actively maintain a certain amount of *distance* towards a

role, for instance for strategic reasons or because they do not want others to fully identify with them with this role. '*Role distance*' refers to "*…those instances in which persons place distance between their self and their current self-in-role.*" (Chriss, 1999: 71) Goffman explains this notion by using an example of the ways in which individuals of different ages present themselves during a ride in a merry-go-round at the fair. Small children, aged three and four, Goffman notes, are so exited about riding a wooden horse in a merry-go-round that they fully embrace their role:

> The rider throws himself into the role in a serious ways, playing it with verve and an admitted engagement of all his faculties. […] To embrace a role is to disappear into the virtual self available in the situation, to be fully seen in terms of the image, and to confirm expressively one's acceptance of it. To embrace a role is to be embraced by it. (Goffman, 1961b: 106)

However, says Goffman, when we see children of five years old riding a horse in a merry-go-round the picture is quite different. Children at this age make it clear that they are not to be seriously identified with the role of a wooden horse rider:

> Irreverence begins, and the horse may be held on to by his wooden ear or his tail. The child says by his actions: 'Whatever I am, I'm not just someone who can barely manage to stay on a wooden horse.' Note that what the rider is apologizing for is […] the whole role. […] …an image from which he apparently withdraws by *actively* manipulating the situation. (Goffman, 1961b: 107, emphasis in the original)

Goffman shows that children of seven or eight, teenagers and adults all have their own mechanisms of showing what the five-year-old shows: I am not to be identified fully with this role, I am reserving some amount of distance between myself and this role, and I am not to be taken too seriously in what I'm doing, riding this wooden horse. Role distance means, then, that while on the one hand accepting a role and performing it within a situated activity system, individuals simultaneously keep some "*elbow room in which to maneuver*" (Goffman, 1961b: 112). As said, keeping role distance may also have strategic reasons, for instance because the individual doesn't want to be discredited when a performance doesn't come off, or because an

individual has to balance different situational demands at the same time[63]. Chriss summarizes Goffman's perspective as follows:

> If culture provides the script to actors performing in roles, Goffman was there to remind us that actors sometimes flub their lines, and that in the episodic, sometimes rapidly-shifting realm of face-to-face conduct, improvisation often makes more sense than merely following the script to the letter. Role distance may be considered then analogous to improvisation, freeing up the actor, as it were, to marshal his or her own cognitive and affective arsenals toward upholding, defining, redefining the social situation. (Chriss, 1999: 72)

Now, the most obvious question that Goffman's discussion of role distance raises is this: what role, what self, do individuals occupy when they are distancing themselves to some degree from the role they are accepting in a given situated activity system? Do they retreat into a 'real self', do they take the position of the director, while at the same time still playing out the performance of one of their selves?

The answer, from Goffman's perspective, is quite clearly 'no', I would say. Goffman says: "when the individual withdraws from a situated self he does not draw into some psychological world that he creates himself but rather acts in the name of some <u>other socially created identity</u>." (Goffman, 1961b: 120, emphasis added) For Goffman the individual has a 'multiplicity of selves' that are all socially constructed, expressed and maintained. When a person practices role distance he doesn't retreat into a 'real self', a vertical step back into a deeper self, from which he still half-heartedly performs the role allotted him. Rather, there is a horizontal relationship between the web of roles a person plays in his life, and from which he may use aspects simultaneously on various occasions. This means that there is in fact no director behind the roles, but merely a network of roles, from which the individual can choose

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[63] As an example Goffman discusses the role of a chief surgeon during an operation. The chief surgeon may lay claim to certain forms of respect and reverence from the other members of the medical staff that are in line with his position. At the same time, however, it is in the chief surgeon's interest to keep the cooperation with the rest of the staff as smoothly and uncomplicated as possible. This is the reason why he may sometimes choose to let moments of irreverence or clumsiness on the part of interns or nurses pass. He chooses to distance himself somewhat from his role of chief surgeon, and the demands that places on himself and those surrounding him, for the benefit of a more relaxed working environment for all of those present.

and pick, but also distantly view his own performances. When practicing role distance, then, an individual moves between different roles, or adopts several roles simultaneously, which themselves are part of a horizontal complex of selves that he identifies with.

We can see how the notion of role distance can be used to formulate a response to Fontana's ideas on the 'naked self' behind the 'social self' in *Asylums*, and to Manning's two selves thesis. What Goffman describes in *Asylums*, one could argue, is a very explicit and profound form of role distancing: inmates living in total institutions use a variety of strategies to *maintain distance* between the roles the institutions attempt to prescribe for them, and the roles they prefer for themselves[64]. Likewise, the manipulator that Manning sees looming behind the performed selves in *The presentation of self in everyday life* is not actually a cynical manipulator in the background, but rather a detached role stance taken by individuals who abide by the rules by adopting a role, yet keep their distance at the same time – and 'keeping a distance', then, does not imply cynicism necessarily (although this may of course be a reason to use role distance), but rather may stem from a wide variety of motives. Using the notion of role distance may be one way of solving the director's dilemma.

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[64] During the discussion of an earlier version of this chapter dr. Awee Prins asked me whether in my perception of the construction of identities the *integration* of a multitude of roles was always unproblematic. He argued that in practice it seems obvious that this is not always the case – patients with certain psychiatric illnesses, for instance, may be understood as examples of failed role-integration. Dr. Prins is absolutely right, of course. I in no way want to suggest that the keeping together of a multiplicity of selves may at times fail to such a degree that we speak of 'psychiatric illness'. As a matter of fact, I suspect that many of us, at times, may feel bewildered by the fragmentary nature of our role-related interactional lives – I myself, at least, do. While this subject falls outside the argument of this dissertation, and therefore will not be pursued further, I do want to suggest that Goffman's notion of 'role distance' might be used to provide insight into this phenomenon. It is in the practice of role distancing that human beings may *hold onto* integrated senses of self, for instance by distancing themselves from aspects of the performed role that they do not feel befit them – it is also in the practice of role distance that human beings may *lose* their sense of an integrated self, because they cannot embrace any role to enough of a degree, or because when thinking about themselves the "*picture is shattered into many pieces and the individual divides into different persons holding the ties of different spheres of life by his hands, by his teeth, and by his grimaces.*" (Goffman, 1961b: 143) I kindly thank dr. Awee Prins for posing this important question.

3.5.8 Solving the director's dilemma, part 2: 'I' and 'me'

But there is another way to solve this riddle: using George Herbert Mead's interpretation of the distinction between '*I*' and '*me*', a distinction that was also discussed extensively by William James before him. Mead argued that human beings use the generalized other to view, judge and adjust their own actions, which means they take a third-person perspective towards themselves. At the same time, human beings can view the world from their own first-person perspective. This means the self has two sides: the 'self as *subject*' and 'self as *object*'. The self as subject can take itself as object of reflection and can thus review itself using the attitude of the generalized other.

Symbolic interactionists generally refer to the 'self as *object*' as the '*me*', whereas the 'self as *subject*' is labeled '*I*' (Charon, 1989: 85; Michener, et al., 2004: 81). The 'me' is generally viewed as the passive part of the self – the part that is the result of the internalization of the attitudes put forth by the reference groups in which a person takes part. The 'I' is the active, the impulsive part, from which action originates. There is a constant oscillation, according to Mead and other symbolic interactionists, between the 'I' and the 'me'. Michener, DeLamater and Myers explain this idea as follows:

> Action involving the self begins with the *I* – with an impulse to act. [...] In the next moment, that impulse becomes the object of self-reflection and, hence, part of the *me* [...] Next, [the individual] responds actively to his self-awareness, again an *I* phase [...]. This, in turn becomes the object to be judged, again a *me* phase [...] The *I* and *me* phases continue to alternate as every new action (*I*) becomes in the next moment the object of self-scrutiny (*me*). Through these alternating phases of self we plan, act, monitor our actions, and evaluate the outcomes (Michener, et al., 2004: 81, emphasis in the original)

The combination of the 'I' and the 'me' is what makes a person into the unique human being that he is, not only because every human being incorporates the rules and attitudes of a different combination of reference groups into his 'me', but also because the active 'I' creates freedom in the stance one takes to those internalized attitudes. Mead views

> the 'I' as the impulsive, non-deterministic aspect of the individual and the 'me' as the more controlled, socially conscious aspect of personality. The 'I' acts with an

opinion of the self as a unified whole, while there exists a separate 'me' for each of the individual's roles and social groups. A dynamic internal process is thus envisioned, whereby people actively engage in conscious behavior involving themselves and others. [...] Within each person Mead envisioned a society in miniature, a little parliament with conflicts, debates, evaluations, and decisions. (Adler and Adler, 1980: 32-33)

Note that when the 'I' thinks about itself, it objectifies itself, thereby turning the first-person perspective of the 'I' into the third-person perspective of the 'me'. The moment the 'I' stops its activities in order to think about itself, it is instantly placed in the position of the 'me'. This means that whenever we reflexively investigate ourselves, our identities, we are *in the realm of the 'me' trying to grasp the 'I'*, which forever recedes behind our sightline.

What this latter aspect of the distinction between the 'I' and the 'me' shows, I argue, is a second answer to the riddle of Goffman's director. The 'I' is elusive in the sense that we can experience it from a first-person perspective, but once we turn our minds to it, it evades us and turns into 'me'. In a similar way we may experience a 'director' that is present behind every performance ('I'), that holds all the performances together and unifies all the roles, but once we turn our minds to this director to investigate this 'real self behind the role', this 'manipulator', this 'naked self' more closely, we lose sight of him and end up with a third-person perspective instead ('me'). The answer to the question of whether Goffman's perspective includes a 'true self' behind the roles turns out to be, then, both 'yes' and 'no'. Yes, there is indeed such a director, since we experience being in his position from the subjective stance of our self-experienced identities. However, at the same time the answer is 'no', since the director himself is forever beyond our grasp.

3.6 The situated self

In this chapter I have presented two elements that are of crucial importance to the construction and expression of identities. First of all, as we have seen, who we are is related to *where* we are. 'Place', or rather 'situation', is of paramount importance to our selves. Second, *interaction* forms the basis of the construction and expression of who we are. This means that other people's presence plays a role in who we choose to be at any specific moment. Combining these two leads to my perspective of identity,

which can be subsumed under the heading of '*the situated self*'[65].

The main points of my theory of the situated self are that identities are situated in two senses: (a) they are related to the situation one finds oneself in, which means we play different roles when we are in different places and at different moments in time; and (b) they arise and find expression in and through interactions with other people. Situated selves are constructed and articulated against the background of situations, containing a setting at a given moment in time, with objects that may be used, and in concert with the expressed selves of other people. Identities are dynamic, open-ended processes.

I endorse the interactionist perspective, which explains identities in terms of the interactions between human beings, but will argue in Chapter 5 that we need to cast a wider net to incorporate particularly the effect human-technology interactions may have. In light of recent technological developments, such as the increasing interactivity and mobility of technological artifacts on the one hand, and the increasing ubiquity of technologically-mediated or enhanced environments on the other hand, I argue that the interactionist framework needs to be broadened to include our dealings with such artifacts and environments. The advent of Ambient Intelligence environments forecasts a high degree of pro-activeness on the part of artifacts and environments, which makes them, as we shall see in Chapter 5, candidates for the label of a 'reference assemblage' (in parallel with the symbolic interactionist notion of 'reference groups').

Before we turn to this matter, though, there is one other matter to be addressed: if, as I argue, identities are constructed and expressed in situations, then *how does this come about exactly*? How do situations affect role choices, which, as we have seen in Goffman's dramaturgical perspective, form the basis of the self? What

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[65] Long after I had come to summarize my perspective on identities under the heading of the 'situated self' did I find out that, ironically, Erving Goffman used this term in one of his essays as well, although, it has to be said, only in passing. Goffman writes: "*The part that an individual plays in a situated circuit of activity* [that is, a situation as I have defined it, BvdB] *inevitably expresses something about him, something out of which he and the others fashion and image of him. Often, this will be more than what is conveyed by mere accidents and incidents, and different from what is conveyed by membership in the establishment as such and by location in its ranks and offices. A situated self, then, awaits the individual.*" (Goffman, 1961b: 96-97, emphasis added)

elements in situations do people use to come to terms with 'what is going on there'? And how do technologies in general, and Ambient Intelligence technologies in particular, affect situations and the situated selves constructed and expressed in them? These questions will be addressed in the next chapter.

Part III

4

Situation, script, frame

Defining Ambient Intelligence situations

It is because subjects do not, strictly speaking, know what they are doing that what they do has more meaning than they know. (Bourdieu, 1977: 79)

Increasingly permeable situational boundaries affect more than the particular behaviours within them; they also reshape social identities in general. (Meyrowitz, 2005: 29)

4.1 Introduction

In Chapter 2 of this dissertation I have introduced the technological vision of the near future that is the center of focus for this dissertation: Ambient Intelligence. In the previous chapter I have presented my perspective of the 'situated self': I have argued that identities are constructed and expressed in and through interactions with other people, and that the roles we play are related both to the situation in which we find ourselves (place, location, moment), and the other people that are present there. With these two chapters I have laid the foundation for the real work of this research: uncovering the ways in which identities (read: situated selves) are affected by the realization of the Ambient Intelligence vision. In this chapter and the next one I will discuss two aspects of our everyday lives in which Ambient Intelligence will have precisely such an impact. The first is the 'definition of situations', which will be the

topic of this chapter[66], and the second is the 'agency of objects', which will be the subject of the next.

As said above, in the previous chapter I have argued that there is a clear link between situations and the construction and expression of identities. People play situationally chosen and situationally relevant roles. They express situated identities and construct situated selves. In this chapter we will look more closely at how this happens exactly. Interactionists often claim that the roles people choose in specific situations (and hence, ultimately, the identities they create) are a response to their '*definition of the situation*', a concept that was coined by William Isaac Thomas (Thomas, 1969: 42; Thomas and Janowitz, 1966: 160). In this chapter we will investigate the impact of Ambient Intelligence technologies on definitions of the situation, on role-choosing, and hence on the construction and expression of identities. In paragraph 4.2 we will look into the meaning of the concept of the definition of the situation, and its place in interactionist theories of identity. I will argue that while the notion of the definition of the situation explains the fact *that* people choose different roles in relation to different situations, it fails to explain *how* they choose these situated roles. This is why I propose to use the notion of *scripts* to explain what 'situational cues' people use to determine what is going on in each situation, and to motivate their role choices (paragraph 4.3). I will show that when we change the scripts in a situation, this has an impact on our definitions of what goes in them (paragraph 4.4). Then I will explain in which ways technologies can be understood as scriptal forces. I will discuss the notion of scripts as it has been used in two different research domains, Science & Technology Studies and Artificial Intelligence respectively, and explain the overlap and the distinctions between these conceptions and my own (paragraph 4.5). I argue that existing definitions of situations are regularly destabilized in light of the advent of ubiquitous and mobile technologies – a fact we see exemplified in debates regarding the etiquette of mobile phone use. To come to a clearer understanding of what this destabilization means I will propose a diversification of the notion of the definition of the situation. I will use

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[66] Two different earlier versions of this chapter have been published under the title '*Self, script, situation: Identity in a world of ICTs*': a highly condensed adaptation for an online publication (Van den Berg, 2007), and a longer version as a book chapter (Van den Berg, 2008d).

Goffman's concept of 'frames' to accomplish precisely such a differentiation (paragraph 4.6). At the end of the chapter I will propose some of the scriptal consequences of the realization of Ambient Intelligence for the construction and expression of identities (paragraph 4.7).

4.2 Defining situations

In the early decades of the twentieth century William Isaac Thomas developed an approach to social scientific research, which has come to be known as the '*situational approach*'. Thomas wanted to find explanations for the occurrence of particular human behaviors, or tendencies for human behavior, and he argued that the best way to investigate these occurrences is by relating them to the *situations* in which they occur. What is interesting about situations, argued Thomas, is the fact that they contain both 'objective' and 'subjective' elements[67]. Objective factors of the situation include the physical characteristics of the environment itself, but also, for instance, the objective economic or political situation in which individuals display behaviors. But there is also a subjective side to situations, relating to the way individuals "*perceive the situation, what it means to them…*" (Volkart, 1951: 2). For Thomas, both of these sides must be included in a scientific analysis of humans' situated behaviors. In the natural sciences, he argues, the behavior of the objects under scrutiny, for instance particles or planets revolving around the sun, is regular and predictable to a large degree. In contrast, says Thomas, in the social sciences the behavior of the object under scrutiny, for instance individual people or groups of people displaying particular types of behavior, are much less regular and predictable, even when we study them under circumstances that seem to be constant. The reason why this is so, says Thomas, is because of the subjective element of situational

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[67] I place the terms 'objective' and 'subjective' between quotation marks, because I have some reservations regarding this distinction: in the second half of the twentieth century various social scientists and philosophers have convincingly shown that such a distinction cannot be uncritically maintained, because the 'subjective' and 'objective' are in fact both social constructs and/or factually interwoven and only analytically distinguishable concepts (cf. Latour, 1993). However, for the argument of this chapter this point is not critical. I am merely presenting the background of Thomas' notion of the definition of the situation here.

behavior, that is, the fact that individual human beings may interpret situations differently in relation to their past experiences, culture, outlook, ideologies and so on and so forth. Thomas was interested in finding out how different people chose to display different behaviors, despite the fact that the objective characteristics of the situation in which they operated seemed to be the same (cf. Stryker and Vryan, 2003: 14). To explain this difference he formulated his (so often misquoted and even more often misunderstood) *'Thomas' theorem'*: "*if men define situations as real, they are real in their consequences.*" (Thomas and Thomas, 1928: 572)

However, at the same time the behavior of individuals is not entirely random or completely unpredictable in given situations. Somehow, it seems, people share ideas about social norms and expected behaviors in relation to situations. Volkart summarizes Thomas' line of reasoning on this issue as follows:

> One of the most important features of human existence is the fact that each individual is born into a group which possesses a going way of life, or a culture. In Thomas' terms a culture is composed of, or contains, 'definitions of the situation' which have been arrived at through the consensus of adults over a period of time. As a product of social life, these definitions are embodied in codes, rules, precepts, policies, traditions, and standardized social relationships. They are external to individuals, exercise some control over them, and have an existence of their own which makes them amenable to study in and of themselves. (Volkart, 1951: 7-8)

Definitions of the situation are learnt in the social groups in which an individual participates. But this does not mean that a person is always completely 'determined' by the definitions he has thus been handed down through his interactions with social groups. Instead, there is always room for personal interpretation and for maneuvering by the individual in defining a situation (cf. Coser and Rosenberg, 1982: 188, 191). Thomas remarks: "*There is* [...] *always a rivalry between the spontaneous definitions of the situation made by the member of an organized society and the definitions which his society has provided for him.*" (Thomas, 1969: 42) That definitions of the situation do not fully determine the behavior of individuals also stems from the fact that "*in many situations the cultural definitions are vague enough to permit diverse responses within certain limits.*" (Volkart, 1951: 9) What Thomas was after, was finding out to what degree individuals' definitions of the situation were in line with those of the groups in which they participated, and more

importantly, what happened when conflicting definitions of the situation emerged. He argues that we should not view situations as static backgrounds for action, but rather as changeable and dynamic. New individuals, new institutions, and new products may change existing definitions of the situation and call for new social negotiations and new social norms. In a famous quote, to which we will also return later in this chapter, Thomas writes:

> Every new invention, every chance acquaintanceship, every new environment, has the possibility of redefining the situation and of introducing change, disorganization […] into the life of the individual or even of the whole world. (Thomas and Janowitz, 1966: 232)

The notion of the definition of the situation has been widely adopted in symbolic interactionism, and it also plays a role in the work of Erving Goffman. Interactionists use this term to explain how individuals come to choose situationally related and relevant roles – roles, which as we have seen, are the constituents of their (eventual) self-conceptions. Interactionists argue that defining a situation involves two factors: first, the fact that the participants in an interaction need to "*agree on the type of social occasion in which they are participating. Is it a wedding? A family reunion? A job interview?*" (Michener, et al., 2004: 224) Second, they must agree on "*the identities they will grant one another and, relatedly, on the roles they will enact. That is, people must agree on the type of person they will treat each other as being.*" (Michener, et al., 2004: 225) Both agreement on the types of roles to be performed in the situation and on the type of situation in which the interaction takes place are relevant for role performances and for the construction of identities.

For Goffman, a definition of the situation emerges when people 'ask themselves': "*What is going on here?*" (Goffman, 1986: 8; Meyrowitz, 1985: 24; 1990: 67; 2005: 24). The answer a person will come up with forms the basis for the particular action pattern, chosen from a whole range of possible action patterns, he will adopt within that setting. Note that for interactionists individuals' use of a definition of the situation does not necessarily involve a rational, conscious process of deliberation before a performance or the completion of a set of actions. Quite the opposite: more often than not, answering the question 'what is going on here?' is not done in an explicit, analytical or logical way, but rather in an immediate, automatic, implicit, un- or pre-conscious manner. Goffman argues, in fact, that the question

'what is going on here?' is asked explicitly only when the participants in a situation do not immediately know the answer to this question, for instance in times of "*confusion and doubt*", but generally, "*during occasions of usual certitude*" it is left wholly implicit, it is asked only "*tacitly*" (Goffman, 1986: 8). The answer to the question becomes visible in the choice of a role and its accompanying actions, but emerges more often than not in such an instantaneous, automatic way that the individual won't even be aware of the fact that he or she is using a definition of the situation at all to assume a role within the given context. Rather, a definition of the situation generally is nothing other than the implicit process of interpreting and ascribing meaning to the setting one enters, a process so subtle and unthinking that agents are mostly unaware of its taking place. The definition of the situation, one could argue, comes about by using what Pierre Bourdieu calls '*practical knowledge*', which he describes as behavior "*based on the continuous decoding of the perceived – but not consciously noticed*" (Bourdieu, 1977: 10)[68]. The use of practical knowledge, according to Bourdieu,

> continuously carries out the checks and corrections intended to ensure the adjustment of practices and expressions to the reactions and expectations of the other agents. It functions like a self-regulating device programmed to redefine courses of action in accordance with information received on the reception of information transmitted and on the effects produced by that information. (Bourdieu, 1977: 10-11)

Or, as Carr puts it:

> For most of the routine situations in life your culture, mainly through language, presents you with ready-made definitions. You know a scene when you see one, a bank, a railroad waiting room, a college classroom. In fact, from childhood up, in order to get on with the business of living at all, you have had to develop definite

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[68] Bourdieu is not a (symbolic) interactionist, but he spent a considerable portion of his life working on the same themes that symbolic interactionists focused on, most notably the role and meaning of symbols in human life. Also, like many interactionists (and Goffman in particular) he found inspiration in the work of Thomas and Znaniecki on the one hand, and Emile Durkheim on the other. It is clear from his work that he also found great inspiration in Goffman's work. See also: (Jenkins, 2004: 20)

expectations about all kinds of situations. (Carr, 1948: 23-24)

Goffman rightly remarks that the term 'definition of the situation' is dubious in this respect: it suggests rational, conscious deliberation in relation to every situational role chosen. As we have seen now, this is clearly not the intended meaning of the term. Goffman notes that there are a few other problematic aspects to the term. For one, situations often cannot be straightforwardly defined as a single, clearly delineated slice of social life. He writes:

> ...it is obvious that in most 'situations' many different things are happening simultaneously – things that are likely to have begun at different moments and may terminate dissynchronously. To ask the question 'What is *it* that's going on here?' biases the matter in the direction of unitary exposition and simplicity. (Goffman, 1986: 9, emphasis in the original)

And the definition of the situation is also misleading, Goffman says, in that it may seem that this term refers to a clearly demarked amount of time, and that the action takes place in a clearly delineated location. This, too, is not intended in the notion of the definition of the situation. Goffman writes: "*The amount of time covered by 'current'* [as in the 'current situation', BvdB] *(just as the amount of space covered by 'here') obviously can vary greatly from one occasion to the next and from one participant to another*" (Goffman, 1986: 9).

Although the term 'definition of the situation' may be poorly chosen because it raises these unintended, even explicitly rejected, connotations, as a description of the mechanism of role-choosing it has become a vital term in the interactionist framework. It has come to play such a central role in the interactionist understanding of role performance in relation to specific situations, that we cannot ignore or replace it easily, despite its limitations. With Goffman's warnings and his explanation of the intended meaning of the term firmly in mind, then, we will look into its use in interactionist theories in more detail.

The notion of the definition of the situation is used in interactionism, as I have shown, to explain the fact *that* human beings choose situationally variable roles and how these role-choices may affect their behavior in specific situations. However, a burning question regarding this concept remains: *how do people choose what role to play in each situation*? How do they come to a definition of the situation in the way they do? What 'cues' do they use to interpret 'what is going on'? Interactionist

theories start from the assumption *that* people use definitions in each situation they enter, but do not explain *what such definitions are based on.* This omission, I argue, needs to be rectified. It is relevant to explicate the cues people use to define what the situation is, because understanding these cues enables us to analyze whether *changes* in existing everyday situations, for instance brought about by the addition of technologies to these situations, will have an impact on the way we define situations. Since defining situations is the starting-point for role-choosing, and role-choices in turn consolidate into identities, by investigating the changes brought about in situational definitions, we can get a clearer picture of the effects these changes may have on the construction and expression of identities.

4.3 Scripts and situations

When entering a situation a person uses a definition to establish what is going on there, as we have seen. He ascribes meaning to the general setting into which he has entered, and uses his definition of the situation to take up a meaningful and socially acceptable role within that setting. But how does a person come to such a definition? What 'cues' does a person use to come to a definition of the situation? Which elements in the environment (physical, social, legal, etc.) play a part in the ascription of meaning that arises in this manner?

I argue that each situation contains '*scripts*'[69] that human beings use to come to

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[69] The notion of 'scripts' has several everyday language connotations. For one, it brings to mind acting out scenes in a play or a movie: scripts are used as the instructions for playing a role. Also, it has connotations with computer programming: a script is the code that a computer program follows to accomplish tasks. I have harbored some doubts on whether or not the notion of 'scripts' was the right term for this dissertation, because of these two everyday language meanings. Both in theater and in computer programming the notion of scripts refers to explicit instructions of what actions ought to be taken in a given situation, and these descriptions are complete and determine (to a high degree) what a person or program should do. My interpretation of scripts, as I will show below, clashes with these two connotations, in the sense that scripts, in my use of them, do <u>not</u> describe in any detail or in any complete form what a person should do in a given situation. Humans do not follow scripts in the sense that there are ready-made scenes for them to play out, or lines for them to pronounce, or steps to go through to get to the 'right outcome'. Not only does everyday life have too much of an improvising character for that, but human also interpret and use scripts with a degree of freedom that makes them

a definition of the situation. I define a script[70] as *a set of contextual cues, expressed in the configuration of objects present in that situation, which explicitly or implicitly govern (courses of) action in connection with the situation.* From my definition of scripts as 'contextual cues' it follows that scripts are bound up with the environments or situations that we find ourselves in or move between. Scripts may be present explicitly within a given situation, and thus guide behaviors in a conscious manner, for example when a sign in the park says we are not allowed to walk on the grass. But scripts often do their work in more implicit and unconscious ways. A railway platform with an escalator and staircases leading to the main entrance of the building has implicit scripts concerning the way a flow of passengers should move from the train to the main hall and vice versa. When entering the office building in which one works, there are implicit scripts that guide us in adjusting to the environment – we instantly, automatically, and without conscious awareness assume roles appropriate for interactions with colleagues, clients, and superiors, instead of roles we would play in front of friends, spouses or family members. The scripts contained in the environment help us make these transitions from one situation to the next. For instance, the partitioned spaces with desks and desk chairs, an abundance of computers and telephones, and the presence of copying machines and a coffee machine may all function together, for instance, as the scripted expressions of an office.

4.3.1 Scripts and rules

A first important point to be made concerning the nature of scripts is that of the

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incomparable to the scripts used in computer programming and in the theater. In the end, I have chosen to maintain the concept of scripts because of its theater connotation, which aligns it nicely with Goffman's dramaturgical perspective. Considering my aim of uncovering the impact of technologies as scriptal forces in everyday life it seemed that the second connotation, referring to computer programming, also had a nice implicit link.

[70] The notion of 'scripts' has been used in different fields of (technology) research to designate different things. In paragraph 4.5 I will discuss the role and meaning of the notion of scripts in Science & Technology Studies (S&TS) and in Artificial Intelligence respectively. My interpretation of the term shows some overlap with its use and meaning in these fields, but also diverges from it in some respects.

distinction between scripts and rules. '*Rule-following*' and all that it may entail has been one of the topics studied extensively by analytical philosophers such as Ludwig Wittgenstein, Gilbert Ryle and John Searle. Goffman has used the notion of 'rule-following' extensively as well. Otto Duintjer (Duintjer, 1977) has analyzed the main characteristics of 'rule-following behaviors' in analytical philosophy (which shows great similarities with Goffman's interpretation) and has distilled ten laws regarding rules (Duintjer, 1977: 26-39). The most important ones are[71]:

1. Rule-following behavior is not the same as *regular behavior*: there are many instances of behavior in the world that cannot be labeled as 'rule-following', although they show high levels of regularity, for instance sunrise and sundown, the beating of the heart, respiration and so on and so forth.

2. Rule-following behavior is not necessarily accompanied by conscious reflection, and does not necessarily involve explicitly knowing the rules governing that specific behavior. Oftentimes we are unaware of the rules governing behavior until someone asks us to make them explicit. Rule-following is often about '*knowing how*' rather than '*knowing that*', to phrase it in Ryle's terms.

3. Rule-following behavior can be *criticized*: in cases of rule-following behavior one can always ascertain whether the rule has been followed properly or not. This is one of the features that distinguishes rule-following behavior from regular behavior – we can criticize the way someone applies the rules of a chess game, but we cannot criticize the behaviors of the sun.

4. Rule-following behavior is *learnt behavior*: we learn to follow rules throughout our upbringing and education.

5. Rule-following behavior is *understandable* to others; communal rules are a prerequisite for the understandability of behavior. Rules are the result of

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[71] Duintjer's book was written in Dutch; all translations of his work are made by the author.

shared social/cultural meanings.

6. Rule-following behavior is behavior that comes about as the result of the expectations of the social group one belongs to. Duintjer writes: "*It concerns expectations not just regarding what will happen, but also regarding how we are supposed to act, what is appropriate behavior for members of a community.*" (Duintjer, 1977: 39)

My interpretation of scripts builds on this discussion regarding rules and rule-following behavior, but specifies it in one respect. Scripts are *communications*, or *expressions of rules in material forms*. For instance, traffic *rules* are intended to ensure safe travel for all participants in traffic situations; when these rules are communicated through their embodiment in for example traffic lanes and stop signs, these material expressions take the form of scripts. Thus, scripts are rules made visible in the environment. Note, however, that this visibility need not always be very explicit, as I have remarked above. A sign that says 'left turn only' is an explicitly expressed rule scripting driving behavior, but the placement of lines marking traffic lanes to designate a driver's place in the road is more subtle and implicit. And the placement of ribbed lines to subtly yet persistently convince drivers not to cross the lines marking each lane are an even more implicit script, expressing a traffic rule.

4.3.2 Scripts: Main characteristics and functions

Scripts, it has now become clear, are the expressions of rules in everyday environments. Like rules, scripts arise on the basis of shared cultural meanings. They are the result of processes of cultural dynamism, in which people create ways of interacting, rules of conduct, legal prescriptions, and so on and so forth to facilitate the relations among participants in social connections and exchanges. Most of these processes of cultural dynamism are wholly implicit and could hardly be made explicit – they have been ingrained in our interaction patterns through gradual and unconscious socialization and have been integrated into our repertoire of roles in such a way that we cannot view our exchanges with others apart from them. In fact, one could argue that the key element of socialization may not be to learn a wide variety of *roles* to play in detail, but rather predominantly to recognize the relevant

cues, scripts, in the diverse settings a human being may encounter in everyday life. In the words of Goffman:

> Socialization may not so much involve a learning of the many specific details of a single part – often there could not be enough time or energy for this. What does seem to be required of the individual is that he learn enough pieces of expression to be able to 'fill in' and manage, more or less, any part that he is likely to be given. (Goffman, 1959: 73)

Meeting and interacting with the world and the other people in it presupposes shared cultural meanings, and precisely these are expressed in the 'cues' we take from the situations we enter: scripts.

Scripts are social constructs. They are created and preserved in and through social processes. Scripts can only be sustained by their affirmation in everyday practices. Goffman calls such affirmations *'everyday-life interaction rituals'* (Branaman, 1997: lxiv). Such rituals consist of all kinds of "...*unspoken social traffic rules that pervade everyday existence*" (Branaman, 1997: lxviii). When coming to define a situation we use such traffic rules to select what role to assume. To Goffman, the social order is the totality of all of the interaction rituals of a group or culture:

> When persons engage in regulated dealings with each other, they come to employ social routines or practices, namely, patterned adaptations to rules – including conformances, by-passings, secret deviations, excusable infractions, flagrant violations, and the like. These variously motivated and variously functioning patterns of actual behavior, these routines associated with ground rules, together constitute what might be called a 'social order'. (Goffman, 1971: x)

It is important to note, though, that despite their socially constructed nature, scripts are not arbitrary, voluntaristic or without obligations. They call forth a certain level of engagement with the particular situation and create a framework within which a person may choose his or her course of action, so to speak. They cannot be altered at will by individuals in a given situation. In the words of Goffman:

> Presumably, a 'definition of the situation' is almost always to be found, but those who are in the situation ordinarily do not *create* this definition, even though their society can often be said to do so; ordinarily, all they do is to assess correctly what the situation ought to be for them and then act accordingly. True, we personally

negotiate aspects of all the arrangements under which we live, but often once these are negotiated, we continue on mechanically as though the matter had always been settled. (Goffman, 1986: 1-2)

As we have seen, definitions of situations are mostly assumed in an automatic, implicit way, which means that the scripts that inform them are perceived and interpreted in equally tacit ways. Due to the fact that most scripts intervene in our behaviors in an implicit way, it is hard for individuals to change or impact the definitions that prevail in a given situation. Rather, scripts may change gradually over time as a result of social dynamics within the wider environment. In short, scripts are both socially constructed and thus depend on active construction and prolongation through social processes, but at the same time they cannot easily be altered by individuals, since they work their ways in implicit and often pre- or unconscious ways.

One could say that scripts and definitions *structure* situations, in the sense that they provide guidelines for choosing a role befitting the environment a person has entered. Their 'cues' enable us to pick a course of action that is deemed appropriate within the situation. At the same time, however, their structuring capacities are not exhaustive, in the sense that there is room for variation in interpretation and, therefore, room for maneuvering through social traffic with unique personal patterns and courses of actions. For Goffman, the fact that human beings have elbow-room in interpreting situations, and yet at the same time mostly comply with the social rules governing a situation was one of the most interesting miracles of the social world. In the words of Philip Manning:

> In our daily lives we often act on autopilot: we comply with a set of implicit instructions that govern our behavior. Social life is patterned because we often choose to follow these instructions and thereby make the world predictable. Predictability is an astonishing collective accomplishment. (Manning, 1992: 4)

Scripts leave room for interpretation, so that the same scripts may not give rise to the same responses in different people – on the one hand because every person brings a different set of previous experiences to his interpretation of the situation, which affect the way he will read the current one, and on the other hand because every situation is in fact a new one, which means that persons always need to improvise to some extent within the given circumstances. Scripts are non-

determinate in this sense. They could be labeled as '*strategy-generating principles*', to use a term by Pierre Bourdieu (Bourdieu, 1977: 72), principles that accompany people's actions within given situations, but don't determine these actions completely. Bourdieu emphasizes that people don't have '*mechanical reactions*' (Bourdieu, 1977: 73) to given situations. This does not mean, however, that people can define situations at will – rather, acting within a given situation there are schemes or strategies embedded in the setting, which are at once free (one can choose to follow them or not, and one can choose from different ones), and restricted (there are only a limited number of strategies one can follow within the given situation). When placed in a given situation, people do not have to follow the scripts embedded there. As Van Oost argues with regards to the scripts embedded in technological artifacts:

> Obviously, scripts cannot determine the behavior of users, their attribution of meaning or the way they use the object to construct their identity, as this would lead to the pitfall of technological determinism. Users don't have to accept the script, it is possible for them to reject of adapt it. [...] ...but scripts surely act invitingly and/or inhibitingly... (Van Oost, 2003: 196)

Or as Latour frames it: "*no aspect of* [a situation] [...] *'determines' what you are going to say* [or do]. [...] *But just because some material element of the place does not 'determine' an action doesn't mean you can conclude that they do nothing.*" (Latour, 2005: 195) In some respects my conception of the notion of scripts resembles Michel Foucault's analysis of the role of architectural features and social regulations in conditioning behaviors and ideas. In *The will to knowledge* (Foucault, 1998) Foucault analyzed the impact such conditioning elements have had on the ways in which the discourse of sexuality has developed as a disciplinary practice in Western society throughout history. The following passage from *The will to knowledge* could be labeled as a 'script-like' analysis of the ways of dealing with sexuality in secondary schools:

> Take the secondary schools of the eighteenth century, for example. On the whole, one can have the impression that sex was hardly spoken of at all in these institutions. But one only has to glance over the architectural layout, the rules of discipline, and their whole organization: the question of sex was a constant preoccupation. The builders considered it explicitly. The organizers took it

permanently into account. All who held a measure of authority were placed in a state of perpetual alert, which the fixtures, the precautions taken, the interplay of punishments and responsibilities, never ceased to reiterate. The space for classes, the shape of the tables, the planning of the recreation lessons, the distribution of the dormitories (with or without partitions, with or without curtains), the rules for monitoring bedtime and sleep periods – all this referred, in the most prolix manner, to the sexuality of children. (Foucault, 1998: 27-28)

Ideas on architecture, social interaction and rules of conduct combine into a discourse on sexuality, which is expressed in a particular practice and an accompanying physical setting. The discourse is translated into 'scripts', both physical and social, that become part of the environment. With Foucault I emphasize the political power of scripts. Scripts embody power relations – they may be labeled as conditioning cues, in that they steer people's behavior in certain directions and support the creation of categories such as 'appropriate' versus 'non-appropriate' action patterns for each particular setting. However, as Foucault also shows, such conditioning or disciplining properties are not merely restrictive regulations, but also enable us to establish agency and subjectivity (Foucault, 1995). Scripts function as aids or guidelines, in the sense that they help us choose an action pattern from a whole range of possible options, an action pattern that is in accordance with (our reading of) the situation we find ourselves in. So while scripts may indeed be labeled as restrictive, they can also be viewed as supportive, assisting mechanisms that facilitate the role choices we are confronted with in each setting we enter. Scripts, therefore, can be said to be both limiting and liberating.

Also, scripts can be labeled as interactional mechanisms emerging in a situation. A script is not something that is simply implanted in the environment as a rule etched in stone, to be interpreted and used by every passer-by in the same exact way. Rather, as argued above, scripts leave room for interpretation – they are taken to mean one thing by one individual and may be taken to mean something else by another person. One could argue that the script even comes about only in being a cue for whomever sees its meaning – the script comes about only as a mechanism in the fact that it is taken to be a cue. Of course, most of the time most people will note the same cues in the same situations, since scripts are based on shared cultural meanings, and such meanings are culturally handed down in processes of socialization. Thus, what we view as a situational cue and how we interpret that cue will often be similar for many

different people. However, the point here is that scripts are not a 'given', but rather emerge in the interaction of a human being and his environment[72].

As we have seen, scripts have a physical expression in the environment of the situation. Doors, walls, windows, and traffic lanes are simple examples thereof. Such scripts guide our actions (e.g. entering or leaving a room, driving on the right side of a road) through their material form – they enable certain action patterns, while disabling others. Physical script cues may be conveyed in the space and size of rooms, in the placement of doors and windows, in the ways in which movement is affected through for example the position of barriers and the arrangement of furniture and other physical objects within a spatial plan.

In some cases, one could argue that such materialized scripts have a moral property. In his brilliantly funny and insightful article entitled *Where are the missing masses? The sociology of a few mundane artifacts* (Latour, 1992) Bruno Latour uses the example of seat belts in a car that protect the driver in case of an accident to explicate this point. In some modern cars, Latour states, the seat belt is connected to the door and gently buckles the driver up automatically once he closes the door. In this type of car the driver cannot choose to *not* buckle up – the responsibility for buckling up has been removed from the user and placed with the car, i.e. the morality of choosing to be a good and responsible driver (in this respect) has been delegated to the artifact. Thus, the scriptal influence of the seat belt is absolute. Latour writes:

> It has become logically – no, it has become sociologically – impossible to drive without wearing the belt. I cannot be bad anymore. I, plus the car, plus dozens of patented engineers, plus the police are making me be moral…" (Latour, 1992: 226)

In most cases, though, the script cues expressed in physical forms are not that explicit and absolute. Entering a room through the door is not as binding a script as the seat belt example described above – we may choose instead to enter through a window (provided there is one), but usually refrain from doing so for reasons of practicality on the one hand, and because entering a room through the window is socially suspect, on the other (since climbing through windows is often associated

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[72] I kindly acknowledge Esther Keymolen's input on this particular aspect of scripts.

with breaking and entering). So although we generally follow the physical script prescribed to us by the shape and placement of a door (e.g. use this hole in the wall to enter or leave a room) this type of script leaves room for maneuvering.

That said, Latour argues convincingly that the functioning of a door may prescribe the way in which we use it. He describes the workings of a groom that operates to close the door behind people at his office building in Paris. The groom was placed because the building's occupants would otherwise oftentimes be too lazy or too distracted to remember closing it themselves. Therefore, the job of closing the door has been delegated to an artifact, in this case the groom. However, once in place, the '*nonhuman*', as Latour calls it, will discipline human behavior, so that the people entering or leaving the building will have to adjust to the nonhuman's skill and quirks. In the example of the groom: it will slam the door shut, so people have to develop skills in opening and closing the door without being smacked in the face[73]. Latour remarks: "*An unskilled nonhuman groom thus presupposes a skilled human user. It is always a trade-off.*" (Latour, 1992: 232) Script cues may be at work at different levels at the same time, then. In the door example we have seen that there is room for choice in following the script cue to begin with (after all, we are 'free' to enter a room through the window), but once we choose to use the door, our actual passing through it is affected by the placement, shape, and actual form the door and its possible attributes take. Mireille Hildebrandt remarks that artifacts or technologies seem

> to influence our behaviour patterns via a backdoor, creating a tacit understanding of the technology that settles under the skin, allowing us to work with it effectively. Its prescriptions are not written down in the form of decrees one must obey, they are as it were inscribed in the hardware and software that we have to deal with. (Hildebrandt, 2008a: 178)[74]

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[73] Note that the groom is a script – it expresses the rule 'close the door behind you', or rather, its placement is a response to the consistent breaking of that rule. (Perhaps, therefore, we should say that the groom expresses the 'rule': 'since you have consistently ignored to follow the rule 'close the door behind you' we have now delegated this task to an artifact, which will close it for you, without fail and with determination, albeit with a lack of social sensitivity.'

[74] To conceptualize this phenomenon further Hildebrandt distinguishes between 'legal normativity'

As this brief description of some script features shows, scripts vary from being very explicit (made visible by signs and symbols), to being left unspoken and wholly implicit. Also, they range from having a clear and absolute force to leaving room for choice. And they may operate on different levels at the same time: leaving room for choice in some respects, while being strictly prescriptive in other respects. Broadly speaking, scripts communicate the situational social regulations, legal rules, political prescriptions, etc. However, making a clear distinction between the social, legal, physical, political and symbolic aspects of scripts that may be present in situations is impossible. For one, oftentimes a single script embodies, for instance, both physical, social, and legal rules. Also, scripts hardly ever operate alone: in the reality of everyday situations different constellations of scripts may be present, working in concert and reinforcing (or combating) one another. It is impossible to untangle these assemblages. And one type of script usually entails another. For example, a door may be viewed as a demarcation for the entrance and boundaries of a confined space, say a store. When entering the store the individual encounters a number of other scripts to express the rules of the store situation, for example a script prohibiting theft in store situations, which is expressed in the physical form of a security gate at the store's exit. Thus, the entrance door serves as a first cue to announce a specific type of situation (a store situation), which then entails a host of other cues as well.

After this analysis of scripts as situational or 'role cues' contained in the milieus we enter, we can turn to the next question in this chapter: how do changes in situational scripts affect people's definitions of the situation?

4.4 Changing scripts: Changing situations (and vice versa)

So far we have seen that different types of scripts are embedded in specific

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and 'technological normativity'. Whereas the former refers to "*a set of prescriptions and prohibitions* [...]*, combined with rules of competence* [...] *embedded in democratic procedures via the legislator,* [constituting] *a set of checks and balances*" (Hildebrandt, 2008b: 170), the latter refers to "*the way a specific technology induces/enforces or inhibits/rules out certain types of behavior*", that is, the "*regulative and constitutive normativity of technologies*" (Hildebrandt, 2008a: 177).

settings and give off 'cues' regarding the roles people might assume within these situations. We have also seen that the process by which people come to choose such roles, based on the cues provided by scripts, can be labeled as the definition of the situation. The definition of the situation, then, is the result a person's interpretation of the specific setting he finds himself in, whereby the person reads the scripts, to come to an understanding of 'what is going on' in that situation.

The next question that emerges is: how do *changes* in scripts affect situations and their definitions? Since we have established that scripts both aid and limit a person in the range of roles to choose from in the context of the situational meaning he establishes, the answer to this question is fairly straightforward: if you change the scripts, you effectively change the cues used to come to a definition of the situation, and thus alter the situational content and its range of appropriate behaviors.

In the introduction to this chapter I quoted William Isaac Thomas, who said that "[e]*very new invention, every chance acquaintanceship, every new environment, has the possibility of redefining the situation*" (Thomas and Janowitz, 1966: 232). One of the examples that Thomas discusses in relation to situational change is the spread of new media – in his case: newspapers, movies and 'light periodicals' (Thomas and Janowitz, 1966: 242) – in challenging and redefining existing situations. According to Thomas, in the past in small, spatially isolated communities definitions of situations had a high degree of stability. However, processes of urbanization, industrialization, and the spread of new media undermined these stable definitions. Thomas' central idea was that in the tight-knit communities of the past individuals fit smoothly into the behavioral patterns that were expected of them. He writes:

> The definition of the situation is equivalent to the determination of the vague. In the Russian mir and the American rural community of fifty years ago nothing was left vague, all was defined. But in the general world movement to which I have referred, connected with free communication in space and free communication of thought, not only particular situations but the most general situations have become vague. Some situations were once defined and have become vague again; some have arisen and have never been defined. (Thomas and Janowitz, 1966: 240)

Thus, the loss of these tight-knit communities of the past, Thomas argues, gave rise to one of the central problems of his age, that is, the fact that so many rival

definitions of the situation had come into being, with no single definition that binds all people anymore. This in turn, argued Thomas, affected the cohesion of society in general and of sub-groups within society in particular, and even affected the consistency and organization of individual's lives. Now, whether we agree with such a grand (and rather pessimistic) conclusion or not is not the point here. What counts is that Thomas shows that changes in everyday situational definitions may have profound consequences for societies at large.

At the same time, redefining situations and changing situational scripts can be studied in cases of a much smaller scale as well. Let's return to Latour's example of the groom detailed in the previous paragraph. Latour described how a groom was added to the door of the institute where he works in Paris to relieve those entering and leaving the building of the responsibility of closing the door behind them. This was done because in the past the door was left open all the time, since those entering or leaving the building were either too lazy or too distracted to close it. The original script, i.e. the unwritten rule 'close the door behind you' (expressed in the assemblage of door + doorknob + hinges), apparently didn't work – it was either forgotten or overlooked or neglected for some other reason. Therefore, the groom was added to the door and a new script emerged: 'enter or leave the building, but don't worry about closing the door behind you – we'll do it for you'. Simple as this change may seem, Latour points out that the addition of the groom had serious consequences for some specific groups of people attempting to enter or leave the building: children, elderly people and people delivering packages to the building now have a hard time opening the door because of the physical strength needed to counter the groom's tight grip:

> Because of their prescriptions, these doors *discriminate* against very little and very old persons. Also, if there is no way to keep them open for good, they discriminate against furniture removers and in general everyone with packages, which usually means, in our late capitalist society, working- or lower-middle-class employees. (Latour, 1992: 234, emphasis in the original)

Although one could argue that Latour's latter argument, concerning discrimination against specific classes in our late capitalist society, is somewhat charged and over the top, his central point is important in our discussion of changing scripts: what used to be a regular 'entering the building situation' before the placement of the groom, has now become a different situation, in the sense that there

is a struggle involved in being allowed in for some people, and there is therefore a mechanism of selection in place regarding who may enter. In this case, then, the addition of a single script, has affected 'what is going on' in the situation in a serious way – for everyone entering and leaving the building, since they don't have to bother with closing the door anymore, but for some in particular, because they have a hard time getting in.

In the same article, Latour gives another, very funny example of adding scripts to a situation. He describes the way in which he used to drive around in his car with his son. The son always wanted to sit in the middle of the back seat with his head in between the front seats. Latour kept telling him to sit back and stay away from the middle seat, because of the dangers involved in case of an accident. The son, of course, consistently ignored his father's pleas and stuck to his preferred spot. Which, despite his better judgment and awareness of social conventions regarding traffic behavior (not to mention his knowledge of traffic rules and the fines attached to breaking them) in turn led Latour to constantly use his right arm to keep the boy in check. All in all, quite an unsafe driving situation. Thus, in attempting to avoid danger, a dangerous situation was created. At some point, Latour decided to delegate the task of holding his son back to an artifact: he installed a padded metal bar behind the front seats, or as Latour calls it "*a device made for tired-and-angry-parents-driving-cars-with-kids-between-two-and-five (too old for a baby seat and not old enough for a seat belt) and-from-small-families (without other persons to hold them safely) with-cars-with-two-separated-front-seats-and-head-rests*" (Latour, 1992: 249). With this device installed his son would be held back by the bar in case of an accident, so he could now safely occupy the seat he so desired, and Latour himself could keep both hands on the wheel. Note that the addition of the metal bar was not just the addition of another object to the situation, but rather a script, which in turn led to a change of the rules. The original rule in the car situation was 'don't sit in the middle seat and lean your head between the front seats, because it is dangerous in case of an accident'. By adding the bar, Latour has added a physical barrier, a script, which changes the rule into a different one: 'it's fine to sit in the middle seat (please do!), because the bar acts as a barrier, which will block you from propelling through the windshield in case of an accident'. The script expressed through the bar not only applies to the seating rules for the boy, but also applies to Latour himself: he no longer needed to hold the boy back anymore, and could return to adhere to one of the

rules of safely driving a car, namely 'hold both hands at the wheel'. In the end, the addition of a single script to the existing, dangerous driving situation turned it into a safe, and notably less stressful one, and changed the rules governing that situation in the process.

4.5 Scripts and technologies

In the previous paragraph we saw that when scripts change in situations, this has a bearing on the rules that apply to these situations, on the ways people define them, and hence on the roles they may choose in them. Having established this, the next question is: how does the addition of new technologies affect 'what is going on' in situations? And more specifically, what impact would Ambient Intelligence have in this respect?

The term 'scripts' has a history in relation to technological artifacts. It has been used by researchers in Science & Technology Studies (S&TS) to shed light on the conceptions of users and practices of use that become embedded in technological artifacts throughout their design process. And it has been used by researchers in Artificial Intelligence as one of the knowledge structures that human beings use to come to terms with the meaning of everyday life situations. At first it may seem that these two conceptions of the term 'scripts' diverge from my own, as I have presented it so far. However, in fact they do not. Both of these conceptions of 'scripts' are part of what I mean by this term.

Where my conception of scripts diverges from these two is in the fact that, to my mind, Science & Technology Studies and Artificial Intelligence each only tell *part* of the story. I argue that both of their interpretations of scripts need to be consolidated into one story – and then there is even more to tell. For me, scripts are *implanted in* technologies in the design process, and they relate to the *human way of knowing* and can therefore play a role in technological design. But there is a third element to scripts and technologies that both S&TS and A.I. overlook: technological artifacts themselves *function as scripts* when they enter our everyday environments.

4.5.1 Scripts <u>in</u> technologies

In this paragraph I will discuss the role of the notion of scripts in Science &

Technology Studies (S&TS) and Artificial Intelligence respectively.

Scripts in Science & Technology Studies

Over the last decades much research has been conducted in Science & Technology Studies (S&TS) regarding the design process of technological artifacts. Specifically, researchers have investigated the images of users, and the presuppositions concerning contexts of use that may become incorporated into technological artifacts during the design process (cf. Akrich, 1992; 1995; Gjøen and Hård, 2002; Latour, 1992; Oudshoorn and Pinch, 2003; Oudshoorn, et al., 2004; Van Oost, 2003). Madeleine Akrich instigated this line of research by introducing the term '*script*' in her 1992 article called *The de-scription of technical objects*. She wrote:

> Designers [...] define actors with specific tastes, competences, motives, aspirations, political prejudices, and the rest, and they assume that morality, technology, science, and economy will evolve in particular ways. A large part of the work of innovators is that of 'inscribing' this vision (of prediction about) the world in the technical content of a new object. I will call the end product of this work a 'script' or a 'scenario'. (Akrich, 1992: 208)

'*Script analysis*' developed into a research approach, which investigates the embedded ideas concerning prospected users and practices of use in technological artifacts. Researchers in Science & Technology Studies have shown convincingly that such scripts abound in even the most simple and straightforward technological artifacts. For example, Ellen van Oost conducted research on '*gender scripts*' and focused on electric shavers developed by Philips (Van Oost, 2003). She analyzed the differences between the design and marketing strategies for female electric shavers (called '*Ladyshave*') and their male counterpart (called '*Philishave*'). She found that the radically different designs of the Ladyshave and the Philishave embody a host of assumptions regarding the prospected user groups, women and men respectively. The Ladyshaves had a curvy look, a smooth surface with as few buttons and dials as possible, and were sold as 'cosmetics' rather than as electronic devices. These facts reflect ideas regarding female users, such as an assumed dislike of anything technological. In contrast, the Philishave for men was designed with several buttons, displays and dials, to give men a sense of the technological wonders taking place

'under the hood', its colors were dark (metallic and silver) and *"functioned as tokens representing technological innovation"* (Van Oost, 2003: 207).

Such implanted scripts, Van Oost points out, are highly gendered, not only in the assumptions used as a starting-point for the design, but also in the result they bring about[75]: shavers such as these consolidate cultural norms and gendered patterns of behavior. She concludes:

> ...the gender script of the Ladyshave inhibits [...] the ability of women to see themselves as interested in technology and as technologically competent, whereas the gender script of the Philishaves invites men to see themselves that way. In other words: Philips not only produces shavers but also gender. (Van Oost, 2003: 207)

A second example of script research in Science & Technology Studies is that conducted by Gjøen and Hård on the electric car (EV) and its use and social acceptance in Norway (Gjøen and Hård, 2002). Gjøen and Hård argue that, although designers and developers insert a range of ideas concerning users and use into the products they design, users sometimes come up with their own scripts (called '*user scripts*') to complement or alter those embedded by designers. In the case of the electronic car (EV) they found that users adhered to the engineers' scripts to some degree: they stated that the car's environmentally friendly image was an important factor in choosing it, and they had adjusted their driving habits to be in line with the intended use of the car (e.g. planning trips more carefully and driving smaller distances, due to the limited battery time). Both of these are responses to the engineers' scripts. However, one of the users, named Sylvia, had also created her own script: she has named the car 'Barbie' because it is small and cute. With this feminine name, Gjøen and Hård argue, Sylvia turned existing cultural scripts concerning cars, labeling them as gendered, masculine vehicles, upside down. They write:

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[75] Script analysis in Science and Technology Studies can be labeled a form of 'soft determinism' (see also Chapter 1, paragraph 1.5), in the sense that it studies the impact that preconceived ideas on users and use, implanted in technological artifacts, may have on actual practices of use, that is, the ways in which technologies 'steer' users' behaviors, or more positively put: the ways in which technologies 'invite' specific kinds of behaviors.

> The name Barbie [...] certainly did not belong to the engineers' original script, nor can it be called an antiprogram. It was simply another script – a user script – that turned the EV into a distinctly female automobile, even a girlish toy. Barbie was not a reaction to a script or a program developed by any engineer or politician, but a new script, indeed a new cognitive design element, not yet discovered by the people who are usually called designers. (Gjøen and Hård, 2002: 268)

The authors conclude that user scripts such as these may eventually lead to "*another cultural understanding of what a car is*" (Gjøen and Hård, 2002: 272), somewhat disproportionately I would argue, since the inference is based on this one example only. However, I share the authors' final conclusion, which is that the notion of user scripts is worthwhile as a tool, since it may provide insight in the way users "*domesticate technology by assigning new meanings to an artifact*" (Gjøen and Hård, 2002: 278).

Script analysis in Science & Technology Studies has proven to be an interesting and revealing approach to understanding the (literal) social shaping of technology. It sheds light on the often implicit and under-articulated ideas regarding technology users and their habits and practices of use. My conception of scripts is indebted to the one presented in Science & Technology Studies. The scriptal force of technologies, I concur, stems to a considerable degree from the ideas that designers, developers, and marketers have embedded into the artifacts. However, there is also a point of critique to be made regarding Science & Technology Studies' conception of scripts: it overlooks the scriptal power that an artifact or object can have *of and by itself*. Technological artifacts do not only host a variety of (implicit or explicit) ideas regarding users and user practices, but they also function as intended or unintended scripts *as objects*. I will come back to this point below, after I have discussed the concept of scripts as it is conceived in Artificial Intelligence.

Scripts in Artificial Intelligence

In Artificial Intelligence research the notion of scripts was put on the agenda by Roger Schank and Robert Abelson in their famous book *Scripts, plans, goals, and understanding: An inquiry into human knowledge structures* (Schank and Abelson, 1977). As the title suggests Schank and Abelson aimed at uncovering (some of) the structures of human knowledge, with the goal of using the outcomes to further

research in Artificial Intelligence, by mimicking such structures in Artificially Intelligent machines. Schank and Abelson pose the question of how humans approach the world in terms of knowledge, how they know what to do and how to respond to everyday situations, and what structures of knowledge are in place to quickly understand and respond to their day-to-day world. One of these structures, according to Schank and Abelson, pertains to 'specific knowledge' relating to "*standard situations*" that a person "*has been in many times*" (Schank and Abelson, 1977: 38). This type of knowledge builds on 'scripts'. Schank and Abelson define a script as "*a predetermined, stereotyped sequence of actions that defines a well-known situation.*" (Schank and Abelson, 1977: 41) A script, for them, allows people to quickly determine what is going on in a specific situation and choose a pattern of action appropriate within the limits of that situation. Moreover, understanding the script in a specific situation enables humans to predict and place sequences of action on the part of others. Schank and Abelson discuss the example of a 'restaurant script', which consists of a number of procedural elements such as 'finding a seat', 'looking at the menu and deciding what to eat', 'ordering the food', and so on and so forth. Because human beings know the elements of such a procedure, know how to behave in them – as if they were following a script for a movie or a play – and know what to expect from others, these types of sequences and their scripted elements could be relevant in the creation of Artificially Intelligent machines.

Schank and Abelson's definition of scripts clearly has some overlap with my own understanding of the term. For Schank and Abelson and for myself scripts are an important element of practices of action and interaction in everyday life. Also, I agree with Schank and Abelson's argument that "*scripts handle stylized everyday situations*" (Schank and Abelson, 1977: 41) – we have seen this above in my discussion of scripts on several occasions. For Schank and Abelson, as for myself, scripts provide a way to come to a quick understanding of the situations we enter, and (although they do not explicitly address the issue in these words) for both Schank and Abelson and myself scripts facilitate answering the question 'what is going on here?'.

However, my perspective of scripts diverges from that of Schank and Abelson in two important respects. First, Schank and Abelson view scripts as *knowledge* structures, thereby placing them in the human mind. Scripts are forms of knowing that guide sequenced patterns of action in everyday life. In my own perspective, in

contrast, scripts are expressions of rules that are made visible in situations, and thus they are emergent properties of situations, which are interpreted by human beings in their definitions of situations. Scripts, for me, are not elements of the human episteme, but rather situational components. Second, Schank and Abelson introduce the notion of scripts to shed light on certain types of repetitive, chronological action patterns, with the intention of making such sequences explicit, and thereby furthering attempts to incorporate such knowledge in Artificial Intelligence machines. In my perspective, as we have seen, scripts do their work in myriad ways, and are not necessarily explicit. Rather, in many cases they cannot even be *made* explicit.

4.5.2 Technologies <u>as</u> scripts

In the previous paragraphs we have seen two interpretations of the notion of scripts, both of which are in line with my own understanding of the term in some respects, but diverge from it in others.

My main criticism of both conceptions is that they focus on the ways in which technologies *contain* scripts, that is ideas of humans welded into technologies by humans. They overlook the ways in which technological artifacts themselves can *act as scripts*. Script analysis, crudely put, focuses on the ways in which *humans* affect the behaviors of other humans, *via objects*, that is, on ways in which designers, embedding their scripts regarding users and use into an artifact, affect the behaviors and self-conceptions of these users[76]. Artificial Intelligence, in turn, focuses on human knowledge structures to be replicated into technological artifacts. Both interpretations thus aim at (creating or uncovering) scripts as elements that are put

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[76] This idea is put forth most clearly in Latour's description of a script in *Reassembling the social: An introduction to Actor-Network Theory* (Latour, 2005). In this book he gives an example of how an architect designs a lecture hall, in which objects and spatial arrangements 'script' the lecturing scenes that are to take place there. He refers to the fact that the architect envisions that "*you* [as the teacher, BvdB] *will have to be heard when you speak; you will sit at the podium; you will face a number of students whose maximum number, space requirements, etc. must be taken into consideration.* [...] *...when you enter this scene, you feel that* [...] *most of what you need to act is already* <u>in place</u>." (Latour, 2005: 195, emphasis in the original) It is the *architect*, then, who creates the scripts and thus 'molds' the behaviors of individuals in a space through the design and placement of objects.

in technologies. Although this is indeed a relevant way of viewing the scriptal force of technological artifacts, I argue that it leaves out part of the interesting story to be told about the effects of technologies on everyday situations: the fact that technologies *as artifacts* may act as scriptal forces themselves in situations.

My main point of focus in using the notion of scripts in relation to technologies, is to uncover what happens once technological artifacts enter our everyday environments, and the ways in which these artifacts may function as scripts, sometimes in concordance, and sometimes in opposition to other objects and influences present in given situations. I want to reveal not so much the scripts that human beings may have implanted into artifacts, but rather treat such objects as scripting forces in their own right: to see in which ways technologies shape the 'cues' we use to come to a definition of the situation in given situations.

Boundedness

In the previous pages I have argued that when people enter a situation, they use a definition of the situation to come to terms with 'what is going on' in that situation and to choose a role for themselves within that situation. For their definition of the situation they use cues based on the constellation of objects they encounter in the environment, called scripts. Changing the scripts in a situation affects the definitions people come to in that situation, and thus influences the roles they may choose. Alternatively, changing the situation, for example by adding, removing or rearranging something in the material or social constitution of that situation, has a bearing on the scripts that are at work there, which in turn leads to changes in the definition of the situation and through them, on the role choices of persons entering them. Technologies have the ability to change situations. But how does this happen precisely? I argue that there are several ways in which technologies have a bearing on the definition of the situation.

For one, the presence of technologies alters the *boundedness* of situations, as Joshua Meyrowitz has argued convincingly in *No sense of place: The impact of electronic media on social behavior* (Meyrowitz, 1985). In this book, and in his later articles, such as *Global nomads in the digital veldt* (Meyrowitz, 2003) and *The rise of glocality* (Meyrowitz, 2005) Meyrowitz has shown that the introduction of what he calls 'electronic media' (television and radio, but also mobile phones) has, first and foremost, had an impact on the *permeability* of a situation's boundaries. Whereas

situations traditionally may be said to link up with bounded physical places, electronic media break through this boundedness, and even dissolve it. Meyrowitz writes:

> The pre-electronic locality was characterized by its physical and experiential boundedness. Situations were defined by where and when they took place and by who was physically present – as well as by where and when they were *not* taking place and by who was *not* physically present at particular events. [...] Now such boundedness requires some effort: Turn off the mobile phones, PDAs, and laptops; banish radio and television. [...] In most settings in a post-modern society [...] the definitions of the situation are multiple and unstable, able to shift with the ring or buzz of a telephone or with the announcement of a 'breaking story'. (Meyrowitz, 2005: 28, emphasis in the original)

Meyrowitz concludes:

> By changing the boundaries of social situations, electronic media do not simply give us quicker or more thorough access to events and behaviors. They give us, instead, new events and new behaviors. (Meyrowitz, 1985: 43)

According to Meyrowitz, the advent of electronic media leads to the destabilization of the definitions of situations since we are always connected through such media. This means that the situation we find ourselves in may change the instant the phone rings or an e-mail is received. Whereas only a few decades ago physical seclusion implied social seclusion, in the days of mobile and ubiquitous computer technologies this is no longer the case. In *The presentation of self in everyday life* Goffman referred to the boundedness of physical situations by stating that a person's performance 'saturates' the bounded physical place in which it takes place:

> In our Anglo-American society – a relatively indoor one – when a performance is given it is usually given in a highly bounded region, to which boundaries with respect to time are often added. The impression and understanding fostered by the performance will tend to saturate the region and time span, so that any individual located in this time-space manifold will be in a position to observe the performance and be guided by the definition of the situation which the performance fosters. (Goffman, 1959: 106)

True as this may have been in 1959, when Goffman's *The presentation of self in everyday life* was published, Meyrowitz argues that the rise of electronic media has severed the saturation of this 'time/space frame' whenever they are present (Meyrowitz, 1985: 124; 2005: 28), precisely because electronic media allow for multiple definitions of the situation within a given physical place. In paragraph 4.6 we will see in more detail what such multiple definitions of the situation entail.

Physical place and social place

The spread of technologies has also lead, according to Meyrowitz, to the disconnection of '*physical place*' and '*social place*'. Before the age of electronic media, he argues, physical and social place coincided: in order to have specific social interactions, one had to go to specific physical places. Access to and presence in these physical places enabled certain social interactions, whereas those who did not have access or were not present in them were excluded from participating in the interaction. Let me illustrate this with some examples. In the past, members of an exclusive Gentlemen's Society would visit meetings with other members (social place) at a specific physical location, viz. the society's Club House (physical place). Non-members did not have access to this physical place, and therefore had no access to the 'social place' of a Gentlemen's Society. Similarly, in order to receive education (social place) children had to go to a specific building, that is, a school, with separate rooms for different grades (physical place) – those who did not go to these physical places, did not participate in the socialization order (social place) of our general education system.

Meyrowitz compares our current digital age to the oral and print cultures of the past in order to uncover the development of this uncoupling of physical place and social place. In both oral and print cultures, he concludes, the connection between physical place and social place was very strong. Although the spread of print media did have an impact on the information patterns, and on the power relations within society, printed media did not sever the connection between physical place and social place. Print media have

> changed the patterns of information flow *to* and *from* places. [...] Changes in
> media in the past have always affected the relationship *among* places. They have
> affected the information that people *bring* to places and the information that

people *have* in given places. But the relationship between place and social situation was still quite strong. (Meyrowitz, 1985: 115, emphasis in the original)

In contrast, electronic media, Meyrowitz argues, have in fact greatly changed the coupling of social and physical place, or rather they have had a large effect on their *un*coupling. Non-members of an exclusive Gentleman's Society may now gather information about what it means to be in such a club, for instance by browsing the club's website or by viewing a documentary about it on television. Similarly, receiving education is no longer solely an activity that takes place in a specific building, but one that combines presence in that building with activities conducted in the online worlds of the internet and through the use of all sorts of different media. As a matter of fact, online education and distance learning are rapidly becoming more and more central in our education system and some types of education no longer require visiting physical locations such as schools or course centers at all anymore.

Meyrowitz also compares the form of information storage and transfer of electronic media and traditional ones, such as books and clay tablets. He points out that print media always had to be moved physically from place to place and usually traveled with the person who owned them, at the speed of human travel (Meyrowitz, 1985: 117). Electronic media have changed all of this. Whereas in the pre-electronic age the amount of information that entered or left a situation was bound up with physical carriers, such as books, papyrus roles, or clay tablets, electronic media have dissolved this link. We have seen that walls, doors and fences are of no consequence in the social insulation of a place that is electronically mediated. The physical transportation of messages and communications in the digital age is such that they are transported from one place to the next with a speed that is infinitely faster than that of the human traveler (and becoming faster every day), and they have no need for material carriers, like books or scrolls, nor do they depend on human beings literally bringing them from one location to the next. All of this has enhanced easy access for electronic media and their contents to situations and localities.

Of course, there is still a lot of social information that is actually closely tied to specific physical places. The uncoupling of physical place and social place is not complete – physical place has not become entirely irrelevant as a category of experience. Nor do we have access to any and all physical places, simply because we may be able to gain access to (a wide variety of) social places. Rather, Meyrowitz's point is that the connection between physical place and social place, which was

absolute in pre-electronic times, has been greatly weakened ever since the introduction of electronic media.

Since information and communication technologies have come to pervade almost any physical setting at any given moment and thus have turned literally every physical place into a technologically mediated one, this has a bearing on the definition of the situation: 'what is going on' is no longer strictly bound up with the physical place one finds oneself in. As Kenneth Gergen explains in his article *The challenge of absent present* (Gergen, 2002) a person can be physically present in one place, and yet be socially absent from it, for example because he or she is on the phone talking to someone who is not in the same space – this person thus really 'is' somewhere else entirely. Gergen calls this '*absent presence*', being somewhere, yet not being there at the same time. He writes:

> One is physically present but is absorbed in a technologically mediated world elsewhere. Typically it is a world of relationships, both active and vicarious, within which domains of meaning are being created or sustained. Increasingly, these domains of alterior meaning insinuate themselves into the world of full presence – the world in which one is otherwise absorbed and constituted by the immediacy of concrete, face-to-face relationships. (Gergen, 2002: 227)[77]

The presence of information and communication technologies that enable us to be socially present while physically absent thus mean that physical presence as a category of situational experience is decreasing in relevance. Through the use of technologies one doesn't have to be physically present in a situation anymore to participate in the social interactions of that situation. Instead of physical presence, one could even argue, *informational* presence has become the more important factor. Being present in a situation, does not necessarily relate to one's physical location anymore, but has rather become an *informational property*: being present means

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[77] Absent presence, Gergen says, does not necessarily *only* occur in relation to modern technologies. In fact, the phenomenon is much older. Gergen shows that absent presence can also occur, for instance, when one person is reading is book while another person is eager to have a social interaction with him – while the reader is physically present in the room where he is reading the book, he is socially absent there. Daydreaming, too, could be considered a form of absent presence, one in which not even a mediating object is involved.

being 'tuned-in'. Note once more, that because of the disconnection between physical and social place the definition of the situation has become more instable: it can change in the blink of an eye as a result of the social interference that technologies may cause. As we have seen above, a situation that was defined as one type of setting by its participants may change instantly as a result of a technological artifact's intrusion.

A related point concerns the fact that ICTs, particularly mobile technologies, have changed the *function* of the situations we find ourselves in. Specific situations, that used to be bound up with particular locations in space and time, such as visiting a movie theater, attending a church service or going to a store, have become uncoupled from their former physical locations – although, of course, one can still go to their respective locations to get such experiences. We can now watch a movie on television or on our iPods, download it from the internet or rent it from a video store; we can watch a church service on television, listen to it over the radio, or download the latest service as a Podcast; and we can shop for virtually anything through catalogues and on the internet. However, it is not just physical and social place that become separated; we may say the same of physical place and spatial function.

In the pre-digital age there was a close connection between a physical place and the function it fulfilled. For example, a train compartment functioned as a public space, used to travel from A to B, a park was a space used to relax and enjoy the weather or the green surroundings, an office was a semi-public space used to work and so on and so forth. Although physical places could fulfill more than one function, their functions were generally limited in scope. For example, a park could be used to relax and enjoy the green surroundings, it could be used to do sports, but it could also be a place to have lunch with colleagues or friends, or a meeting place for all sorts of interactions. However, the range of activities that could possibly be conducted within such a place was limited. With the advent of information and communication technologies, particularly mobile technologies, some of these limitations were lifted. A park may now function in the same traditional ways, as a meeting place, a place to relax, a place to do exercise etc., but it may also be used as a place to work, using a laptop, a mobile phone, a PDA, or all of these combined. Information that was previously unavailable in the park, such as one's personal computer files or webpages on the internet, are now available in those green surroundings (or basically anywhere, anytime). This means that the function a space like a park may fulfill in

our everyday lives has expanded: on top of the traditional functions a park had, it may now include a work function, a technologically mediated communication function, a technologically provided entertainment and information function, and so on and so forth. Thus, the clear tie between physical place and spatial function of the pre-electronic age has weakened: the same physical place may now be used for a much wider variety of functions, thanks to the advent of mobile, always-on, always-connected technologies.

It is obvious that alterations in the function of places and spaces again leads to a destabilization, or at least an expansion of the definition of the situation: since the range of possible patterns of action has expanded as a result of our being always-on and always-connected through (mobile) technologies, there is more variation in how we define 'what is going on' in each situation we enter. Thus, the expansion of the functionality of spaces and places leads to an increase in the possible definitions of the situation, which in turn means we gain greater variety in such definitions as a result of the advent of electronic and mobile technologies.

Middle region behaviors and the side-stage view

Information and communication technologies also have an impact on the distinction between what Goffman called 'front stage' and 'backstage behaviors', according to Meyrowitz. I discussed this distinction in the previous chapter[78]. Goffman points out that people play out performances, aiming at creating favorable impressions, when they are in front of an audience. Such performances before an audience are labeled as *'front region behaviors'* or front stage behaviors. When there is no audience present individuals or teams of players can relax, let down their guard, and rehearse for future performances. Goffman calls this 'backstage behavior' or 'back region behavior'. With the advent of electronic media, Meyrowitz argues, the clear distinction between 'front region' and 'back region' as separate regions, each with their own repertoire of behaviors, starts to crumble (Meyrowitz, 1985: 47-51). He concludes that the merging of front region and back region behaviors leads to a host of new behavioral practices, which he labels as *'middle region behaviors'*:

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[78] See Chapter 3, paragraph 3.5.5.

In middle region behaviors, the extremes of the former front region are lost because performers no longer have the necessary backstage time and space; the control over rehearsals and relaxations that supported the old front region role is weakened. The new behaviors also often lack the extremes of the former backstage behavior because the new middle region dramas are public (that is, performed before an 'audience') and, therefore, performers adapt as much as possible to the presence of the audience, but continue to hide whatever can still be hidden. (Meyrowitz, 1985: 47)

Meyrowitz has an ecological conception of situations and the behaviors we may find in them. He argues that when formerly separate situations merge, this does not result simply in the combination of both of these formerly disconnected situations, but rather in a *new merged situation*, with *new behavior patterns*. One of the examples he uses is that of small children getting access to adult situations, for instance at a party (Meyrowitz, 1985: 47-48; 1990: 78): when children are present at such a party for a short time, certain topics of discussion, such as sex, will be avoided, since they are not supposed to hear them. However, when they stay for longer periods of time, or come to parties often, Meyrowitz argues, "*some new compromise style of behavior is likely to arise where 'adult' topics are discussed in front of children, but with neither the explicitness characteristic of an adult-adult party nor the innocence once deemed appropriate for an adult-children party*." (Meyrowitz, 1985: 47). This means that children learn things about the 'adult world' they might not otherwise have come to know. Two formerly separate situations ('adult-adult party' and 'adult-children party') merge into a new situation, that is different from both of the old ones in that it combines behaviors from both, mixes them up and allows for a weakened, milder version of them. Hence, a new behavioral pattern has arisen in the 'middle region'.

Electronic media, Meyrowitz argues, may also give rise to the merging of formerly separate situations. As we have seen above, the boundedness of situations and the tight link between physical place and social place are undermined by the advent of such media. For example, using a home telephone to conduct work-related business opens the private 'back region' of the home temporarily into a 'front region'. Similarly, displaying private ('back region') behaviors on television in front of a large audience turns them into 'front region behaviors' – we only need to bring to mind some of the scenes portrayed in real-life television shows such as *Big Brother* to see

how this works. Also, television, the internet and other ICTs allow formerly distinct social groups, which were divided for instance by age, gender, social class, and so on and so forth, to gather information about each other. This, Meyrowitz suggests, leads to homogenization of knowledge, in the sense that more people have access to the same types and contents of information. Again, the emergence of middle region behaviors is the result: since the strict distinction between social groups lessens, new behaviors emerge that correspond to the merging of these groups and their situations.

What Meyrowitz's discussion of the changes to situations brought about by the advent of modern technologies shows is that technologies clearly affect the definitions of situations. Who we are in each situation, and what we show of ourselves, has become more fluid in the current age of information and communication technologies, and all the more so with the recent emergence of mobile technologies, that have aided in further destabilizing the boundaries between public and private behaviors.

4.6 Differentiating the definition of the situation

In the previous paragraph we have seen that technologies contain scripts, that is, they embody ideas about users and practices of use, they have an impact on the ways they function in the everyday lives of these users and contribute to (re)shaping users' self-conceptions. Also, technologies may (come to) contain some of the scripts that human beings use to quickly recognize and act upon often occurring sequences of action. But technologies themselves may also function as scripts, in the sense that they are part of the constellations of objects that make up the script cues of a situation.

Now, one the most interesting things to note about modern technologies *as scripts*, is that such technologies have a much *stronger* tendency to rearrange, interrupt, or destabilize existing definitions in situations than do some other objects or elements of an environment. Take for instance the following, everyday life example: a couple comes home from work and spends some time discussing their respective days at work, while one of them is cooking and the other is setting the table. These activities can be combined easily with a chat about the day's events. Then one of them switches on the television. By switching on it on, he effectively changes

the situation that was prevalent in the room up until then. The primary activity is changed from 'debrief at the end of the day' to watching television – and although both may attempt to combine the latter with the former, more often than not the conversation will be interrupted or become fragmentary because of the television's pull. Fortunati argues that electronic media, such as televisions and mobile phones, have the remarkable feature of being so gripping that their messages and interruptions often get prevalence over the actual face-to-face interactions taking place in a given situation:

> With the advent of the small screen, we had already shifted attention away from natural communication, fragmenting it with TV consumption. And so initially we learned to talk while we were watching TV at home; later, we learned how to answer a call, brusquely interrupting an already ongoing conversation with somebody. That is, what we do in this case is divert attention from interpersonal communication in favor of a virtual conversation, over a distance. In the same way as we hushed our family members to be able to follow the TV program, in the same way in the case of the mobile, we make our flesh and blood interlocutor helpless while we talk into the mobile and give the person at the other end more importance than the person in front of us. (Leopoldina Fortunati, quoted in Rheingold, 2002: 196)

Hence, televisions and mobile phones, or more generally information and communication technologies, have the interesting quality of grasping more of our attention, or grasping is more easily and more acutely, than do some other objects. Thus, ICTs form stronger script cues than do some other objects. They interrupt situations more easily, and one could argue, are more crucial in defining 'what is going on' than other elements in a situation. When information and communication technologies are present, these tend to define a situation more strongly than do the rest of the elements in the environing space[79].

We can see how this works in the use of mobile phones in public spaces. Earlier on I mentioned the fact that the *functionality* of spaces is widened to a considerable degree by the possibilities that technologies offer. For instance, whereas a train

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[79] I kindly thank Christian van der Veeke for an interesting discussion on this subject, and for his help on this particular aspect of the scriptal force of ICTs.

compartment used to be the kind of space in which only a limited amount of activities could take place (such as talking to others who were also physically present there, reading a book or a newspaper, looking out the window, sleeping) the advent of mobile, networked technologies has greatly enhanced the scope of what we can do in such a space. We can still do all the 'old' things there, but we can also talk to people who are not physically present there, we can surf online, work on files, read and send e-mails and so on and so forth. Obviously, this has consequences for 'what is going on' in such a situation. I argue that the recent discussions regarding the etiquette of mobile phone use in such spaces, for instances, clearly relate to a generally experienced destabilization of what we understand to be the prevailing definition of the situation there, and what roles and performances befit that definition. In fact, what happens when a mobile phone user makes a phone call in a shared space such as a train compartment, one could say, is that he temporarily adheres to *his own definition of the situation* in that space, a definition which may (or may not) be at odds with those of the other people present there. The caller turns this shared space, which up until the moment of the call was, for instance, a 'train-compartment-in-which-people-read-or-sleep-or-talk-quietly-with-others-present situation' into a 'all-of-you-can-do-what-you-do-on-trains-but-for-me-this-is-my-private-office-from-which-to-conduct-an-important-work-phone-call situation'. The others present in the same space will thus be submitted to (the consequences) of this individual's personal definition of the situation and the resulting behaviors that this definition entails – and this is precisely why a discussion regarding mobile phone etiquette has emerged in the first place in recent years. They are literally on the receiving end of the caller's choice to redefine what is going on, on his own terms, in their shared space. What the debates regarding mobile phone etiquette are about, to my mind, is a widely shared sense of confusion about the appropriateness of (inter)action patterns, about 'who to be' and what to do and not to do in specific situations. When confronted with new behaviors in situations of which we used to have quite a clear idea, both in terms of what behaviors we were able to appropriately display there, and also in terms of what (range of behaviors) to expect from others present there, this creates uncertainty regarding the basic question central to this chapter: what is going on here? What is the definition of the situation prevailing here? And what roles may each individual choose that is in line with that definition? In a time in which the definitions of situations get interrupted so easily by, or at least are becoming more dynamic and

less stable because of the addition of various technologies to existing social situations it is not surprising that such turmoil arises, and arises in a widespread and collectively felt fashion.

4.6.1 Defining situations in a world of high technology

Now, one could argue that this kind of infringement, the redefinition of a shared definition of the situation by one individual or a small group of individuals is nothing new. After all, in the 'old days' one could enter a train compartment and decide to use it as the perfect stage for displaying one's singing talents, for example, and thus submit the others present to one's personal interpretation of what was appropriate there, while this definition and one's subsequent performance needed not necessarily be appreciated by those others. In fact, variation in the definition of situations by different individuals entering the same situation, I argued at the beginning of this chapter, is not only a normal phenomenon, but even one *expected* to occur, since such definitions are not fully determinate. However, what is new is the *speed* with which the interruptions caused by new technologies may insinuate themselves in and also remove themselves again from social situations, and the *scale* on which the ensuing destabilization of situational definitions takes place. Social definitions used to have solidity in terms of their definitions: they stayed the same until someone either actively changed them by taking up a new activity in the same situation, or until someone new entered, or someone present left. In a world of ever-present, always-on technologies these firm definitions of the situation belong to the past. Instead, definitions are now forever in jeopardy of being interrupted, undermined, momentarily suspended, redefined, or put between brackets by some individual(s) while others present in the same situation still (attempt to) adhere to them.

So what does this mean? Can the notion of the 'definition of the situation' still survive in such an instable, shifting, sliding world of 'technological colonization'? And what happens to the definitions of situations in a world of Ambient Intelligence, when the processes of destabilization described here will only increase and expand further? Should we give up the notion of the definition of the situation entirely?

I argue that this conclusion is too drastic. Definitions of situations will always remain as basic structures used to come to terms with what is going on in particular situations. A 'supermarket situation', which we can recognize by the constellation of

objects and other elements that we regularly connect to such as situation, such as the supermarket logo, a space filled with shelves full of products, cash registers, shopping carts, and the presence of other people carrying bags of bought goods and baskets full of products picked off the shelves, will in all likelihood be part of the repertoire of the technologized world of tomorrow as much as it is today. Elements of the shopping experience may change with the addition of technologies, such as self-scanners to pay for products without having to stand in line for a cash register. And the prevailing definition of a supermarket situation may be interrupted or suspended momentarily by individuals receiving phone calls, texting, or making other uses of mobile technologies they have brought with them to the store. But the 'supermarket situation' itself, with its accompanying definition(s) will remain, unless at some point in the future all physical supermarkets will be replaced by online supermarkets – a development that to my mind is unlikely to happen[80]. The key point is, that while the addition of technologies to existing situations may destabilize the definitions of these situations, and while this may indeed have significant consequences for what is going on in them, and for the action patterns that we find acceptable or likely to appear in them, there will always be situations, particularly in everyday life, that will remain intact (almost) as they are today. Definitions of the situation will remain to serve as anchor points for us to come to an understanding of the kind of situation we are in and the roles that are open to us in these situations.

4.6.2 Frames as temporary brackets

So then how can we understand the types of momentary disruptions, suspensions, of the definition of the situation described at the beginning of this paragraph, where I discussed the use of a mobile phone in a train compartment?

While *some* definitions of situations remain almost as they are today, others

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[80] Online shopping for groceries may become more prevalent than it currently is, and may become a *parallel* 'supermarket option' for obtaining one's groceries. The 'smart refrigerators' in the Ambient Intelligence vision, ordering groceries by themselves whenever we run the risk of running out of products we use on a regular basis may in fact take over part of our supermarket activities in the near future, but I doubt that we will stop buying our own groceries entirely, or that physical supermarkets will disappear completely.

become destabilized and turn into a whirlwind of dynamically changing personal interpretations – the latter being closely related to the introduction of mobile and networked technologies. To my mind, what is needed in light of this development is to *diversify* the notion of the definition of the situation to accommodate for the greater variation in stable versus dynamic situational interpretations. Particularly in a world of Ambient Intelligence, in which technologies will saturate our everyday lives to ever higher degrees, to borrow a term from Kenneth Gergen (Gergen, 1991; 1996), it becomes all the more relevant to understand situations, their definitions, and the scripts at work in them, in a differentiated fashion.

One way of accomplishing this is to use Goffman's notion of *frames* alongside the 'definition of the situation'. In *Frame Analysis*, we have seen above, Goffman discusses the notion of the definition of the situation, and formulates a number of weaknesses regarding this concept[81]. While I have chosen to maintain the notion of the definition of the situation despite its shortcomings, in *Frame Analysis* Goffman, in fact, does not[82]. He replaces the definition of the situation with the concept of *frames*, which he defines as "*principles of organization which govern the subjective meaning we assign to social events*" (Branaman, 1997: lxxiv) For Goffman, frames *organize* activities in the sense that individuals come to an understanding of what is going on in a situation, and thenceforth adjust their actions to fit this frame. In *Frame Analysis* what Goffman is after is uncovering the ways in which shared frames of meaning are used and maintained by groups of people in the same situation, but also about what happens when shared frames collapse, fall apart, when misunderstanding arises, or when frames are manipulated by some to create false impressions in front of others. To make insightful the *layered* nature of much framing in everyday situations Goffman distinguishes between '*primary*

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[81] See paragraph 4.2.

[82] His main reason for doing so, in the words of Greg Smith, is this: "*The concept of frame revises voluntaristic construals of the Thomas Theorem, 'if men define situations as real, they are real in their consequences'. Goffman [...] maintains that participants do not uniquely create definitions of the situation. The frame concept modifies the concept of the definition of the situation in a social direction. The personal negotiation of situations involves discovering or arriving at the socially given frame, not creating it.*" (Smith, 2006: 58)

frameworks', '*keys*', '*designs*' and '*fabrications*' (Goffman, 1986)[83]. Goffman refers back to the work of Gregory Bateson, who used the concept of '*bracketing*' to distinguish between serious activities and playful interpretations of these same activities (Bateson, 1972; Goffman, 1986: 7). Now, for the problem at hand in this chapter the difference between shared 'serious' definitions of situations and their transformation into more 'playful frameworks' is not of central importance. What we are after here is to come to a more balanced understanding of the diversity of (equally 'serious') situational definitions that may emerge in relation to information and communication technologies within the same situation – the idea that while in a shared space some people temporarily suspend the ongoing definition of the situation prevalent there until that point in time, as a result of an 'intrusion' caused by the technology, for instance a phone call, an incoming e-mail, a text message, a video and so on and so forth. It seems to me that Bateson and Goffman's terminology may be useful in this respect.

I define a '*frame*' as the *temporary bracketing of an ongoing definition of the situation and the adoption of a personal definition in its stead*. The reason for my choosing this term is that it has a number of connotations in everyday life that actually apply to this form of bracketing. For one, we 'frame' pictures, for instance of previous experiences. In this case the frame provides the border, which sets it apart and marks it off from the surrounding environment into which it is placed. Second,

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[83] 'Primary frameworks' are the ordinary frameworks we use to make sense of the everyday world surrounding us; Goffman distinguishes between 'natural' and 'social' ones. Natural frameworks "*are understood to be due totally, from start to finish, to 'natural determinants.*" (Goffman, 1986: 22) Examples of these can be found in the natural sciences. Social frameworks "*provide background understanding for events that incorporate the will, aim, and controlling effort of an intelligence, a live agency...*" (Goffman, 1986: 22). 'Keying' refers to the fact that a shared meaning of an activity or a set of activities is transformed into some other meaning. For instance, play fighting is a keyed interpretation of normal, serious fighting – serious fighting is taken to be the model for something that all participants in the play fight understand to be non-serious. A 'fabrication' is similar to a key: it is also a reworking of an existing shared definition of the situation, except for this difference: in a fabrication "*one or more individuals* [...] *manage activity so that a party of one or more others will be induced to have a false belief about what is going on.*" (Goffman, 1986: 83) Fabrications can be benign, as is the case in for example surprise parties or practical jokes, but also exploitative, as is the case for example when people are set up or intentionally discredited by others.

photo frames, but also technologies such as televisions and computer screens 'frame' images, in the sense that they display only a *part* of what we would see it if we were to be physically present in the place where the image is taken. Thus, they literally 'frame' what the viewer gets to see – they eliminate the majority of the contextual information available in real life in favor of a compartmentalized slice of that information. This means that in their form such technologies literally bracket a large part of 'what is going on' in the situations they capture or represent. Moreover, what is contained *in* the frame becomes the main point of focus – it is the image presented there that draws our attention. This is apparent most clearly in the ways in which *within* the framed portrayal of information presented by computer screens we use different frames ('windows') to access different 'worlds' in rapid sequence. The window on top is the one that gets our attention at the moment, but it may easily be swapped by ALT-TAB-ing through any of the other ones at any given moment in time.

The parallels between photo and television frames and the temporary bracketing of situational definitions is clear. When receiving a telephone call in a public space the callee temporarily brackets 'what is going on' in that situation and adopts his own 'frame' instead. The non-present caller asks him to choose between the definition of his physical surroundings, which may ask for repertoires of appropriate behavior of which making phone calls is not an element, and an alternative definition, in which those socially more important to the individual than the strangers in the shared public space, yet physically absent there, gets precedence over the prevailing definition there. It is important to note that such bracketing of the definition of the situation does not entail a hierarchy of definitions. Rather, frames are *nested* within the definition of the situation (Gibson, 1986: 9). They literally take place between the two brackets that an individual in a given situation places around his temporary retreat from the situation, as he engages with the technologically generated interruption that gives rise to the frame. Once the bracketed frame is completed, the individual can go back to the prevailing definition of the situation and partake in the shared social understanding of what is going on there. As Goffman explains: "*The current definition of the situation is disrupted, but the possibility of defining things this way with these participants remains.*" (Goffman, 1986: 86)

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4.6.3 **Frames and definitions**

Using a distinction between 'frames' and 'definitions of the situation' enables us to accommodate for the fact that when individuals adopt a frame at the expense of the prevailing definition of the situation in the presence of other people they seem to know exactly what is deemed 'appropriate behavior' in that setting, and they seem to understand the fact that their actions may fall outside that category, yet nevertheless they decide to bracket that definition and adhere to a frame which is their personal guidance for action and their personal source of role choosing, but that doesn't apply to anyone else present there. They thus accept a guide to action which cuts through, pauses or even undermines the existing definition of the situation. They temporarily take a different set of scripts as their lead for both the choosing of a role and the action patterns that follow from that choice.

In a world of Ambient Intelligence, with its ubiquitous, always-on technologies presumably the situational interruptions caused by technologies and the framing responses of technology users will only increase. Interestingly, this means that when framing will become more frequent it will therefore become a *part* of the 'normal' definition of situations in many social situations. As we become used to mobile phone users on trains and in restaurants, or interlocutors who interrupt a conversation to Google the subject of discussion or even the other person, this fact will become part of the social repertoire of shared meanings, shared behavioral patterns, and expected behaviors or behaviors deemed appropriate.

4.7 **Frames, definitions and identity**

How do these developments affect the construction and expression of identities? At the beginning of this chapter I argued that we use definitions of situations to come to terms with 'what is going on' in a specific context, to ascribe meaning to that context, and to choose an appropriate course of action, a role, within that context. The definition of the situation, I argued forms the starting-point for role choices, and this in turn means that it has a vital function in the construction and expression of identities. As we have seen in this chapter, scripts play a fundamental role in establishing 'what is going on' in each situation, and changes in scripts, for example brought about by the addition of technologies to these situations, have an

impact on how we define them. I argued that interruptions of the definitions of situations caused by for instance mobile phones and Ambient Intelligence technologies can be understood in terms of *frames*: these technologies challenge the prevailing definition of the situation and invite users to temporarily bracket 'what is going on', in order to (literally and figuratively) answer the technology's call. I have shown that we may expect framing to become an ever more widespread phenomenon in a world of Ambient Intelligence.

In all likelihood, the increase in framing will also have consequences for the construction and expression of situated identities. After all, adopting personally relevant frames by bracketing the larger social definition of a situation enables people to choose roles and create performances that fall outside of the scope of those regularly available there. This means that individuals are given an increased diversity of opportunities for identity expression and construction. Above I referred to the fact that the present-day generation of computers also extensively uses frames, called 'windows', which allow users to ALT-TAB between different tasks, and hence definitions. Sherry Turkle writes that the notion of working in different 'windows' has had a serious impact on identity construction:

> The development of the windows metaphor for computer interfaces was a technical innovation motivated by the desire to get people working more efficiently by 'cycling through' different applications [...]. But in practice, windows have become a potent metaphor for thinking about the self as a multiple, distributed [...] system. The self is no longer simply playing different roles in different settings, something that people experience when, for example, one wakes up as a lover, makes breakfast as a mother, and drives to work as a lawyer. The life practice of windows is of a distributed self that exists in many worlds and plays many roles at the same time. (Turkle, 1996: 160)

Since framing involves a temporary bracketing of the prevalent definition in a given situation, but may also entail an individual's return to the prevalent definition, situated role-playing can become expected to be more dynamic and changeable. Each frame, instigated by a technological interference, such as an incoming personal message or a personally tailored add, leads to the adoption of a momentary role within that frame, which can be traded in for a different role once the frame ends – and considering the amount of technological interferences we may be expected to be bombarded with in a world of Ambient Intelligence, this is an interesting foresight

indeed. More dynamic role-playing, one could say, means more dynamic, more fluid self-expression, and ultimately a more dynamic, more fluid self-conception.

At the same time, one could also argue that the increase of framing and the dynamics of situational definitions tumbling over one another in rapid succession may undermine the solidity of the individual roles played. We may reasonably expect that each of the consecutive roles played will not be embraced fully, if only for the fact that the succession of roles is so fast that we lack to time to fully embrace each role. Perhaps we could understand the consequences of this fact by using Goffman's notion of '*role distance*' (Goffman, 1961b), which I discussed in Chapter 3 of this dissertation[84]. In a world in which technological interruptions are part of the everyday fabric of everyday life, being in a role, whether it results from a bracketed frame or a definition of the situation shared with others, entails that individuals are continuously halfway in and halfway out of a performance. Role-distance may therefore become an even more common phenomenon. Role distancing has clear consequences for the construction of identities. While Ambient Intelligence technologies open up opportunities for more varied and diverse role-playing on the one hand, the other side of this coin is perhaps that each of a person's many selves as such are less pronounced, less well-developed, and more fluid. In a world that seems to pick up the pace in many respects it might be a good thing to be able to adjust to its social requirements with agility and flexibility. On the other hand, one might argue that we lose some of the depth and firmness to identity construction and expression in comparison with the days before the advent of mobile, ever-present, always-on technologies.

'*Audience segregation*', a term by Goffman that I also discussed in Chapter 3[85], will become more difficult as well, as it has already today in a world of mobile technologies. Audience segregation refers to the fact that it is important for people to display consistent performances in front of audiences, which means that they will strive to keep audiences and conflicting or undermining performances in front of these audiences separate. As Meyrowitz calls it, the audience to our performances will be given a '*side stage view*' (Meyrowitz, 1985: Chapter 3) more often in a world of

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[84] See Chapter 3, paragraph 3.5.7.

[85] See Chapter 3, paragraph 3.5.2.

Ambient Intelligence because of this rapid interchange between frames and definitions: they will see (parts of) both our front stage, rehearsed performances, aimed at public approval, and our back stage, improvised, non-choreographed ones, not intended for public eyes. This mixture of roles to be viewed by the audience present in a situation may not only have an impact on one's self-conception in terms of the impressions and image one leaves behind, but it may also contribute to a sense of confusion of what role to play and 'who to be'. It may become harder for individuals to grasp what roles are expected from them or available to them, and for a social consensus to be maintained throughout a social situation among individuals. Role-playing and role-choosing at any given moment in any given situation may become significantly more of a challenge in light of the developments predicted by the Ambient Intelligence vision. As said, the other side of the coin of course is, that at the same time this dynamic and rapidly changing succession of definitions and frames also enables people to more freely 'be what they want to be'.

We may conclude that the materialization of the Ambient Intelligence vision will lead to a tremendous expansion of the possible definitions we may use to come to grips with role choices in each situation. Since the amount of roles to choose from is destabilized and increased in each specific situation, the bandwidth for choosing stretches as well, thereby creating a double effect: on the one hand individuals get more freedom and flexibility to choose roles in given situations. At the same time, however, this places an ever-bigger burden of choice on these individuals. The sum total of all the roles we may play in life is enlarged, thus dramatically expanding the necessity for human beings of merging the vast amount of separate roles they play into some form of a combined self. Technologies thus function both as mechanisms of liberation yet at the same time also help corrode coherent and simple senses of self.

In this chapter we have seen that people use scripts to determine 'what is going on' in a situation, to come to an understanding of the situation and the roles they may choose in that situation. We have seen that technologies have an important function as scripts, and that the addition of technologies to situations leads to new ways of (inter)acting in these situations, for instance through framing. We have seen what the impact of technologies can be on situations and situational interactions. Technologies, then, in this chapter were understood as situational elements that have a bearing on our interactions *with other people* in the same situation. But what about our interactions with *technological artifacts themselves*? How can we understand

interactions with Ambient Intelligence technologies and other artifacts and objects? How do people relate to objects in general and to technological objects in particular? And do such objects also have an impact on our self-conceptions? These questions will be addressed in the next chapter.

5

Intelligent Ambience

Intimate technologies as 'reference group'

[N]ew technologies [...] tend to undermine existing practices and demand new ones. In this disruption, subtleties of existing social behaviours and the affordances upon which they rely become apparent, as do the new affordances and social behaviours offered by technology. (Gaver, 1996: 112)

We live our lives in the middle of things. Material culture carries emotions and ideas of startling intensity. Yet only recently have objects begun to receive the attention they deserve. (Turkle, 2007: 6)

5.1 Introduction

In the previous chapter we have seen that the addition of Ambient Intelligence technologies to existing social contexts will have an impact on the definition of the situation that prevails there and the scripts that people use to come to terms with 'what is going on'. I have used Goffman's notion of frames to clarify the nested character of much role choosing and situational defining, particularly in light of the temporary bracketing of the definition of the situation by individuals whose attention is drawn away from the larger social context because someone or something else breaks into that social context from the outside. We have seen that the increase in framing, in the momentary bracketing of the definition of the situation and its

accompanying role-play, also has a bearing on the expression and construction of identities. The dynamic, constant alteration between frames, definitions and roles leads on the one hand to an increase in flexibility in terms of role choices, yet on the other to a decrease in role-embracement and role-identification, and hence, in sum total, to more fluid self-expressions and conceptions.

So far, in this dissertation we have looked at changes brought about in the interaction patterns and social behaviors *between people*, and the ways in which these may be affected by the introduction of Ambient Intelligence technologies. This is in line with traditional interactionist conceptions of identity and identity construction. However, it seems worthwhile to investigate interactions between humans beings and *objects* or *environments* as well. After all, we have seen that Ambient Intelligence technologies profoundly alter the environments we live and work in, and we have seen that through the advent of Ambient Intelligence more and more currently non-technologized everyday objects will become 'smart' or at least responsive – we will thus literally be *interacting* with an increasingly wide array of objects and responsive environments. This raises the question of whether we ought to expand the interactionist perspective, which so far has focused only on human-human interaction, so that we may include the interactional role of *objects*[86] and *environments* in the construction of identities. In Actor Network Theory the role of objects in interaction is one of the key points of focus. Therefore, in this chapter I will attempt to bring together an Actor Network Theory-like analysis and interactionist conceptions of identity[87].

5.2 The role of other people in the construction and expression of identities

As I have explained in the first chapter of this dissertation the interactionist

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[86] The category of 'objects' includes both man-made objects (also called artifacts) and non-man-made ones. In this dissertation the focus, of course, is on the former rather than the latter, although much of what is said here applies to the category of objects as a whole.

[87] Two earlier versions of this article have been presented at international conferences (Van den Berg, 2008b; e); also see (De Mul and van den Berg, 2009).

school of social research can be roughly viewed as a tree, of which symbolic interactionism is the stem, and Goffman's micro-sociological approach forms one of the most well-known branches. So far in this dissertation we have focused predominantly on the 'Goffmanian branch', but in this chapter I will use a number of ideas from the tree's stem, from symbolic interactionism.

George Herbert Mead, as we have seen, is generally considered the founder of the symbolic interactionist perspective on identity. He argues that identities are the result of the internalization of a third-person perspective by the individual with regard to his own behavior. Humans develop identities, according to Mead, by viewing and judging their own actions through the eyes of others. We have seen that Mead explains his perspective with the example of participating in a baseball game, in which one has to be able to '*take the rôle of everyone else*' (Mead and Morris, 1934: 151). When internalizing this attitude, when 'taking on the rôle of everyone else', Mead argues, a person thus comes to understand his own behaviors in light of his interactions with others – he becomes an *object* for himself. This leads to a kind of internalized conscience that Mead calls the '*generalized other*' (Mead and Morris, 1934: 154). Michener, DeLamater and Myers describe the 'generalized other' as follows:

> [E]xperience teaches children that organized groups of people share common perspectives and attitudes. With this [...] knowledge, children construct a generalized other – a conception of the attitudes and expectations held in common by the members of the organized groups with whom they interact. When we imagine what the group expects of us, we are taking the role of the generalized other. (Michener, et al., 2004: 85)

Internalization of the 'generalized other' means that a person becomes "*a society in miniature; he sets the same standards of conduct for himself as he sets for others, and he judges himself in the same terms.*" (Shibutani, 1955: 564)

Tamotsu Shibutani, we have seen, replaced Mead's notion of the 'generalized other' with that of '*reference groups*' (Shibutani, 1955; 1987). He argued that the notion of the 'generalized other' was too solid and homogenous to be an apt description of interactional patterns in current times. Modern 'mass society', Shibutani says, entails that people, more than in previous ages, participate in many different social groups and worlds simultaneously. Each of these various social

groups functions as a different generalized other – or more accurately, each reference group is a *partial* 'generalized other'. Shibutani writes:

> Most people live more or less compartmentalized lives, shifting from one social world to another as they participate in a succession of transactions. In each world their roles are different, their relations to other participants are different, and they reveal a different facet of their personalities. Men have become so accustomed to this mode of life that they manage to conceive themselves as reasonably consistent human beings in spite of this segmentalization...
> (Shibutani, 1955: 567)

Shibutani further altered the original meaning of the 'generalized other' by arguing that both the *actual* groups one is a member of may function as reference groups, and groups one *aspires* acceptance of, or even *imaginary* ones. He summarizes:

> [T]he concept of reference group points more to a psychological phenomenon than to an objectively existing group of men; it refers to an organization of the actor's experience. [...] In this usage a reference group becomes *any collectivity*, real or imagined, envied or despised, whose perspective is assumed by the actor.
> (Shibutani, 1955: 563, emphasis added)

In the same article he goes as far as to claim that "[a]*ny group or object*" (Shibutani, 1955: 563) can function as a reference group, and may thus be pivotal in the creation of frameworks of meaning and the development of identities in individuals. It is this latter claim, that '*objects*' and '*collectivities*', too, can function as reference groups, that will be of particular relevance to the argument I am developing in this chapter. What I'm interested in is whether *objects* can come to fulfill a similar role as other human beings in the construction of identities. Or more precisely, *whether objects*, either on their own or in an ensemble with human beings, *can function as 'reference groups'*. In this chapter I will present an argument that consists of a number of steps. In paragraph 5.3 I will explain that our interactions with objects and environments are not neutral or straightforward, but rather that our way of being in the world is always *relational*. This is the reason why is important to pose the question of the role of objects in the construction of identities. After establishing this fact, w need to learn a little bit more about *how* exactly we relate to objects and environments. In order to shed some light on the various ways in which

we relate to objects and environments, I will distinguish between three types of objects, and three accompanying ways of relating (paragraph 5.4). Then it is time to focus on technologies as a special category of objects. I will explain that technologies are very much like any other object in some respects (paragraph 5.5), but at the same time they are also distinctively different (paragraph 5.6), for a number of reasons. One of the main reasons why technological artifacts are different from other objects, is the fact that, as research has shown, they call forth *social responses* in human beings. Ambient Intelligence technologies, I will show, in all likelihood will take these social responses to a new level, leading to a new degree of engagement with them (paragraph 5.7). I conclude that 'intimate technologies' in a world of Ambient Intelligence may indeed come to function as 'reference groups' (or, as I rename them, 'reference assemblages') in the construction of identities (paragraph 5.8). I end this chapter with an appeal to revise the existing interactionist paradigm to accommodate for the role of (technological) objects as agents that play a role in our self-conceptions and expressions (paragraph 5.9).

5.3 A critique of the interactionist stance

Interactionist theories have traditionally focused their investigations regarding the construction, expression and experience of identities on the interactions *between human beings*. They describe, in more or less detail, what happens when individuals are what they call 'co-present' and engage in communication with one another. More often than not the focus is on the different ways in which people present themselves to others, and the resulting ways of influencing that emerge in the exchange of self-presentations between people.

I argue that by focusing exclusively on the interactions between *human beings* something vital is irretrievably lost. That something is the role that *objects* and *environments* may play in these matters. Objects and environments are not wholly absent in interactionist research, but whenever they are discussed in this research field, they only fulfill an *accommodating* role in the self-presentations of co-present human beings. Put starkly, objects are 'tools' that can support (or undermine!) the self-presentations a person aspires – they function as 'props' and 'equipment' to be used by the individual to create as convincing and/or as socially acceptable a presentation as possible for his audience (cf. Goffman, 1959: 22-24). Environments,

in a similar fashion, are simply viewed as 'décor', the presumably neutral 'background' for self-presentations. For example, when Goffman explains the elements that are relevant in a performance, he says: "*First, there is the 'setting', involving furniture, décor, physical layout, and other background items which supply the scenery and stage props for the spate of human action played out before, within, or upon it.*" (Goffman, 1959: 22) The setting and its objects are simply 'there' for the performer to use as a backdrop for his performance in front of other human beings. Although Goffman argues that it is important to get a better understanding of the collections of '*sign equipment*' (Goffman, 1959: 23) that one may find in for instance domestic environments, the emphasis is still on the signs such collections may contain *for or in relation to (other) human beings*[88]. The role of objects as constitutive elements in human identities is overlooked. As Stephen Harold Riggins points out in *The role of domestic objects in the presentation of self*: "*Goffman never developed a distinct typology of objects. Instead, in all of his publications he merged objects and behavior in the same categories as symbols. This is also characteristic of some other symbolic interactionists*" (Riggins, 1990b: 343)[89].

I argue that our engagements with and actions in everyday environments are all but neutral, and that objects are everything but 'simply there' as props, tools, and décor. Instead, we should be aware of the *agency* of objects and environments. I

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[88] In *Asylums* Goffman discusses the role of objects as important factors in the maintenance of identities. He argues that inmates in total institutions have "*identity kits for the management of* [their] *personal front.*" (Goffman, 1961a: 20); these contain items such as "[c]*lothing, combs, needle and thread, cosmetics, towels, soap, shaving sets, bathing facilities*" (Goffman, 1961a: 20; also see Ling, 2008: 65). Most of the time in institutions such identity kits are taken away from the inmates and they are given standard issue institutional versions instead. Goffman argues that stripping a person of his identity kit is a 'personal defacement' and can "*prevent an individual from presenting his usual image of himself to others.*" (Goffman, 1961a: 21) Note that the objects in the kit function only as a means to give off signs *in front of other human beings.*

[89] Interestingly, Riggins also has an explanation for the fact that Goffman pays so little attention to the role of objects in the construction and expression of identities. He says: "[I]*f Goffman had focused more explicitly on objects, this might have contradicted his claim that face-to-face interaction constituted a bounded system. The analysis of material artifacts draws one's attention beyond the immediate present to the influence of people absent in intimate situations, to the past...*" (Riggins, 1990b: 346).

follow Bruno Latour, who says:

> The main reason why objects had no chance to play any role before was […] due […] to the very definition of actors and agencies most often chosen. If action is limited a priori to what 'intentional', 'meaningful' humans do, it is hard to see how a hammer, a basket, a door closer, a cat, a rug, a mug, a list, or a tag could act. They might exist in the domain of 'material' 'causal' relations, but not in the 'reflexive' 'symbolic' domain of social relations. [In contrast, for Latour, BvdB] *any thing* that [modifies] a state of affairs by making a difference is an actor […]. (Latour, 2005: 71, emphasis in the original)[90]

A long tradition of phenomenological research has shown that our embodied way of being in the world is always *relational,* not just *vis-à-vis* other people, but also with regard to the environments that we inhabit and move through in everyday life and the objects in those environments (cf. Ihde, 1990; Verbeek, 2005). The placement of objects, in the broadest sense of the word, has an impact on the paths we use through spaces and on the behaviors we display in them. Our actions are always relational, in the sense that our way of being in the world necessarily involves a condition of *relating* ourselves *to* these objects. So instead of viewing objects and environments as a neutral backdrop for human interaction I argue it is time to include them in our interactionist conceptions of the construction and expression of identities.

5.4 Relating to objects and environments

As even the most casual consideration of our relational way of being in the world reveals, we relate to *different objects and environments in different ways.* Broadly speaking, I distinguish between *three different ways of relating* to both objects and environments: *'non-participative'* relations, *'participative'* relations, and *'personal relations'*. Each of these types of relating aligns with a different type of objects and environments: *'directional'* objects and environments, *'engaging'* objects

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[90] Latour argues that we shouldn't speak of 'objects' ('nonhumans') as distinct entities, but rather only of networks of '*object-discourse-nature-society*' or '*hybrids*' (Latour, 1993).

and environments, and '*intimate*' objects and environments respectively[91].

5.4.1 Non-participative relations | directional objects

The first category consists of '*non-participative*' relations, in which we find what I call '*directional*' objects and environments. We relate to objects and environments in a *non-participative* way that form the 'field' in which we *position* our embodied selves, and do so in a threefold manner: first, we navigate through, around, over, under, and via the environing world, and use it, and the objects in it, in an *orientational sense* – objects and environments are there as traversal cues to guide us in certain directions but not others (streets, paths), to block certain movements but encourage others (obstacles, such as walls and fences, but also stairs), and as signs to help us remember which way to go (landmarks). Second, we use directional objects and environments in a *locational sense* – they are the immobile, permanent markers in relation to which our bodies locate themselves in spaces. They form boundaries to our perception and (literally) create the different spaces in which we live and act. Third, relations in this category are *territorial* – we lay territorial claims to them, attempt to gain control over them (cf. Goffman, 1971; Sack, 1986). Such claims may range from the temporary occupation of a space or object (a hotel room, or a park bench) to more permanent habitation (one's own

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[91] A preliminary remark needs to be made with regard to the *generality* of this categorization and the dynamic nature of the content of each of the categories. In dividing our relational way of being in the world in these three broad categories I do not assume to give a complete, inclusive portrayal of the reality of human-object and human-environment relations. Rather, there are many examples of objects and environments that either fall outside this categorization or that fall in multiple categories at the same time. Thus, the categories I present below are intended as provisional, tentative and broad. Moreover, objects that fall into one category in one situation may fall in another category in another situation, and variations of categorization are possible based on people's personal ways of relating to objects and environments. The content of my three categories is dynamic, then, and depends on the specific context in which human beings relate to objects and environments. Since the meanings we ascribe to objects and our surroundings depend on our situational definitions, and these definitions vary, both in terms of place, time, (intended) performance, audience, social and cultural parameters, and so on and so forth, it follows that what an object or environment is to a person at any one given point in time is, indeed, relative and dynamic.

home).

Directional objects and environments are not *used* like other objects may be, but rather provide us with navigational and locational boundaries, and transversal possibilities and barriers. The objects and environments in this category are called *directional* because they don't *engage* us beyond the fact that they show us the specific ways of being and navigating through them and with them. We position ourselves over and against them, pass through them, and live in them, with all the '*affordances*'[92] and obstacles they provide in the process (Gaver, 1991; 1996; Gibson, 1986; McGrenere and Ho, 2000; Norman, 1988), but do so in a manner that displays no *active involvement* with them.

5.4.2 Participative relations | engaging objects

The second category of relations I call *participative* ones. Objects and environments in this category function positionally – i.e. orientationally, locationally and territorially – just like the directional objects discussed above. But they also affect us in an *engaging* way, in the sense that we *use* them to *do* things. The ways in which we use objects and environments to 'get things done' are both historically and culturally contingent – different people use different types of objects to the same end, and, alternatively, different people use the same types of objects to different ends. What is central in the category of *participative* objects and environments is that we have a bodily positionality *towards* them, but, more importantly, that they literally *engage* us in acting *with* and *through* them.

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[92] The term 'affordance' was first used by James J. Gibson in *The ecological approach to visual perception* (Gibson, 1986). He writes: "*The* <u>affordances</u> *of the environment are what it* <u>offers</u> *to the animal, what it* <u>provides</u> *or* <u>furnishes</u>*, either for good or ill.* [...] [The term] *implies the complementarity of the animal and the environment.*" (Gibson, 1986: 127, emphasis in the original) Donald A. Norman incorporated the notion of the 'affordance' of objects into Human-Computer Interaction research in his book *The psychology of everyday things* (Norman, 1988). Norman argued that designers should include the idea of affordances into their design of objects and technologies, so that their designs may better match the requirements and inclinations of human beings in everyday contexts. According to him, in a well-designed product the affordances of the object "*provide strong clues to the operations of things.* [...] *When affordances are taken advantage of, the user knows what to do just by looking: no picture, label, or instruction is required.*" (Norman, 1988: 9)

When I use a spoon to eat the soup that I have poured into a bowl, I have a bodily orientation and location *vis-à-vis* the spoon and the bowl. This is the same sort of bodily relation that I have to *any* object and *any* environment that I find myself in, and it was discussed above under the heading of 'non-participative relations'. However, something else is going on here as well. While I am bodily oriented and located in relation to the bowl and the spoon, the more important issue here is that at the same time I am *engaging with* the spoon and the bowl to get something done: the eating of the soup. My embodied being and the two objects (spoon and bowl) *cooperate* to get a task completed and hence these objects are not simply passive things in my surroundings, but rather *active* participants in the activity I have set myself.

The category of engaging objects and environments is very varied and includes both natural objects (a stick that I may throw for my dog to catch), and a wide range of man-made objects or artifacts, from coffee makers to microwaves, and from beds to tables[93]. An example of an engaging environment is a car – this environing space/object is *used* to accomplish an activity, i.e. traveling from A to B, and it literally 'engages' the traveler to reach that goal through driving it.

5.4.3 Personal relations | intimate objects

The last category is that of *personal* relations and consists of objects and environments with which engagement is of an *intimate* nature. They are 'personal' in two respects. First of all, 'intimate objects' are objects that we tend to use often, wouldn't want to part with without difficulty, or share with others easily. Personal objects include the clothes that we wear, photographs or memorabilia, jewelry etc. –

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[93] Note that a table and a bed can both the labeled as 'directional objects' when we do *not* use them – during the day my bed is just an obstacle that I move around or a surface that I put other objects on; when I am not using the table to eat, write, read a newspaper, etc. then it is simply *there* as an element in my living or working environment. However, when I go to bed, I *use* my bed for a specific activity (sleeping), and when I sit down at the table with a bowl of soup and a spoon I *use* the table to have my dinner. These are both *engaging* activities, although, one could argue, my using the table is less so than my using a spoon to eat my soup. These are differences of degree, though, and not differences of kind.

objects that we wouldn't want to lose, that we carry with us often, that have special significance and a clear meaning for us. Second of all, such objects are 'personal' because they enable a two-directional process of *constructing* and *expressing* *identities*. Intimate objects are objects that we use to present (aspects of) ourselves, as happens for example in the clothes we choose or the jewelry we wear. Through such intimate items we express who we are (or think we are, or want others to think we are). They are what I call '*tokens of self*' – vehicles for self-presentation. At the same time, such tokens *reflect back* on our senses of self. By adopting a certain style or look and dressing the part – say, for example the clothing of a serious business woman – I come to conceive of myself as *being* a certain type of person – in this case: a serious business woman. Through the use of items such as clothes, jewelry, but also personal objects such as books, pictures, and certain types of technologies, we present ourselves (to others and to ourselves!) in certain ways, and this, in turn, shapes our self-conceptions. Intimate objects are intimate because they come 'close to home' – they make explicit to ourselves and to others who we, as unique individuals, are[94].

The three categories of object and environment relations (non-participative, participative and personal), and their respective object/environment labeling (directional, engaging and intimate) are summarized in the table below.

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[94] There are some objects that we would generally label 'intimate', but that fall outside my definition of this term in the current chapter. A toothbrush is an example in case. The use of a toothbrush is often regarded personal in the sense that many people would not be inclined to borrow their toothbrush to anyone other than a very limited few intimates (if at all). They are intimate in the first sense discussed here: we conceive of them as personal items that we would not easily share. However, toothbrushes (generally) cannot be labeled intimate in the second sense described here: they do not activate the cycle of self-construction and –expression that I have pointed out is a key characteristic of other intimate objects, such as clothes and jewelry.

	non-participative	participative	personal
relation	positional = orientational + locational + territorial	positional + use	positional + use + self-expression/self-construction
object/ environment	directional	engaging	intimate
examples (objects)	river, tree, mountain, wall, fence	spoon, bowl, hammer	'token' clothing, jewelry, books, pictures
examples (environments)	street, park	train, car	living room
technologies	windmill, (street) lamp	TV, radio, coffee maker, microwave	Ambient Intelligence, mobile technologies

Table 1: Three ways of relating | Three types of objects

5.5 Relating to technologies (as objects like any other)

Technological artifacts are the same as other objects in many respects, which means that what has been said in the previous section on the three categories of relating to objects and environments applies to technologies as well as to any other object. For example, we relate to *directional* technological artifacts such as (street) lamps, traffic lights or windmills in a *non-participative* way, whereas we *engage* with such technologies as televisions, microwaves, coffee makers, and robot arms in a *participative* way.

One point to be made with respect to some engaging technologies, most notably

electronic media (such as television, radio, and the (home) telephone[95]), is that there is a third layer of relationality involved in our engagements with them. These media have a positional function, like any directional object in our surroundings and they are engaging in the sense that we use them to do something. But there is more to them than that: these media are *portals* to relate to other human beings, places, and worlds. Roger Silverstone has called this the '*double articulation*' of information and communication technologies. Such technologies are both "*material objects located in particular spatio-temporal settings*" and "*symbolic messages located within the flows of particular socio-cultural discourses*" (Livingstone, 2007: 18). Sonia Livingstone explains this notion by showing how technologies such as televisions and telephones are like other regular objects in our domestic environments in some ways, but at the same time, they are also different in one important respect: they function as channels of communication with the outside world. She writes:

> The television, the HiFi, the mobile phone, even the books are both part of the world of sofas and lamps, objects of consumption, designed for the domestic market, located in the time-space relations of the present, carrying their markers of gender and class, *and* they are also fundamentally different. [...] ...they are portals to other worlds that open up the realms of the imaginary, connecting the domestic living room – staggeringly – to the rest of the globe. (Livingstone, 2007: 17, emphasis in the original)

In the case of electronic media we relate to their object form in terms of position, to their content in terms of engagement, but also *through* them as windows or access panes to people and environments that are not physically present. Televisions, telephones and radios have the extra quality of being 'looking-glasses' and connecting gateways into other domains and other peoples' lives.

The last category, of *intimate technologies* consists of such personal

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[95] In this chapter the mobile phone is taken to be an 'intimate technology', whereas the home telephone is not. Mobile phones are 'intimate' because of the fact that we always carry them with us, and generally tend to invest levels of attachment in them that are mostly lacking in our engagements with home telephones. Also, the mobile phone has a number of medium-specific characteristics that place it in the same category as Ambient Intelligence technologies. It is therefore discussed below when more is said about 'intimate technologies'.

technologies as mobile phones, PDAs and laptops. These are technological artifacts (mostly ICTs[96]) that are used on a day-to-day basis, and that we live with in an intimate way. These technologies will be the focus of the rest of this chapter and therefore will be discussed in more detail.

We have seen that intimate objects are intimate in two senses of the word: we live with them in intimate ways, and they activate a cycle of self-presentation and self-conception and thus contribute to the creation and maintenance of identities. 'Intimate *technologies*'[97] are artifacts to which both of these conditions apply. Many information and communication technologies (ICTs) can be labeled as 'intimate'. Over the last decades many of us have come to depend greatly on such technologies on a day-to-day basis, which has led many people to proclaim that they actually feel quite a strong bond with these artifacts (for a beautiful and personal discussion of the 'intimacy' of a wide range of technological artifacts, including laptops, radios, and glucose-meters, see the essays in Turkle, 2007). Particularly the advent of mobile technologies, traveling with us (almost) always, has been a big development in this respect[98].

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[96] Not all intimate technologies are information and communication technologies. A glucose-meter and a keyboard are examples of intimate technologies that do not fall into the category of information and communication technologies. These and several others are discussed in Sherry Turkle's book *Evocative objects* (Turkle, 2007). Personally, one of my own most intimate, (non-ICT) technologies is my universal, portable battery pack.

[97] The term 'intimate technology' or 'intimate technologies' has been used by different authors to mean different things in the past. Some have labeled 'intimate technologies' as those that enable users to create and manage *representations of themselves* that can act 'on their behalf', for example avatars in virtual worlds (cf. "Sven", 2007). Others have defined 'intimate technologies' as those "*...technologies which address human needs and desires as opposed to technologies which meet exclusively functional task specifications*" (Böhlen and Mateas, 1998: 345). And then there are those who take 'intimate technologies' to mean 'technologies that we live with in intimate ways' (cf. Frantz, 2006). It is this latter meaning that will be used in this chapter. A precise description of 'intimate technologies' is the subject of this paragraph. [Websites by "Sven" and Frantz: last visited on 15 December 2008].

[98] It is not completely clear whether this sense of affection is a result of the interactions one has had *with other people* via the artifact, or whether it refers directly to relationship between a user and his artifact. One could argue that technological artifacts such as mobile phones become important objects in our lives, because we sustain significant affectionate relations with other people through using them. This means that the affection felt for a mobile phone is not really aimed at the physical object

Moreover, ICTs, most notably mobile technologies, may instigate the cycle of self-presentation and self-construction in similar ways as other intimate objects, such as items of clothing or jewelry. Mobile phones, for example, are explicitly marketed by telephone companies as fashion or style items, and indeed also *used* as such, particularly by certain social groups, such as teenagers and adolescents. Both their design and functionality are relevant in this respect: the specific *type* of phone (e.g. a camera phone, a smart phone, or an mp3 phone) and the specific *presentation* of the phone (e.g. a clam-shell, an ultra-thin phone, or a slide phone) are expressive of the type of use a person makes of the phone and, in consequence, of the types of self-presentations the phone may be used for in a person's life. As an often-used, always-at-hand item in a person's presentations in everyday situations the mobile phone thus becomes a part of the self-expressive repertoire of the person carrying it – it becomes a 'token of self'. By regularly using the mobile phone as a 'dramatic prop' in self-presentations its expressive qualities in those presentations start reflecting back on the presenter. The phone substantiates claims of being a certain type of person, not only to those surrounding him, but, more importantly, to the person himself.

5.6 Relating to technologies (as objects unlike others)

Although technological artifacts are objects just like others in many respects, there are some profound differences as well – technologies stand apart from other objects in a number of ways. In this paragraph I discuss three lines of research that explain in which ways technological artifacts are objects *unlike* others: Don Ihde's argument on the three ways of relating to technologies (paragraph 5.6.1), Sherry Turkle's anthropomorphic explanation of social responses to technologies (paragraph

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itself, but more at its mediating properties in our human-human relations. However, this line of reasoning seems to be contradicted by the simple fact that many people are reluctant to part with their specific physical phone and to trade it in for another, for instance when it needs to be repaired. They miss having their 'own phone', even if all the functionalities offered by the replacement phone (including the full potential of staying in touch with important others) remains intact. This seems to suggest that there may indeed be a sense of affection or fondness that is directed towards the technological object itself, aimed at its material/symbolic form rather than its functionality as a gateway to other people.

5.6.2), and Byron Reeves and Clifford Nass' 'Media Equation' (paragraph 5.6.3).

5.6.1   Don Ihde: Three ways of relating to technologies

Don Ihde has explored the specific ways in which we relate to technological artifacts, and has come up with a threefold distinction that applies to human-technology relations, but not to our ways of relating to other objects (Ihde, 1990: Chapter 5). These three relations emerge because technologies have specific characteristics that set them apart from other objects.

First of all, Ihde says, some technological artifacts *mediate our perception.* They can do so in two ways: either transparently (as is the case, for instance, when we use glasses or contacts to improve our eyesight) or non-transparently (as is the case, for example, when we use a thermometer to find out what the temperature is). Second, there are what Ihde calls *background relations* – technologies, such as refrigerators with their specific hum, or thermostats that regulate temperature – that shape the experiences we have in spaces, but do so only in the background. Third, Ihde says, there are *alterity relations* – these refer to our explicit and conscious involvement with technological artifacts. An alterity relation, in the words of Peter-Paul Verbeek, is "...*a relation not via an artifact to the world but to an artifact itself*" (Verbeek, 2005: 123). It is the direct relation a person may experience with a technological artifact, for instance with a car or a mobile phone. Alterity relations explain the fact that some people proclaim to feel some sort of 'bond' with specific technological artifacts, such as their mobile phones (see also paragraph 5.5 above). It is this type of relations that is most relevant to my own argument, so I will discuss it in some more detail.

In alterity relations, Ihde says, the technology becomes a '*quasi-other*' (Ihde, 1990: 98). It is not really 'other' in the sense that other human beings or animals are 'others', but it does appear *as if* it were 'other'. To explain how this works Ihde compares a 'spirited horse' that we domesticate with a 'spirited sports car' – the first being really 'other', whereas the second is not. Ihde says there are two clear differences between them. When a car refuses one's commands while driving, this is due to some form of malfunctioning, but when a horse refuses one's commands this doesn't have anything to do with malfunctioning, but rather with disobedience. The horse truly has a will of its own, while the car does not. Also, a horse can live without

the care of its owner, provided, of course, that it is in a suitable environment, and it doesn't need to be 'started up' by a human being in order to operate. A car simply sits there waiting for its owner to 'animate' it by switching it on. On the basis of these distinctions Verbeek concludes:

> Technology appears in alterity relations as quasi-other because while we may encounter technologies in ways in which they seem to behave as an 'other', they can, *of course*, never be present as a true person. [...] ...technology is *never a genuine other*. (Verbeek, 2005: 127, emphasis added)

Technological artifacts fascinate us, says Ihde, because they *appear* to have a life of their own – they do unexpected things, move in unexpected directions without us giving them commands to do so, interact with us and respond in ways we didn't foresee. This leads us to ascribe 'animation' to these technologies, but really this is '*quasi*-animation', because it doesn't compare fully to the animation of an animal or another human being. Ihde thus dismisses the idea that technologies could ever be *real* others.

Although this claim sounds intuitively right, and perhaps up until this point in time *has* been true with respect to human-technology relations, maybe with the emergence of intimate technologies we need to reconsider its validity. I will come back to this point below. What is relevant for now is the fact that, regardless of whether some technological artifacts should or should not in fact be labeled as actual 'others', Ihde points towards a important fact in human-technology interactions, yet one that remains implicit in his discussion of alterity relations: the fact that human beings apparently display *social responses* to certain technological artifacts. We can relate to Ihde's example of a 'spirited car' because we may all at times tend to ascribe intentions to our cars – and, for that matter, not just to cars, but also to computers, telephones, and basically any household appliance that every now and then appears to have a will of its own.

Leaving aside for now whether this is something that should be attributed to humans or to these artifacts, I want to discuss two different strands of empirical research in Human-Computer Interaction (HCI), which have consistently presented one and the same remarkable conclusion: humans are inclined to approach technological artifacts and media, such as computers and television, with the *same repertoire of social behaviors* that they usually reserve for interactions with other

humans. The first line of research focuses on *explicit, conscious* social behaviors in relation to technologies, while the second one investigates *implicit, automatic* social responses to technologies. In this chapter, the first will be summarized under the heading of 'anthropomorphism', and will be exemplified with reference to the work of Sherry Turkle, while the second strand of research can be subsumed under the heading of 'the Media Equation', which was developed by Byron Reeves and Clifford Nass.

5.6.2 Sherry Turkle: Anthropomorphism

In *The Second Self: Computers and the human spirit* (Turkle, 1984) Sherry Turkle describes the empirical research she has conducted among large groups of early computer users in different age groups and the findings that has resulted in. Turkle conducted interviews with young children, teenagers and adults concerning their interactions with computers. Her conclusions were innovative and unexpected. She found that when people first came into contact with computers they approached them as tools for some specific task(s). But once they started working with the computer their ideas about the machine (and, as we shall see, ultimately about themselves!) changed – they started using it as a *'projective medium'* (Turkle, 1984: 14), a machine into which they could release parts and/or sides of themselves they could not easily express in everyday life. The machine, her subjects suggested, liberated them in a way. Because of its many abilities Turkle labeled the computer as a chameleon, "*an ideal medium for the construction of a wide variety of private worlds and, through them, for self-exploration. Computers are more than screens onto which personality is projected.*" (Turkle, 1984: 15) Rather, they are *'evocative objects'*: they make us question ourselves and the world around us (Turkle, 1984: 14; see also Turkle, 2007).

When interviewing young children (up to age 8) about their interactions with computers and digital toys Turkle found that they often ascribed lifelike qualities (for instance intentions) to such machines. The interactivity of computers and particularly the fact that they display *irregular behaviors* makes them into likely candidates for this kind of childhood animism (Turkle, 1984: 30). Research conducted by Melson *et al.* confirmed Turkle's findings (Melson, et al., 2005: 1652). They compared children's interactions with AIBO (Sony's robot dog) with a real dog

(that they named 'Canis'). As it turned out children did not treat the two in the same way: they patted Canis more and stayed closer to him. Remarkably, though, they did believe AIBO had some lifelike qualities, deserved to be treated like a normal dog (for example, it should not be kicked or abused), and they did believe AIBO could make a nice friend.

It is not just children who ascribe human characteristics to these devices: Turkle's research has shown that even adults sometimes do so – although the animistic tendencies of children disappear after a certain age, even adults may at times find it difficult to maintain that a machine is *not* a living human being like themselves. Ihde's 'spirited car' is an example in case. Turkle describes Joseph Weizenbaum's famous experiment with ELIZA, a computer program that mimicked the behavior of a Rogerian psychoanalyst (Weizenbaum, 1966). Computer users could converse with this program using natural language. The program had a number of techniques at its disposal to convert the users' input sentences into coherent and sensible output sentences, thus creating the illusion that it had the ability to understand the users' utterances and respond intelligently to them. Weizenbaum was shocked to find out how convincing his program turned out to be. He says:

> I was startled to see how quickly and very deeply people conversing with [ELIZA] became emotionally involved with the computer and how unequivocally they anthropomorphized it. Once my secretary, who had watched me work on the program for many months and therefore surely knew it to be merely a computer program, started conversing with it. After only a few interchanges with it she asked me to leave the room. Another time, I suggested I might rig the system so that I could examine all the conversations anyone had had with it, say, overnight. I was promptly bombarded with accusations that what I proposed amounted to spying on people's most intimate thoughts; clear evidence that people were conversing with the computer as if it were a person who could be appropriately and usefully addressed in intimate terms. (Joseph Weizenbaum, quoted in Kerr, 2004: 305)

Allegedly, after seeing how captivating people found ELIZA Weizenbaum became its most fierce combatant. Already in his 1966 article, when he presented the program for the first time, he writes: "*ELIZA shows, if nothing else, how easy it is to create and maintain the illusion of understanding* [...] *A certain danger lurks there.*" (Weizenbaum, 1966: 42-43)

Turkle uses the example of ELIZA to show that computers have the ability to make people believe they have capabilities and characteristics that, in fact, they are lacking. She writes:

> Weizenbaum's students and colleagues who had access to ELIZA knew and understood the limitations of the program's abilities to know and understand. And yet, many of these very sophisticated users related to ELIZA as though it did understand, as though it were a person. With full knowledge that the program could not empathize with them, they confided in it, wanted to be alone with it. (Turkle, 1984: 39)

This is why she believes computers can be labeled as 'intimate machines': "*People buy an 'instrumental machine', but they come to live with an intimate machine.*" (Turkle, 1984: 166). They ascribe intentions, feelings, behaviors to the machine that are really projections of themselves, of their own human capabilities and faculties. This means they *anthropomorphize* it (Nass and Moon, 2000; Nass, et al., 1995; Nass, et al., 1993). Anthropomorphism is the conscious and thoughtful tendency to ascribe human characteristics to nonhumans, such as animals and objects (Duffy, 2003: 177; Fong, et al., 2003: 150).

Turkle's research focuses on *explicit, conscious* behaviors that people display with regards to information and communication technologies (ICTs). At Stanford University a different line of research was developed. The *Social Responses to Communication Technology* group at this university has developed a series of experiments to show that technological artifacts and media do not only evoke conscious and explicit social responses, but also *unconscious* and *automatic* ones. The group explains this fact with the so-called '*Media Equation*', which we will turn to now.

5.6.3 Byron Reeves and Clifford Nass: The Media Equation

In 1996 Byron Reeves and Clifford Nass, both part of the *Social Responses to Communication Technology* group at Stanford, published their groundbreaking book called *The Media Equation: How people treat computers, television, and new media like real people and places* (Reeves and Nass, 1996). This book contains a collection of different empirical experiments they have conducted in the 1980s and 1990s with regard to human responses to computers and other information and communication

technologies. On the basis of the results of these experiments Reeves and Nass have developed what they call the '*Media Equation*', which can be summarized as follows: when people interact with information and communication technologies they need only very simple social cues from these machines to call forth a whole range of social responses that would normally only be reserved for interactions with other human beings, without being aware of the fact that this is happening. The most remarkable thing is that, when questioned about their behavior, people tend to *deny* displaying such behaviors towards these technologies (Nass and Moon, 2000: 87; Picard, 1997: 14-15).

I will describe a few of their experiments to clarify their conclusions. In the first experiment Reeves and Nass wanted to investigate whether the notion of 'teamwork' would apply to humans working together with a computer in the same way as it applies to humans working together with other humans. They divided participants into two groups. Both groups were told that they were going to solve the '*Desert Survival Puzzle*'[99] on the computer. The first group was given a blue armband and the monitor of the computer was decorated with a blue border. The other group of people was given a green armband but the computer did not have a colored border around the monitor.

The experiment had clear and significant results. Nass and Moon write:

The results showed that even when confronted with such a minimal manipulation, and an understanding that the computer could not return the participant's loyalty, participants in the 'team' condition were significantly more likely to cooperate with the computer, to conform to the computer's suggestions, to assess the computer as more friendly and more intelligent, and to perceive the computer as being similar to themselves, compared to the participants in the 'nonteam' condition. [The] research suggested that the mere use of a matching armband and border could mindlessly induce social responses [...]. Of course, participants in these experiments claimed (in postexperimental debriefs) that the

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[99] In the Desert Survival Puzzle the user is confronted with the following problem: the airplane he was traveling on has crashed in the desert. There is a list of items that the user can choose from in order to maximize the chances of survival until he is rescued from the desert. The user may choose only a limited amount of objects from the list. The computer will give suggestions and ask questions concerning the choices made. For a full description see: (Reeves and Nass, 1996: 94)

labeling was irrelevant to their behaviors and attitudes. (Nass and Moon, 2000: 87)

A second experiment pertained to 'politeness'. Reeves and Nass again divided the group into two. One group was asked to conduct a task on the computer and then fill out an evaluation of the computer's performances on the same machine. The second group conducted the same task and was asked to fill out the evaluation on a different computer. It turned out that the people in the first group were much more careful and polite in their negative comments with regard to the computer, whereas the amount of praise they gave the computer was bigger. Also, their answers were more homogenous. The second group, not hindered by the fact that they were evaluating the machine they had just been working on, was more straightforward, more critical, gave out less praise and answered with a bigger diversity than the first group.

Note that the responses people displayed in these experiments are not *conscious* or *deliberate* social responses towards machines:

> Many people occasionally yell at a newscaster or quarterback on television, or plead with a computer to give back a disk. These responses, however, are instantaneous, and they are rarely sustained. In our experiments, the social responses lasted much longer than an instant – they characterized an entire learning session. Polite responses were related to the entire experience. Hence, social responses are more than impulses that punctuate more thoughtful moments. (Reeves and Nass, 1996: 26-27)

The responses given by participants in these experiments were automatic and unconscious. They did not know what the goal of the experiment was, nor did they deduce it from its form or settings. It was obvious from the experiments that machines don't need to be very fancy for people to act socially towards them – Reeves and Nass conclude that acting socially comes so naturally for human beings that it's one of the easiest ways of approaching the world for them. Rosalind Picard calls it their "*default model for relating to others*" (Picard, 1997: 15), which is a *social* model, originally aimed at human-human interaction, but applied automatically and unconsciously whenever small hints evoke it – even if the evocation is conducted by a machine instead of a human being. The Media Equation shows that humans respond to media and computing technologies *as if* they were human beings (Reeves and

Nass, 1996: 6).

5.6.4 Social behavior both ways

As we have seen there is much evidence to sustain the claim that people tend to respond socially towards ICTs. Now, if this is the case, it means that information and communication technologies are 'intimate' in a way that largely overlaps with other intimate objects and environments, but adds yet another element of intimacy as well. We have seen above that all intimate objects and environments have the following characteristics: they are personal in the sense that we live with them in highly intimate ways and conceive of them in such a way that we wouldn't share them or part with them easily. They are personal also in the sense that they instigate what I have called the cycle of self-expression and self-construction – like the clothes we wear and the accessories we use to present ourselves in a certain way, so too may intimate technologies be used to create or sustain self-images, which in turn reflect back on the individual and lead to certain self-conceptions. But information and communication technologies are personal or 'intimate' in a third sense, which other intimate objects and environments lack: they call forth the kinds of responses that we traditionally reserve for human-human interaction.

Interacting with them, thus, shows parallels with human-human interaction that force us wonder precisely *how similar* our social responses to such technologies are (or may become as technological developments continue) in comparison with other people, and, more importantly, what this means for the impact such technologies may have on our identities. After all, if intimate technologies engage us in the same social responses that we display towards human beings, then does that mean that such technologies may in turn come to *socially affect us* in similar ways as human beings as well? Or, to be more specific: *if human beings tend to respond socially to intimate technologies, does this mean that these technologies, in return, may have effects on the construction and expression of identities that are parallel and similar to those of other human beings?* These questions become all the more relevant when technologies become increasingly more 'lifelike' and 'smart'. To see how this works we will apply the ideas presented above to the Ambient Intelligence vision to see what the limits of sociality and intimacy in human-technology relations really are.

5.7 Ambient Intelligence: Intimate technologies taken to new levels

Ambient Intelligence technologies are intimate technologies in all of three the meanings presented above: they will accompany us (almost) anywhere and it is highly conceivable, therefore, that we will develop senses of companionship towards them. We will literally live with them in intimate ways (paragraph 5.7.1). Also, they will actively engage the cycle of self-expression and self-conception that characterizes intimate technologies; they will come to function as tokens of self (paragraph 5.7.2). Moreover, Ambient Intelligence technologies will call forth social responses, and because of their form and behaviors (some of them) will take the level of social engagements human have with them to new heights (paragraph 5.7.3).

But on top of these three meanings intimate technologies become 'intimate' in yet another sense of the word in a world of Ambient Intelligence technologies. We have seen in Chapter 2 that Ambient Intelligence technologies have a number of specific characteristics. They are embedded in the surroundings of our everyday lives, they proactively provide us with personalized and context-specific information, communication and entertainment services, and they adapt to our personal preferences and needs. Ambient Intelligence technologies, technologies with this specific combination of characteristics, reach new levels of '*agency*', I argue. Not only do they take over various tasks and chores from us, or do they actively engage us in activities by providing us with (self-chosen!) product suggestions, ads, and content-relevant information, but, more importantly: by providing us with all these suggestions Ambient Intelligence technologies give us an insight into who we are – or are perceived to be by the technologies. They may at times provide us with suggestions that we didn't know we would find interesting or worthwhile to pursue. And strangely enough, this means that the technologies *may teach us things about ourselves* that we didn't know yet. Let us go through each of the four meanings of intimacy defined in this chapter and see how they relate to Ambient Intelligence technologies.

5.7.1 Living with Ambient Intelligence technologies: intimacy₁

Earlier on we saw that technologies over the last decades have become an

intimate part of our everyday lives, and that particularly in the case of mobile technologies this may result in a sense of affection towards these artifacts. In the case of Ambient Intelligence it is easy to see how this trend may become strengthened. First, since we will carry an 'access key' with us always, chances are that the latter will become a 'companion' just like our mobile phones are today. The ubiquitous presence of technological artifacts and networks entails that Ambient Intelligence technologies will be with us wherever we go, and hence our living with them will be close in the most literal sense. The fact that Ambient Intelligence technologies are embedded and do their work in 'natural' and unobtrusive ways presses this point only further. These factors will facilitate our ease of interacting with them and are aimed at making interactions more pleasurable. Also, a lot of emphasis is placed in the Ambient Intelligence vision on aesthetically pleasing designs. These aspects entail, the designers hope, that we will enjoy interacting with Ambient Intelligence artifacts, which in turn, may lead to a stronger sense of affection for them.

The emergence of less conspicuous interactional mechanisms, such as the use of voice control or tactile input, and the fact that technologies may respond to gestures and even to a user's 'moods' are intended to further enhance the ease of interaction. In all likelihood, this means that the sense of intimacy they provide in our lives becomes strengthened, because technologies adjust to more human ways of relating.

A second indicator is the notion of *pro-activity*: Ambient Intelligence technologies will be responsive in wholly new and unforeseen ways. They will respond to us *before we have explicitly articulated what we want*. It is not surprising that the term 'butler' comes to mind in relation to Ambient Intelligence (cf. Marzano, 2006). As technologies become increasingly more interactive and pro-active, we may assume that our interactions with them will start to resemble human interactions to an ever-larger degree. After all, their level of interactivity makes communicating with them more frequent, easier, and presumably also more complex and varied than the interactions we have with computing technologies of the current generation. Pro-activity further boosts these characteristics, and makes the feedback and information provided by these technologies seem increasingly more intuitive. Such technologies, then, may reasonably be predicted to become more companionable as time progresses, not only because of the intimacy with which we live with them, but also because of the type of content they provide and the ways in which they do so.

5.7.2 Ambient Intelligence technologies as tokens of self: intimacy$_2$

As we have seen above intimate technologies, such as mobile phones or computers, engage what I have called a cycle of self-expression and self-conception. They can be viewed as tokens of self, used to present a particular self-image in front of other people, which in turn reflects back on the person giving the presentation. We may safely expect Ambient Intelligence technologies to engage the cycle of self-expression and self-construction as well.

Ambient Intelligence technologies will afford us with a variety of new ways in which to engage the cycle of self-presentation and self-conception that is constitutive of our identities. A simple example of one type of Ambient Intelligence technology clarifies how this works: LED lighting in clothing and personal accessories. LED lighting is woven into the fabric of any type of clothing and can be manipulated by users to light up in unlimited variations of patterns. This means these items of clothing literally become surfaces for self-expression: one can write words or draw pictures, and one can use both still and moving images – all expressed through lighting. The expressions one wears can be altered at will and thus reflect different articulations of self at different moments or in different settings. The ideas about self one expresses in this fashion in turn reflect back on the presenter, leading to self-conceptions that align with these expressions.

5.7.3 Ambient Intelligence and social responses: intimacy$_3$

As we have seen above, information and communication technologies generally tend to call forth social responses, even when the social cues they give off are quite minimal. Both of the research domains discussed above to explicate this point ('anthropomorphism' and the 'Media Equation') focused on the role of relatively *simple* computing technologies – single computers, and not even highly complex ones at that. In a world of Ambient Intelligence in all likelihood technologies will be even more likely to call forth social responses in human beings, since Ambient Intelligence environments will be filled to the brim with complex, 'smart' and responsive technologies. These technologies will be adjusted, the vision states, to human needs and human interactions patterns, which means that they will attempt

to mimic human forms of relating and human sociality to a much larger degree than do current technologies. If the current generation of ICTs already calls forth social responses, which in fact, as I have shown, it does, then it seems obvious that Ambient Intelligence technologies will do so even more easily and automatically.

The fact that, according to the vision, the majority of the technologies present in any situation are adaptive and personalized only adds to this development. After all, the technologies will respond to human beings in a manner that is in line with their personal preferences and needs in terms of content, but also in terms of form: Ambient Intelligence technologies will adjust their own behavior to the social preferences of each individual – users who like frequent technological offerings and interventions will be offered many services, while users who view such services as distractions or disturbances will be left alone as much as possible. This type of behavioral alignment with individual users' preferences may easily lead these users to view the technology as 'socially sensitive', in the sense that it appears to 'understand' their ideas on appropriateness and desirability, and to respect these preferences. Moreover, the fact that Ambient Intelligence technologies will be context-sensitive, and thus ought to be able to judge the desirability of their interventions and offered services in relation to specific situations, may lead users to believe even more strongly that the technology is being 'socially circumspect', which in all likelihood will call forth social responses in return.

5.7.4 From Ambient Intelligence to Intelligent Ambience

In the previous paragraphs I have shown that in a world of Ambient Intelligence three different levels of intimacy can be distinguished with regard to human-technology interactions. What the Ambient Intelligence vision pictures is that the everyday environments in which human beings operate will become sensitive, smart, and responsive to a large degree and in a sophisticated manner. Technologies in such an environment will be socially sensitive and place the human being at the center of the technology experience. It seems to me that the term 'Ambient Intelligence' is actually not entirely in line with the content and the aims of this vision. The vision is not so much after *intelligence* per se, that is, it does not simply strive for smartness in the environment, but quite the reverse: what the Ambient Intelligence vision is after is creating a specific type of *environments*: 'ambiences' *of an intelligent kind*. The

term '*Intelligent Ambience*' more clearly explains what is envisioned here: being surrounded by everyday settings that respond in (socially) smart ways.

5.8 From reference groups to reference assemblages

At the beginning of this chapter I introduced the notion of '*reference groups*' – the social groups that each of us uses to mirror his behaviors, and to judge his performances – groups of significant others that play a role in the construction of our identities. After that I discussed Don Ihde's notion of alterity relations, the relations we have to technological artifacts, and showed why he believes such artifacts can never be 'genuine others', but instead will always remain 'quasi-others'. Now, the central questions the Ambient Intelligence paradigm calls forth in this light are these: *could it be that Ambient Intelligence technologies, as intimate technologies (in all senses of that term) may come to fulfill some of the 'social roles' that other human beings tend to play in our lives? And, consequently, should we review Ihde's stance on technology as 'quasi-other' in light of the prospected changes brought about by Ambient Intelligence as presented here?*

I argue that these questions should be answered affirmatively. The parallels between human-human and human-computer interaction will be such, that we may expect Ambient Intelligence technologies to come to fulfill similar roles in our human lives that other human beings now have – most notably that of reference groups in the construction and expression of identities. Since both human beings and technologies may start fulfilling such roles, and may do so in joint assemblages, I propose to replace the notion of a reference group with that of a '*reference assemblage*'[100]. In response to Ihde I argue that technological artifacts in a world of Ambient Intelligence will *indeed become 'others',* rather than 'quasi-others', because of the parallel roles they will assume.

Ihde formulated two criteria to distinguish actual 'others' from 'quasi-others'.

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[100] The notion of a 'group' has strong connotations with a group of *human beings*, whereas an assemblage may comprise of both humans and non-humans. Moreover, the word 'assemblage' contains the verb 'to assemble' and this is literally what technologies do in their interactions with human beings: they gather them into shared perspectives and shared activities.

The first criterion was having a will of one's own – in his comparison of a spirited car and a spirited horse Ihde argued that while the horse may be disobedient because it has a will of its own, a car can only be 'disobedient' because it breaks down and not because it has decided to disobey our orders. While this may be true in the example Ihde has chosen[101], I argue that already in our current age of networked and highly complex technologies the distinction between spirited beings with a will of their own and non-spirited, mechanical machines without a will becomes blurred. Technological artifacts, for instance the vehicles that we send into space to map the terrain of distant planets, have the ability to operate with a degree of independence and use 'reasoning techniques' to deduce the best course of action based on their own interpretation of their local surroundings, so that it seems almost degrading to call them 'non-spirited'. Moreover, in the last decades technological networks have been developed that can learn tasks without explicit programming, mimicking neural networks in the brain. After a period of self-learning these networks can perform tasks of such mind-boggling complexity that human observers are astounded by their ingenuity. My goal here is not to build a watertight case for the claim that technological artifacts are as 'spirited' or 'animated' as human beings or horses or any other living organism. I merely feel that the harsh distinction between 'us' (living organisms) versus 'them' (mere machines) that Ihde presents to underpin his argument for otherness versus quasi-otherness should at least be softened or diversified in light of some of the technological developments of recent years. The advent of Ambient Intelligence technologies, with their high levels of agency, their self-learning, adaptive, and context-sensitive capabilities, fits in with my argument for fuzzier boundaries in defining the spiritedness of 'us' versus 'them'.

Ihde's second reason for distinguishing a 'spirited horse' from a 'spirited car'

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[101] Ihde's stance towards technologies, developed in the late 1980s (*Technology and the Lifeworld* was published in 1990) does not account for the complex, ingenious technologies we have developed over the last decades (and how could it?). It is in light of our current technological world that we may need to rephrase them. Ihde writes for instance: "*Not only spring-run automata but also the most sophisticated computer-run automata look mechanical. These most sophisticated computer-run automata have difficulty maneuvring in anything like a life-like motion.*" (Ihde, 1990: 102) This, in fact, is no longer true, as the following YouTube clip on Sony's humanoid robot Qurio proves: http://www.youtube.com/watch?v=33a33XEVHKE [last visited on 26 November 2008].

may also be in need of reconsideration in light of recent technological developments and those of the near future. Ihde says that a horse can survive on its own and doesn't need a human being to 'animate' it, whereas a car needs to be 'started up' by a human being. Many technological artifacts these days in fact do not need to be started up by humans anymore – they are either always on, or if they are not, they may also switch on (or off) by themselves, for example at a specific moment of the day. Think of VCRs that switch themselves on and off to tape a program. Now, of course in the case of a VCR one could argue that this action is still based on a command that was given by a human being. However, there are also technologies who write their own commands and thus operate entirely 'on their own' – again, artificial neural networks but also various forms of Artificial Life technology are examples in case. As I have said above, I am not necessarily arguing that technological artifacts and living organisms are equally spirited, for there are many obvious differences between them, and more importantly, making such a case falls outside the scope of this dissertation. What I am pointing out is that perhaps it is time to revise Ihde strict spirited/non-spirited distinction and to accept that there may be various *degrees* of spiritedness instead. Ambient Intelligence technologies seem to further blur the boundaries between these two.

If Ihde's distinction between 'spirited' organisms versus 'non-spirited' technologies is nuanced it seems time to also review the strict division between 'others' and 'quasi-others'. I argue, contrary to Verbeek's claim that technological objects are "*never a genuine other*" (Verbeek, 2005: 127), that in a world of Ambient Intelligence they may in fact just come to function as such: as genuine others in the construction and expression of identities.

We have seen above that we already live intimately with certain technologies, both in terms of their permanent presence in our lives, and in terms of their self-expressive and self-constructive abilities. However, Ambient Intelligence technologies give intimacy a new meaning. Not only may we reasonably expect to develop senses of affection for such technologies, but since they are everywhere, and are constantly in interaction with us, they will literally become *our closest allies* – providing us with answers to our every needs, and enabling us access to an almost unlimited realm of technologically mediated possibilities, both in private and in public spaces. Moreover, as I have emphasized throughout this chapter, Ambient Intelligence technologies will display high levels of agency, of autonomy and self-

determination, which will not only have an effect on our interactions with them, but also have consequences in terms of the effects such technologies will have on us. These factors combined, surely, will not only enhance the current trend of technological affection but may even lead to technologies gaining a larger *formative role* in people's lives – since they're literally always there and live with us in intimate ways, they may start having effects on us that are unforeseen up until this point in time. For one, I argue, Ambient Intelligence technologies may start playing the role of *reference assemblages*. Technologies in an Ambient Intelligence world will be butlers and constant companions, providing us with support and feedback through natural cues (language, tactile information, visual signals), and adjusting their behavior to ours. In turn, two factors in human-technology relations will provoke *us* to adjust *our* behaviors in light of the technology's actions.

First, there is the fact that we *care* about the ways in which others perceive and judge us and our behaviors. This is particularly so with regard to 'significant others', be they social groups that we participate in or that we aspire membership of. The reference groups that have the biggest influence on our behaviors and self-conceptions naturally are those that we engage with most intimately. This means that the level of companionship we feel towards (members of) a social group is a relevant factor in how central such reference groups are in the construction and expression of our identities – the more companionable the group (members), the stronger the impact will be. It seems logical to extend this rule to technological artifacts, once these become companions at a level of intimacy that rivals (or even surpasses) some of the intimacy we feel for our most important social groups. This is the first reason why we can label Ambient Intelligence technologies reference assemblages.

Second, there is the notion of *being seen*. What is crucial in relation to reference groups is the idea of *being seen and valued* by the members of such groups. Reference groups function as a mirror, an external reference point through which or via which to judge oneself. We see ourselves through the eyes of the other. Hence, 'being seen' and 'being judged' are central themes in the construction and expression of identities. In a world of Ambient Intelligence users will be *watched constantly* by the (intimate) technologies surrounding them. These technologies will monitor their every doing non-stop in order to pro-actively provide users with the personalized services they may want. Moreover, these technologies don't just *see* users, but also *value* what they do: they interpret their actions and provide feedback. It seems

reasonable to expect that this *being seen* and *being valued permanently* by technologies has an effect that is comparable to that of being seen by other human beings, and specifically reference groups. This is the second reason why we can label intimate technologies reference assemblages.

5.9 Interactionist theories of identity revisited

A last point to be addressed is this: at the beginning of this chapter we have seen that interactionist perspectives on identity have so far always concentrated on interactions *between human beings* as the source of the creation and expression of identities. I have argued that we ought to include our embodied relationality with both objects and environments in our interactionist conception of the creation and expression of identities. This means that interactionist theories of identity need to show not only how *human-human* relations have a bearing on the construction and expression of identities, but also how *objects* and *environments* do so – and, in even more mature versions of theorizing: how humans, objects, and environments *combine* into situationally varied interactional practices that call forth behavioral patterns, self-presentations and self-concepts, where the human relations in the situation affect the use and meaning of objects and the general surroundings, while in turn the surroundings and objects are situationally relevant for the human beings present there. Ultimately, then, interactionist theories would be able to accommodate for the *network of relations* between humans and their environing world as a situational whole.

It becomes all the more relevant, I have shown with this chapter, to include objects and environments *as agents* in interactional theories in light of a number of technological developments of the near future. Returning to the interactionist understanding of the 'generalized other' and 'reference groups' I have argued that intimate technologies, as networks of active agents, may (literally) *come to function as 'reference groups'* – Shibutani's suggestion on page 236, that any object or collectivity can function as such, may be finding actualization. This is so, because technologies of the near future, as presented in the Ambient Intelligence vision display the following characteristics: they will be ubiquitous, they will approach users in personalized ways, they will be highly interactive and even pro-active in their responses, and they will have intimate contact with us. The ways in which we interact

with such technologies will therefore come to resemble our interactions with human beings to such a large degree that we may assume that their *roles* in our lives will also come to resemble those of other human beings. Functioning as 'reference groups' is one logical conclusion of this line of thought.

A last remark: it is important to note that the role of 'reference groups' in the construction and expression of identities more often than not goes unnoticed for human beings. Most of us, most of the time, are unaware of the relevance and role of reference groups in coming to understand who we are, and which sides of ourselves to express in any given situation. The impact of reference groups is largely unconscious – it is internalized to such an extent that we overlook its importance. The same will be true for our interactions with technologies of the near future. It will be hard to see their formative effects in a clear and straightforward way, since the functioning of reference groups generally is largely unconscious. However, with this chapter I hope to have shown that, due to human responses to technologies in general, and due to the specific characteristics of Ambient Intelligence technologies, they will more likely than not have precisely this kind of impact on our identities.

Part IV

6

Bubblicious? Bubblelonely?
Bubbleverywhere!

Findings and food for further thought

> ICT is not just the object of philosophical reflection, but also challenges the fundamental concepts of philosophy in radical ways. (De Mul, 2002: 27, translation by BvdB)

> [I]f the result of my approach can be construed as 'decentring' the self, then I am happy to be in the vanguard, providing it is appreciated that it does not mean a lack of interest in the self, merely an effort to approach its figuring from additional directions. (Erving Goffman, quoted in Smith, 2006: 98)

6.1 Introduction

Wondering about the future and the (technological) world to come is as old as mankind. Every age produces its own stories and images of the world of tomorrow. The illustration on the cover of this dissertation is an example in case: it is a nineteenth century depiction of tomorrow's technological world. In 1899 a French toy company called '*Armand Gervais et cie*' from Lyon commissioned an artist by the

name of Jean Marc Côté to draw a set of so-called 'cigarette cards'[102], depicting "*life in the year 2000*" (Asimov and Côté, 1986: 14). The cards were to be distributed to the public during the fin de siècle festivities. Côté created a set of 50 cards on which we find a variety of ideas regarding everyday life in the year 2000. Unfortunately, by the time Côté delivered his cards to Armand Gervais the toy company was in serious financial troubles, and although the cards were printed in large numbers they never reached the public – at the end of 1899 Armand Gervais went bankrupt.

Luckily, the cards did not sink into oblivion entirely. In 1986 the famous science fiction writer Isaac Asimov collected the 50 cards in a book called *Futuredays: A nineteenth-century vision of the year 2000* (Asimov and Côté, 1986). Asimov added a commentary to each of the cards, describing the historical background against which they should be understood. He explained some of the late-nineteenth century ideas on the future and the role of technological development therein. The book is a wonderful collection of sometimes bizarre, sometimes spot-on imaginations of a world to come. One card, for instance, depicts the fireplace of the future, which uses radium for heating the living room – that never happened obviously. Another card depicts so-called 'battle-cars', ordinary early twentieth century cars equipped with guns and canons – a premature version of the tank, one could say. There is a card that depicts Côté's ideas on the classroom of the future, in which the students (notably all boys) each wear a set of headphones, which are connected to a machine that feeds them knowledge. The teacher feeds books into the machine and a boy turns a crank that grinds the books into information that goes straight into the children's brains. There are remarkably many cards depicting scenes at the bottom of the sea, where men and women wearing diving suits ride seahorses, or whales are the newest 'thing' in public transport, carrying a busload of people suspended beneath their bodies. In these pictures we see that Côté was inspired by the work of the science

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[102] The Wikipedia description of a 'cigarette card' is this: "*Cigarette cards are trade cards issued by tobacco manufacturers to stiffen cigarette packaging and advertise cigarette brands.* [...] *Some very early cigarette cards were printed on silk, which was then attached to a paper backing. Each set of cards typically consisted of 25 or 50 related subjects, for example famous football or Canadian ice hockey players, Boy Scouts or British butterflies. They were discontinued in order to save paper during World War II, and never fully reintroduced thereafter.*" For the full entry see: http://en.wikipedia.org/wiki/Cigarette_card [last visited on 17 November 2008].

fiction writer Jules Verne, who was immensely popular at the time and for whom the 'under water theme' was also a central and recurrent one. To conclude, there are a number of cards that display work or home scenes in which everyday tasks are mechanized through various automatic arms and other machinery, which can be operated via large numbers of levers, switches and buttons. The fragment on the cover of this dissertation is an example of just such a picture. Asimov's accompanying commentary is this:

> Apparently, by the year 2000 we will see the demise of the lady's maid. 'Madame' will be doing the work herself, with the help of electrified gadgets. Here she is, in her negligée, seated before a full-length mirror [...]. At the moment, her hair is being combed by two different combs, and a powder puff hovers before her face, ready to do its work on demand. [...] Nothing of the sort has evolved or is likely to, since replacing the delicate manipulations of one's own hand with mechanized equipment in washing and making up [...] is not particularly desirable. (Asimov and Côté, 1986: 69)

Asimov's assertion that women around the world still do their own makeup is true until this day, of course. What is interesting about this picture, though, is that it depicts an everyday situation that is thoroughly technologized through the use of consumer electronics in the home environment. And this is precisely one of the central domains that the Ambient Intelligence vision targets. So far, I haven't come across an Ambient Intelligence prototype that mechanizes making up one's face, but the similarities between the vision of the future depicted here – using highly refined technological gadgetry to complete ordinary tasks in the home – and those discussed throughout this dissertation under the banner of the Ambient Intelligence vision are clear. Both portray a world in which even the most mundane everyday practices may become 'technologized'.

Moreover, while it is easy to cast Côté's mechanical 'lady's maid' aside as unrealistic, only time will tell how realistic we will consider Ambient Intelligence to be in ten, twenty, a hundred years from now. The uncertainty of the future is the most central issue for anyone attempting to formulate an idea of what tomorrow's world will look like – all we have to go on are extrapolations of the present and the use of our (admittedly quite extensive) imagination. Nevertheless, it is important to study visions of the technological future, both those of the past and those of the present. Those of the past are not only highly entertaining to study from the comfortable

position of the 'all-knowing' future, but also, in all of their dreams and fantasies, show us a glimpse of the *historical* perception of the meaning of technologies in a specific age, of their role in society, and their material and non-material promises.

Studying technological visions of the future *in the present* – as was the case in this dissertation on Ambient Intelligence – has another goal. I hope to have shown throughout this book that it is important to hold technological developments under a philosophical and/or social scientific lens from their most elementary, visionary stages, to constantly supplement their technological realization with a constructive, critically evaluative, probing voice. Such a lens, which may provide (conceptual) analyses and detailed investigations of the many, complex consequences of its materialization, hopefully delivers valuable input for making Ambient Intelligence's final realization as successful, as socially relevant, and as socially productive as possible. It is my belief that social scientists and philosophers can contribute to the optimization of the design and development of new technological paradigms such as Ambient Intelligence, so that the technological systems these paradigms promote match the wishes, requirements and needs of both individuals and groups as solidly as possible – so that they fit into the world we know, and into the world as we would like it to become.

I have argued at the beginning of this dissertation that there is always a gap between the ideas and hopes presented in a *vision* such as Ambient Intelligence, and the actual *materialization* of that vision within the constraints (economic, technological, social, cultural, legal and so on and so forth) of the real world. This, I have said, is not a problem – quite the opposite: by writing a dissertation such as this one, I hope to have *contributed* to that gap rather than to its diminishment – after all, this dissertation sets out to critically evaluate Ambient Intelligence, and hence to be a part of is transition from soaring idea(l) to actual world. The fact that the vision changes in this reflexive process of 'vision meets reality' is not a shortcoming on the part of the vision, but quite the contrary: it is an enrichment of both the technological debate and her final materialization.

What are the ideas that I have developed throughout this dissertation? What are its major findings? And what lines can we draw for further research, what 'food for further thought' is left? These are the questions I will address in this last chapter.

6.2 Introducing the research domain: Identity and Ambient Intelligence

The central question of this dissertation was '*Does Ambient Intelligence affect human identity, and if so, in what ways?*' Before we could start answering this question, I needed to establish what the terms 'Ambient Intelligence' and 'identity' mean exactly. In Chapters 2 and 3 this exercise was undertaken.

Ambient Intelligence, I have shown, is a vision of the technological future that was originally developed by Philips, a multinational in consumer electronics, lighting and medical technology from the Netherlands. Soon after its launch the vision was picked up by the European Commission and it has since been an important aspect of Europe's policy and strategy agenda. In a world of Ambient Intelligence, the vision tells us, networks of technologies will be hidden from view, in furniture, in walls and windows, in household and office objects, and in clothes or even bodies. These technologies will be present both in private and in public spaces. They will perform personalized, context-related services and tasks for users, providing them with just the right kind and just the right amount of information and entertainment these users may want in each specific situation. Ambient Intelligence technologies will be proactive and will do their work in unobtrusive, natural ways.

The Ambient Intelligence vision fits into a larger pattern of technological development and displays substantial overlap with other visions of the technological future, most importantly with its forerunner ubiquitous computing. It has also incorporated elements of the design paradigms Human-Computer Interaction (HCI), user centered design and affective computing. Moreover, this vision can be viewed as a technological extension of trends in (RFID) tagging, the rise of networked, portable and locative technologies, and converging technologies. Also, it can be understood as a response to a number of socio-economic trends and developments, such as the demographic changes brought about by aging societies, the increased demand for civil security as a response to the threat of terrorism, and Europe's desire to become the most competitive knowledge economy in the world, which was originally formulated in the Lisbon Goals of 2000. But Ambient Intelligence is also new in a number of respects. Most importantly, it is the first ICT-related vision of the technological future that aims specifically at the market of consumer electronics, rather than, for instance, focusing only on the creation of office technologies. Also, it emphasizes a move away from the virtualization of our technologized lives and aims instead at enhancing and intensifying real world, everyday experiences.

A wide range of questions and critical points can be raised with regard to the Ambient Intelligence vision. In Chapter 2 I have discussed a few of them, and in this chapter some more of these will be addressed (see paragraph 6.6 below). We have seen, for instance, that there are concerns regarding the creation of extensive user profiles ('profiling'), regarding the amount of control and influence that users have and/or experience over Ambient Intelligence systems, and regarding privacy and security. Also, I have argued that the concept of 'users' may have to be reconceptualized in a world in which technologies are proactive and do their work in invisible and unobtrusive ways; strictly speaking, in such a world people don't really 'use' the technology – they find themselves in environments in which technologies predominantly do things for them in automatic and unconscious ways. We have also seen that the notion of embedding technologies raises questions with regard to the human body, which could be viewed as the 'final frontier' with respect to hiding technologies from view.

In the third Chapter of this dissertation I have presented my perspective on identity. I have taken an interactionist stance towards the construction and expression of identities, and aligned my work with Goffman's ideas thereon. Identities, I have argued, are the result of social interactions between human beings. Whenever people enter a situation in which they are to engage with other people, the following cycle is set in motion: each individual asks himself the question 'what is going on here?' – sometimes, for instance in "*times of confusion or doubt*" they will do so explicitly, but more often than not, "*during occasions of usual certitude*" (Goffman, 1986: 8) they will do so tacitly or implicitly. In answering this question they formulate a 'definition of the situation', which in turn is used to choose a role to conduct. This role will be performed in front of the audience present, with the aim of gaining public validation and of maintaining a social equilibrium in which everyone's face is respected and confirmed. The performances a person displays and the roles he fulfills, particularly those he performs often, gradually come to be internalized – they reflect back on the performer and come to be seen as parts of this person's self. By internalizing roles, or social masks, the person thus comes to see himself as *being* the character he is performing. The collection of roles performed by a person makes him into a unique human being, with a distinctive biography. Within this biography 'identity pegs' play an important role – they are one of the key aspects of what Goffman calls 'personal identity', as we have seen above:

Personal identity [...] has to do with the assumption that the individual can be differentiated from all others and that around this means of differentiation a single continuous record of social facts can be attached, entangled, like cotton candy floss, becoming then the sticky substance to which still other biographical facts can be attached. (Goffman, 1968: 74-75)

My perspective on identity emphasizes the situatedness of our self-conceptions and expressions. By focusing on the everyday micro-social contexts in which identities are expressed and created, the self comes to be viewed as a dynamic and open-ended process rather than a stabilized essence. My perspective of the situated self, then, avoids a focus (as do some other identity theories) on the maintenance of coherence and consistency of identities in and throughout an individual's lifespan. Rather, it allows for conflict and friction between different selves, different sides of the same person. And it allows for changes in a person's self-conception and expression over time. All of these elements seem vital to come to a full understanding of identity in a world of Ambient Intelligence, a world in which existing conceptions of self will become destabilized in several ways, and in which our engagements with technological artifacts will multiply to new levels. In the next paragraphs, in which I summarize the findings of this dissertation, I will explain in which ways identities will be transformed by the advent of Ambient Intelligence technologies.

6.3 Topical findings: How Ambient Intelligence affects identities

After establishing what I mean by 'Ambient Intelligence' and 'identity' in the third part of this book we could begin to formulate some answers regarding the main question driving this research. The third part of this dissertation consisted of two chapters (4 and 5). In each of these chapters a different domain was investigated.

6.3.1 Human-human relations | human-object relations

In the fourth chapter I described the possible impact that the advent of Ambient Intelligence technologies may have on *human-human relations*. The focus in this chapter was on the way in which interactions *between human beings* may be affected once Ambient Intelligence is realized. To investigate this impact I used the interactionist notion of the 'definition of the situation', a (joint) social understanding

of 'what is going on' in specific everyday contexts, which people use to choose roles for themselves and to come to socially acceptable and mutually beneficial social interactions. In Chapter 4 I investigated if, and in which ways, the definitions of situations change in light of developments such as those sketched in the Ambient Intelligence vision. Moreover, I examined the impact such changes may have on the construction and expression of identities as these emerge in *human-human* interaction.

In the fifth chapter I described the possible effects that the advent of Ambient Intelligence technologies may have on *human-object relations*. The focus in this chapter was not so much on how *human ways of relating* may or may not change in relation to technological developments such as those portrayed in tomorrow's world of Ambient Intelligence (as was the case in Chapter 4), but rather on the ways in which human beings *use technological objects* in the construction and expression of identities, and on the roles Ambient Intelligence objects may come to play in processes of identity construction in the world of the near future.

A summary of the findings of Chapters 4 and 5 will be given in the next paragraphs.

6.3.2 Ambient Intelligence affects situational scripts

As we have seen above, whenever a person enters a situation, he will ask himself 'what is going on here?' (Goffman, 1986: 8; Meyrowitz, 1985: 24; 1990: 67; 2005: 24) to come to a definition of the situation. In the fourth chapter of this dissertation I have argued that people use situational *scripts* in order to come to an understanding of 'what is going on' in the situation they have entered. Scripts are sets of contextual cues, expressed in the configuration of objects present in the situation, which explicitly or implicitly govern courses of action in them. They operate as 'signs' for individuals – signs that give off suggestions for the ascription of meaning pertaining to the definition of the situation in that context.

William Isaac Thomas, who first coined the notion of the 'definition of the situation' already argued that "[e]*very new invention, every chance acquaintanceship, every new environment, has the possibility of redefining the situation and of introducing change"* (Thomas and Janowitz, 1966: 232) and in this chapter I have shown that Ambient Intelligence, indeed, may be expected to bring

about fundamental changes in the scripts and definitions that currently prevail in many everyday situations. For one thing, Ambient Intelligence technologies will radicalize a trend that has begun with the introduction of electronic media in general, and has been expanded by the advent of mobile technologies: that of the blurring of what Goffman calls 'front region' and 'back region' behaviors, thus creating an ever larger domain of what Joshua Meyrowitz calls 'middle region' behaviors (Meyrowitz, 1985: Chapter 3; 1990: 74-76). Before the advent of information and communication technologies situations were 'bounded', in two senses of the word. First, the type of roles to be performed in situations and the amount of tasks one could fulfill in them were limited, because of the limitations set upon information entering and leaving the situation. Simply put, one could not access one's work e-mails or answer work-related phone calls while traveling on a train, and thus a 'train situation' allowed for only a limited amount of work-related tasks and roles (e.g. having a face-to-face conversation with a work associate or colleague, or reading printed work-related materials). Second, as Meyrowitz has pointed out, situations in the days before the introduction of electronic media were bounded in the sense that 'physical' and 'social place' coincided, and were shielded off from the rest of the world by simple, yet effective barriers such as walls, windows, and doors. Physical distance and various ways of physical in- and exclusion played an important role in the social and informational situations a person had access to. Physical presence was a prerequisite for participation in social situations and having access to social information.

Obviously, this has changed with the advent of various kinds of technologies throughout the twentieth century. Mobile technologies and the internet allow us to perform roles and fulfill tasks in situations where these roles and tasks were impossible to fulfill before – the limitations set upon situational roles by both our physical location and our informational access have greatly expanded. It is safe to assume that Ambient Intelligence will further expand these possibilities – up to a point even, where it may become harder and harder to know 'what is going on' in specific situations. I have argued that the increase in technological possibilities and their increasingly wide reach entail a destabilization of existing definitions of the situation. This destabilization relates both to the extended possibilities in terms of what we can do and who we can be in situations, and to the dynamics of what is going on in a situation at any given point in time. This in turn means that it may become harder for individuals to grasp what roles are expected from them or available to

them, and for a social consensus to be maintained throughout a social situation among individuals.

Currently, interruptions caused by, for instance, mobile phones and e-mail traffic, we have seen, already cause debates regarding what can be referred to as the 'social etiquette' of a situation. I have shown that what these debates are about is a deep-felt confusion about the appropriateness of (inter)action patterns at a time in which the definitions of situations are rapidly becoming more dynamic and less stable because of the addition of various information and communication technologies to existing social situations. Role-playing and deciding 'who to be' at any given moment in any given situation is becoming more of a challenge in light of this development. The other side of the coin, of course is, that at the same time this dynamic and rapidly changing turmoil of definitions of situations all tumbling over one another also enables people to more freely 'be what they want to be'.

With this increase in the dynamics of defining what is going on in everyday contexts one could argue that perhaps the notion of the definition of the situation will disappear altogether – perhaps situational definitions will become destabilized to such an extent that we cannot speak of a prevailing definition for each social situation anymore in a world of Ambient Intelligence? I have argued that this conclusion is too extreme. Definitions of the situation will remain to serve as anchor points in people's coming to terms with everyday situations, and the roles and actions expected of them in these situations. Scripts, in all of their many guises and forms, will remain important sources for coming to terms with what is going on in the micro-social contexts of our daily lives. However, I have shown that the introduction of Ambient Intelligence technologies (and the further spread and proliferation of information and communication technologies in general) forces us to conceive of the definition of the situation in a more *diversified* fashion. I have introduced Goffman's concept of *frames* to delineate the situational 'interruptions' caused by various kinds of modern technologies from the definition of the situation prevailing in a social context. Frames function as *ways of bracketing* the prevailing situational definition, adopted momentarily by individual persons in a social situation in response to, for instance, a technologically mediated intrusion. As said, in our current world more and more of such technological interruptions occur, and we may expect this trend to become intensified even more by technologies of the near future. Using the notion of frames enables us to come to terms more precisely with the ways in which people will

maintain social stability, yet also accommodate for the new possibilities, both in terms of role performance and in terms of task fulfillment that ever-present, always-on technologies allow for. Frames, in my interpretation, are nested within the general definition of the situation (Gibson, 1986: 9).

This explains why, for instance, individuals using mobile technologies in public spaces simultaneously seem to know exactly what is deemed 'appropriate behavior' in that setting – which means that they grasp the prevailing definition of the situation – yet at the same time explicitly or tacitly choose to suspend that definition in favor of a frame in which the situational rules they accept as the dominant guide to action cuts through, pauses or sometimes undermines the existing situational consensus. They understand what is going on in the general situation, yet temporarily take a different set of scripts as their lead for both the choosing of a role and the action patterns that follow from that choice.

As we have seen, it is safe to assume that the spread of Ambient Intelligence technologies will contribute to an increase in the amount of situational disruptions created by personal and personalized technologies, leading to more frequent framing, more temporary bracketing of the definition of the situation. This has profound consequences for the construction and expression of situated identities. On the one hand, the nesting of personally and temporarily adopted frames within the larger definition of the situation allows for greater variety in choosing roles and creating performances, ergo a wider array of opportunities for identity construction and expression. Moreover, since framing involves a temporary suspension of the prevalent definition, role-playing in situations will become more dynamic and variable. With each nested frame, caused for example by an incoming phone call, a personalized ad, or any other kind of personal message provided by Ambient Intelligence technologies, a momentary role is chosen to match the frame, only to be traded in for a different role once the general definition of the situation is again accepted as the leading guide to action, for example when the call is ended or the message dealt with. More dynamic role-playing, one could say, means more dynamic, more fluid self-expression, and ultimately a more dynamic, more fluid self-conception.

On the other hand, one could argue that with the rapid succession of different frames and definitions each of the individual roles played will be less solid. We may reasonably expect that each of the consecutive roles played will not be embraced fully

– Goffman's notion of role distance (Goffman, 1961b), which we've first encountered in Chapter 3 of this dissertation, will become an ever more common phenomenon. Also, the audience to our performances will be given a 'side stage view' (Meyrowitz, 1985: Chapter 3) more often in a world of Ambient Intelligence because of this rapid interchange between nested frames and general definitions. Role distancing has clear consequences for the construction of identities. While Ambient Intelligence technologies open up opportunities for more varied and diverse role-playing on the one hand, the other side of this coin is perhaps that each of a person's many selves as such are less pronounced, less well-developed, and more fluid. It is obvious that the advent of Ambient Intelligence technologies thus may have strong implications for identity construction and expression.

6.3.3 Ambient Intelligence as reference assemblage

One of the key concepts of the interactionist perspective on identities is the notion of the 'generalized other' (Mead, 1925; Mead and Morris, 1934). George Herbert Mead argued that the socialization process of children goes through several different phases,

> starting with the child's attempt to step outside himself or herself by imitating others, and reaching completion when the child, through participation in games with rules, acquires the ability to take on the organized social attitudes of the group. (Delamater, 2003: 129)

This latter ability, to view and judge one's own actions and roles through the eyes of others, to imagine "*what the group expects from us*" (Michener, et al., 2004: 85) is to view oneself from the perspective of the 'generalized other'. As we have seen Tamotsu Shibutani rightly argued that the notion of one homogenous, solid generalized other does not befit our modern, highly compartmentalized lives. He therefore proposed to replace this concept with the notion of 'reference groups' (Shibutani, 1955; 1987).

In Chapter 5 of this dissertation I have adopted this latter term and argued that Ambient Intelligence technologies, too, may come to function as 'reference groups' in the construction and expression of identities. To make this case I have argued that Ambient Intelligence technologies are 'intimate technologies' in four different

respects. First, they are intimate because *we live with them closely*: we use them often, and they accompany us on (almost) all of our travels through the everyday world. Also, as is currently the case with for example mobile phones, most of us in all likelihood will view Ambient Intelligence technologies as such 'personal' technologies that we would have difficulties parting with them or sharing them with just anyone.

Second, Ambient Intelligence technologies are 'intimate' because they engage what I have called a *cycle of self-expression and self-construction*. They are 'tokens of self' in the sense that in using them we express ideas about who we (think) we are in front of others. These ideas, these roles we play, reflect back on us and thus contribute to the creation of identities – we become the masks we play. Ambient Intelligence technologies, just like current-day mobile information and communication technologies, but also like personal items such as jewelry or clothes, contribute to this cycle as 'props' in the performances of roles.

Third, Ambient Intelligence technologies are 'intimate' because they will *call forth social responses in human beings* – social responses that we would traditionally reserve for human-human interactions. Two lines of research, one focusing on humans' *explicit* responses to information and communication technologies ('anthropomorphism'), and the other on their *unconscious* responses to such technologies (the 'Media Equation'), have led to one and the same consistent conclusion: information and communication technologies tend to call forth a wide range of social responses in human beings, even when the social cues given off by the technology are only very limited or implicit, even while human beings themselves are mostly unconscious of being social towards those technologies, and even while they explicitly deny being social towards them once it is pointed out to them that this is in fact what they are doing.

Now, in a world of Ambient Intelligence, the vision predicts, technologies will be much more attuned to human ways of interacting, much more aligned with human expectations and ways of interpreting the world. It is one of Ambient Intelligence's explicit goals to make technologies adjust to the user rather than the reverse, which is true for most technologies of our current times. Instead of users having to adjust their behaviors to the workings of technologies (e.g. by taking computer lessons, or reading extensive manuals), the technologies will have to adjust their workings to meet human forms of understanding, human needs and human perceptions. This, the vision states, would have to result in technologies becoming more 'natural' and

'unobtrusive' for humans to interact with. The use of more human ways of interacting with these technologies, for instance by using voice commands or motion detection, would also contribute to realizing less 'invasive' ways of human-technology interaction. It is easy to see how the design goal of 'calm technology' (Weiser and Brown, 1996), if it were to be realized, would have an impact on people's social responses to these technologies: if technologies will start mimicking human interaction to a larger degree, if they become ever more socially sensitive, it seems likely that the social responses they will call forth in human beings will start to parallel human-human relations to an increasingly large degree. In Chapter 5 I raised the following questions: if human beings respond socially to intimate technologies, does this mean that these technologies, in return, may have effects on the construction and expression of identities that are parallel and similar to those of other human beings? Can intimate technologies in a world of Ambient Intelligence come to fulfill similar roles in our lives as other human beings? Can they come to function as 'reference groups' in the construction and expression of identities?

I answered these questions affirmatively, because Ambient Intelligence technologies will be 'intimate technologies' in yet another meaning of the term. These technologies will display levels of intentionality, levels of intelligence and levels of autonomy and self-reliance with regard to action that will compel us to view them as *agents* in and of themselves. Don Ihde has argued that technologies are never 'real others' but only 'quasi-others' because they lack the 'spiritedness' of true others – they have no will of their own, and they need human beings to 'animate' them (i.e. to switch them on and off, to keep them going). I have argued that this line of thinking goes awry in light of recent technological developments, and will do so even more clearly in a world of Ambient Intelligence. Modern technological systems, such as Artificial Life systems and the Smart Grid (De Mul, 2006) reach levels of independent, smart, and intentional action that compel us to reconsider whether we oughtn't call them spirited and animate. Reserving these terms for human beings and animals alone seems to disregard the grey area between 'life' and 'non-life' in which intimate technologies might very well find their place. Ambient Intelligence technologies, with their combination of personalization, pro-activity, context-sensitivity, and adaptivity, will, more likely than not, display levels of ingenuity and (social) refinery that will truly and rightfully earn them the predicate 'agents'. This, in turn, means that Ihde's distinction between (technological) objects as 'quasi-others'

and human beings or animals as 'genuine others' (Verbeek, 2005: 127) is in need of revision.

I have argued that Ambient Intelligence technologies are likely to come to function as 'reference assemblages' in the construction and expression of identities. I have replaced Shibutani's notion of a 'reference group' with that of the 'reference assemblage'. The word 'group' has strong connotations with human beings, whereas an assemblage can consist of both humans and non-humans. Also, the word 'assemblage' contains the verb 'to assemble', and in such a reference group this is literally what happens: humans and non-humans are collected into one 'assemblage' in which both may play a role in varying compositions. Ambient Intelligence technologies may come to function as reference assemblages for two important reasons. First, because we *care* about the ways in which 'significant others' *value our behaviors*. Since Ambient Intelligence technologies will become constant companions in our lives, with whom we will interact in 'natural' ways, it seems reasonable to assume that we will come to view them as 'significant others' just like the human other we value as such. This means we will come to attach importance to their perception of us, which might entail, effectively, that they come to function as reference assemblages in the construction and expression of our identities.

Second, Ambient Intelligence technologies *see and value us constantly*. One of the crucial factors regarding reference groups and their importance in the construction and expression of identities is that we attach importance to their judgment of us – we use such groups as a mirror to value our own behaviors, and ultimately, to value who (we think they think) we are. This means that being seen and being valued are central elements of the expression and construction of identities. Now, in a world of ubiquitous Ambient Intelligence technologies *being seen* by the technology is (almost literally) unavoidable – it is a permanent fact of life. Such technologies will monitor our doings in both private and public spaces, literally non-stop, to deduct our needs and provide us with whatever service we may require in any situation. I have argued that being seen and valued by technologies in this fashion may very well have effects that parallel those of being seen and valued by the significant others, the reference groups we use to express and construct identities.

6.4 Theoretical findings: Two critiques of interactionism

In the introduction to this dissertation I argued that the most productive and fruitful way of investigating the social impact of modern technologies, to my mind, is the *mutual shaping* perspective. In such a perspective one attempts not only to come to an understanding of the ways in which technologies shape, rearrange, and reconstitute existing social practices in everyday contexts, but also how existing social practices in everyday contexts, in their turn, have a bearing on the use of technologies, their roles and implementations in individual lives, and their design and development processes. Unfortunately, I argued, for practical reasons it is impossible to show this kind of two-directional shaping in this dissertation – Ambient Intelligence up to this point in time is a *vision*, and not a materialized praxis, so while we can formulate Ambient Intelligence's possible (social) consequences in relation to existing everyday practices, we cannot yet investigate the reverse. After all, only individual laboratory prototypes of Ambient Intelligence technology have been developed so far, and it is therefore impossible to research the ways in which everyday users in everyday contexts would domesticate Ambient Intelligence technologies, for instance in their home or work environments.

However, as I was conducting this research and composing this dissertation, something interesting happened. While I started this project assuming that I would use interactionist theories of identity to come to an understanding of the consequences of Ambient Intelligence's materialization for the construction and expression of identities, I realized that in the process of doing precisely that, *several shortcomings in the interactionist stance emerged*. Applying the ideas of Goffman and symbolic interactionism to Ambient Intelligence led me to conclude that in light of the technological developments under way in realizing that vision, several revisions and additions to the existing body of interactionist theories were necessary. While using an interactionist stance to critically evaluate the ways in which the materialization of the Ambient Intelligence vision might affect identities, at the same time I found that interactionist theories themselves were in need of critical evaluation and adjustment. Hence, via a sort of roundabout way, a mutual shaping perspective emerged in the end after all – except not in the way, nor in the place, where one would normally expect to find it.

Formulating the revisions needed in light of the realization of Ambient Intelligence, and finding solutions for the shortcomings that became apparent in the

interactionist paradigm in a confrontation with the Ambient Intelligence vision thus became a second, theoretical goal for this dissertation. In Chapters 4 and 5 of this dissertation I have formulated two points of critique on existing interactionist conceptions of identity and attempted to revise the interactionist stance in such a way as to accommodate for these shortcoming.

6.4.1 Clarifying the construction of 'definitions of the situation'

In Chapter 4 of this dissertation, we have seen, I discuss the notion of 'scripts' and present some of the prospected changes brought about in both scripts and the definition of situations in a world of Ambient Intelligence. In this chapter I also formulate my first critique of existing interactionist conceptions of identity. While many interactionists take the notion of the definition of the situation as one of the starting-points for their perspectives on interaction and the construction and presentation of (situated) identities, they structurally neglect to explain *how definitions of the situation come about*. The concept of the definition of the situation aims at explaining the fact that different people have different responses and ascribe different meanings to the same 'objective circumstances': "*The same objective circumstances* [...] *often do not lead to the same behavioral responses because subjective components of people's experience – definitions of the situation – intervene.*" (Delamater, 2003: 14). While it is true that Thomas' concept of the definition of the situation enables us to understand *that* people respond differently to the same 'objective circumstances', he himself, nor the interactionists following in his footsteps, have explained *what cues people use* to come to such as definition. Formulating a definition of the situation entails answering the question 'what is going on here?', but *how* do people answer this question? How do they *know* what is going on in that particular situation? I have proposed to remedy this gap in existing interactionist theories by using the concept of 'scripts'. Scripts, as we have seen above, can be viewed as the totality of all the cues a person may use in a given situation to come to terms with what is going on there, and to choose a role in light of his definition. Understanding the ways in which Ambient Intelligence technologies change existing scripts and current definitions of situations can help us come to terms with the role such cues play in coming to terms with situations, with the choices of roles a person makes, and, ultimately, with the identities that we express

and consolidate through situational interactions.

6.4.2 Expanding the notion of reference groups

In Chapter 5 I discussed the construction of identities in relation to 'reference groups' (or as I called them: reference assemblages), yet another key term in many interactionist works. In this chapter I also presented my second critique of existing interactionist conceptions of identity. Interactionism has convincingly and fruitfully shown how identities are expressed in and emerge from interactions between human beings. However, it has overlooked the role that *objects* and *environments* may play in the construction and expression of identities. In interactionism objects and environments are viewed as mere 'props' or 'décor' in the performances that people stage for one another as they interact. They are not viewed as constitutive factors for those performances or the resulting self-conceptions, let alone as agents in themselves. However, as we have seen, in Chapter 5 I have argued that there are some vital reasons why we should take objects seriously as agents that play a role in our identities, particularly in a world of Ambient Intelligence. Objects are never merely props or décor. For one, they function as enablers and inhibitors, sometimes even as prohibitors. They shape the environments in which we move, live, interact with others, and they shape the actions we perform in those environments. Moreover, as a special category of objects, technological artifacts, particularly those in a world of Ambient Intelligence, display a number of characteristics that force us, even more than other objects, to reconsider the constitutive role of *things* in our self-conceptions and in the formation of our selves. In this chapter I argued that, in light of recent technological developments and the prospected changes envisioned in Ambient Intelligence, the interactionist perspective of identities ought to be expanded to come to include the role of objects in general, and 'intimate technologies' in particular, as *agents* in the construction and expression of identities.

6.5 Studying Ambient Intelligence and identity

In the Introduction to the dissertation I discussed Zygmunt Bauman's article *Identity in a globalizing world* (Bauman, 2001), in which he argues that 'identity theories' have proliferated within the social sciences and the humanities, as a

response to the fundamental ways in which the notion of identity has altered throughout modernity. According to Bauman identity has turned from a 'given' into a 'life project', a permanent quest "<u>become</u> *what one* <u>is</u>" (Bauman, 2001: 145, emphasis in the original). Processes such as globalization, the decline of religious observance in many Western countries, the massive displacement of both people and goods across the globe, and the resulting loss of senses of local rootedness and social collectivity all play a role in this fundamental change. All of these factors combined contribute to the fact that the quest for identity, indeed, for many of us has become an important theme in our lives. *Technological developments*, I argued in the Introduction, form yet another important factor in the reshaping and remaking of identities, and therefore there is a need to investigate their roles, their effects, their impact on our interactively created and expressed identities, as these become visible in everyday life. This dissertation has been an attempt to make insightful how the technologies of tomorrow's world, as envisioned in Ambient Intelligence, might affect the 'life project' Bauman so aptly describes. I hope to have shown throughout this book that, contrary to Bauman's claim that the proliferation of identity theories is a symptomatic and unhealthy consequence of broader social developments surrounding the notion of identity, the identity theory presented here can, in fact, contribute to a better understanding of, and a better preparation for, the world to come and our everyday self-conceptions and –expressions in it. In general, I feel, that raising the question of identity, and coming to an understanding of (personal, collective, cultural) identities by using the identity theories Bauman rejects, is a worthwhile and vital matter, particularly in a world in flux as much as our current one. More specifically, understanding one's self from the extrapolated reference point of the near (technological, Ambient Intelligence) future contributes in important ways not only to the technological praxes we are constructing with that future as our horizon, but also of understanding ourselves better and more thoroughly in the technological world of today.

6.6 Food for further thought: Some questions that remain

The work of this dissertation is almost done. What is left is a brief discussion of a few topics that were still on my 'to do'-list at the end of composing this dissertation. I present them as an epilogue to this book, as (perhaps?) a starting-point for future

research, as food for further thought in relation to the emerging world of Ambient Intelligence.

6.6.1 Of technological bubbles and their impact on everyday life

The other day I was traveling on a tram through the city center of Rotterdam. I was listening to music on my iPod and was checking my e-mails on my mobile phone at the same time – something, it needs to be said, I don't usually do, at least not in that combination or in that (kind of) space. While I normally am quite aware of my surroundings and the people moving through and interacting in them, this time a tram conductor wanting to check my (RFID chipped!) tram ticket made me almost jump out of my skin by tapping me on the shoulder (after he had, no doubt, asked me politely for my ticket several times, to no avail). This autobiographical example reminded me of one of the central themes I have mused about many times for the last four years with regard to Ambient Intelligence and the technological world of tomorrow: the *insulating effects* that using such (combinations of) personal, portable technologies will have on our participation and accessibility in public spaces.

One might argue that Ambient Intelligence technologies will create personal, individual '*technological bubbles*'[103], which literally travel with a person wherever he or she goes. Since these technological bubbles will be with us (almost) always, we might even argue that our everyday form of living in the world of tomorrow could be described as '*bubbled living*'. We have encountered what bubbled living might look

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[103] I have chosen the term 'bubble' rather than 'capsule', as does the Belgian philosopher Lieven de Cauter in *The Capsular Civilization* (De Cauter, 2004), to emphasize the *transitory* nature of the technological spheres that Ambient Intelligence creates. De Cauter speaks of literal physical 'capsules', such as cars, trains, and airplanes, of buildings that insulate us from the outside world (think of a shopping mall or a gated community), and of '*virtual capsules*'. The latter are technologically mediated capsules, such as those created by the use of "*a screen, a Walkman, a mobile phone*" (De Cauter, 2004: 45). The term 'virtual capsule' seems somewhat internally contradictory to me, since the *materiality* of the notion of a capsule does not sit well with the idea of virtuality. This is why I propose to use a term that literally embodies the transitory nature of technologically mediated or generated spheres, that embody their ephemeral nature, as it is generated through such fleeting 'components' as sound, text and images. These resemble soap bubbles that may burst in case of rupture, yet at the same time show a remarkable elasticity and strength.

like in the Chapter 1, where I discussed the *ISTAG Scenario* of Maria, traveling to a country on the other side of the globe. Maria used her access key, called 'P-com', to turn a non-descript hotel room into one with a number of personal touches: the lighting and temperature settings were attuned to her wishes, she used a video call projected onto the wall of her hotel room to talk to her daughter back home, and could browse through local news and a range of music options automatically matched to her personal profile. This scenario presents an interesting feature of Ambient Intelligence technologies in tomorrow's world: the idea that personalized needs, wants and preferences are *expressed* in the *material* environments we find ourselves in. Any room one enters may thus be given the aura of a 'personal space' through the use of technologies. One could argue that a whole new meaning of the term 'personal space' is generated here[104].

Investigating the consequences of the emergence of 'bubbled living', to my mind, will be a highly relevant project. After all, we can imagine that living in a world of personal, technological bubbles has consequences for human interaction. For one, the technological bubbles that will surround us in a world of Ambient Intelligence will function as a *shell* that literally accompanies our every move as we go through the motions of everyday life, personalizing the environment to accommodate our wishes and needs (even the ones we didn't know we had – that is what pro-activity ultimately comes down to!). It will form a *mediating* shield between the 'hard reality' of the world around us, and our personal sphere on various levels: this shield will mediate the types and content of the information, communication and entertainment that reaches us, it will negotiate with the environing spaces we find ourselves in to make these spaces accommodate our personal preferences, and it will even mediate *between a person and his own wants and desires* by interpreting his every need even *before* he is aware of what he needs himself – thereby, one would imagine, strangely insulating him from himself as well to some degree.

Now, to be sure, technologies of many kinds have fulfilled the roles of insulators

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[104] I have, in fact, developed this argument in *Ik ga op reis en ik neem mee… Over de toekomst van het begrip 'persoonlijke ruimte'* (Van den Berg, 2008c). For an overview of the traditional meaning of 'personal space' see for instance Edward Hall's discussions of this notion and his theory of proxemics in *The hidden dimension*, *Proxemics* and *A system for the notation of proxemic behavior* (Hall, 1963; 1990; 2003).

and mediators for human beings since the beginning of human history – think of clothing as a clear example, or of the glasses we wear[105]. Also, my experience on the tram shows that with a (combination of) current-day mobile technologies a similar kind of bubble is created, one that insulates us from the environing (public) space in which we find ourselves. Moreover, in footnote 103 I quoted Lieven de Cauter's examples of 'virtual capsules': screens, Walkmans, and mobile phones. After its introduction in 1979 Sony's Walkman quickly became the subject of heated debates between its defenders, who praised the personal freedom it enabled, and its opponents, who claimed it promoted anti-social behavior – not only because of the 'noise leaks' that several consecutive generations of headphones suffered from, but also because it 'removed' people from public space as possible participants in social interactions. Walkmans literally created an individual world for the listener, thereby making this person inaccessible for contact with others. It is clear, however, that in a world of Ambient Intelligence, the notion of technological bubbles reaches new levels. And therefore, it would be interesting to investigate, for instance, what the difference is between these current-day types of 'virtual capsules' and insulating technologies, and those in the technological world of tomorrow, as presented in the Ambient Intelligence vision. Moreover, it would be interesting to find out whether there is a difference between them only *in degree*, or rather *in kind*. Personally, I suspect it is actually both.

The difference in *degree* seems evident from my personal experience on the tram described above. What this example shows is that the *more* technologically mediated input one combines, the *less* aware one is of one's surroundings. Kenneth Gergen introduced the notion of '*absent presence*' (Gergen, 2002) to describe the fact that people may be physically present in one place, yet socially (or psychologically, or emotionally) absent there, for instance because they are talking to someone on the phone, or because they are daydreaming or reading a book. However, my experience on the tram shows that 'absent presence' comes in *degrees* – the more one is engaged by the source of one's social/psychological/emotional absence, whether this absence is generated by technologies, or by a text or one's own imaginations, the less present one really is. In a world of Ambient Intelligence, where various perceptual stimuli are

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[105] See Ihde's mediating relation as described in Chapter 5, paragraph 5.6.1.

offered at the same time (sounds, visuals, text, moving or still images, and even sensual or tactile stimuli), and where the explicit *aim* is, as we have seen in Chapter 2, to create experiences that are more immersive and all-encompassing for individual users, the insulating shield will, in all likelihood, be very thick indeed. Perhaps in such a world, in which technological mediation and saturation are reaching high levels, we cannot speak of 'absent' presence anymore (or 'present' presence for that matter). Perhaps we ought to speak of *distributed presence* instead: being in one place and in several other places at the same time or in rapid succession.

6.6.2 Battle of the Bubbles? Negotiating territorial claims in a world of Ambient Intelligence

The difference *in kind*, I suspect, resides in the fact that a person's personal space is externalized and *materialized* in whatever space he finds himself, made visible to the world at large. This means that the *confrontation* between the bubbles of various people in the same space becomes unavoidable, perhaps only in specific cases, but maybe even as a fundamental condition of living in a world full of technological bubbles. We could easily envisage the ensuing 'battles of the bubbles', in two meanings of the terms.

First, as we have seen in Chapter 2 one of the questions that emerges in relation to the personalization of public and private spaces is what happens to the ideal of personalization when *more than one person is present in the same room*. Whose preferences will be materialized then? Will the technology attempt to find a compromise, or will a battle of the bubbles emerge? We can imagine, I argued, that a quest for finding a compromise between two different preferences for music styles could be solved by finding a third music style that both parties like. However, when it comes to adjusting the room temperature somewhere between, say, 16˚C and 23˚C, then we can see how finding a compromise would mean both parties would end up being alright, but not thoroughly comfortable[106]. Note that in this first meaning of the

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[106] Lighting is another one of the domains in which hard battles may have to be fought in a world of Ambient Intelligence. In the summer of 2007 Philips launched the 'Living Colors' lamp for the consumer market in Europe (it had been available in the Netherlands for some time already). Using a remote control one can change the lighting color of this LED lamp. The idea is, says Philips, to "*let*

notion of a 'battle of the bubbles' the battle is *fought by the technology* – it is the technology, in this first meaning, that both creates and attempts to solve the confrontation between multiple technological spheres. The reason why 'battles of the bubbles' emerge in the first place is because of what I would argue is one of the most problematic aspects of the Ambient Intelligence vision: its *promise* of a unique, personalized sphere for each individual, everywhere. This promise is problematic because the deeply social character of our everyday world is overlooked – a social world that is fraught with compromises. The necessity of being able to compromise clashes fundamentally with Ambient Intelligence's promise of an individualistic personalization of the environing world. Its atomistic conception of human beings and their everyday lives is therefore, to my mind, one of its greatest weaknesses[107].

Second, a 'battle of the bubbles' refers to the fact that using Ambient Intelligence technologies in shared spaces is an actively *territorial* act that may lead to a confrontation *between human beings*. We can compare this second meaning of the term with current discussions regarding the social etiquette of using mobile and portable technologies in public spaces. Research shows that the use of such technologies, for example on trains and in restaurants often results in frustration on the part of the (involuntary!) 'audience' present there (cf. Fortunati, 2003; Ling, 1997; 2002; 2004). Rich Ling has described the issues on etiquette in such situations

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your   interior   follow   your   feelings" (Source: http://www.consumer.philips.com/consumer/en/gb/consumer/cc/_productid_LCS5002_ 05_GB_CONSUMER/LED-lamp+LCS5002 [last visited on 19 November 2008]. Some people apparently have very heated feelings over the 'color picking' that this lamp enables. As one owner recently confessed to me the members of her household ended up having to create a 'lamp time arrangement', detailing which member was to be master of the remote control and for how long, just to keep all parties satisfied. This measure was taken after many a night spent bickering over what color was the best equilibrium for the 'general mood' of all of those present in the room – the finding of which apparently was harder said than done. (Of course, this household might be exceptional in its preferences for lighting color (and truth be told, n = 1 is a small sample indeed)).

[107] Of course, one could argue that if Ambient Intelligence technologies were to attempt to find a compromise between the preferences of multiple users in the same space, this would in fact mimic quite accurately what happens in ordinary social situations. When people have different preferences in social situations they tend to find an in-between solution that satisfies all parties. However, wonderful as this solution sounds, it is in fact in direct opposition, as I have argued, with the promise of a personalizing potential that forms one of the cornerstones of the Ambient Intelligence vision.

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from the perspective of the person making a phone call as *'the management of multiple front stages'* (Ling, 1997; 2002; 2008)[108], and from the perspective of the audience as *'forced eavesdropping'* (Ling, 1997; 2004)[109] respectively. We can easily imagine how these matters of social etiquette will become even more of an issue in a world of bubbled living. Generally, when we find ourselves in a shared space, such as a train or a restaurant, we allow each other what Goffman has called *'use space'* (Goffman, 1971: 34-35), a certain amount of that space for one's own use, i.e. to fulfill a task or a job. With the spread of always-on, always-connected technologies and the emergence of embedded displays in both private and public spaces, I imagine that the notion of 'use space' will gain prominence. When, for example, the windows of a train – a shared and public space – can be turned into a display on which personal(ized) information, such as the content of one's mp3 player or mailbox, can be accessed and manipulated, this allows for new ways of 'using' such public spaces, and hence of new territorial claims with regard to 'use space' by the individual, new negotiations between individuals and the audience present, and new allowances toward the individual on the part of the audience. New rules of social etiquette and interaction, both with regard to *content* – e.g. not displaying content that may be an affront to others in shared spaces – and *form* – e.g. not taking up too much space – will have to

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[108] With this term Ling refers back to Erving Goffman's distinction between 'front stage behaviors' and 'backstage behaviors' (Goffman, 1959). Ling argues that when using a mobile phone in the company of others the caller is forced to manage multiple 'performances' at the same time. He wants to give off a certain impression towards the person on the phone, while at the same time maintaining a certain 'face' towards those present around him. 'Managing parallel front stages' may be problematic at times, for example when there is a significant difference in the level of intimacy with regard to those physically present, versus the person on the other end of the line. As a solution, the caller may try to shield himself from his audience, for example by removing himself from his audience until the call is ended. However, this often does not happen. Instead, the audience is subjected to 'backstage' information, because the caller favors the impression given off towards the person on the phone over that given off towards those directly surrounding him.

[109] Normally, we speak of eavesdropping when others attempt to overhear secrets that we have and that we are unwilling to share with them. In the case of mobile phones, Ling argues, this argument is reversed: the *others* are subjected to secrets they are *un*willing to overhear. They feel uncomfortable by being made an audience for talk that is unintended for their ears. The forced eavesdropper feels awkward because he "*has no way to withdraw from the situation.*" (Ling, 2002: 8)

emerge. And until they do, all sorts of 'battles of the bubbles' can be expected.

6.6.3 Bubblicious? Bubblelonely?

Last, on a more general level, the notion of the technological bubble and the ensuing bubbled living raises interesting philosophical and political questions. If, as I presume to be the case, the technological world of tomorrow will be one in which people travel through their everyday world each surrounded by their own individual technological bubble, and if this bubble indeed externalizes and makes visible people's individual preferences, both in terms of visuals, of sounds and of other perceptual input, then we may safely conclude that the notion of 'public space' as we know it will come under strain. The technological bubbles of individual human beings will eat away at the shared, open and free arena that public space once was (or at least ideally was in political science and philosophy). It will be increasingly *colonized* by individuals, who claim their share of space for personal ends. As said, this raises questions regarding social etiquette and presses us to find new rules of social interaction in public spaces in the short run, but also addresses a deeper issue: a need to rethink the conceptual changes brought about by technological developments in the notion of 'public space' and in the balance between individual freedom and social/collective solidarity.

One could argue that the Ambient Intelligence vision is the latest stage in a history of developing technologies that are tailored to the needs and wants of the individual, and that, in the process, overlook the social character of much of our everyday lives. Rich Ling writes:

> [T]here is [...] a seeming stream of technologies that atomize social life and cater to the individual as opposed to the collective. The automobile, the personal stereo system, and indeed the mobile phone are technologies of the individual. Collective solutions for transit (trams and buses), for listening to music (the concert, the piano, the phonograph – without headphones), and for interpersonal communication (the land-line phone) have started to be replaced by technologies owned and controlled by the individual. (Ling, 2008: 36)

Ambient Intelligence technologies, we have seen, will enable us on the one hand to create more possibilities for a 'private universe', to adapt the world to meet our personal preferences. At the same time, however, they also diminish our openness

towards the social world surrounding us, to interaction with the world and one another. I wonder whether tomorrow's world of bubbled living will be 'bubblicious', with all of its functionality and service-orientedness aimed at the atomistic individual, or rather 'bubblelonely', with its disregard for the importance of the social dimension of our lives.

As I have said several times before one of the most problematic issues regarding the Ambient Intelligence vision, to my mind, is the fact that it over-focuses on the individual and promises a perfect private cocoon for that individual, at the expense of the social, the community, our participation in and experience of a shared world. Unless this social dimension will become included in the vision in some way or other, I fear that either its materialization will not become the massive success its originators hope for, or else while some may find its materialization bubblicious, many others may become bubblelonely indeed.

These, and many more issues, are worthwhile to investigate in relation to the increasing permeation of technologies of various kinds in our everyday lives. In this dissertation I hope to have shown that it is important to critically yet constructively research the ways in which such technologies shape, alter, reshape our ways of interacting, our everyday practices and rituals, our ideas about self, other, and world – sometimes in evident, clearly visible ways, but more often than not, in harder to grasp, more subtle yet nevertheless important ways. It is our task, to paraphrase the words of Jos de Mul that opened this chapter, to reflect philosophically on the changes brought about by the technological developments we witness, but also to challenge our own conceptions of the world, even our philosophical vocabulary, in light of what these technologies show us.

6.7 To boldly go where no man has gone before – wearing gloves

I started this book with a discussion of E.M. Forster's short story *The Machine Stops* – a century-old, remarkable story of the technological world of the future. From there we traveled to the present, and onwards towards our own technological future, as it is currently predicted in the Ambient Intelligence vision, developed by Philips and endorsed by the European Commission. It is now time to return once more to our own age. And look what awaits us here: a newspaper clipping from the *International Herald Tribune* of 14 November 2008, discussing the newest, hippest,

ultra-funky pair of gloves:

> ...the g.cell gloves (GX-1) [...] offer a way to stay both warm and in touch via an integrated Bluetooth system that synchronizes with your mobile phone. When someone calls, the glove's LED display blinks and a built-in 'vibra alarm' at your wrist starts vibrating. To take the call, press the black button on one of the gloves, hold the loudspeaker (on the glove's thumb) near your ear and start talking into your hand. (Ensha, 2008)

It sounds like the technological future, whether we call it 'Ambient Intelligence' or not, is already here. Or at least, that it is closer by than we may think. I am eager to see where the technological developments will take us over the next few decades. Gene Roddenberry, the creator of the science fiction television series *Star Trek*, to my mind has provided us with an oft-quoted, yet powerful motto for the journey to come: "*To explore, to seek out new life, and new civilizations, to boldly go where no man has gone before.*" (Roddenberry, 1966)

Wearing gloves, I would add.

Bibi van den Berg
Rotterdam, January 2009.

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Nederlandse samenvatting

(Dutch Summary)

De centrale **onderzoeksvraag** van deze dissertatie is '*Heeft Ambient Intelligence invloed op menselijke identiteit, en als dat zo is, waar bestaat die invloed dan uit?*' Deze onderzoeksvraag roept onmiddellijk twee andere vragen op: 'wat is Ambient Intelligence?', en 'wat versta je onder 'menselijke identiteit'?' Na een algemene inleiding in hoofdstuk 1, heb ik in hoofdstuk 2 en 3 van deze dissertatie de begrippen 'Ambient Intelligence' en 'identiteit' tegen het licht gehouden. In het daarna volgende deel, bestaande uit hoofdstuk 4 tot en met 6, kon ik vervolgens de onderzoeksvraag beantwoorden.

Ambient Intelligence, zo liet ik in het **hoofdstuk 2** van deze dissertatie zien, is een visie op de technologische toekomst, die oorspronkelijk ontwikkeld is door het Nederlandse Philips. Al vrij snel na haar lancering werd deze visie opgepikt door de Europese Commissie en zo is zij uitgegroeid tot een belangrijk onderdeel van de beleidsagenda van de Europese Unie. In een wereld van Ambient Intelligence, zo stelt deze visie, zijn we omringd door netwerken van technologie die aan het zicht onttrokken zijn – weggewerkt in meubels, in muren en ramen, in huishoudelijke en kantoorobjecten, en in kleding of zelfs onze lichamen. Deze technologieën zullen zowel in private als in publieke ruimtes aanwezig zijn. Ze zullen ons voorzien van *gepersonaliseerde*, *context-relevante* diensten en services, die gericht zijn op individuele gebruikers, opdat deze gebruikers voorzien worden van precies de goede en precies de gewenste hoeveelheid informatie en entertainment, passend bij de specifieke situatie waarin zij zich op dat moment bevinden. Ambient Intelligence technologieën zullen bovendien *pro-actief* (anticiperend) zijn en hun werk op een *onopvallende*, zo *natuurlijk* mogelijke manier doen.

De ontwikkeling van de Ambient Intelligence visie past in een breder patroon van technologische ontwikkelingen. Er is een substantiële overlap met andere technologische toekomstvisies, met name met haar voorloper 'ubiquitous computing'. Bovendien kan deze visie begrepen worden tegen de achtergrond van brede technologische trends als de opkomst van RFID, de verspreiding van genetwerkte, draagbare en locatieve technologieën, en de ontwikkeling van zogenaamde 'converging technologies'. Daarnaast dient de opkomst van Ambient Intelligence begrepen te worden in het licht van een aantal sociaal-economische ontwikkelingen, zoals de demografische veranderingen die het gevolg zijn van de 'vergrijzende samenleving', de toegenomen eisen rondom terrorismebestrijding, en Europa's wens om de meest competitieve kenniseconomie van de wereld te worden (onderdeel van de 'Lissabon-doelen' uit 2000). Maar Ambient Intelligence is in een aantal opzichten ook een nieuwe visie. Het is de eerste technologische toekomstvisie die zich expliciet richt op de consumentenmarkt. Bovendien legt het veel nadruk op een beweging weg van de virtualisering van ons getechnologiseerde bestaan (zoals internetgerelateerde en virtual reality-achtige technologieën doen), en richt het zich daarentegen juist op het intensiveren van echte, alledaagse ervaringen in deze werkelijkheid.

Een visie zoals Ambient Intelligence roept talloze vragen op. Enkele daarvan heb ik aan het einde van hoofdstuk 2 besproken. Zo noemde ik daar de zorgen van wetenschappers en beleidsmakers omtrent het bouwen van uitgebreide gebruikersprofielen ('profiling'), en omtrent privacy, security, en de hoeveelheid controle en invloed die alledaagse gebruikers hebben over dit soort technologische systemen. Bovendien heb ik geopperd dat het begrip 'gebruikers' misschien helemaal niet meer van toepassing is in relatie tot Ambient Intelligence technologieën. Immers, in een wereld waarin technologieën op een pro-actieve, onzichtbare manier hun werk doen, 'gebruiken' mensen die technologieën niet meer echt – ze bevinden zich veeleer in omgevingen waarin technologieën automatisch en onbewust dingen voor hen doen.

In **hoofdstuk 3** van deze dissertatie heb ik mijn perspectief op identiteit beschreven. Ik heb een interactionistische invalshoek op de constructie en expressie van identiteiten gekozen, en baseer mij daarbij vooral op het werk van de Canadese socioloog Erving Goffman. Identiteiten, zo heb ik laten zien, komen tot stand in sociale interacties tussen mensen. Wanneer mensen een sociale situatie betreden, dan instigeren ze de volgende cyclus: ze stellen zichzelf de vraag 'wat is hier aan de

hand?' – soms zullen ze dat expliciet en bewust doen (bijvoorbeeld als ze er niet zeker van zijn in wat voor situatie ze beland zijn), maar meestal beantwoorden ze deze vraag op een impliciete, onbewuste manier. In het beantwoorden van deze vraag komen mensen tot een zogenaamde 'definitie van de situatie', en die definitie wordt gebruikt om tot de keuze van een bepaalde situationele rol te komen. Deze rol wordt voor het 'publiek' dat aanwezig is opgevoerd, met het doel publieke erkenning te krijgen en een sociaal equilibrium in stand te houden. De 'performances' die een persoon vertoont en de rollen die hij vervult – vooral de rollen die hij regelmatig vervult – worden geleidelijk geïnternaliseerd; ze slaan terug op de 'performer' en worden langzaam maar zeker gezien als een onderdeel van zijn zelf. Door het internaliseren van rollen (of sociale maskers) gaat de persoon zichzelf dus zien *als het karakter dat hij opvoert*. Zo komen ideeën over de eigen identiteit tot stand. De verzameling van rollen die een persoon speelt maakt hem tot een uniek individu met een duidelijke eigen biografie.

Mijn perspectief op identiteit benadrukt de *gesitueerdheid* van onze zelfconcepties en –expressies. Door de nadruk te leggen op de alledaagse, micro-sociale contexten waarbinnen identiteiten worden geconstrueerd en uitgedrukt, komt identiteit voor het voetlicht als een dynamisch proces met een open einde, in plaats van als een gestabiliseerde essentie. Daarmee vermijdt mijn invalshoek van het 'gesitueerde zelf' (the 'situated self') de sterke nadruk op het scheppen van coherentie en consistentie als centraal onderdeel van identiteit – een element dat veel andere identiteitstheorieën karakteriseert. In plaats daarvan biedt mijn identiteitsopvatting ruimte voor verschillende, en soms zelfs conflicterende 'zelven', verschillende kanten van dezelfde persoon. Bovendien laat het ruimte voor veranderingen in de zelfconceptie en –expressie van individuen door de tijd heen. Al deze elementen zijn van belang wanneer we een goed begrip willen krijgen van wat identiteit zou kunnen zijn in een wereld van Ambient Intelligence, een wereld waarin bestaande ideeën over identiteit op verschillende manieren gedestabiliseerd zullen worden, en waarin onze interacties met technologische artefacten zich zullen vermenigvuldigen tot nieuwe, vooralsnog ongekende niveaus.

In hoofdstuk 4, 5 en 6 heb ik uitgewerkt op welke manieren identiteit zou kunnen worden beïnvloed door de materialisatie van de Ambient Intelligence visie. In **hoofdstuk 4** heb ik doordracht wat de invloed van de verwezenlijking van Ambient Intelligence zou kunnen zijn op *mens-mens relaties*. De focus in dit hoofdstuk lag op

de manier waarop *interacties tussen mensen* beïnvloed zouden kunnen worden wanneer Ambient Intelligence eenmaal onderdeel is geworden van onze alledaagse leefwereld. Het begrip 'definitie van de situatie', dat ik hierboven reeds kort aanstipte, en dat betrekking heeft op onze gedeelde, sociale betekenisverlening aan specifieke alledaagse situaties, stond in dit hoofdstuk centraal. In dit hoofdstuk heb ik onderzocht of de 'definities van situaties' veranderen met de komst van technologieën in het algemeen, en met de komst van Ambient Intelligence in het bijzonder, en wat daarvan de consequenties zijn voor menselijke interactie en voor interactionele identiteitsconstructie en –expressie.

Eén van de meest opmerkelijke zaken aangaande interactionistische perspectieven op identiteit is, mijns inziens, dat 'interactionisten' de notie van een definitie van de situatie gebruiken als startpunt voor het vinden van een verklaring voor gesitueerd rolgedrag, zonder dat zij daarbij verklaren *hoe mensen tot een dergelijke definitie komen.* De vraag die ik aan het begin van hoofdstuk 4 heb opgeworpen is: hoe weten mensen eigenlijk 'wat er aan de hand is' wanneer zij een definitie van de situatie vormen? Mijn antwoord daarop bestond erin te stellen dat mensen bij het betreden van situaties gebruik maken van *scripts*, dat wil zeggen van *sets van contextuele aanwijzingen (cues), die worden uitgedrukt door de configuratie van objecten aanwezig in die situatie, en die impliciet of expliciet richting geven aan (reeksen van) handelingen in relatie tot die situatie.* Ik heb laten zien dat veranderingen in scripts, van welke aard ook, kunnen leiden tot veranderingen in de situationele definities die mensen hanteren, en derhalve tot veranderingen in hun gedrag. De toevoeging van informatie- en communicatie-technologieën aan bestaande situaties kan als een belangrijke bron van situationele verandering beschouwd worden – door deze technologieën veranderen de scripts in situaties in sterke mate. Een voorbeeld is het gebruik van mobiele telefoons in publieke ruimtes, zoals restaurants en treinwagons. Mobiele telefoons maken het mogelijk in dergelijke ruimtes nu gedragingen te vertonen die daar voorheen ondenkbaar waren, zoals bijvoorbeeld het plegen van persoonlijke of werkgerelateerde telefoongesprekken. Als gevolg daarvan wordt het 'publiek' dat er aanwezig is blootgesteld aan nieuw (a?)sociaal gedrag, dat vervolgens vragen oproept over de definitie van de situatie, over interactionele wenselijkheid en sociale codes.

Ook Ambient Intelligence technologieën, zo liet ik in hoofdstuk 4 zien, zullen veranderingen teweeg brengen in situationele scripts, definities, en de daaraan

gerelateerde rolkeuzes. Deze technologieën zullen ons, nog meer dan de huidige generatie mobiele en draagbare technologieën, in staat stellen om nieuwe gedragingen te vertonen op plekken waar dit eerder onmogelijk was. Maar tegelijkertijd zullen ze het ons in sommige gevallen ook *on*mogelijk maken gedragingen te vertonen in situaties waarbinnen die gedragingen voorheen heel normaal waren. Bovendien, en dit is nog belangrijker, stellen deze technologieën ons in staat om (tijdelijk) *alternatieve, genestelde definities* van de situatie te hanteren, die gerelateerd zijn aan onze eigen, persoonlijke voorkeuren en handelingspatronen, in relatie tot de technologische artefacten waarmee we (of via welke we) op dat moment een interactie hebben. Iemand die gebruik maakt van moderne technologieën, bijvoorbeeld in een publieke ruimte zoals een trein of een restaurant, creëert een tijdelijke *interruptie* van de geldende definitie van de situatie in die ruimte. Hij of zij zet deze definitie tijdelijk in de wachtstand, en laat in plaats daarvan zijn eigen 'particuliere definitie' prevaleren – ik noem zo'n momentane suspensie van de algemene definitie van de situatie een 'frame', en deze activiteit 'framing'. Wanneer de technologisch gemedieerde interruptie eindigt, zal het individu zijn gedrag weer aanpassen aan de algemene definitie.

Het begrip 'frame' stelt ons in staat te begrijpen op welke manieren mensen gebruik zullen maken van de nieuwe mogelijkheden (zowel in termen van rolkeuzes als in termen van handelingsmogelijkheden) die nieuwe technologieën met zich meebrengen, terwijl zijn tegelijkertijd ook in een hoogtechnologische werkelijkheid vormen van sociale stabiliteit zullen blijven hanteren. 'Framing' stelt mensen in staat in snelle opeenvolging deel uit te maken van verschillen sociale werkelijkheden en daarin verschillende rollen te vervullen. Voor identiteitsconstructie en –expressie heeft het fenomeen framing duidelijke consequenties. Enerzijds stelt het nestelen van persoonlijke, tijdelijk aangenomen frames binnen de bredere definitie van de situatie mensen in staat uit een veel grotere variëteit aan rollen te kiezen, en dus een veel breder repertoire aan identiteitsuitdrukkingen te genereren. Bovendien worden situationele zelfexpressies door het tijdelijke karakter van framing dynamischer en variabeler. Dit leidt tot meer fluïde identiteitsexpressies, en dus uiteindelijk ook tot een meer fluïde zelfconceptie.

Aan de andere kant zou men kunnen concluderen dat deze snelle opeenvolging van verschillende frames en definities er toe leidt dat elk van de individuele rollen die een individu speelt minder solide zullen zijn. Rollen zullen, zo mogen we aannemen,

in minder sterke mate omarmd worden door het individu, wat leidt tot een toename in wat Goffman 'rol distantie' ('role distance') heeft genoemd. Dit heeft op zijn beurt gevolgen voor de mate waarin mensen zich identificeren met gespeelde rollen. Hoewel Ambient Intelligence technologieën dus enerzijds nieuwe mogelijkheden bieden voor het spelen van gevarieerdere rollen, waarbij een sprake is van een grotere dynamiek en afwisseling, kan men anderzijds zeggen dat de 'zelven' die een individu op deze manier ontwikkeld minder goed ontwikkeld, minder uitgesproken, en meer fluïde zullen zijn.

In **hoofdstuk 5** heb ik laten zien welke mogelijke gevolgen de komst van Ambient Intelligence technologieën zou kunnen hebben voor *mens-object relaties*. De focus van dit hoofdstuk lag niet zozeer op de manieren waarop interacties *tussen mensen* veranderen door het materialiseren van dergelijke technologieën (zoals in hoofdstuk 4 het geval was), maar veeleer op de manieren waarop mensen *technologische objecten gebruiken* in de constructie en expressie van identiteiten, en op de rollen die Ambient Intelligence technologieën zouden kunnen spelen in processen van identiteitsconstructie en –expressie in de (nabije) toekomst.

Eén van de centrale begrippen uit interactionistische identiteitstheorieën is de notie van de 'gegeneraliseerde ander' ('generalized other'). Hiermee wordt bedoeld dat individuen hun eigen gedragingen steeds beschouwen en beoordelen 'via de ogen van de ander' – zij proberen steeds vast te stellen wat 'de groep' van hen verwacht. Dit zelf ingevulde oordeel over het eigen handelen, bezien vanuit 'de groep', noemen interactionisten de 'gegeneraliseerde ander'. Individuen maken vaak deel uit van een veelheid aan sociale groepen in hun leven; daarom spreken sommige interactionisten dan ook liever dan 'referentiegroepen'.

Tot op heden hebben interactionisten deze referentiegroepen altijd opgevat als groepen *mensen*. In het vijfde hoofdstuk van deze dissertatie heb ik betoogd dat het wellicht tijd wordt om ook *artefacten* als mogelijke referentiegroep te beschouwen, zeker wanneer deze artefacten een hoge mate van autonomie, onvoorspelbaarheid, en individualiteit gaan vertonen, zoals dat bijvoorbeeld zou gelden voor veel technologische artefacten in een wereld van Ambient Intelligence. Om te laten zien hoe dit werkt, heb ik laten zien dat Ambient Intelligence technologieën 'intieme technologieën' zijn, in vier betekenissen van die term. In de eerste plaats zijn zij intiem omdat we op een zeer hechte manier met hen zullen samenleven – deze technologieën zijn altijd en overal aanwezig, we zullen ze veelvuldig gebruiken en

(nagenoeg) overal mee naar toe nemen. Bovendien is het aannemelijk dat veel mensen dergelijke technologieën als 'persoonlijk' zullen beschouwen – zoals ze dat nu ook al doen met hun mobiele telefoon of laptop.

In de tweede plaats kunnen Ambient Intelligence technologieën worden aangemerkt als 'intiem' omdat ze een cyclus van *zelf-expressie en zelf-constructie* instigeren. Het zijn zogenaamde 'zelfvehikels', dat wil zeggen dat we ze gebruiken om uitdrukking te geven aan wie we (denken te) zijn in relatie tot anderen. Deze zelfexpressies slaan vervolgens terug op onszelf en dragen zo bij aan onze zelfconcepties – we worden de maskers die we opzetten, en technologieën spelen daarbij een ondersteunende rol.

Daarnaast zijn Ambient Intelligence technologieën 'intiem' omdat ze *sociale reacties oproepen* in mensen – sociale reacties, welteverstaan, die we traditioneel alleen zouden gebruiken in mens-mens interacties. Om aan te tonen hoe dit werkt, heb ik een overzicht gegeven van twee verschillende stromingen wetenschappelijk onderzoek die empirisch aantonen zien mensen sociaal reageren op informatie- en communicatietechnologieën (ICTs). Het betreft hier aan de ene kant de *expliciete* reacties die mensen vertonen ten aanzien van ICTs (antropomorfisme), en aan de andere kant de impliciete en onbewuste reacties op dergelijke technologieën (de 'Media Equation'). Beide invalshoeken tonen aan dat mensen onomstotelijk sociaal reageren op ICTs, zelfs wanneer deze technologieën zelf wel zeer minimale sociale signalen afgeven. Eén van de doelstellingen van de Ambient Intelligence visie is om technologie 'natuurlijker in de omgang' te maken, dat wil zeggen dat de technologie beter in staat zou moeten zijn om te reageren op en te handelen naar de manier waarop mensen hun werkelijkheid interpreteren en daarin betekenisvolle, geïnvolveerde handelingspraktijken aantreffen en scheppen. Als dit streven gerealiseerd zou worden, dan mogen we aannemen dat de sociale reacties die mensen ten opzichte van technologieën vertonen alleen maar sterker zullen worden.

Ik heb daarom in het vijfde hoofdstuk de vraag gesteld: als mensen sociaal reageren op intieme technologieën, betekent dit dan ook dat deze technologieën op hun beurt invloed kunnen uitoefenen op de constructie en expressie van identiteiten, op een manier die vergelijkbaar is met de rol die andere mensen, als referentiegroepen, in hierin innemen? Kunnen intieme technologieën als referentiegroep gaan functioneren? Ik heb deze vragen bevestigend beantwoord in relatie tot Ambient Intelligence technologieën, omdat deze technologieën nog op een

vierde manier 'intiem' genoemd kunnen worden. Zij vertonen niveaus van intentionaliteit, van zelfstandigheid, van intelligentie en van autonomie, die ons ertoe zullen uitnodigen hen als echte, eigen, individuele *actoren* te beschouwen. Door de combinatie van personalisering, pro-activiteit, contextgevoeligheid en het aanpassingsvermogen waarover deze technologieën beschikken, zullen zij zodanige niveaus van ingenieusheid en (sociale) verfijning vertonen dat zij, mijns inziens met recht, het predikaat 'actor' zullen krijgen toebedeeld.

Ik heb betoogd dat het aannemelijk is dat Ambient Intelligence technologieën zullen gaan functioneren als 'referentiegroepen' (die ik heb hernoemd tot 'referentie-assemblages'), en wel om twee redenen. In de eerste plaats hechten we waarde aan de manieren waarop 'belangrijke anderen' ons gedrag beoordelen. Als Ambient Intelligence technologieën een intiem onderdeel van ons leven gaan uitmaken (in alle hierboven besproken betekenissen), dan is de kans aanwezig dat zij ook in steeds sterkere mate als 'belangrijke anderen' in ons leven gaan functioneren. Zij zouden in die hoedanigheid dan ook een impact kunnen hebben op de constructie en expressie van onze identiteiten. Daarbij komt dat Ambient Intelligence technologieën ons letterlijk voortdurend waarnemen, en ons gedrag zonder onderbreking valideren. Ik heb betoogd dat dit voortdurende waarnemen en 'waarderen' door de technologie haar rol als 'belangrijke andere' kan versterken, wat op zijn beurt weer gevolgen heeft voor de manier waarop wij onze identiteiten, zowel in relatie tot andere mensen, als in relatie tot dit soort technologieën, zullen vormgeven en uitdrukken.

In het **laatste hoofdstuk** van deze dissertatie heb ik een overzicht gegeven van de belangrijkste bevindingen van dit onderzoek. Tot slot heb ik nog enkele lijnen uitgezet richting mogelijk toekomstig onderzoek op het snijvlak van Ambient Intelligence en identiteit.

8

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Curriculum Vitae

Personal details		
	Name	Van den Berg
	First name	Bibi
	Date of birth	26 September 1975
	Place of birth	Tietjerksteradeel
	Home address	Waterwerk 66
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	Gender	female
	Nationality	Dutch
	Martial status	married
	Languages	First language: Dutch;
		fluent in English

Education		
	PhD Philosophy	*Faculty of Philosophy, Erasmus University, Rotterdam, The Netherlands*
		■ August 2004 – May 2009
		■ Title: *The situated self: Identity in a world of Ambient Intelligence*
		■ Supervisors: Prof. dr. Jos de Mul and Prof. dr. Valerie Frissen
	Bachelor and Master Philosophy	*Faculty of Philosophy, Erasmus University Rotterdam, The Netherlands*
		■ August 1999 – April 2004
		■ Bachelor and Master, both *cum laude* (with distinction)
		■ Major in Philosophical Anthropology
		■ Master thesis: *Smart and sensitive: Machines of the 21st century? Concerning the relationship between emotion and intelligence and its consequences for Artificial Intelligence* (in Dutch)
	Propaedeutic level Languages and Cultures of China	*Faculty of Languages and Cultures of China, State University Leiden, The Netherlands*
		■ August 1994 – January 1996
		■ Propaedeutic certificate received in June 1995 (equivalent to first year international Bachelor level)
	Secondary education	*Zwijsen College, Veghel, The Netherlands*
		■ August 1987 – June 1993
		■ A-levels: Dutch, English, French, Latin, History, Geography and Math

Awards		
	dr. W.H. Postumus-van der Goot Stipend	*Award for 7 best female PhD students of Erasmus University 2008/2009*
		■ February 2008
		■ Awarded by Erasmus University, Rotterdam, The Netherlands
	Best Student Award	*Best propaedeutic level student Faculty of Philosophy 1999/2000*
		■ August 2000
		■ Awarded by Vereniging Trustfonds Erasmus University, Rotterdam, The Netherlands

Publications	Book chapters	Van den Berg, B. – *Self, script and situation: Identity in a world of ICTs* (2008) ■ In: *The future of identity in the information society: Proceedings of the third IFIP WG 9.2, 9.6/11.6, 11.7/FIDIS International Summer School on the Future of Identity in the Information Society* ■ Edited by Simone Fischer-Hübner, Penny Duquenoy, Albin Zuccato and Leonardo Martucci ■ Springer, New York (USA) – pages 63-77 Van den Berg, B. – *Ik ga op reis en ik neem mee... De toekomst van het begrip 'persoonlijke ruimte'* (*The future of the notion of 'personal space'*) (2008) ■ In: *De draagbare lichtheid van het bestaan: Het alledaagse gezicht van de informatiesamenleving* (*The portable lightness of being: The everyday face of the information society*) ■ Edited by Valerie Frissen and Jos de Mul ■ Uitgeverij Klement, Kampen (the Netherlands) – pages 45-63 Van den Berg, B. – *Ik doe er niet aan mee: Niet-gebruikers in een technologische wereld* (2008) ■ In: *In de greep van de technologie: Hoe we kwetsbaarder en onafhankelijker worden* (*Gripped by technology: How we are becoming more vulnerable and independent*) ■ Edited by Marguerite van den Berg, Corien Prins and Marcel Ham ■ Uitgeverij Van Gennep, Amsterdam (the Netherlands) – pages 263-281
	Articles (submitted)	Van den Berg, B. – *The generalized everything: Constructing identities in a world of Ambient Intelligence* ■ Positively reviewed by *Ethics and Information Technology*, minor revisions, to be resubmitted in March (2009) Van den Berg, B. – *I-Object: Intimate technologies as 'reference groups' in the construction of identities* ■ Positively reviewed by *Techne: Research in Philosophy and Technology*, revisions, to be resubmitted in June (2008)
	Articles in popular media	Van den Berg, B. – *Ambient Intelligence, de toekomst van de Europese Unie?* (*Ambient Intelligence, the future of the European Union?*) (2008) ■ In: *De Helling, Kwartaalblad voor linkse politiek* ■ no. 4 – pages 20-24
Teaching	Philosophy BA: 3rd year undergraduate	*The situated self: Plaats, technologie en identiteit* (*The situated self: Place, technology and identity*) ■ Lectures on philosophy of place and philosophy/sociology of technology ■ 10 week course, spring 2007 ■ In Dutch ■ Rated 'very good' in evaluations
	Philosophy MA: graduate school	*Philosophical anthropology: Erving Goffman and symbolic interactionism* ■ Lectures and discussion on some of Erving Goffman's key texts ■ 15 week course, spring 2008 ■ In English, international course ■ Rated 'excellent' in evaluations
	Philosophy BA: 3rd year undergraduate	*De domesticatie van het noodlot* (*Destiny domesticated*) ■ Course on (Greek) tragedy, together with Prof. dr. Jos de Mul ■ 10 week course, spring 2009 ■ In Dutch
	Thesis supervision	*Supervision of various Bachelor and Master theses* ■ In philosophy of technology and/or social impact of ICTs on everyday life

Work experience	2000 – 2004	*Teaching assistant Blackboard Academic Suite at Faculty of Philosophy of Erasmus University, Rotterdam, The Netherlands* ■ Assistance in setting up and managing the online education platform called Blackboard ■ Organizing training and information for faculty staff
	1998 – 1999	*Marketing manager at VitOrtho BV, Hellevoetsluis, The Netherlands* (*import and distribution of food supplements*) ■ Developing and consolidating a new product line ■ Developing a website and brochures with consumer information
	1996 – 1998	*Assistant-manager at De Roode Roos, The Hague, The Netherlands* (*mail order company for food supplements*) ■ HR and daily management tasks

International experience	USA	*Different types of charity work* ■ January 1996 – October 1996
	Finland	*Exchange student AFS Intercultural Programs in Helsinki* ■ August 1993 – September 1994 ■ 'Finnish for foreigners' at the University of Helsinki ■ Last year of secondary school

Other activities	2001 – 2002	Student member of the University Council (Erasmus University)
	2000 – 2001	Student member of the Faculty Council (Faculty of Philosophy, Erasmus University)
	2000 – 2004	Student member of the Educational Council (Faculty of Philosophy, Erasmus University)
	1999	President of AFS Intercultural Programs, Region Zuid-Holland
	1994 – 1999	Trainer/coordinator for AFS Intercultural Programs, Regions Zuid-Holland and Noord-Brabant

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