Perception in the digital age

Analysing aesthetic awareness of changing modes of perception

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22 August 2010

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Introduction

"It is impossible for man to imagine a position outside of technology." – Martin Heidegger

"The mode of human sense perception changes with humanity's entire mode of existence." – Walter Benjamin

Technology has permeated every aspect of our society. Its presence is so elusive yet ubiquitous that in the modern Western society it has become impossible to evade its affects. The development of digital technology has increased the elusiveness of technologies, making them more intangible, miniscule, even invisible. This has wrongly led to the assumption that interaction with digital technologies is disembodied. The prophecies of the digital era have varied from an increasingly disengaged and disembodied existence to the possibility of immortality by downloading our mind in a computer. These views arise from an ancient desire of humankind to transcend the body and a fundamental distrust of the sensory faculties as providing 'true' information about the world. However, many scholars now point towards the inextricable link between perception and the body and show how the body is engaged in the interaction with digital technologies. Following Walter Benjamin, I concur that the modes of perception are interrelated with the cultural and historical context. In the digital era, the modes of perception demand to be reexamined. I want to examine how the changing modes of human sense perception are affected by digital technologies. We are often not aware of the various ways technologies affect and mediate our perception of the world, especially since technology often strives to hide its mediation and create the illusion of an im-mediate perception. This is where art can help us. An aesthetic framework can construct a self-reflexive mode of perception in which the subject becomes aware of the processes of perception. I will therefore use performances to provide insights into the changing modes of perception in the digital age.

I will begin by situating the philosophical debate around perception. I will discuss the dominance of visual perception and the separation between the mind and the body that long has prevailed. Even to this date, this lies at the foundation of theories of the obsolete body in a digital environment. Instead, I will argue for a phenomenological approach that presupposes the entanglement of the body, the world

and perception. Then I consider the value of a phenomenological approach in the digital age by discussing several human-technology relations. Because this approach acknowledges the centrality of the body in perception, it provides a suitable perspective to discuss the impact of human-technology relations. In the next chapter I start with an account of the habitual aspects of perception. In everyday life we are rarely aware of the processes of perception and thus we do not notice the changes it undergoes. Art can both make us aware of these processes of perception and reinforce a prevailing mode of perception without drawing attention to its construction. I will discuss several representational strategies of art and propose that intermediality in performance is particularly suitable to lay bare the conditioning of perception through digital technologies. In the last chapter I will illustrate this by analysing several intermedial performances. Each of these performances has their own way of constructing a self-reflexive mode of perception and making visible the ways in which digital technologies affect the changing modes of perception.

I will briefly clarify some of the underlying assumptions of my writing and the terms I employ. To start, I will always refer to the subject or spectator as 'she', since I am writing this from my (inevitably) female perspective. I further use the term 'technology' instead of 'medium' since the term 'medium' is both more inclusive as it is limiting. A medium in McLuhan's sense can encompass just about anything; on the other hand, it often refers specifically to information technologies. Technology is perhaps a less ambiguous term and it has different connotations than a medium; it implies the use of a technical process or method and generally denotes mechanical devices or techniques. I will use this term in a flexible way without restricting myself to rigid definitions. Finally, I would like to say that digital technologies have not affected all people equally. It is important to realise that only a minor percentage of the total population has access to technologies such as the internet or mobile phones. Thus, this research is written with a Western technological society in mind.

1. A history and theory of perception: From the dominance of sight towards a phenomenological approach

In this chapter, I want to establish a way to think about perception that can take into account the impact of digital technologies. Digital technologies affect, extend and redefine the human body and its senses. Characteristic of these technologies is the way they affect the entire body and address multiple senses at once. We live in an era in which we are surrounded by technologies, which have even penetrated the human body. To account for the changing modes of perception in the digital age, it is thus essential to take an approach that incorporates the body into the processes of perception. In Western history, sight has often been considered the predominant sense. The other senses and the body in which they are grounded have been actively forgotten, according to Mark Paterson as will be discussed below (Paterson 2007, 59). Especially since the Enlightenment the prevailing notion is that of a disembodied eye which is objective and operates separately from the other senses. In the last century, theoretical approaches such as phenomenology have triggered a new interest in the other senses and the perceiving body as a whole. Maurice Merleau-Ponty in particular emphasised the inextricable relation between the human body and its environment. After a short overview of the predominantly visual accounts of perception in Western history, I will argue for a phenomenological approach to consider the relation between digital technologies and perception.

The dominance of the disembodied eye

Nowadays, it is generally acknowledged that we acquire our knowledge of the world primarily through our senses and that perception has a profound influence on our thinking. However, Western philosophy has been characterised by a strong distrust of the senses because of its illusory nature. Sensory perception would get in the way of knowing the object or the world *an sich*. Plato already stated that what we perceive is just a shadow of the world; the real world, the world of ideas, is not accessible to us with our senses, but perhaps, by a selected few, through our reasoning and mind, or soul. Our senses can only provide us with appearances, not with universal truths. Many thinkers

after Plato agreed with his notion that our sensory perceptions are deceptive and only cloud our knowledge of the world.

For a long time, sight has been valued above all the other senses. From the very roots of Western culture and philosophy, vision was deemed the noblest of the senses. Ancient Greek philosophy and culture were strongly centred on sight as the most reliable source of knowledge, although there was also an ambiguity in their conception of sight. Plato did not give as much attention to a discussion of sense perception as Aristotle, since in his view the senses could not provide us with any truth about the world and its objects. The objects in the perceptible world are merely a copy of the Ideas, which exist in a transcendental world. As Martin Jay notes in his overview of the visual dominance in Western culture, Plato considered the sense of sight as the purest of the senses that could come closest to perceiving absolute truth (Jay 1993). However, he often seemed to have referred to the 'eye of the mind' when talking about sight. Plato's use of sight could thus also denote the perception of the soul in the world of Ideas, where the soul originally comes from. As is clear from the analogy of the cave, our actual sense perception does not offer us anything but a shadowy copy of the real world.

Aristotle studied the five senses extensively in *De Anima*, additionally establishing that there are only five senses, a conception that has held its ground for a long time. In his quest to distinguish between plants, animals and humans he takes the sense faculties as his starting point. What distinguishes animals from plants is that animals have sensations. For example, certain sponges are said to be animals primarily because they possess the sense of touch. Aristotle considers touch the primary sense faculty in all animals (Hicks 2009, 55). This is the most basic of the senses, which can exist independently of the other senses and is necessary for survival. As Mark Paterson points out: "Touch is acknowledged not only as indispensable, but as prior to the other sensory modalities" (Paterson 2007, 17). Sight is the most supreme sense in Aristotle's hierarchy, as Jay states, because of its power to "discriminate among more pieces of information than any other sense" (Jay 1993, 28). However, Aristotle did extensively investigate the sense of touch and his conclusions can offer some arguments as to why touch is often forgotten or undervalued as a sensory faculty. Aristotle distinguishes a single organ that corresponds to each sensory faculty via a medium that transfers the sensation to the organ. For example, sound and light affect the ear and the eye respectively and thus function as a medium for these sense organs. In the case of touch, as Paterson summarises, "there is no obvious single organ to which it corresponds, unlike sight (the eye) or hearing (the ear)" (Paterson 2007, 17). Aristotle concludes that the organ of touch must be internal, and our flesh is just the medium of touch. He comes

to this conclusion through an analogy with the other senses. We can only perceive through a medium, not via direct contact with the sense organ.

> But neither in the one case nor in the other would sensation follow on contact with the sense organ; for instance, if a body that is white were placed on the outer surface of the eye: which shows that the instrument that apprehends the tangible is within (Hicks 2009, 103).

Still, in Aristotle's treatise the sense of touch remains an obscure case. He makes an important distinction between the direct senses of touch and taste and the other senses; in all cases we perceive through a medium, but in the case of the senses of hearing, smelling and seeing we are aware of how the medium affects us since we have a greater distance towards the medium. But in the case of touch "we are not affected or altered by the sense-object itself, nor simply through the medium (flesh), but actually *in synchrony with* the medium" (Paterson 2007, 17). That is why we fail to notice the medium in the process and "our contact with things is erroneously perceived as direct, as unmediated." (Paterson 2007, 17). Aristotle's account provides a plausible aspect that has contributed to the forgetting of touch in later theories, and even in everyday life at present.

Jay illustrates the implications of the primacy of vision in Greek thought by means of the essay "The Nobility of Sight" by Hans Jonas. He recapitulates Jonas' three main contentions concerning the consequences of a visual bias. Firstly, sight is less temporal than the other sensations and gives an impression of stable contents. As a result, "it thus tends to elevate static Being over dynamic Becoming, fixed essences over ephemeral appearances." (Jay 1993, 24). Secondly, the sense organ of sight is external, and unlike the sense of touch as Aristotle already noted, it can be clearly separated from the object it perceives. According to Jonas, this gave rise to the notion that the object is distinct from the subject and can be apprehended by the subject. The concept of objectivity simultaneously suppressed the link between the perceiver and the perceived. This would be crucial to later thought and the development of theoretical truth (Jay 1993, 25). Thirdly, since the eye can see far ahead, the Greeks got acquainted with the idea of infinity and of fore-seeing. This argument by Jonas is problematic, since he insists that the apprehension of spatial distance was translated into temporal terms. However, earlier he noted that the ocularcentrism of the Greeks resulted in a detemporalised notion of reality. Jay additionally adds the objection that seers were always depicted as blind and oracles were communicated verbally.

The ocularcentrism of the ancient Greeks started a tradition that is still felt to this day. They formed the philosophical foundation for a hierarchy of the senses that many successors have built on and that has pervaded Western society in the many centuries to come. Even in their anxiety towards vision, as displayed in various myths, its power was all the more evident (Jay 1993, 28). Jay traces the ambiguity and importance of vision throughout the Middle Ages, the Baroque and Renaissance. The church played an important role; during the Middle Ages the use of visual representations to educate the masses confirmed the power of the image, the same power that was highly suspected, as is seen in the condemnation of the worship of idols. Jay notes that after the Reformation, religious practices no longer required the use of images in the sense as they were used before and the visual developed separately into an autonomous realm. As a result, "vision, aided by new technologies, became the dominant sense in the modern world, even as it came to serve new masters." (Jay 1993, 45).

The invention of perspective laid the foundation for Descartes' radical and influential philosophy that foregrounds a division between mind and body. In the next chapter I will go into more detail about the impact of perspective on the notion of perception. For now, it suffices to highlight some of the most important general shifts that perspective has caused in regards to thinking about the senses. This method used to create an illusion of three-dimensional space on a canvas constructed a static objective viewpoint disconnected from the body of the actual spectator. What arose was a "differentiation of the idealized gaze from the corporeal glance" (Jay 1993, 57). The rules of perspective gave an abstract dimension to the representation of space. Jay notes the substantial impact of this invention on "the new scientific order", asserting that "in both cases space was robbed of its substantive meaningfulness to become an ordered, uniform system of abstract linear coordinates" (Jay 1993, 52). The idea of the objectivity – and thus of the scientific value – of sight led to an enormous amount of inventions of apparatuses to extend and enhance our visual perception. This 'abstracted visualism' permeates many scientific practices such as geometry, and becomes a model for *mathesis universalis* through the active forgetting of the involvement of the body (Paterson 2007, 59-60). Paterson shows in his chapter "The forgetting of touch" how the bodily processes of measuring space and using tools are 'forgotten' in order to achieve an "abstracted, generalized model", or the *mathesis universalis*, "wherein the visual imposes a consistency on a measured space" (Paterson 2007, 64). Descartes' philosophy adheres to the principles of perspective and the new scientific approach based on a *mathesis universalis*. He was, like Plato, wary of the senses; however, in a certain way,

sight had objectivity and superiority since this sense faculty was rationally constructed and connected to our mind with its "innate geometrical sense" (Jay 1993, 78). The Cartesian eye is thus a disembodied eye: idealised, objective and static, thereby becoming the basis for modern science. This notion is supported by one of Descartes' most famous conclusions, namely "this *me* – that is, the soul by which I am what I am – is completely distinct from the body" (Descartes in Jay 1993, 81). This mind-body dualism has been of a major influence for many centuries since and still permeates contemporary thought. Nevertheless, it has since been challenged and new approaches that incorporate the subject and her body involved in seeing have arisen. Perhaps the view that is most radically different to the Cartesian one is the phenomenological approach that I will discuss in the following part.

Bring back the body! Towards a theory of embodied perception

Despite the influence of many new thinkers, ocularcentrism remained dominant in the early twentieth century. In its basic assumptions, Cartesian philosophy still permeates scientific thought to this day. The idea of an objective world that is intelligible to the mind of the subject has proven difficult to overthrow. Maurice Merleau-Ponty, amongst others, has made a valuable contribution to an alternative approach to perception, thought and the primacy of vision. He argues that all our knowledge has its basis in our experience of the world. We cannot know the world without perceiving it, even though many philosophers try to forget the sensory input as soon as possible and value the abstraction far beyond the sensory experience. As Merleau-Ponty says: "We never cease living in the world of perception, but we go beyond it in critical thought – almost to the point of forgetting the contribution of perception to our idea of truth" (Merleau-Ponty 1964, 3). Phenomenology 'remembers' this contribution of perception, and gives a place to bodily experience as the root of our knowledge. Phenomenologists examine the way we experience the world with our body and senses and how we are embedded in this world. Phenomenology has proven to be very useful in bringing the body back into theory and history of perception.

In his seminal work *Phenomenology of perception* Merleau-Ponty aims to overthrow the distinction between the physical and the mental. This separation forms the foundation of two other approaches to perception, empiricism and intellectualism, which Merleau-Ponty seeks to refute. Even though they are two very different theories, both think of perception as a mental activity separate from the physical world of objects, which "was construed as a spectacle to be observed from afar by a disembodied mind"

(Jay 1993, 308). Merleau-Ponty agrees with empiricism in so far that he agrees "we cannot conceive anything that is not perceived or perceptible" (Merleau-Ponty [1945] 2002, 373). But he formulates a different relation between sense experience and thought; as Thomas Baldwin contends in the introduction to *The world of perception,* "he consistently rejects those forms of empiricism which aim to restrict or reduce the contents of thought to possible contents of experience" (Merleau-Ponty [1948] 2004, 7). In the words of A.D. Smith, Merleau-Ponty offers a different approach "by *starting* with an irreducible involvement of subject and world" (Smith 2007, 2). We do not perceive with the mind, but with the body. Merleau-Ponty's central statement that is in complete contradiction with both empiricism and intellectualism is that the body is the subject of perception. Because our bodies and the world are intertwined, part of the same structure, "the world cannot, even in principle, be intelligibly laid out before consciousness" (Smith 2007, 2). As a result, Merleau-Ponty also believes that we do not have a priori knowledge of the structure of the world in the Kantian sense, but rather that we "carry the basic structures of the world with us; but that is because we are essentially *of* the world" (Smith 2007, 2-3). He does not deny *a priori* concepts altogether; however, he recognises their existence only as part of the bodily structure. Baldwin sums up: "our embodiment brings to our perceptual experience an a priori structure whereby it presents itself to us in consciousness as experience of a world of things in space and time whose nature is independent of us" (Merleau-Ponty [1948] 2004, 9). There is not a reality behind the sensory world; there are no cognitive principles that stand outside or above the world as we perceive it. We do not relate to the world through thought, but through our body. Merleau-Ponty does not state that there is no mind, thought or consciousness; however, the body forms the foundation of our thinking and precedes our personal existence. Smith asserts that it is of primary importance to Merleau-Ponty's theory that the body operates pre-personally: "my body, as it were, perceives the world for me. My body is already at grips with the world, before the offices of understanding" (Smith 2007, 3). It becomes clear that Merleau-Ponty places the body at the very origin of our being. He sees it as a subject underlying our personal existence, "for whom a world exists before I am here, and who marks out my place in it" (Merleau-Ponty [1945] 2002, 296).

Digital technologies have changed the way of communication between people and, with that, our perception of others. Merleau-Ponty's ideas on intersubjectivity are thus worth considering here. When the mind cannot be separated from the body and all our thoughts are derived from our own subjective perception, the question of intersubjectivity seems to become problematic. If everything is subjective, how do we

communicate? Merleau-Ponty states that we can only know other human beings through their bodies. Consequently, their bodies can give us information about their intentions and in this way we form a character sketch of a person. However, this is always attached to their bodily characteristics, and derived from the interaction between bodies.

> Another person, for us, is a spirit which haunts a body and we seem to see a whole host of possibilities contained within this body when it appears before us; the body is the very presence of these possibilities (Merleau-Ponty [1948] 2004, 62).

According to Merleau-Ponty, intersubjectivity is thus located in the relation between bodies. Human beings can communicate not because they are part of a shared consciousness or subject to the same universal rules, but because they are subjects in a shared perceptual world. Even though the perceptual world is intertwined with the subject, we still expect other people to see the same thing as we do (Merleau-Ponty 1964, 17). Merleau-Ponty maintains that we can never know how another person sees the thing that we do, but our first instinct is to share our experience and only after 'a failure of communication' do we realise that we each have a separate consciousness. Yet in principle, we should believe in the possibility of sharing our perceptions, that the thing that I am seeing is "real for every subject who is standing where I am" (Merleau-Ponty 1964, 17). We believe this because we recognise the behaviour of the other and recognise his reactions to phenomena as similar to our own.

> From the depths of my subjectivity I see another subjectivity invested with equal rights appear, because the behavior of the other takes place within my perceptual field. (...) [T]he body of the other (...) tears itself away from being one of my phenomena, offers me the task of a true communication, and confers on my objects the new dimension of intersubjective being or, in other words, of objectivity (Merleau-Ponty 1964, 17-8).

Since Merleau-Ponty's phenomenology does allow for intersubjectivity, there must be such a thing as a consciousness or thought. Even though his approach seems quite radical, it is important to realise that he does not eliminate the role of consciousness altogether. In his essay *The primacy of perception,* Merleau-Ponty addresses the nature of thought in an elucidating manner. First of all, we do not relate to the world like a thinker to an object of thought. We cannot categorise our perceptions

according to ideas that we impose on the perceived reality, because all our ideas are based on this reality. The inextricable link between subject (the human body) and the world entails that "all consciousness is perceptual, even the consciousness of ourselves" (Merleau-Ponty 1964, 13). As a result, we can conclude that ideas, thought or consciousness do exist but they can never function separately from perceptual experience. There are no truths that are not present in the perceptual world, as Plato would think.

> The perceived world is the always presupposed foundation of all rationality, all value and all existence. This thesis does not destroy either rationality or the absolute. It only tries to bring them down to earth (Merleau-Ponty 1964, 13).

Phenomenology in the digital age

A phenomenological approach to perception can offer us different insights in an age of digital technologies. Digital technologies are increasingly centred on the body, require physical interactions and produce somatory sensations. Wireless technologies allow the user to carry them with him and on his body wherever he goes, touch-screens and other haptic interfaces involve a bodily interaction and the development of 3D-effects and immersive environments aim to evoke somatory and kinetic sensations. As Merleau-Ponty aptly said, "a theory of the body is already a theory of perception." The alteration and manipulation of our senses and body through technologies thus have direct consequences for the way we perceive the world and the other. We cannot simply ignore or evade the influence of technology, since we are inextricably bound up with them. Phenomenology accounts for the consequences of our relation to technology in a way that a disembodied ocular perception could not, since it takes as its starting point the lived body in interaction with the perceived world. Thus it does not presuppose a deterministic view of technology, in which technologies develop autonomously and regulate changes in human perception and behaviour. Neither does it presume a social-determinist position, where human agency controls the use and effect of technology as if it were a completely malleable entity. Rather, technology mediates between the perceiver and the perceived and in this process it is embodied by the perceiver (Ihde 1990, 38-41).

Digitality does not merely refer to technology but extends to the specificity of contemporary culture. In his article "Digital culture" Andy Lavender gives a comprehensive overview of the aspects of digital culture, which he starts with the

primary meaning of digitality: "digitality describes the use of binary code that uses the digits 0 and 1 in order to structure information" (Lavender forthcoming, 125). This particular feature enables the user to consume, manipulate, send and receive the content all with the same device. Because this binary code provides us with a common language, communication has speeded up immensely. Lavender stresses that the impact of these developments reach beyond information and communication technologies; "[they] have altered our experiences of creativity, ownership and distribution" (Lavender forthcoming, 127). In this sense digitality is a far more encompassing and influential technology than analogue technologies can be.

> Digital refers not just to the effects and possibilities of a particular technology. It defines and encompasses the ways of thinking and doing that are embodied within that technology, and which make its development possible. These include abstraction, codification, self-regulation, virtualization and programming (Gere in Lavender, 127).

This is partly possible because digitalisation does not only concern 'mediascapes', but in the same way it converts other domains of society to become part of the digital information system. What Lavender specifically emphasises about digital cultures is that it depends on oppositions that nevertheless operate simultaneously. Digital culture is both material and immaterial, both local and global, virtual and actual and so forth. These oppositions work together in the structure of the network, which has become a model for modern society. A network does not have a centre, but consists of nodes (the points of intersection at the network) of varying relevance. This allows for a fluid model in which counterterms can coincide.

Even though Merleau-Ponty did not live in the digital age, several segments of his work are concerned with human-technology or human-artefact relations. He argues that artefacts can become extensions of the lived body to such a degree that one is aware of its spatiality as if it were part of the body. Merleau-Ponty uses the example of a woman with a feathered hat who automatically keeps a distance between the feather and other objects. "She feels where the feather is just as we feel where our hand is," Merleau Ponty contends (Merleau-Ponty [1945] 2002, 165). The same goes for navigating a car through an opening in a similar way as to navigating our own body through a doorway. His example of the blind man's stick clearly illustrates the familiarisation of technological extensions. The man can feel the ground and its texture through the means of his stick, which forms the extension of his sense of touch. This

mediation occurs without delay, the ground is perceived immediately. When the man gets used to this technological extension, the mediation is no longer experienced as such. "The blind man's stick has ceased to be an object for him and is no longer perceived for itself" (Merleau-Ponty [1945] 2002, 165).

Don Ihde builds on this approach in his book *Technology and the Lifeworld: From Garden to Earth* (1990) where he characterises this type of human-technology relations as 'embodiment relations'. These extensions, such as a blind man's stick or glasses, are located between the perceiver and the perceived world, "in a *position of mediation*" (Ihde 1990, 73; original emphasis). Whereas glasses are a simple device that only mediates vision, some extensions are more complex and apply to multiple senses. The automobile for example mediates motility and the whole body extends to the parameters of the vehicle, as Merleau-Ponty also noted. Through it, the subject experiences the road and the surroundings. The 'I-as-body', as Ihde calls the perceiving subject, grows to embody these extensions because "I take the technologies *into* my experiencing in a particular way by way of perceiving *through* such technologies and through the reflexive transformation of my perceptual and body sense" (Ihde 1990, 72; original emphasis). If the technology works properly and becomes habitual to the subject, they disappear into the background: they become embodied. "My glasses become part of the way I ordinarily experience my surroundings; they 'withdraw' and are barely noticed, if at all" (Ihde 1990, 73). In the case of digital technologies it becomes even easier for the technologies to withdraw, or even harder to distinguish between the body and the mediating extensions. Whereas a stick, glasses or a hearing aid is a physical object that you can discard whenever you wish, digital extensions have become smaller, numerous and even invisible. Instead of glasses, we now have laser-eye surgery which leaves no visible traces. Hearing aids have been developed that are merely a small chip to be implanted in the ear. The possibility of a totally artificial heart seems within reach, as medical technologies swiftly develop. Many of the digital extensions are internalised and continue to mediate the human perception out of sight. These developments underline the desire for total transparency, a desire that Ihde describes as ambiguous and contradictory. We desire a total embodiment of the technology in order to perceive the world immediately. We strive for directness and immediacy in our experience of the world. However, the purpose of technological extension is to transform and enhance our perception. If we cannot notice this transformation, if the extension has become completely transparent, can we still regard it as a technological extension? The total transparency of technology entails that it no longer changes

anything in our perception, and it is thus essentially non-existent. In conclusion, we can only experience the embodiment of technologies by virtue of its differentiation.

In addition to embodied relations, Ihde distinguishes other types of human-technology relations. The second type he discusses is the hermeneutic relation, which he defines as an interpretative reading of technology. Take for example the reading of a chart. A chart is an isomorphic representation of a landscape, but seen from a different perspective than the reader occupies. The perceptual focus of the reader is the chart, not the world it represents. The world is perceived through this technology. In the case of writing, the isomorphic relation to the world has turned into abstraction. The perceptual transparency has disappeared even more than in the case of a chart, and the world is only present through hermeneutic interpretation. The relation between the subject and the technology has moved away from an embodied one. Ihde uses the example of reading a thermometer while the subject is inside on a cold day. "To retain the full sense of an embodiment relation, there must also be retained some isomorphism with the felt sense of the cold", as Ihde argues. "Instead, you read the thermometer, and (…) you *hermeneutically* know it is cold" (Ihde 1990, 85; original emphasis). There is still immediacy in this reading of technology and the knowledge of its meaning, but the "immediate *perceptual* focus" is the technological mediation (Ihde 1990, 86; original emphasis). Instead of the embodied relation of (I-technology)-world, the hermeneutic relation becomes I-(technology-world). Since hermeneutic relations describe something *to* which one relates, contrary to something *through* which one experiences, the problems that arise in perceiving the world are different from those in the embodiment of technologies (Ihde 1990, 93). The most obvious problem is located in the act of reading: the subject could misinterpret the technological instrument or interface that represents the world. However, the ultimate purpose of the technologies is to attain hermeneutic transparency; the reader should become as familiar as possible with the reading of the instruments so that there still remains a sense of immediacy in the perception of the world. Nevertheless, this is a deceptive immediacy, because, as Ihde, emphasises, there is always a "*difference* between what is shown and how something is shown" (Ihde 1990, 92; original emphasis). Furthermore, if there is a defect in the technology which results in an incorrect representation of the world, we do not always notice it. The process of mediation is hidden from view in the (technology-world)-interface. This problem becomes more apparent in the case of digital technologies, since they no longer have a direct material connection to the world they refer to. Yet, the technologies that represent this world have become less manifest in their presence, and are not always the distinct object of our perceptual focus. Instead, the aim is to achieve

an apparent immediacy or transparency in the hermeneutic reading of technology. This reduces the awareness of the act of interpretation in our perception of the world, and the possible incongruences between the technology and the world it refers to.

Alterity relations describe how a technology can function as an other. This relation entails, paradoxically, the anthropomorphisation of technology; this can range from "serious artifact-human analogues to trivial and harmless affections for artifacts" (Ihde 1990, 98). Humans can be tempted to characterise their machines as an other that is animate and has its own will. For example, the car is often referred to as an animalistic other. In some cases, one might talk about a car as though it has a personality. The automaton is typical of the alterity relations; this is a mechanical device that is designed to move autonomously and has been the subject of fascination for centuries. These devices were often designed to resemble an animal or human figure. Automata had a certain magic appeal to it, since they were built to hide its inner mechanisms. Ihde compares automata with toys (the apparent animation, the way they take on a life on its own) or computer games ("the sense of *interacting with* something other than me", a mechanical competitor) (Ihde 1990, 100; original emphasis). In the digital age, automata are becoming more elaborate and their mechanisms increasingly complex and inaccessible to the ordinary bystander. Since machines appear to move more and more autonomously, the sense of otherness has also increased. It is important to note that the anthropomorphic characteristics we ascribe to it are a *quasi*-autonomy, a *quasi*-animation, and thus a *quasi*-otherness. It is often in the breaking down of technology that the machine becomes an other to which we direct our frustration or anger, since we do not have a clear insight into their logical behaviour and we might feel like they have a will of their own. The focal point is no longer what the technology represents, but the technology itself; or in Ihde's formula: I → technology –(-world). The relation with the world may or may not be present, but remains in the background, whilst the subject engages with the technology.

It should be clear that a 'real', complete other in technology is not yet realised, although most of the fears of humankind are precisely directed at that: the fear that computers would evolve to such an extent that they will no longer obey people but take over control. It can even be argued that, just like the total embodiment of technology, the genuine otherness of technology can never be achieved since it would no longer be recognisable as one. To speak of a technology, it still has to be identifiable as such. In the above examples, the presence of the technology is at the core of the relations, even when there seems to be a transparency in its use. These three human-technology relations are characterised by the focal aspect. Ihde contrasts this with technologies that operate in

the background of our experience. He divides those background relations into four groups, according to the degree in which they form or become part of an all-encompassing natural environment. I will regard these relations as one group, with their shared characteristic being that of an absent presence, "not usually occupying focal attention but nevertheless conditioning the context in which the inhabitant lives" (Ihde 1990, 111). Typically in the case of a breakdown or failure, their presence and influence is noticed. Examples include electricity, heating, the birth control pill, technological cocoons like spaceships, the cyborg and other dreams of technological totalisation. These examples show how technologies can form the external conditions in which we live or how they internally alter our bodily state. They are not always visible or even actual; nevertheless they do influence and shape the human behaviour, its body and its perception. Many of these background relations can only exist in the case of digital technologies, which are characterised by their automatisation and increasing permeation of our daily environments without requiring our direct attention.

These human-technology relations indicate different ways in which technology affects the human body and perception from a phenomenological and hermeneutical perspective. The technological influence is not depicted as a force that only works one-way, but Ihde considers the interaction between the human subject and technologies and the new relations that arise from that. Ihde's theory implies a notion of perception that, aside from its phenomenological nature, has a hermeneutic aspect. To perceive is more than to experience physical sensations (even though Merleau-Ponty's phenomenology is in this aspect a bit more complex). To perceive is also inevitably to ascribe meaning to our sensations. Chiel Kattenbelt supports this approach which combines semiotics and phenomenology, asserting that meaning and experience are not mutually exclusive opposites (Kattenbelt forthcoming, 31). He refers to the pragmatist theory of signs of Peirce, which is a particular variant of semiotics that acknowledges that meaning is not inherent to an object. Instead, it is ascribed to it by the subject in the encounter with the object. Meaning exists by virtue of the human perception, not independent of it. I propose to incorporate these hermeneutic elements into my phenomenological approach.

The historical dominance of visual perception is very persistent, and even though there are theories of perception that incorporate the whole body, the notion of the disembodied eye is still part of our legacy. These theories that focus on the 'nobility of sight' do not deny the existence of physical sensations and its effect on perception; however, they maintain that these should be eliminated in order to discover the world 'as it is'. I have indicated that the relation between digital technologies and perception

require an approach that involves the human body using Ihde's account of human-technology relations. Since digital technologies are sometimes difficult to discern in these relations, it is important to find a way to identify their presence in order to examine how they affect human perception. In the next chapter, I will argue that art is particularly suitable to accentuate the processes and conditions of perception and can provide insights into how perception is affected by technology.

2. Aesthetic awareness: Art, technology and perception

In the previous chapter, I outlined the historical background of thought on perception, and I established phenomenology with elements from hermeneutics as my preferred approach to think about perception, in particular in relation to technology. The concluding section points towards ways in which a phenomenological approach can provide insights into the relation between digital technology and perception. In this chapter I will consider the problems that are posed by the habitual nature of perception. The processes of perception are automatic and are generally not consciously experienced. Additionally, the technological mediation between the subject and the world often aims to give an impression of immediacy. Perspective, resulting from a technology that mediates between the painter and the world, is an example of a representational strategy that shows the world 'as it is' without drawing attention to its mediation. I will discuss the accounts of Petran Kockelkoren and Maaike Bleeker on the impact of perspective and the way it conditions our perception of the world. They both point out the critical potential of the artist to reveal the mediations at work. The Formalist theory of Shklovsky underlines this potential of art to de-automatise the processes of perception, and introduces the term defamiliarisation. In this chapter, I will show how an aesthetic framework can create a critical awareness of perception, but also how it can domesticate and reinforce modes of perception brought on by new technologies. Lastly, I will argue for intermedial performance as the ultimate aesthetic framework for a self-reflexive mode of perception. Intermediality as a representational strategy is able to construct a critical awareness of technological mediation of our interaction with the world.

Habitual perception

The impact of digital technology on perception is hard to discern. There are two main reasons for that: firstly, digital technologies have become an integral part of the human environment – and even of the human body – and are increasingly 'invisible', and secondly, the processes of perception are habitual and are consequently hardly noticed.

In the last chapter, I already pointed out some issues that arise in human-technology relations when digital technology is concerned. Digitalisation has made the presence of technology in human-technology relations less manifest. In the case of embodiment relations, the technologies are internalised, miniaturised and embodied to such an extent that they are hardly, if at all, distinguishable from the body. Digital technologies in a hermeneutic relation often do not draw attention to themselves; however, much of what we perceive of the lifeworld is mediated by these technologies and their influence is therefore often underestimated in everyday life. The same goes for background relations to an even greater extent: without digital technology, humankind can probably not function, but who would think twice about the presence and accessibility of the many digital devices and facilities that are often automatic and integral to our surroundings? Finally, because of rapid developments in AI, resulting in the creation of robots and android, the relation to technology as an other becomes more complicated, dynamic and feasible. With humans becoming more bound up with technology and mechanical devices acquiring more human traits, the boundaries are slowly blurring (yet by no means do they disappear). I conclude from this that digital technologies which enhance, affect and condition human perception tend to withdraw and become part of the lived body and environment. Or to return to Merleau-Ponty, they are incorporated into the natural attitude of perception.

This brings us to the second argument concerning the habitual aspect of perception. Merleau-Ponty distinguishes a 'natural attitude' of perception, which Paterson describes as "the everyday interpretive stance, a taken-for-granted orientation to the world" (Paterson 2007, 21). The way the senses work together becomes habitual to the extent that we do not notice the interplay of vision and touch and the processes of perception. Merleau-Ponty calls this the 'trick' of perception, the way perception obscures its own processes. He often refers to the duty of philosophers and artist to shed this habituated attitude in order to "reawaken perception and foil its trick of allowing us to forget it" (Merleau-Ponty [1962] 2002, 66). Art has the potential to fulfil this purpose; it can provide a framework for an aesthetic and reflective attitude that makes one aware of the act of perceiving and its underlying conditions. Merleau-Ponty's thoughts on art support this argument, as Paul Crowther argues:

> the work of art, then, does not aspire to reproduce perception but rather to give a senuous interpretation of it (…). Everyday perception gives us constant encounters with 'visibilia', but the demands of life are such that we do not have

> time to take note of the various 'invisible' relations which define these situations (Crowther 1982, 145-46).

Art can point towards those processes of perception that normally go unnoticed, and it makes visible the premises and conditions on which perception is built. However, critical awareness or reflexivity is not a given consequence of an aesthetic framework; art can just as easily hide the way it conditions the perception of the spectator

Concealing the construction, obfuscation of mediation

The technique of perspective in art shows the power of art to regulate vision and condition perception without drawing attention to the act of perceiving and the involvement of the subject's body. Merleau-Ponty already criticised the use of perspective in painting, arguing that it renders a false impression of how we perceive the world:

> on the canvas, [the painter] arranges things such that what he represents is no more than a compromise between these various different visual impressions: he strives to find a common denominator to all these perceptions by rendering each object not with the size colours and aspects it presents when the painter fixes it in his gaze, but rather with the conventional size and aspect that it would present in a gaze directed at a particular vanishing point on the horizon (Merleau-Ponty [1948] 2004, 40).

This creates a distance between the viewer and what is represented in the painting, despite the aim of perspective to draw the viewer in. As I have already mentioned in the previous chapter, the use of perspective constructs a point of view within the representation which is separate from the subject who observes the painting. This ideal gaze implied in the representation does not correspond to the way we perceive the world; it eliminates the body and the subjective point of view of the perceiver who is in front of the painting. Merleau-Ponty was a great admirer of Cézanne and cubist painting, since their composition of different points of view does justice to the various impressions that arise from our perceptual experience

Petran Kockelkoren looks in particular at the relationship between art, technology and perception (Kockelkoren 2003). Technology mediates the perceptual experience of human beings; it temporarily decentres the subject, it alters the subject's view of her position in and relation to the world. After that, a decentring occurs in which

the subject acquires a new centre in which the technological mediation is integrated. When in first instance the technology disturbed the sensory relations to the world, now a new mode of perception has been established that incorporates the technology. According to Kockelkoren, art can ease the recentring and help install the new mode of perception. In other words, art can domesticate new technologies. Kockelkoren uses the example of the introduction of the train in the 19th century. This new technology caused such a disturbance in perception that people got physically ill. The relations between the senses were disarranged by the train: what people smelled did not correspond to what they could see; the speed of movement they could deduce from their vision did not match their bodies which were at a standstill. People had to appropriate the technological mediation "by embodying the train as a moving medium of perception" (Kockelkoren 2003, 17). So the embodiment of technology, also central to Ihde's theory, plays an important role for the historical variability of perception. Fundamental to this idea is to conceive of the body not as a neutral and stable concept: "[t]he body is not some universal substratum on which cultures graft their different linguistic attributions of meaning, from above as it were, but the senses are sensitive to historical fluctuations" (Kockelkoren 2003, 16). The body is constantly subject to change and a new technology can cause severe physical reactions when it mediates the bodily perception. This is where Kockelkoren assigns the artist with an important task. He calls it a disciplining process that conditions the body and teaches the senses the new perceptual relations brought on by the technological mediation. In the case of the train, fairground attractions were developed which simulated the experience of riding a train by unrolling canvases that depicted sceneries in front of imitation coupés. In this way, the spectators were introduced to perceiving in motion. For a more selective audience, futurist painters tried to capture the new perception of movement by depicting scenes seen from a fast-moving train or car.

Kockelkoren does not advocate a form of technological determinism when he stresses the cultural conditioning of perception through technology. Rather, in a similar way as Ihde, he conceives of technology as mediating between the subject and the world, in the process altering the human body and perception. The subject eventually incorporates the effects of that technology and adopts a new centre. Additionally, technologies do not originate in a vacuum; "[they] emerge in a social process, and that process is not marked by monocausality" (Kockelkoren 2003, 35). Using the example of perspective, Kockelkoren sets out to explain how a technological instrument can produce new metaphors and manipulate sensory perception. In his view, perspective resulted in the birth of the autonomous subject and consequently the autonomy of art.

This is a strong thesis which certainly has its flaws, but it does give an account of how new scientific and philosophical concepts, in particular the Cartesian notion of the mind/body split and the dominance of the eye as discussed in the previous chapter, are entangled with technological developments and new sensory regimes. Panofsky has written extensively on the subject of linear perspective and how it contributed to the notion of an autonomous subject. "Panofsky argues that linear perspective was not only the formalisation of a natural use of the senses, but rather introduced a new sensory regime to replace the medieval variant" (Kockelkoren 2003, 39). Perspective painting transforms the world into an 'external scene' and it separates the viewer from the representation. Even though he largely agrees with Panofsky, Kockelkoren objects that Panofsky did not account for the materiality of the technological mediation. He explained the invention of perspective as something that arose from a (later) Cartesian epistemology based on a geometrical understanding of the world. Kockelkoren, on the other hand, understands the technique of linear perspective and the new epistemology as "co-evolving phenomena" that are both connected to the material conditions of the technological mediation.

Jonathan Crary separates perspective as a geometrical metaphor or concept from the instrument of the camera obscura that enabled the development of perspective. This instrument that operated as a scientific metaphor for the functioning of the eye separated the eye from the body and "installs an uninvolved observer" (Kockelkoren 2003, 47). Kockelkoren points to the even earlier instruments that enabled the painter to paint using perspective. Glass panes separated the painter from the scene he was depicting and through this act the painter's body was subjected to the instrument. The body was turned into an object, the technique of perspective did not allow for subjectivity or bodily involvement. Anatomy theatres reflected this view of the body as an object by staging dissections for an audience and contributed to the domestication of this new sensory regime. What makes this account of technological mediation in relation to perspective slightly problematic is that perspective is described as a technique resulting from a technological instrument, a metaphor that describes a sensory regime and a mode of perception that accompanies it, and an artistic style of depicting images. The technological mediation, the artistic technique and the new sensory relations that are established are never clearly separated by Kockelkoren. This also poses problems for the domestication through art, since perspective was first developed in painting. I think we should see perspective as the result of technological mediation between the world and the subject, even though it could also be argued that it is the visualisation of the process of mediation.

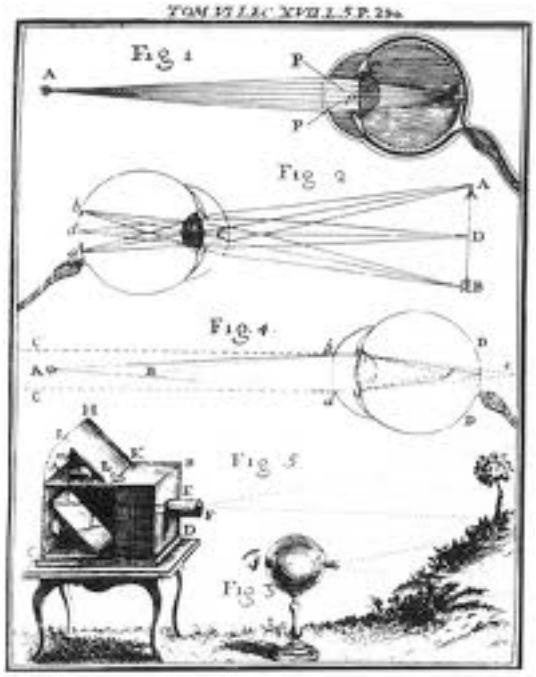

Figure 1. The camera obscura as a metaphor for the human eye

Kockelkoren's account of the relations between material conditions and sensory perception is still useful. By highlighting the historical and cultural contingency of sensory regimes and the philosophical and scientific concepts they produce, he reduces the universal claims of these regimes that stretch far beyond their historical specificity and are applied retroactively, and puts them 'in perspective' as it were. The question is, if the body and its senses are subject to historical and cultural change, how is it possible for the artist to uphold an autonomous position outside of the sensory regimes? The artist's body is also subject to cultural disciplining, as Kockelkoren argues after Foucault, so how can the artists form a criticism of these conditioning forms? To answer that question, Kockelkoren relies on Plessner's concept of human 'ex-centricity'. This notion presupposes that humans have a natural ability to distance themselves even from their own being. Their relation to the world is always already mediated and they are characterised by a 'natural artificiality'" (Kockelkoren 2003, 27). This inherent ex-centricity creates a paradoxical situation. We are always looking to recentre and win our autonomy back from the new technologies we have embodied, but "at the same time we owe our current notion of autonomy precisely to technological mediations of this kind (Kockelkoren 2003, 70). However, there are always numerous sensory regimes operating simultaneously and various technologies that discipline the body and senses in different ways. Because of this friction and the lack of a centre for humans, art has the critical potential to expose the technological mediation of the senses. This notion of art

rests on the classical conception of aesthetics (*aesthesis*), which mainly refers to sense perception.

In *Visuality in the theatre: The locus of looking*, Maaike Bleeker argues that vision is never neutral, but is always embedded within a cultural and historical context (Bleeker 2008). What appears to be 'just looking' is determined by the relationship between the one seeing and what is seen. Bleeker uses the term 'visuality' to denote "the distinct historical manifestations of visual experience", arguing that vision is subject to "the tacit rules of a specific scopic regime" (Bleeker 2008, 1-2). Theatre is an art form that is very suitable to investigate in relation to visuality, since it constructs a relationship between the ones seeing and what is seen. However, for a long time theatre, in order to appear as true, has tried to hide this relationship; in the quest to achieve immediacy, its "presentational strategies (…) have to be aimed at obscuring or erasing traces of its own condition of being staged" (Bleeker 2008, 3). Theatre of the 19th and 20th century reinforces the Cartesian notion of a disembodied eye and the illusion of vision as true and objective by means of "strategies of 'staging' the relation between the one seeing and what is seen in such a way as to obscure precisely the relationship between what is seen and the subjective point of view from where it is seen as such" (Bleeker 2008, 5). Perspective is such a strategy that constructs a disembodied eye and claims to represent the world 'as it is'. It strives for immediacy, and it reduces itself as a framework that orders and produces reality. Even though it is known as a pictorial strategy, Bleeker shows that it is also used in the theatre.

In dramatic theatre, there is a teleological framework that structures what is seen into a coherent world, hereby aiming for an immediacy that will hide the representational strategies. Just as in perspective painting, the spectators become detached from their bodies since they are occupying an ideal point of view constructed by the representation. They are invited to enter the world represented on stage by taking up the position of the disembodied eye, which requires them to leave their bodies behind since they are not accounted for within the representation. What support this mode of perception is that the spectators are placed in a dark auditorium in a fixed place and are never subject to being seen themselves. They are physically separated from the world represented on stage, which makes it even easier to forget the relationship between the spectators and the world on stage. Bleeker calls this strategy 'absorption', in which the spectator takes up the position as the one seeing as it is implied in the representation. Set against this is theatricality, which aims to reveal the subject position that is constructed by the performance. Bleeker points out that nowadays the representational strategy of perspective has become visible to such an extent that it "has

lost its power to produce convincing representations of 'how it is'" (Bleeker 2008, 99). However, this transforms its function into a theatrical one, since it explicitly shows how the relationship between the subject and the representation is constructed. In this way it can become a mode of retheatricalisation, which I will discuss later.

While theatre that aims to create an illusion keeps its audience in the dark, avant-garde theatre frees the spectators from their constricted place and centres its attention on the relationship between the audience and the stage. The construction of the theatrical event is made visible, and the spectator becomes free to ascribe meaning at will or "simply experience the objects presented to them in their concrete being" (Fischer-Lichte in Bleeker 2008, 65). However, this way of thinking still presupposes that things can be perceived 'as they are', and that perception is a neutral process. Bleeker stresses that this account of spectatorship does not support the notion of subjective vision, since "[t]he notions of 'subject' and 'subjectivity' imply a critique of the idea of the individual as an agent free to assign meaning" (Bleeker 2008, 66). The spectator is by definition not free to attribute meaning at will, and the idealistic explanation of avant-garde theatre does not acknowledge the process of cultural conditioning of the subject and the way its perception. In that sense, the way this form of theatre obscures the mediation between the subject and the represented world is similar to that in perspective.

Both Bleeker and Kockelkoren argue that perspective is a technique or representational strategy that has given rise to a new sensory regime. The use of perspective constructs a disembodied eye and has contributed to the notion of a separation between mind and body. The aim of this mode of representation is to draw people in, and it has become a model for what we perceive as natural or realistic. Even though their ideas on the role of the artist differ, Kockelkoren and Bleeker both indicate that the critical potential of art lies in its ability to reveal the (technological) mediation between the subject and the world, or between the spectator and what is represented. This echoes Merleau-Ponty's idea that art should create an awareness of the processes of perception in the subject. In order to do this, we should leave the art of perspective far behind and turn to a different artistic device: the strategy of alienation and defamiliarisation.

To make the stone stony: Shklovsky and the art of defamiliarisation

The idea that art can create a self-reflexive perception and make one critically aware of its sensory perception is found in the Formalist theory of Shklovsky. Even though his

theory mostly concerns the art of poetry, his ideas about the essence and effect of art are illuminating for all art forms. Instead of domesticating sensory perception and easing the instalment of a new scopic regime, Shklovsky regards defamiliarisation and deautomatisation of perception as the primary effects of art. Like Merleau-Ponty, he argues for a reawakening of perception which processes are so habitual to us. The habit that occurs after the umpteenth repetition of a sensation causes perception to become automatic. "In this process [of automatisation] (…) things are replaced by symbols. (…) we do not see them in their entirety but rather recognize them by their main characteristics" (Shklovsky 1965, 11).

> and art exists that one may recover the sensation of life; it exists to make one feel things, to make the stone stony. The purpose of art is to impart the sensation of things as they are perceived and not as they are known. The technique of art is to make objects "unfamiliar", to make forms difficult, to increase the difficulty and length of perception because the process of perception is an aesthetic end in itself and must be prolonged. *Art is a way of experiencing the artfulness of an object; the object is not important*" (Shklovsky 1965, 12; original emphasis).

Defamiliarising an object can be achieved by describing it as if the writer perceives it for the first time. An extensive description that not once calls the object by its name impedes the immediate recognition of the object and slows down the process of perception. Hence, the prolonging of attention de-automatises perception and in this perceptual process, the desire and struggle to perceive the object lies the value of the artwork. Shklovsky uses various examples of Tolstoy's writing, in which he describes acts and objects as if they were completely new to him and thus transforms the habitual perception of them. I would like to refer here to an example of a performance, which is the only art form that allows the spectator to be in the same space-time continuum as the object or world that is represented. The process of perception can be experienced much stronger than in the case of poetry, where we can only read and imagine this process. I will discuss the special case of performance in further detail later, but for now my experience during the performance *Wij* (We) by Roos van Geffen will be illuminating with regards to this method Shklovsky discusses.

I was sitting in a dark cubicle with a glassless window in front of me. My eyes could not penetrate the darkness. After several minutes I thought I could see a light on the other side of the window, just a few metres in front of me. As the light grew stronger, I was desperately trying to discern what it was that I was seeing. At first I thought it was

a projection of some kind, but slowly the outlines of a face became visible. Because it took so long for the face to 'materialise' in my vision, I heavily doubted my perception and struggled to make sense of what I was seeing. During the rest of the performance, scarcely lit faces of performers slowly drifted by, in and out of sight, little by little closing in on the spectator until every detail was visible before disappearing into darkness again. The artist impeded and prolonged the spectator's perception which resulted in a completely new sensory experience. The object, the face of a performer, is something we see every day, but only now did I look at it so intensely and perceived it as if it was the first time I ever saw one.

Figure 2. *Wij* - Roos van Geffen

Shklovsky addresses here what is important in order to discover the mediation between the subject and the world. To redirect the attention to the act of perception and the conditions, limitations and powers that govern it will create awareness and the possibility to position oneself within these powers. Through the construction of self-awareness in the viewer, art can resist the scopic regimes or at the least reveal their power. This deautomatisation of perception is particularly important in the digital age to become aware of the increasing mediation of technology between the subject and the world, since digital technologies are adept in withdrawing themselves from sight and becoming habitual.

Silvija Jestrovic discusses the relation between the Formalist notion of defamiliarisation and the concept of re-theatricalisation (Jestrovic 2002). Shklovsky's

term of defamiliarisation had its equivalent in the theatre in the form of Berthold Brecht's *Verfremdung*. This dramaturgical strategy was aimed at an effect of estrangement by shattering illusions in the theatre. Jestrovic discusses the work of other early 20th century theatre directors, such as Meyerhold and Evreinov, who aimed at re-theatricalising theatre. Jestrovic argues that re-theatricalisation is a way to highlight the theatricality of theatre and, in a similar way to defamiliarisation, to make the familiar strange. As Jestrovic states, "theatricality functions as a distancing device when it foregrounds what is immanent to theater, calling attention to the fictionality and incompleteness of the representation" (Jestrovic 2002, 42). She distinguishes two variants of theatricality: the first is re-theatricalisation of theatre, hereby "foregrounding its self-referential aspects", and the second is a theatricalisation of life (Jestrovic 2002, 44). This second notion of theatricality is mostly seen in Evreinov's work, who considered this to be something that existed outside of art as well, in the form of an innate human quality. The first meaning is closely related to Shklovsky's use of defamiliarisation, as an artistic strategy aimed at rediscovering life, instead of a transformation of everyday life into the theatrical. Jestrovic analyses the work of Meyerhold to illustrate this use of theatricality.

Meyerhold uses stylisation to emphasise the artificiality of theatre; hereby, "Meyerhold's theatre strongly relies on anti-illusionistic representation and defamiliarization devices" (Jestrovic 2002, 44). One element that is characteristic of the style of Meyerhold is the changing role of the dramatic text. Instead of regarding the text as the main element of the performance, Meyerhold considers it to be one of the components. In a time where theatre was often seen as in the service of the text, he produced plays in which the actor's body formed the constitutive element of the theatrical event. Jestrovic uses the example of his staging of Gogol's *The Inspector General*, which Meyerhold adapted to convey his interpretation of the text. He introduces a stage double of the main character that refers both to other literary works and through its mechanical features to other forms of theatre, namely the puppet theatre. In this way, Meyerhold created "a distancing effect by violating the conventions of staging of the Russian classic and subverting the audiences expectations" (Jestrovic 2002, 46). The second element Jestrovic discusses is the revealing of the aesthetic devices in theatre, which is similar to the strategy of baring the devices of plot structure which Shklovsky discusses in his study of Stern's *Tristram Shandy.* In a theatrical situation, this involves "showing in full view of the audience the process of theatricalization" (Jestrovic 2002, 46). This strategy is aimed at breaking the illusion of the theatre, by thematising the process of making theatre. In an example, Meyerhold

built a puppet theatre on stage in order to show the audience the mechanisms of this theatre and the actors who control the puppets. By creating a theatre within a theatre and crossing different theatrical conventions, he constructs a self-referential performance. Finally, Jestrovic concludes with the last element of Meyerhold's strategy: trans-theatrical inscriptions. In his performances, he uses elements of other theatrical styles and references to other productions and other works of art. By combining different conventions and evoking memories from other works, he disrupts the automatised perception that is bound up with certain conventions and surprises the audience. Moreover, each theatrical style is accompanied with certain performative and ideological structures of that historical period. The combination of different styles can foreground the contemporary hidden conventions and ideologies. All of these elements ultimately come down to the end: to reveal and disrupt the processes and conventions of the theatre in order to break through the automatised perception of the audience and create an effect of defamiliarisation. This is the purpose of re-theatricalisation of the theatre.

It is important to place a footnote to this theory of defamiliarisation. Alienation has become a common strategy nowadays. To 'bare the device' and make the structures of representation visible does not necessarily lead the spectator to take a critical viewpoint. It is hard to speak of a dominant style or conventions, since it has become accustomed to combine different styles and different art forms. We can barely speak of conventions in the theatre, since many theatre makers take it as their goal to break them. In other words, it is hard to surprise the audience these days. In his article, Shklovsky already warns for this condition when he discusses the effect of defamiliarisation devices. As an example, he uses the stylistic device of disordering the rhythm in poetry so that it cannot be predicted in order to keep the reader or listener on its toes. However, if this disordering becomes a convention, it will be ineffective as a device that hampers the language and it will no longer de-automatise perception.

> Just as the body in receiving a series of varying concussions, must keep the muscles ready to meet the most violent of them, as not knowing when such may come: so, the mind in receiving unarranged articulations, must keep its perspectives active enough to recognize the least easily caught sounds. And as, if the concussions recur in definite order, the body may husband its forces by adjusting the resistance needful for each concussion; so, if the syllables be rhythmically arranged, the mind may economize its energies by anticipating the attention required for each syllable (Spencer in Shklovsky 1965, 23-4).

In a similar way, the laying bare of aesthetic devices and the disruption of conventions has arguably become so familiar to contemporary audiences that it no longer has the desired effect of alienation and a renewed perception. Art will always have to search for new strategies to defamiliarise the spectator; when these strategies have lost their alienating effect, they also lose their critical potential. In order to provide critical perspectives on perception, the human position in society and everyday life, art has to keep finding new ways to de-automatise perception.

Performance and intermediality: Towards a self-reflexive mode of perception

Bleeker coins the term 'corporeal literacy' in her article "Corporeal literacy: New modes of embodied interaction in digital culture" to examine the cultural mind-set that emerges from the engagement between technologies and bodies (Bleeker forthcoming). Our bodily practices involved in perception are affected by the materiality of the technologies. Technologies mediate the interaction between human bodies and the outside world and thus help shape more intangible concepts like the human mind and subjectivity (Bleeker forthcoming, 41). For example, it has been argued by several scholars that the alphabet and the practice of writing have profoundly influenced our bodies and ways of thinking. Derrick de Kerckhove discusses the changes brought on by the invention of the phonetic alphabet and the role that Greek tragedy played in installing these changes for an audience that was largely illiterate. He describes writing as "a revolution of sensory relationships pertaining to the major modes of transmitting and exchanging information on a personal and a social level" (De Kerckhove 1980, 24-5). For example, writing had an effect on the functioning of memory. Since it was possible to write memories down, the information became abstracted and the process of memory was separated from the body. Written language established a hierarchy of mental processes over physical processes. This contributed to the desensorialisation of Greek culture, as De Kerckhove boldly states (De Kerckhove 1980, 24). The theatre helped to control the body in favour of a more mental process of perception by placing the body in a fixed position and repressing its physical reactions. In this way, even the illiterate masses were taught the changing modes of perception brought on by writing. De Kerckhove even goes so far as to say that the technology of written language ultimately caused a shift of neurological activities from the right to the left hemisphere of the brain. While De Kerckhove may be an extreme example, in essence his way of thinking is similar to Bleeker, who stresses "the intimate intertwining of bodily practices of perception and cognition and the technologies of writing and print, and how this

intertwining not only impacts the perception of written language but also how we perceive and make sense of other things" (Bleeker forthcoming, 41). Bleeker's conception of corporeal literacy refers to this phenomenon:

> literacy, thus understood, more than describing the capacity to read and write, denotes culturally-specific synaesthetic modes of information processing brought about by culturally specific practices of noting down, storing and transmitting information. These practices, therefore, beyond simply providing useful tools, profoundly influence how we think and understand (Bleeker forthcoming, 40).

Bleeker stresses the centrality of the body in our perception, consciousness and interaction with the world. She contends that these bodily practices and the mediation that occurs in these practices often go unnoticed, or take place unconsciously. Performance has the potential to stage these processes and "bring to conscious awareness the facilitations, affordances, restrictions and demands played out on the body" (Bleeker forthcoming, 42).

Following Bleeker, I argue that theatrical performance is in particular useful and powerful as an aesthetic framework that foregrounds and questions changing modes of perception. I will distinguish between performance as an art form and performative situations. A performative situation implies "an act that constitutes what it represents" (Kattenbelt forthcoming, 30), which takes place in the here and now. It also involves the act of staging oneself in front of an audience, who partly constitutes the performative event. A theatrical performance is defined by Kattenbelt as a performative situation that is perceived from an aesthetic orientation (Kattenbelt forthcoming). Thus, at the core of theatrical performance lies the physical copresence of the performer and the spectator. According to Kattenbelt, self-reflexivity and self-referentiality is characteristic to the very nature of the aesthetic situation. Because of the aesthetic framework, the spectator "is pre-eminently an experiencer who also reflects herself as being a subject of experience" (Kattenbelt forthcoming, 31). Furthermore, because a performance constitutes and stages a world, it necessarily refers to itself as the creator of that world. In theatrical performance in particular, the reciprocity of the encounter between the performer and spectator makes the spectator even more aware of herself as a perceiver. However, I want to stress that this is a potential of performance and of the aesthetic situation that is not always realised. In many cases the performance tries to erase the way it constructs the representation and the way it positions the spectator within that

representation for the sake of transparency. When performance uses a perspectival strategy of representation, the subject is often separated from the representation by the so-called 'fourth wall' and the physical copresence that is so typical of performance is essentially eradicated. However, what fascinates me about performance is the potential for a physical encounter between the spectator and performer that involves the whole body. Unlike many art forms that mostly appeal only to the eye and/or hearing, in theatrical performance the spectator is an embodied subject that provides the stage for the performative situation. This embodiment in theatre is what makes it so suitable to teach the spectator to become more corporeally literate. As Bleeker argues, new technologies are increasingly aimed at involving the whole body and make use of haptic interfaces; this requires us to become "more consciously aware of corporeal dimensions of the way in which we read and process information" (Bleeker forthcoming, 43). Performance can do just that.

Intermediality is a strategy specific to performance that lays bare the processes of perception as they are affected by different technologies and media. This representational strategy has a similar effect as Shklovsky's defamiliarisation but with respect to the role of technological mediation in our perception of the world. As Kattenbelt argues, theatre is a hypermedium; it can incorporate all the other media without affecting their specific mediality by means of staging them (Kattenbelt 2006, 37). Because of this quality, performance has the ability to uncover the mechanisms of media technologies; staged media "become visible as media, as means of communication, each with their own materialities, medialities and conventions of perception" (Groot Nibbelink and Merx forthcoming, 225). Intermediality is a widely used concept, which is hard to define. It is often employed in a literary context, or confused with terms like multimediality. However, I will follow Kattenbelt in this respect, who distinguishes between multi-, trans- and intermediality. In this context, it is not necessary to define all three terms, since I will only focus on intermediality. Jürgen Müller clarifies the specificity of intermediality: "a medial product becomes intermedial, when it transfers the multi-medial togetherness (*Nebeneinander*) of medial citations and elements to a conceptional cooperation (*Miteinander*)" (Müller in Oosterling 2003, 36). In the interaction of different media, their conventions and modes of representation become visible and are redefined in the process. Thus, intermediality makes the spectator aware of the constructedness of the media and their perception through these media. As Kattenbelt states, intermediality has as its effect the redefinition of media and the resensibilisation of perception (Kattenbelt forthcoming, 35). In this way, intermediality contradicts a specific quality of digital technologies that I have signalled

in the previous chapter, namely the aim for transparency. The idea of transparency, or transparent immediacy as Bolter and Grusin termed it, is to give the spectator the sense of having direct access to the represented world; to achieve this, the technological mediation is concealed. Instead, intermediality is closer to hypermediacy, as Kattenbelt argues, which draws the attention to the mediation itself (Kattenbelt forthcoming, 35).

Liesbeth Groot Nibbelink and Sigrid Merx argue in "Presence and perception: Analysing intermediality in performance" that intermedial performance requires a different, flexible method of analysis. Since the body has encountered its digital double in performance, "perception is complicated by a continuous interplay and interconnectedness of modern media" (Groot Nibbelink and Merx forthcoming, 218). The different media incorporated in intermedial performance address the senses in conflicting ways. This disturbance of the senses as a result of the interplay between media creates a self-reflexive mode of perception. The new contextualisation of the media breaks with the audience's expectations and in this process makes the expectations and conditioning of the media visible. The way Groot Nibbelink and Merx talk about intermedial performance blurring the distinctions between presence and absence, mediated and unmediated, real and virtual, resembles Lavender's discussion of the co-existence of opposites in digital culture. They both consider these dualisms as constitutive of each other instead of mutually exclusive oppositions. Where Groot Nibbelink and Merx talk of the intersections of these axes as 'knots', Lavender compares them to the nodes in a network. It should be clear that the simultaneity of apparent oppositions is characteristic of digital culture; the relation between various media can shed light on the supposed boundaries between these concepts and make us aware of how the simultaneous operation and interaction of media blur these boundaries.

In order to analyse intermedial performance, Groot Nibbelink and Merx argue against the use of a rigid method, since intermedial performance is flexible and transformational. The mode of analysis needs to incorporate the embodied experience of the spectator and the context of digital culture in which the performance is situated. They propose a mode of analysis that uses concepts as its main analytical tools, since they are able to cross various disciplines and historical boundaries (Groot Nibbelink and Merx forthcoming, 219). Groot Nibbelink and Merx locate the intermedial both in the body of the spectator and in the structuring of the performance. Like Kattenbelt, they thus do not oppose phenomenology (the experience of the spectator) and semiotics (signs that exist in the performance) to each other, but they include them both to discuss the functioning of intermediality. Accordingly they distinguish between two types of dramaturgical strategies in intermedial performance: those concerned with ways to

structure the stage and those concerned with ways to address the spectator. In both cases, intermediality aims to foreground these acts and make them visible to the audience. Unlike representational strategies like perspective, as I have discussed above, intermediality "increases the spectator's awareness of employed strategies" (Groot Nibbelink forthcoming, 225). As I described above, the defamiliarising effect of intermediality also has the chance to run off. It is no longer shocking to encounter media on stage, nor does it necessarily create a critical attitude when the performance makes its own construction visible. These are all things the audience gets used to, just like we have grown accustomed to the mediation of our perception in everyday life by the constant presence of technologies. To uphold the critical potential of intermediality, artists have to search for new strategies that do not necessarily shock or confront the audience, but still manage to raise their awareness of the familiar processes of mediation in everyday life that go unnoticed. As Groot Nibbelink and Merx conclude, "producing colliding sensual impressions in performance can mobilize a process of knowing by making these acts of mediation once again perceptible" (Groot Nibbelink and Merx forthcoming, 227).

3. Making the invisible visible: Intermedial performance as critical framework

Now that I have discussed some strategies of art, and in particular performance, that can raise awareness of the technological mediation and the processes of perception, I will put this to the test. I discuss several performances with regards to how they make the spectator aware of their relation to technology and how this affects their perception. I have chosen intermedial performances that can highlight in particular the aspects of digital culture and the changing concepts that accompany digitality. Each of these performances I have seen myself, since I believe this is essential for an analysis. In particular in the case of performances in which the spectator becomes a participant and is actively involved in the construction of the performance, it is vital to have experienced this yourself. As a result, my analysis of these performances is highly personal and subjective; however, I will try to describe my experiences as understandable as possible. Of course, the construction of a self-reflexive mode of perception will not always succeed in every spectator and is something that one necessarily has to experience for oneself; still, I believe that an insight in the way the performance attempts to construct such a self-reflexivity can be of value to the reader. The performances I discuss are mostly by Dutch and Flemish artists, since I have the most opportunities to visit these. I have included one performance that I have not seen. This concerns the transgenic art of Eduardo Kac. Since this is an artwork that consists not so much of a performance in front of an audience as the actual gesture of the artist creating new life forms, I do not think I have missed anything crucial to the understanding of his work. I have divided the performances according to the type of human-technology relations presented by Ihde that they fit best. In my analysis of these performances I will address various concepts that are related to the changing modes of perception, affected by digital technologies. I do not pretend to give a complete overview of performances that investigate the relation between digital technologies and perception. Instead, I chose these performances as illustrations of how they can offer insights into human-technology relations and construct a self-reflexive perception by use of intermediality.

Embodiment relations

CREW: Between the virtual and the material

My vision is altered by heavy, uncomfortable video goggles that shut my eyes off from my physical surroundings and display a different environment. When I move my head or my body, the viewpoint of the video image moves with me and thus creates sense that I am inside this virtual environment. My hearing is altered by headphones through which a voice emanates. This voice calls me by my name and guides me during the performance. Since both my eyes and ears are disconnected from the physical world, the only thing that grounds me in space is my sense of touch. I can still feel the ground under my feet; I connect my movement to the images on my goggles. The touch of the performer reaffirms the presence of my body. The incongruences between my sight and movement undermine a harmonious functioning of the senses. I feel disoriented, even slightly nauseous, and I am suspicious of my own perception. Afterwards, when all the equipment has been removed, I walk back towards the train station feeling light but with a fresh look at my familiar surroundings.

Figure 3. EUX – CREW. The immersant looks for her way out while the screen displays her point of view.

There are several issues with regards to the relation between digital technologies and perception that come to light in this performance by CREW. The performance, called *EUX* (2008), is one of the many works this group made using digital interfaces such as the head-mounted display to create an immersive virtual environment in which the spectator, called 'immersant' by CREW, moves around. These performances create an experience of the embodiment relations of technology in the immersant. The physical sensation of the immersant affected by the use of digital technologies forms the main topic of the performance. I will discuss *EUX*, since this is the only performance by CREW I have experienced and in order to analyse a performance that takes place on your body it is essential to have undergone this experience yourself. Furthermore, *EUX* is representative in its use of technologies of the immersive digital performances CREW is known for.

In the performance, technological extensions mediate the immersant's perception of the world in a very drastic way. The immersant does not just look *through* these extensions, but the extensions produce a whole new sensory environment. Only the sense of touch is still immediate, or unmediated (I do not consider the sense of taste and smell, since they were not particularly stimulated in the performance). The purpose of these extensions is to create an immersive virtual environment. Oliver Grau has pointed out that this is not an entirely new phenomenon, but since classical antiquity visual art has strived to be immersive (Grau 2003). Immersion is often linked to the concept of virtual reality, or VR. Grau's use of the concept of virtual reality strongly emphasises the illusion produced by images. He refers to examples in art history, such as fresco rooms, painted ceilings and panoramas, as all-embracing image spaces. In his own words, the intention of virtual realities is "to install an artificial world that renders the image space a totality or at least fills the observer's entire field of vision" (Grau 2003, 13). These image worlds are different from most paintings, television, cinema and theatre with a proscenium stage in that they are not delineated by a frame that is visible to the spectator. For example, perspective painting also offers an illusion to a certain extent; but because the image is clearly framed, the represented world is separated from the world which the spectator inhabits. The specificity of virtual reality lies in the illusion of being inside the world of the image. The world of the spectator and the world of the image coincide and turn the spectator into an immersant.

The term 'virtual reality' has been widely used for various phenomena, but I will follow the understanding that Dixon offers, namely a computer simulated three-dimensional environment in which the user can navigate freely (Dixon 2007). Because of the 360-degree view and the ability to navigate in virtual environments, the user is

inside the computer-world instead of facing a screen. In some cases, it is even possible to touch and move objects in the virtual world. This virtual world exists by means of technological extensions, most importantly a head-mounted display (HMD). This device is generally a helmet or goggle with video images projected inside, right in front of the eyes. Sometimes gloves are used to enable the immersant to touch objects in the virtual world. CREW uses a slightly different technology than virtual reality, mostly to the same effects. Instead of a software environment, they use omni-directional video (ODV) that allows the user to move around inside the panoramic video and take up any point of view (Vanhoutte and Wijnants forthcoming, 70). The images thus tend to be more realistic and combine previously filmed material and live video feed, instead of a constructed software environment. I will from here on refer to CREW's immersive worlds as virtual environments, or VE's, to distinguish it from the technology of VR. The term 'physical environment' is equally confusing, since VE's have a strong physical aspect, so I will contrast virtual environments with material environments.

Even though VR is in technical terms different from the use of ODV, both cases aim to create immersive virtual environments. These technologically produced environments are clearly different from Grau's early versions of virtual reality. The most important difference is that the point of view onto the represented world is located in the subject, the immersant, and not in the representation. Moreover, the entire existence of the VE is dependent on the subject and is created through her body. The fact that the body is central to the experience of immersion contradicts the view that VE enables the subject to leave her body behind. In her article on embodied virtuality N. Katherine Hayles recounts, and ultimately rebuffs, the idea of cyberspace as a disembodied medium (Hayles 1996). She recites how people like Hans Moravec see robotic technology as the way to fulfil the dream of the mind transcending the body. By 'downloading' our brains, which he equates with human subjectivity and consciousness, into a computer, humans can live forever and the flawed, vulnerable body becomes superfluous. This might seem like an extreme example, and it is by no means representative of most contemporary beliefs, but it is worth to pause and realise how persistent this idea of the transcendence of the mind from the body has been. The apparent disconnection from the body that VE's and cyberspace enable seems to encourage this. However, even though our body and its senses have become malleable and extendable through technological mediation, Hayles adheres to the idea that "any reconfiguration of the body must necessarily affect how subjectivity is constituted" (Hayles 1996, 26).

In a similar way, Jacquelyn Ford Morie argues that developments in cognitive science have contributed to the general acceptance of the idea that there is a direct constitutive connection between the body and the brain/mind (Morie 2007). This is certainly no different in the digital age. Morie stresses the crucial role of the body in VE's:

> VE's engage the body as kinaesthetic input via the specialised interface devices that not only permit but *require* bodily actions to be performed sensorially, kinaesthetically, proprioceptively – within a full 3D spatial, yet virtual construct (Morie 2007, 126).

The connection between the 3D visuals and the movement of the body creates the immersive sensation. Morie goes on to say that the embodiment in VE's has a dualistic nature. She says that being in a VE is a simultaneous Being within the virtual and the real (material) world. Like other VR-critics, she ascribes to this experience an almost religious or spiritual dimension and compares it to the state shamans enter during rituals. This Being would entail the lived body that experiences the virtual world and the physical body that remains in the 'real' world. According to Morie, the goal of immersive environments is to make the subject forget these dual perceptions. I am inclined to reject the idea of two bodies and rather see my one body as inhabiting two worlds. It is when both the virtual world and the material world come together that the experience of immersion is strong. The virtual becomes physical because we experience it with our bodies. The virtual world is projected onto our bodies and only exists by virtue of our bodies. Because our somatory and kinaesthetic sensations relate to the virtual world, we feel present in this world. The body is what connects virtual environments with material environments and virtuality is thus by no means less embodied. VR performances do not always use body movements in their immersive experience and indeed aim for a certain sense of disembodiment. Other performances use physical movement in an unfamiliar way. In *Osmose* by Char Davies, the point of view and spatial position in the visual world is connected and altered through breathing and balancing of the body. These physical acts, measured through a motion-capture vest, acquire a new function. In *EUX*, the movement connects quite naturally to the visual input. The immersant can walk around through the virtual environment as in the everyday world, with the exception that she cannot touch the objects.

There are limits to the degree of immersion. The longing for complete immersion is a paradox in itself. If we imagine a completely immersive environment, in

which all of our senses are addressed in order to fit the virtual world so they seamlessly correspond to the environment, this would be just like the 'real' world. This is similar to the paradoxical desire for the total embodiment that Ihde described which I discussed above. We cannot be totally submerged by the illusion, because then we would not know that it is an illusion and it would not give this particular experience. It is possible to feel completely present in the virtual space, but this does not mean we are not aware of its constructedness. We are never completely separated from the 'real' world, since we are connected to it through our body. Grau does not acknowledge this paradox, but contends that it is possible to be temporarily completely present and submerged in the virtual world. Other scholars might argue that we temporarily suspend our disbelief. However, I believe it is the constructedness of the immersion that allows us to experience it as such.

CREW thematises the constructions and limits of the immersion. The use of haptics both intensifies the immersion and disrupts it. The term 'haptic' is used in numerous ways, but literally it refers to the sense of touch and tactile sensations. Following Paterson, I take it to also entail the internal somatic sensations, such as proprioception, kinaesthesia and the sense of balance. Haptics thus relate to the feeling of embodiment and the stimulation of these sensations can contribute to the feeling of being inside the virtual world. During the time I am encapsulated by the HMD and headphones, there is always a performer who touches me and guides me from place to place. This human touch is sometimes reassuring, as an anchor to the material world. It reinforces the presence of my body, preventing a kind of disembodied experience. Sometimes it coincides with the images of hands touching my body in the virtual world in order to underline the totality of the immersion. As Paterson contends: "visual-haptic collocation, the correspondence between visual and haptic stimuli, is particularly desirable for a believable sense of interaction with a virtual object" (Paterson 2007, 136-7). This makes the experience more natural and gives the immersant a real sense of the object. In VR, this entails special gloves or other devices that enable the immersant to touch and manipulate an object. The technology of 'force feedback' can even produce the feeling of touching and being touched "through electric motors in the device that work to selectively counter the movement of the user" (Paterson 2007, 133). A simple example is the vibrations of videogame controllers that create the sensation of bumping into something or getting hit.

In the case of CREW, it is not possible to use this technology since it is not a computer generated world. However, their 'low-tech' manipulation of haptic sensations works in a similar way. In one particular instance, the video images show a man leaning

over me and picking up my arms. As he picks them up I feel someone grasping my arm and at the same time I can see an arm appearing within my vision. Here, the performer in the material world manipulates my body to match the action of the virtual world. The sight of 'my' arms creates realism as well as a distance, since I know these cannot be mine. Yet at some moments, the touch of the performer slightly mismatches the action on the video image and reaffirms the constructedness and discrepancy between the material and virtual world. The sense of movement works in a similar way. When I move, the image moves as if I am walking through this virtual environment. At one point I am put on a stretcher that is pushed around, during which time the image in front of my eyes perfectly coincides with the sense of movement, thus reinforcing the coming together of the material and the virtual world. However, during one stage in the performance I am asked to hold on to an automatic wheelchair that moves around. Again, the image moves to match my own movement, until the wheelchair is abruptly stopped. In this moment, the image of the virtual world also comes to a standstill but always slightly earlier or later than the movement. The sense of touch both grounds the immersant in space and disrupts the perception of the immersion. The incongruences between touch and vision tear apart the physical and the virtual world, creating an awareness of the body being on the threshold of these two worlds. In these moments, the performance intentionally creates a gap between what we see through the technological extensions and what we somatically experience. It puts the body in the centre of technological mediations as the location where the struggles take place. This highlighting of the incongruity of the body and the incongruences between the material and virtual worlds challenge the general aim of immersion of "diminishing critical distance to what is shown and increasing emotional involvement in what is happening" (Grau 2003, 13). Rather, it constructs an awareness of the intricacies of technological mediation.

The role of the body in technological mediation becomes the subject of the performance. The performance takes the daily mediation of our senses to the extreme. The two worlds are made to coincide and sometimes to clash. The beginning of the performance demonstrates how the headphones are used to connect the virtual and the material world. I walk around the centre of Amsterdam, while a voice coming from my headphones guides me. The directions perfectly match the environment and the city becomes part of the world the audio created. As Kurt Vanhoutte himself explains: "The virtual space, then, coincides with the embodied space of the self, thus embedding the story world into the physically experienced world of the immersant" (Vanhoutte and Wynants forthcoming, 71). However, I am always aware of the construction of my

experience, because the bulky headphones are physically very present. This hampers the seamless embodiment of this technology.

The mediation of my vision later on in the performance works in a similar way. Even though the images form a highly intensive experience of being inside a realistic-looking virtual environment, the technological extension that enables this does not easily withdraw. The HMD is quite heavy and uncomfortable and I am constantly aware of this extension. Again, this makes the embodiment of the extensions difficult, but as a result, I can maintain a certain critical distance towards them. The performance also creates a critical awareness of the process of perception. Because some of the senses are manipulated through technology, they are isolated from each other, pulled apart and made to correspond to each other again. The harmony between the senses is disrupted. The correlation between the senses that constitute perception feels uneasy and unfamiliar. As a result, perception does not come naturally to me but I have to learn it again. Perception becomes a violent act, the habitual processes are forcibly disrupted and as a result, I get physically nauseous. I struggle to embody the technological mediations and my body has to adjust to this new mode of perception. Towards the end of the performance I have to hand over my headphones to the next immersant. However, in my goggles I can only see myself and him from the side. This unusual perspective onto myself thoroughly confuses me. When I realise I am looking at myself, I have great difficulty coordinating my movements in order to place my headphones onto the head of this new immersant. My vision is suddenly located outside of my body and the encounter with myself produces an uncanny sense of displacement. The sight of myself staggering blindfolded through space resembles a modern-day Teiresias, blind for the physical world, but nevertheless seeing an other ephemeral reality.

It is perhaps not strange that many VR-artists and critics have described the experience in spiritual terms as a return to yourself. Brenda Laurel described VR as a place to "reinvent the sacred spaces where we collaborate with reality in order to transform it and ourselves" (Laurel in Dixon 2007, 368). Davies stresses how VR can reconnect the body with the mind and redirect attention to the processes of perception: "to heal the Cartesian split between mind/body, subject/object … in a dream-like way, shifting the immersant's mode of experience away from the everyday bias of eyesight to one that resonates deeper within the physical body" (Dixon 2007, 375). We should be careful to ascribe such powers to this technology, and I particularly want to stress that the importance of how the artist handles the technology. VR is not inherently a means to 'heal the Cartesian split'; the effects of this technology are dependent on how the artist uses it. In the case of CREW, they use different strategies to make technological

mediation of perception apparent and forced the immersant to become aware of the processes of perception. At the end of the performance, after I am stripped of my extensions, I have the chance to see the next immersant while he is moving around in his virtual world. A screen in the theatre shows what he was seeing, while he is stumbling around blindfolded from the material surroundings of the theatre. Once again, CREW shows me the subjectivity of perception. When I am back in the everyday world outside the theatre, I feel that my perception had changed. Perhaps change is not the right word, but I look and move around with a new sense of wonderment. My perception is 'reawoken' in the words of Shklovsky and I look at the world afresh. My senses are temporarily heightened and I am very aware of how I relate to the world.

Kris Verdonck: The struggling body of the cyborg

A man is struggling forward, fighting against the rope that holds him back. The stage is covered in dirt; a projection on the back wall shows the sky rapidly changing but yet somehow staying the same. The first thing I think when I see the struggle of this man is: cyborg! Why? This image from *End*, a performance by Kris Verdonck, is in no way similar to cyborgs as they are depicted in fiction, a terminator-like humanoid robot, or a neuromancer kind of technologically extended human. It is maybe closest to the performance artist Stelarc who suspended himself on hooks, which pierced his flesh. This image is mirrored in *End,* where another performer dangles high above the stage on ropes that disappear into the ceiling. Several other figures on stage are engaged in a similar struggle with ropes or other obstructions and mechanisms. What is so peculiar about this is that although the figures fight against these foreign objects impeding their movement, they also move in ways that are only possible because they are connected to these attachments. They cannot function without them. The haunting images of these figures endlessly repeating their actions, moving away from an unknown danger on the right side of the stage and the threatening soundscape create a truly apocalyptic vision of the future of humankind.

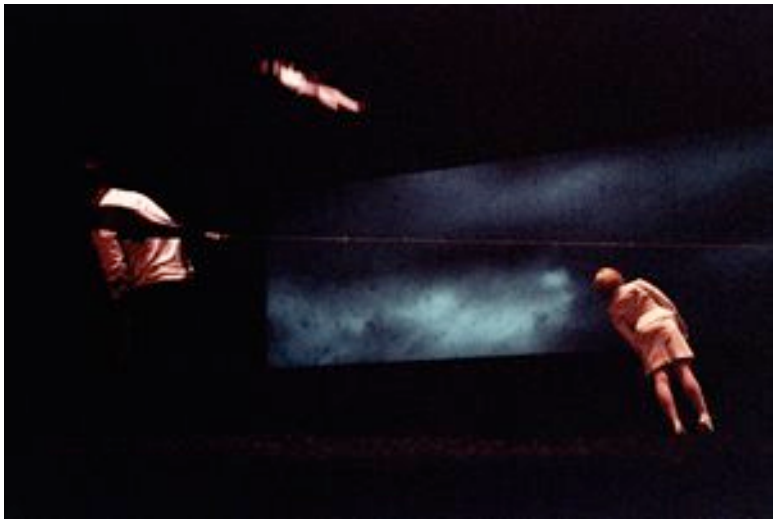

Figure 4. End - Kris Verdonck

The performance of *End* (2008) shows the implications of the embodiment of digital technology for the notion of the human. While in *EUX* we saw that technological extensions can alter our perception to a high degree, in *End* the extensions were external and could be separated from the body. *End* can give us an idea how the whole notion of the human changes when we have internalised technology and are inextricably connected to it. We can no longer function without technology and it has permeated our bodies to such an extent that the human is redefined. This new human that has embodied technology is often termed a cyborg. I have discussed this concept extensively in a previous paper, but for the current purpose I will recapitulate the main characteristics of the cyborg from different views. Some definitions of cyborg entail a very literal convergence of the human and technology. Any human body that consists partly of or is altered by technology is regarded as a cyborg; this is often considered in medical terms, such as prostheses, artificial organs, vaccinations or drugs. The incorporation of technologies in the human body and the idea of a human-machine hybrid feed the dream of immortality. However, the cyborg entails much more than this literal interpretation of the technologically extended human. In a society where technology is integrated and humans interact intimately with machines, the cyborg denotes the new conception of the human being.

Haraway sees it as a positive concept that can overthrow the thinking in dualisms that enables Western society's domination of minorities, or, in Haraway's strongly feminist view, anything that is not an upper-class white male. The cyborg is a hybrid of fractured identities that encompasses both sides of a dichotomy. Because a cyborg can no longer be classified as either of the opposites, it transcends the limitations of categories of gender, race and class. This idea echoes Lavender's conception of

digitality as dependent on the co-existence, co-functioning, of opposites, as I have discussed in chapter 1. However, I do not believe that the cyborg can transcend human categories and defy definition by the dualisms imposed by Western society. We are all already cyborgs, as Haraway claims, but 'we' have not (yet) become superhuman. However, it is hard to deny that the human has been affected by the increasing technologisation of society. Haraway contends, and in this aspect I agree with her, that technologies do not always affect the body in an explicit, physical way, but they also invade our lives in an intangible manner. Our relationship with technology has become so complex that it is only logical that the human has also changed in this relationship. The human is still distinct from the machine, but perhaps the two have become closer to each other. It is necessary to acknowledge and embrace the changes in the human in order to understand the relation to technology, how we depend on it and differ from it. In my view, the cyborg is a way to redefine the human who has internalised the technologised society.

The 'posthuman' is a concept used in a very similar way as the cyborg; however, the term itself indicates the fear of loss of the human. I prefer not to use this term since it implies that we have left the human behind and have become something else. I have argued that the notion of the human, its body and perception, has changed through technology, but a redefinition of this notion is different than rejecting it altogether. Ralf Remshardt deploys the term 'posthuman' in an open way that is very similar to Haraway's cyborg. He specifically examines the consequences for theatrical performance, an art form that is based on the presence of the body that now has attained a different meaning. "Posthumanism," Remshardt says, "signals a new confluence of physical materiality with performative consciousness resulting from immersive virtual reality environments, telepresence, distributed performance and so on, which increasingly trouble the traditional notions of embodiment and presence" (Remshardt forthcoming, 136). His writings suggest that there is no longer a 'natural' body that the mediality of the performer's (and observer's) body refers to. However, I do not think we can ever speak of a natural or naturalised body, since the body has always been part of its environment and shaped by it. It is never a neutral, fixed point but it is constantly engaged with the world and thus affected by it. It is true that the body and technology rely quite heavily on each other and the body is extended in ways we cannot even imagine. Nonetheless, its presence and physicality have not relented and in my view are still what connects our consciousness to the world, and the performer to the observer. Instead, Remshardt contrasts the body with consciousness, which is the new locus for posthuman performance (Remshardt forthcoming, 138). The way he describes

the condition of performance is elucidative and emblematic of the intricate implications of the digital age; however, his conception of the body is confusing. He rightly states that posthuman performance is a place "where digital media are transformed from simply providing channels streaming a version of physical reality (…) to being constituents of a new 'condition of virtuality'" (Remshardt forthcoming, 139). I do agree that the interrelation between digital media and embodied subject is more complicated than that. They are closely intertwined and both acquire different characteristics in the process. However, as I have argued above in my discussion of CREW, virtuality takes place on the body, rather than constituting a disembodied experience. I do not think one can deny the physicality of performance and the embodiment of the performer and spectator, even in intermedial, posthuman performances.

The notion of the cyborg or posthuman also has a dark side, which is better known, but also seems further away. Whereas the use of cyborg based on Haraway that I employ is applicable to most human beings, the fatalistic portrayal of the cyborg is futuristic. It represents the fear that machine will take over control and dominate humankind. If we indeed merge with the machines, we might lose our humanness. Remshardt describes this pessimistic position as follows:

> posthuman designates an evolutionary or morphological step towards a synthesis of the organic and mechanical/digital, and may indeed portend an apocalyptic and deterministic techno-scientism culminating in the subsumption of human consciousness into the binary code of cyberspace so that, as Katherine Hayles paraphrases this position, it will no longer be 'possible to distinguish meaningfully between the biological organism and the informational circuits in which it is enmeshed' (Remshardt forthcoming, 135).

In *End*, this apocalyptic view is reflected. Several figures move across the stage from right to left in endless repetition. Some of these figures are objects endowed with a human quality, others are performers bound up with an extension or object. The human figures differ in their relation to their 'machine', as Verdonck intends to call it. In some figures, the struggle with the machine dominates, as in the one trying to move forward while attached to a rope that holds him back. He still succeeds every time to reach the other end of the stage, but his motivation, his goal, is never clear, or just non-existent. He reappears on the right side of the stage to repeat his movement, in a process of automatisation. Another figure, a woman, moves along the same track, leaning her body in inhuman ways. She seems alien, other-worldly, as though regular human constraints do not apply to her. Eventually, I discover the threads attached to her that allow her to

move in this way. One of the figures that is not clearly attached to a machine repeatedly falls out of the sky, the sound of his fall magnified through a microphone. Afterwards, he gets up and walks off the stage, in the opposite direction as the other figures, towards whatever they are running away from. A man is enclosed in a cubicle and recites stories of witnesses, which depict horrible events. A woman carries a heavy body bag. A man is suspended in the air. All of them make the same continuous circle, half of which is hidden from view. They disappear and reappear, forever stuck in no man's land. This strong image of an endless automatised movement in such a dark, hopeless setting is undermined by the fact that this performance has a beginning and an end. Eventually, the traditional construction of the theatre interrupts the vicious circle and brings us back to the limits of theatrical representation.

The relations of the figures to their machines is characterised by dependency and struggle. The machines both enable them to move like they do, but simultaneously constrain them. *I/II/III/IV* (2007), another performance by Verdonck, has a very similar theme but takes place in a completely different setting. In this performance, four dancers perform a routine suspended from a harness. This 'machine' both restricts them in their movements and enables them to execute movements that they would otherwise not be capable of. The dancers form an intimate relationship with their machines and at moments, they move together with them in perfect harmony. At other times, their relationship is fragile and fallible and we see them struggle to keep control. The struggle of embodying their relations with the machine resembles the struggle in *End*, but the stakes are very different. While in *End* the figures fought against impending obliteration of the human, the dancers from *I/II/III/IV* use their relationship with technology for aesthetic cause in a serene, ethereal dance with the machine. In both cases, Verdonck exemplifies the embodiment of technological extensions by making these extensions visible in different forms and objects that resemble low-tech machines. He problematises the dichotomy of human/machine by putting his performers in a complex bodily relationship with machines that is based on interdependence. It should be kept in mind that we only see part of the machine on stage; its actual mechanisms, including the technicians steering them are hidden from the audience's view. The human component in Verdonck's machines is more substantial than he lets on, and his apocalyptic *End* is thus much further away than he wants his audience to think.

Hermeneutic relations

Dries Verhoeven: Intimacy through technological mediation

I was strolling around the city centre during Festival aan de Werf, when a man addressed me. This man turned out to be Dries Verhoeven and invited me to come to his performance. A little surprised by this unusual way of the artist choosing his own audience, I took him up on his offer and I presented myself, slightly nervous, at a container at the back of the festival terrain. My nerves increased when I seemed to be the only spectator present and Verhoeven asked me to take off my shoes and socks and climb into the container. The door was closed behind me and I found myself in a dimly lit space that was divided by a glass wall. On the other side of the glass there was a man, looking as confused as I felt. We glanced at each other and gave an awkward smile, but I was somehow pleased that I was not alone in this strange situation. Shortly afterwards, I heard a man's voice coming through speakers; he greeted me and introduced himself. He invited me to take a seat at the chair in the middle of my half of the container. The voice guided me throughout the performance; he talked to me, he described my face as if he was looking at it, he asked me to look him in the eyes. Almost immediately I came to associate this voice with the man opposite me. After all, he was the only person who could see me and the comments of the disembodied voice fit his presence perfectly. I felt connected with this unknown person, who was so near to me in this enclosed space, yet physically completely separated from me.

Figure 5. Uw Koninkrijk Kome - Dries Verhoeven

With remarkably low-tech devices, Verhoeven physically separates two people in *Uw Koninkrijk Kome* (2003) and mediates their relation to each other through a recorded audio track. There is a direct visual access to the other person, which supports the impression of perceptual transparency. However, I cannot hear the other and the only contact between us is through body language and facial expressions. This is regulated and mediated by the audio track. In some cases, the voice gives a direct instruction that influences my relation to the other. For example, the voice asks me to take a cup of forest fruit tea if I am interested in him (i.e. the other person) or a chamomile if I am already tired of him. When I reach for the tea is see the man smiling, and I naturally assume he knows what this means. I almost forget that he cannot hear what I hear, and this voice does not belong to him. The construction of the performance tricks me into identifying the audio to the man, and I completely go along with this. However, once I am reminded that they are not the same, I start wondering what he is hearing. Is he hearing a woman's voice that he associates with me? I assume that is true. But what is she telling him? Suddenly I lose control of what constitutes someone else's perception of me. The hermeneutic mediation that takes place is uncovered.

As I said before, in the case of a hermeneutic human-technology relation, the perceptual focus is the technology itself instead of the world it mediates. In this performance, our visual perceptual focus is the unmediated world, but the auditory focus is on the technology. This combination manipulates our perception of the other by appearing unmediated; the glass wall can be seen as a literal representation of the transparency. However, the far-reaching manipulation of the audio track is underestimated. Our whole impression of this person is based on this technologically mediated experience. The technological interface of the audio has no direct connection to the person it represents and yet we interpret it that way. This hermeneutic fallacy is shown in this performance, and even though at times I became aware of that, during most of the performance I was only too willing to forget it. The relationship I develop with this unknown person is also based on this interpretation of the technology**.** The voice steers the way we communicate, together with the voice he supposedly hears, since our actions and reactions to what we hear in combination with what we see seem to make sense. This might be hard to understand without having participated in the performance. For example, when the voice suggests that we both touch the glass, I also see the other move in his seat as though he is considering this. Eventually, after the voice encouraged me to go on, we both lean forward and our palms touch through the glass. Even though he did not actually suggest it and he could not hear what I was

hearing, we do react to each other and we seem to share an understanding. The intimacy that is created is possible because of this interface. It is still an awkward feeling to look this person in the eye for a longer period of time, as the voice suggests. However, the glass barrier creates a distance between us that makes this intense eye-contact with a stranger slightly easier. The audio track contributes to this distance by creating a different persona and emphasising the constructedness of the performance, but paradoxically it also bridges the distance and constructs the possibility for closeness by creating the sense of a conversation, by constructing a communication between us. Thus, the distancing devices enable this intimate relation with a complete stranger.

Presence at a distance: Can we feel it?

In *Life Streaming* (2010), Verhoeven tries to establish a similar intimacy between the spectator, or participant, and a stranger, although he uses different means. The spectators again become participants in the performance. Before entering a container the participants are asked to take off their socks and shoes. I realise this must invite a déjà vu, but there are some differences in the setting. The container is much larger and has glass walls. Inside, each participant takes place behind one of the computers and is instructed to put headphones on. Shutters are lowered and we are cut off from the outside world. What follows is a carefully structured conversation with a person who is gradually revealed to me. The conversation occurs through writing (instant messaging). At first, my conversation partner just exists through text; later on I see him on a webcam. During the conversation it becomes clear that my partner can see me as well. It is implied that this person is in a distant location, but this remains a question mark until the very end of the performance. Central to this performance is the concept of telepresence: the temporal proximity of, in this case, the performer and participant. This proximity might be communicated with visual means, like the webcam in *Life Streaming,* which often enhances the sense of presence at a distance. Telepresence is closely linked to the concept of telematics, telepresence in the extreme. Telematics aims for a more complete copresence, namely "real-time interactions mediated by virtual, visual projections linking disparate physical spaces and bodies" (Bay-Cheng forthcoming, 99).

Grau's conception of telepresence is closer to telematics, and stresses the immersive purposes of telematics. According to him, telepresence is founded on "the dream of *artificial life* and *automation* (…), the tradition of *virtual realities* in art (…), and the occult prehistory of *telecommunication*" (Grau 2003, 279). He connects telepresence to the ancient dream of leaving the body and to achieve presence in distant locations. He

argues that the image, especially in ritualistic traditions, has been endowed with powers to carry meaning and exert influence over great distances. Throughout the ages, humans have tried to communicate over a distance, but for a long time this remained a utopia. Now that everything can be translated into information and sent all over the globe, the myth of transcending the body has found new grounds. Because even though we can create a convincing illusion of spatial and temporal co-presence over a distance through contemporary technologies, the body is still fixed to its geographical location. What is transmitted is merely an ephemeral representation of the body. The developments and familiarisation of technologies of telepresence has changed the notion of presence.

Grau distinguishes three forms of presence in telepresence: the physical location of the user's body, the presence in the virtual space or cyberspace, and the mediated presence in the place which the user is connected to. This last presence only exists when the user can transmit his actions by steering a robot for example that can be operated at a distance. Telepresence opens up the possibilities of different spatial experiences, which are not always determined by physical perception. Telepresence is thus also defined by distance and absence; the presence of two people over a distance via a webcam, or the manipulation of a robotic machine at a distance, always lacks in physical aspects. Grau seems to think this is something to be solved with the increase of the speed of data transfer and the development of haptic technologies. Even though I do not believe haptic devices can make up for the lack of actual physical copresence in the same space-time continuum, they do enhance the sense of embodiment. Grau optimistically paints the future of the employment of haptic technologies: "perception will soon be enriched in the virtual environment. The seeming assurance of what is seen by appropriate haptic impressions or smells enhance the credibility" (Grau 2003, 285). In *A brave new world*, Huxley writes about 'the Feelies', his vision of the future of cinema. This phenomenon would create a complete sensory experience, instead of merely the audiovisual one of contemporary cinema, which makes the representation feel real through tactual effects. Elsewhere in this novel, a description demonstrates Huxley's view of the importance of haptics for the notion of presence: "Touch of smooth skin against his face, scent in his nostrils of musky dust – her real presence" (Huxley [1932] 2004, 124). In this passage, a boy examines the clothes and possessions of Lenina, a woman he is fascinated by. He thinks she is gone, when he finds her perfume box filled with scented powder. He strokes his face with his own hand, covered with the smell of Lenina. This sensation is so powerful that Huxley describes it as 'her real presence'.

Paterson supports the idea haptic interfaces increase the sense of presence at a distance. Already familiar are touchscreens in electronic devices, but newer

developments make to simulate tangibility so that the user experiences the tactile surface of virtual objects and is able to manipulate them. This makes the idea of copresence in a virtual space possible, "the ability to interact with another and feel their presence" (Paterson 2007, 127). In 2002, the first virtual handshake was reported, an experiment in which researchers used advanced haptic interfaces to shake hands over the internet (Paterson 2007, 127). Haptics technologies, including the use of force feedback to heighten the illusion of solidity of virtual objects, were originally used for medical and military purposes. It enabled a very believable simulation that was employed for training systems; later, it even allowed remote surgical operations through telemanipulation of robotics. However, nowadays it is also used for entertainment purposes to enhance the sense of immersion in the virtual world of a videogame, for instance. Paterson refers to Benjamin and his concept of aura as describing this persistent notion of telepresence. Benjamin defined aura in his seminal essay "The work of art in the age of digital reproduction" as "its [the work of art's] presence in time and space, its unique existence at the place where it happens to be" (Benjamin [1936] 2000, 324). The technology of reproduction aims to bring objects closer; the original is brought within reach by means of a copy. This copy, however perfect, will always lack aura or the physical presence in time and space. Haptic devices seem to be able to create this physical presence, even of a virtual object. However, just like a mechanical reproduction, the telepresence created through haptic devices is merely a substitute, an illusion, albeit a powerful one: "the mimetic nature of the haptic experience, recreated through digital means, [is] unambiguously illusory; a phantom-like presence" (Paterson 2007, 135). The experience that haptics technologies constitute is neither marked by an absence or a presence, but rather by a co-existence of these two concepts: "it brings distance to life" (Benjamin in Paterson 2007, 135). It brings the distant into proximity, literally within reach of the hand, whilst still maintaining the geographical distance.

In *Life streaming,* the sense of presence at a distance is established in different ways. Initially, the structure of the performance might be better explained in terms of connectivity. This concept is similar to telepresence, but in Wolf-Dieter Ernst's definition it particularly focuses on the instability of the connection of technologies that function over long-distance. The effects of this instability can have an emotional content and potentially "reinforce the dynamic relations that connectivity allows between users and technology" (Ernst forthcoming, 185). Or in my own words, a particular technology permits a certain type of connectivity between the users and the limitations of that technology have (emotional) effects on the relation between these users. When *Life*

streaming begins, I sit behind a computer and watch as text appears on the screen. The performance is classically structured into a prologue, acts and epilogue; each time a word appears on the screen announcing the subsequent part. The text varies between a story line and a conversation between me and the performer using instant messaging (IM). When the performer first introduces himself as Athila, he tells me I can type as well. If I press enter he can read it. As I am not unfamiliar with IM, I quickly pick up the conversation. Athila asks me my name and then greets me with: "Hi, Lisa". The connection is established. This repetition of my name suggests that this is indeed a live connection and heightens the sense of connectivity over a distance. This distance is established at the beginning, when Athila asks me for my address. On the screen Google maps appears and zooms in on my neighbourhood. Then, the map zooms out and the globe turns until it stops over South-East Asia, implying that this is where the performer is located. The vast distance between the locations of the performer and participant enhances the specialness of the shared experience.

Athila leads the conversation; he talks to me about himself and his country and occasionally asks me question. The text of the performance varies between a 'live' conversation between Athila and me, and prose passages that form the narrative framework of the performance. The conversation follows a script and although my answers are incorporated into the story, Athila rarely reacts with respect to the content of my part of the conversation. It soon becomes clear to me that my contribution is not meant to extend beyond the simple answering of questions. Whenever I type anything outside of my designated role, it is ignored. After a while, I wonder if there actually is a performer at the other side of the connection. I begin to contemplate the possibility that a computer program incorporates my answers into the blanks of the script in order to suggest a live connection. This suspicion is contradicted when Athila describes my appearance and body position. I realise I must be visible via a webcam and this seems to provide evidence that I am directly connected to a performer.

The idea of telepresence is further established in the next part of the performance, when the video image of a webcam appears that shows Athila (or who I assume is Athila). Our conversation is still carried on through IM, but it is now interspersed with webcam images. The webcam is a medium that is associated with liveness and realism. The video images are not edited or prerecorded, the camera viewpoint is fixed and the quality is often poor. This gives the idea that the images are directly transmitted and what we see is unmediated. It creates the idea of transparency between the world and its technological interface. As Dixon describes,

> its low-resolution, grainy pixelation lends it an antiquated, pre-television quality, while its stubborn stasis echoes the stern discipline of the surveillance camera. These qualities imbue the webcam with both a sense of documentary authenticity and of liveness that is central to its appeal and status (Dixon 2007, 444).

At first, the webcam shows a small shabby room with a revolving ceiling fan. This image gives me the first suggestion (after the map) of where Athila currently resides. The room indicates a foreign location, probably somewhere considerably warmer than the Netherlands (hence the fan) and supposedly also poorer. However, my assumption that this is video footage of Athila's whereabouts is only based on conventions of internet communication. If during IM a video image appears, it generally belongs to a webcam from your conversation partner. In this case I cannot be sure. A man sits in the corner of the room. Since I have been conversing with a man, my first inclination is to think this is the same man. However, this man is not behind a computer, he is just hanging around and he does not acknowledge my 'presence'. Although at first the image gives me an idea of the geographical location of the other, soon enough I begin to doubt its truth value.

Another similar image that serves to provide a geographical setting is clearly not a webcam image. It shows a small house in the distance and the sea in the background. Although these images are not from a webcam, they do share characteristics that contribute to its sense of authenticity. The images are filmed from a fixed position and consist of a single continuous shot. The material is unedited, with a low resolution, which gives it a sense of documentary realism similar to the webcam. As a result, despite my doubts, I take these images to denote the location of Athila. They remind me of the physical distance between us, even though we share a virtual space. The next video shows a man lying in bed, looking directly at the camera. This positioning of the camera in such a private situation and the acknowledgement of me as a voyeur creates an awkward yet intimate situation. During this image, I continue to receive text but the man I see is not typing. However, the text is written from his point of view and corresponds to the visual interface; at one moment, the question appears on the screen if I would lie in bed with him. The textual interface corresponds to the visual interface, yet they are incongruous seeing as the person I see cannot be the person who writes. These incongruences direct my attention to the hermeneutic leap I was inclined to make. It shows that the mediation of internet communication devices, such as the webcam and IM, requires an interpretative act; the relation between the technological interface and the world it mediates is hidden from us and is often taken for granted.

Finally I see the webcam image of a man typing, which coincides with the appearing of text on the screen. This image proves to me that this is indeed the performer I am communicating with. Our copresence slowly evolves throughout the performance; this unknown person is gradually revealed to me, first through his stories and now through his visual appearance. At first, the awareness that I am visible to him as well makes my position vulnerable; then, when he is visible to me as well, my connection to him becomes more personal. Before this visual aspect was introduced in our relation, Athila asked me a personal question in an attempt to create an intimate situation. He asked if someone I knew and was close to had ever died. After I told him, he told his story about a loved one dying. This intimate exchange between two strangers was only possible when I did not know I was visible to him. After the introduction of the webcam, the nature of the conversation changes and the topics are less personal, his questions more general. Because the webcam increases the realism of the conversation, the level of intimacy decreases. Again, as in *Uw Koninkrijk Kome*, the intimacy with a stranger is possible by virtue of the distance created through technological mediation. However, the sense of presence and intimacy was considerably stronger in *Uw Koninkrijk Kome,* when I was physically in the same room as the other person. In the case of *Life Streaming*, the intimate nature of the conversation is forcibly established by the scripted conversation that does not allow for a real interactive exchange. The different phases in telepresence through internet communication devices offer interesting insights in the construction and conditions of copresence and intimacy at a distance. However, as a 'participant' I feel misguided and patronised with regards to my role in the conversation. In particular because the underlying theme of the performance is the aftermath of the tsunami that heavily affected the area the performer resides in. He is supposed to give a face to the many nameless victims, although he states that he does not want to be seen as such. After the initial personal start of the conversation in which I was asked to share private experiences, the topic of the talk turns towards the instigation of feelings of guilt, based on my Western background. He asks me accusing rhetorical questions about my involvement with the victims and my feelings of compassion. This generalisation is at odds with the private nature of the conversation and transforms our relation into opposite stereotypes.

At the end of the performance, a surprising moment occurs in which the distances for me finally collide. Towards the end of my conversation with Athila, the backdrop at his location is taken down and a white sandy beach is revealed. In my headphones I hear the sounds of the sea. The neutral space he was in is transformed into a specific location. Other performers come into view as they leave their positions behind

the computer and move towards the sea. Athila gets up and walks with them into the sea. As I watch them, I notice that the container has slowly filled up with warm water and I sit ankle-deep in the water. The scent of foreign spices and cooking fills the container. These haptic sensations transport me towards a far-off place and enable me to feel as if I am standing in the sea with Athila. The touch of water and the smell of cooking create a sense of embodiment that was largely lacking in the rest of the performance. I feel connected to this distant place in a way that could not be achieved with merely visual means. A similar use of haptics is found in *Uw Koninkrijk Kome*. Here, the participants are asked to open a small trapdoor in the floor. The space under the trapdoor contains sand, in which the participant is supposed to place her feet. Sounds of seagulls and crashing waves contribute to the sense of being at a beach. I immediately started to play with my feet in the sand and felt as though I was in a different place. These means of stimulating the haptic senses enhances not just feeling literally, but as Paterson argues, feeling in the emotional sense of the word.

Alterity Relations

Compagnie 111: Decreasing distinctions between human and machine

On the stage, there is a single luminous stick. The stick moves around, apparently on its own. There are no actors on stage; the stick is the only object of focus. It soon becomes a character. Laughter rises from the audience when the performance breaks with expectations by not showing a human actor on stage but an object that steals the show. Then the stick ascends and a hand appears from the floor and reaches up towards the stick. The stick joins numerous other sticks that move around in various formations. I feel like I am watching a dance, even though they are just objects that are mechanically driven. The performance unfolds in a carefully choreographed routine in which humans and objects engage in a playful interaction. The actors seem to float across the stage in an unearthly manner.

Figure 6. Plus ou moins l'infini - Compagnie 111

The relations between objects and humans in *Plus ou moins l'infini* (2008) by Compagnie 111 can illustrate the alterity relations described by Ihde. The idea that humans can relate to technology as an other rests on the conception that technology can acquire, or be ascribed, human traits. To be considered an other, or a quasi-other as Ihde contends, technology or the machine has to appear animate, autonomous and self-moving. I say appear, since machines can only acquire these principles to a certain extent. Digital technology and the development of robotics have increased the autonomisation of machines, but even the most advanced robots are not truly animate and they do not have free will. Even the simplest movement does not nearly resemble a human movement. The fluidity of human gestures and movement is very hard to attain in a mechanical copy, and the current state of robotics is nowhere near a perfect human duplicate. Interestingly, Dixon associates this condition of robots with the characteristics of camp, a term both associated with overtly theatrical style and effeminacy. "Since robots currently fail to mimic human and animal movement accurately, their exaggerated gaits and gestures emphasize the same sense of theatricality and artificiality in movement that we find in camp" (Dixon 2007, 273-4). The reason Dixon chooses camp as a comparison is that it "celebrates difference and otherness as a coded or blatant affront to straight society's notions of what is subversive or alien to the norm" (Dixon 2007, 278).

Robots seem to be closest to forming a semi-autonomous, animate other. They have a lot in common with the concept of cyborgs; however, while I argued that the cyborg is a way to redefine the notion of the human that has embodied and integrated the machine, a robot is essentially a machine that has acquired human features. The main themes of performances that use robots as actors are clearly summarised by Dixon: "the humanization of machines and the dehumanization (or 'machinization') of humans" (Dixon 2007, 272) (Dixon uses the term 'machinisation', since he wants to avoid the negative connotations of 'mechanisation'; I will follow his example). This humanisation of machines enables the machine to act as an other which humans can relate to and interact with. The history of automata, which can be considered as the forerunners of robots, displays this desire of humanising our machines and the fear of robots rebelling against their masters and threatening our humanness. The first automata are said to have existed in the third century BC; from the fourteenth century onwards they became increasingly complex and popular. Automated figures often resembled humans or animals and could carry out simple tasks, imbuing them with the quality of life. The phenomenon of the Automaton Chess Player, which defeated Napoleon in a game of chess, is informative of the conditions required to acknowledge a technological other.

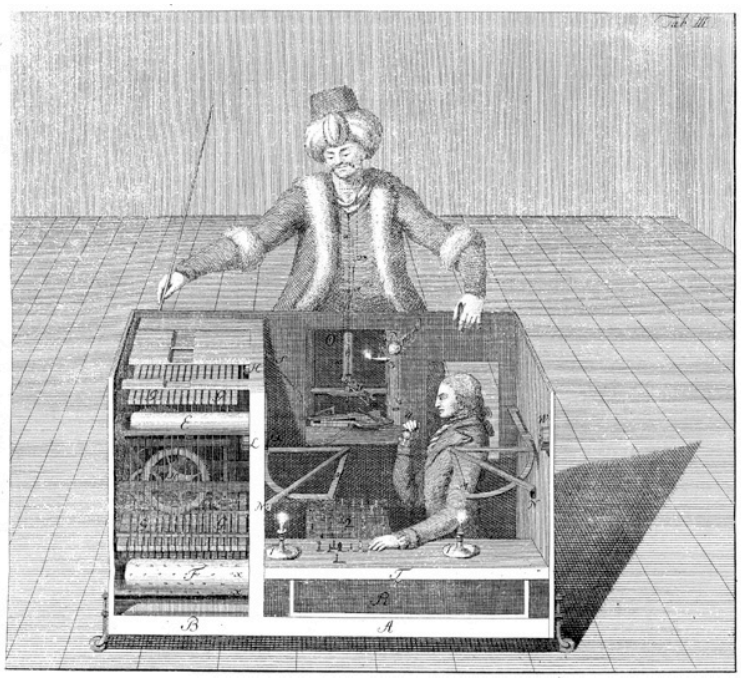

Figure 7. The Automaton Chess Player, its inner mechanisms revealed.

This automaton was developed in 1769 and displayed for almost a century. A humanlike figure, also nicknamed 'the Turk', was attached to a chess board and was seemingly self-moving and of a humanlike intelligence. However, just like any other automaton, his actions were limited to playing chess, which he was nonetheless very good at. Mark Sussman describes this automaton as "a technological *mysterium*, a secret to be uncovered, and a riddle to be solved" (Sussman 2001, 73). The audience knew they were being deceived, that there must be a trick, but they were still fascinated by this figure. This fascination arises from the fact that the workings of the automaton were concealed. As Sussman shows, the performance of the chess player was set up similar to a magic trick. Before the game of chess started, the insides of the automaton were shown so that that the spectator could see there was no human performer steering the chess player. As a result, the trick was to make it appear as if machinery could now match human thought and intellect. The machine could think for itself. The actual workings of the automaton relied on a human chess player hidden inside that operated the figure. Crucial to the success of the chess player, as Sussman argues, was the "partial acknowledgment of the trick" (Sussman 2001, 83). One knows that it is not a human and thus cannot possess human thought; however, this enhances the puzzlement at this figure. The partial reveal of its inner workings conceals the actual hidden figure. Even though the chess player automaton was a cleverly designed mechanism, it was not truly a self-thinking robot. However, the mere appearance was enough for people to relate to it as a quasi-other. This example can be regarded as "a model for how a spectator might reify, and deify, the hidden power at work in a new form of intelligent machinery" (Sussman 2001, 84).

So what can be considered the grounds for technology as other? Automata were already functioning autonomously to a certain extent. Some of them were fascinating because they could move and perform actions on their own, other because they displayed human intelligence. In any case, we only relate to a machine as an other if it somehow has human qualities. Dixon describes Wiener's view on the humanisation of machines as following: "machines were alive because they were physically animate and operationally active" (Dixon 2007, 277). This includes machines that appear to be self-moving or self-thinking, and in my view also requires that their inner mechanisms, their functioning are at least partially hidden. Without a certain mystification with regards to the workings of the device, we do not regard it as a quasi-other but merely as a machine. This is also clear from Ihde's contention that the technology often becomes an other when it is malfunctioning; in other words, when we do not understand its workings and we ascribe to it a will of its own.

It is innate to the human disposition to attribute human qualities to objects and machines. As Dixon notes in his discussion of several robot performances, their display of human temperament often has a comic and absurd effect. However, it is important to remember that robots do not have human emotions; it is in our nature to interpret certain moves and gestures as emotions, even though we are aware that they are not intended as such. This does not only apply to advanced intelligent robots, but also to the simplest of objects and forms. I remember vividly an example from a lecture on Albert Michotte. A professor showed an animation of a big red ball and a smaller blue ball moving to the right. When he asked the students what they saw, most answered: 'the red ball is chasing the blue one.' A similar animation showed the same image, except moving slightly slower to the left; it looked as though the red ball was leading the blue ball, even in a parental fashion. Michotte used these examples to demonstrate that the perception of causality is not objective; we infer causality to situations. Furthermore, I believe it also shows that it is innate to humans to attribute human qualities, such as emotions, to (moving) objects. Nowadays, more and more objects have become machines and have acquired some autonomy. The fascination with humanising objects is widespread; an increasing amount of films have been produced in the past two decades that star normally inert objects, with Toy Story as the pinnacle.

In *Plus ou moins l'infini*, the liveliness of the sticks and their intimate relation to the actors humanise the objects and machinise the actors. In the beginning of the performance, the sticks are alone on stage. Since the audience expects human beings in a performance, this twist evokes confusion and laughter. The stick soon becomes an actor, simply because we expect to see one. The movement of the sticks is seemingly autonomous; even though I know they must be mechanically driven, I never see how they are operated. The first sign of human actors involves a fragmentation and objectification of the human body. Only separate body parts appear from gaps in the floor of the stage. The stage floor is broken up by various small gaps that run in horizontal lines across the stage. Various absurd images are created by protruding body parts that move along these lines. A head pops up at the back of the stage, some metres down the hands emerge, while at the front of the stage two feet stick out. This fragmentation of the human body results in the illusion of an impossibly large figure. Despite the human parts, the whole appears mechanical, robot-like. In another sequence, a head slides into view. The body of the actor is hidden beneath the stage, which gives the impression of a disembodied head. The head looks around, when a man comes crawling onto the stage with his head hidden between the gaps. The headless body chases after the head and tries to connect it to his body. In a similar segment, a

man with his arm hidden clambers after a separate arm making its way across the stage. When the actors attempt to reassemble their bodies, electronic sounds underline the machinic aspects of these fragmented bodies.

The human actors in this performance seem inhuman at times, and the sticks acquire human qualities in their interaction with the actors. The actors use sticks of varying lengths to hop around on; in an acrobatic manner, they hold the flexible sticks on the top and place their feet against it. In this way, they are able to balance on the sticks and bounce across the stage. In another scene, the sticks move automatically along the stage from left to right, standing up right. The actors hold onto the stick in various positions, mimicking a slow motion running movement or hanging vertically in the air. Their acrobatic background contributes to the inhuman quality of their movements and body positions; most spectators would not deem this possible and they marvel with the same wonder as spectators in a circus. The actors are closely joined to their sticks that enable them their movements, but also provide a challenge to their abilities. The actors are looking for ways to move with the sticks; their relation is not always smooth but also displays signs of struggle. Additionally, they both fight for the attention on stage. The actors as figures in the show are on an equal level as the objects, which highlights the machinisation of humans. The sound that accompanies their movements consists of electronic bleeps and blips that turn the fluidity and gracefulness of the acrobatic performers into the artificiality of robots. When the sticks are the main 'performers' on stage, the music is more ethereal and fluent.

This performance highlights the relation of the human to the technology as an almost human 'other' by creating an intimate relation between the actors and the sticks based on interdependence and equality. The technology or machine as 'other' is displayed here as a simple object. This illustrates our tendency to humanise objects, which is the ground for alterity relations in digital culture. The objects have a quasi-autonomy which makes them seem animate in a way similar to the automaton. The mechanisms that drive them are hidden. In addition, their close relation to the machinised humans shapes the objects as an other. This performance provides a metaphor for our dependence in everyday life on technology, even though we have become so accustomed to it that we hardly notice it anymore. Furthermore, it illustrates the intimate relations that people have developed with their technological devices. As the director of the performance, Aurélien Bory, says in an interview,

> the objects become human and the actor, the human on stage, can sometimes seem like an object. (…) An aspect of life is that "technology humanises itself".

> We can have a very human relationship with our mobile phone or other machines. On the other hand, man mechanises himself somewhat. We do not pass judgement, but we like to show it because it is part of our everyday life and it changes our perception of the world; the performance (…) questions our perception of life" (Bory 2008; my translation).

In *Plus ou moins l'infini* the spectator is confronted with the blurring of boundaries between humans and machines or objects and their interdependence. In this way, she is asked to reflect on her own position as a human in a technologically saturated society.

Background relations

Chu Yun and Eduardo Kac: Technology is everywhere

I am walking around the giant exhibition hall of the Venice Biennale 2009. The artworks are impressive, but as expected in an exhibition, most of them are of course static. In some cases the artwork allows the visitor to walk through or around it, which allows your perception of the work to transform; in this way it becomes a performative situation in which the visitor actively engages with the artwork. In one of those instances, I walk into a darkened room in the middle of a hall. Once I am inside I cannot see a thing. Then, slowly, several tiny coloured lights begin to appear. The longer I stand there, the more lights I see. The shimmering of all these beautiful lights creates a mysterious landscape, a fairy tale-like space in which I am immersed. After a while, when my eyes get used to the dark, I begin to notice the source of these lights. Every one of them is coming from household appliances; they are the watchmen during the night, forever glowing on standby, guarding over our houses.

This installation by Chu Yun reminds us of the constant presence of the many electronic devices in our lives. It is easy to forget how many technological appliances there are in our own homes. The power or standby lights signal their presence; it is safe to assume that there is almost always at least one light burning in the modern-day home. Their presence has become so familiar that we do not realise to which extent they condition and enable our life-style. In particular devices such as the refrigerator, thermostat, security system and fire alarm, amongst others, are normally not the object of our perceptual focus; they are automatised and are just there, nevertheless affecting our lives in the background. Yun employs the tactics of defamiliarisation to make us aware of the pervading presence of these technologies. Our perception is at first

hampered because of the penetrating darkness. He stretches out the process of perception; it takes a while for the visitor to get used to the dark. During the time my eyes need to discern the lights and their source, I am actively engaged in the process of perceiving. I do not immediately recognise the objects, but I need to work for it. Because of the obstacles in my perception and the unfamiliar setting of the objects, I become aware of my perception and I come to reflect on it.

Figure 8. Constellation no. 3 - Chu Yun

Aside from these external background relations, there are also technologies that enhance and change the body and perception internally. I already mentioned the examples of the birth-control pill and vaccinations that pervade the human body and become part of it to such an extent that they cannot be distinguished from it. In Ihde's words, they cease to be technologies. The quintessential example of this is genetic transformation through biological technology. This is already frequently applied to animals and plants; transforming and enhancing the human genome is one step removed. Gabriella Giannachi argues how the developments in biotechnology and biomedical sciences have changed our conception of ourselves; we increasingly define ourselves in terms of genetic codes. "Because of our ability not only to intervene in our 'selves', but also to substantially modify ourselves, our animality is progressively turning into anomality" (Giannachi 2007, 84). Giannachi refers here to 'anomal', a term that she uses to replace 'anima' (vital breath) and which describes the deviation from the natural order.

This view echoes the underlying thought of the notion of the posthuman. It seems as though we have left behind our old definitions of what makes us human and embraced the transformations that technology has instigated, even if that means losing our former humanness. Giannachi contends that the posthuman makes the distinction between human and animal become fluid. Because of our interrelation with the animal, the genetic modification of animals is connected to our changing conceptions of the human. Genetic engineering, Giannachi argues, goes much further than biotechnologies that merely tried to crossbreed animal species. Through the process of genetic engineering, animals, or 'anomals' (i.e. transgenic animals), are given human genes in order to produce human products. During the 1990s, the first anomals containing human genes and genetically modified clones saw the light of day; this brought us one step closer to the "transformation of life itself into reproducible technology" (Giannachi 2007, 89). The ability to transfer human genes into an animal's genome is both what makes this transgenic animal potentially useful for humans and what evokes the most protest. The anomal with its human genes can produce donor organs for humans, and even hints at the possibility to transform the human genes, or for animal genes to become part of the human. As such, the anomal "contaminates what it means to be human and this, of course, makes it an uncanny if not frightening possibility" (Giannachi 2007, 93). The concept of the anomal blurs the clear-cut distinction between human and animal, according to Giannachi. Even though it does pose some problems to how the human was formerly understood, I do not agree with this notion of the radical transformation of the human. The human has not become more animal-like than before. We have always been similar to animals to a certain extent; we partially share their genetic makeup, which in some cases shows a large resemblance. Furthermore, there remains the question if genes are all that constitute a human. With the current transgenic practices, I think Giannachi has shown that we are moving further away from the animal, which is constantly subjected to the human wishes and turned into productive technological resources. Humans have colonised nature and put themselves in a superior position. However, I do not deny the consequence of genetic engineering for the conception of the human and its possible applications in the future.

The implications of genetic engineering are not clearly discernible in everyday life. Occasionally, the debate around this technology flares up when a new milestone is reached, such as with the first cloned sheep, Dolly. Generally these developments take place behind closed doors and are not directly perceived by most people. This makes it all the more vital to acknowledge these developments and drag them into focus. As Eduardo Kac declares,

> it is (…) urgent to address the emergence of biotechnologies that operate beneath the skin (or inside skinless bodies, such as bacteria) and therefore out of sight. More than make visible the invisible, art needs to raise our awareness of what firmly remains beyond our visual reach but which, nonetheless, affects us directly. Two of the most prominent technologies operating beyond vision are digital implants and genetic engineering, both poised to have profound consequences in art as well as in the social, medical, political, and economic life of the next century (Kac 1998).

With his sometimes controversial artworks, Kac has certainly brought the debate concerning genetic engineering into the public realm. His most famous creation is the GFP Bunny. The GFP Bunny was created in 2000 by enhancing an albino rabbit with the fluorescent gene originally found in a specific kind of jellyfish. As a result, the GFP Bunny glows fluorescently green under the correct light. Kac calls this transgenic art, a form in which it is no longer possible to distinguish between the technology and the organism.

Figure 9. GFP Bunny - Eduardo Kac

As he states on his website, transgenic art "is a new art form based on the use of genetic engineering techniques to transfer synthetic genes to an organism or to transfer natural genetic material from one species into another, to create unique living beings" (Kac 1998). However, his aims go beyond the usual objectives of genetic engineering; Kac wants to highlight the social and ethical connotations of transgenic practices, instead of the heightening and improvement of productivity, commercial and medical value of animals. With this shocking act of creating a luminous green rabbit, he directs the

attention to a technology that is already very common but happens mostly out of sight of the public. The creation of his bunny is no different than the transgenic engineering of animals that happens on a larger scale. However, Kac presents his new species as an artwork, which places it in a different context. The reason for modifying the rabbit's genome is now aesthetic, which suddenly raises ethical questions. The creation of this anomal is staged as a public act, which draws his audience in. His audience consists of anyone who hears or reads about his act of designing a new species. He transforms unwitting bystanders into accomplices; the mere fact of knowing forces them to pass ethical judgement. Lastly, he chooses to create a visibly modified animal by transferring a gene that gives it an 'unnatural' colour. This last aspect is ambiguous, since the rabbit is not always fluorescent. A special light is required to make the rabbit light up. Under normal circumstances it is impossible to know if Alba is any different from other rabbits. Kac argues that "it is precisely this productive ambiguity that sets her apart: being at once same and different" (Kac 2000, 100). These various aspects contribute to the shock effect of the GFP Bunny and illustrate the way this artwork makes the audience aware of genetic engineering as a technological background relation.

Kac stresses the historical context of his bunny as a transgenic artwork. He points towards the cultural tradition of the imagination of chimeric animals, and the fact that "humans have played a significant role in the evolution of rabbits for at least 1400 years" (Kac 2000, 100). Thus, he contends that he does not break any "social rules". As Ihde argues, the manipulation of animals and plants by humans is an ancient biological technique. Through selective breeding under certain conditions, the diversity and characteristics of animals were changed and enhanced. Kac stresses the difference between breeding and genetic engineering. While breeding can only attempt to change the features of an animal indirectly through the steering of natural selection processes, genetic engineers can directly manipulate genomes and combine genes of completely different species. As Giannachi says, the human is able to reinvent nature through the manipulation of genetics. Additionally, breeding mostly serves to increase the functionality and productivity of an animal, while Kac wants to point to the aesthetic and social aspects of the transgenic animal. That is why he asserts that the artwork of the GFP Bunny does not just consists of the bunny itself, but also of the public debate surrounding it and the integration of the bunny in his family. He wants to position transgenic animals as social subjects instead of mutated monstrosities. He emphasises that biotechnological creations are still life forms.

Giannachi also notes how animals are increasingly regarded and exploited as productive workforces. In this process, they are removed from nature. It starts at the

process of domestication; animals that live in the proximity of humans are defined "in terms of their relationship to the human" (Giannachi 2007, 85) and are separated from their natural environment. They are given meaning in terms of their function and value for humans. They are cultivated and colonised. The redesigning of animals has increasingly led them to become products; they are not allowed to socialise (Giannachi 2007, 87). This new anomal is, as Giannachi argues, "not so much a companion (…) but rather a tool, industry, production process" (Giannachi 2007, 88). Because they are increasingly commodified and objectified, humans do not feel a particular social connection to them. This makes it possible for laboratories to use anomals as test-animals without many objections. Kac strives to show that even these transgenic animals are social living beings that should not be objectified and consumed as products. In his view, "transgenic art must promote awareness of and respect for the spiritual (mental) life of the transgenic animal" (Kac 2000, 99). He takes the bunny that he named Alba into his home and emphasises his social interaction and connection to this anomal as a pet. The incorporation of Alba in a domestic environment aims "to show how transgenic life was penetrating our (already culturally determined) everyday lives" (Giannachi 2007, 96). The effect of this is twofold: Kac both raises critical awareness about the already established practices of transgenics and its possible future applications for human genomes, and secondly, he domesticates this new technology by 'normalising' it in a social, domestic environment. By showing that this anomal is not a monstrous mutant, he reduces the fear and suspicion of people towards this new technology. Art becomes a way to relate to this new species and to grapple with the ethical and social implications of genetic engineering.

Both Chu Yun and Eduardo Kac attempt to make the normally imperceptible background relations of technology visible. Yun shows how technologies have become part of our natural environment. Their presence is integrated into the background to such an extent that we barely notice their role in our everyday lives. In his installation, he makes their presence perceptible. The experience of the audience of the initially impeded perception and the gradual recognition of the objects enhances their awareness of the technologies surrounding them in their daily environment. In Kac's transgenic art, he makes visible the technology that has permeated the body to such an extent that we can normally no longer distinguish between the body and the technology. This is emphasised by the fact that his bunny is no different in appearance or behaviour, unless it is seen under the light of revelation. He turns the internalised and neutralised technological mediation green, which shows that even if we cannot perceive it directly, technology is everywhere.

Concluding remarks

I set out to examine how the modes of human sense perception are affected by digital technologies. In our everyday lives we are often unaware of the processes of perception and the technological mediations at work. In the digital age, this is even harder to discern. I have argued that digital technologies often aim for transparency. They attempt to hide their mediating presence and seem to offer a direct experience of the outside world. Additionally, instead of an external relationship between the senses and technological extensions, we have now internalised technology, both literally and figuratively. Digital technologies often operate out of sight, but their role is nonetheless very substantial. To reveal the technological mediation between the subject and the world, an aesthetic framework is needed. Art has the potential to defamiliarise our perception so that we become aware again of our perceptual processes. Intermediality in performance is a strategy that can particularly reveal the continual presence of technologies in society and the various ways in which they appeal to and manipulate our senses.

The performances discussed above all have in common that they strive to make the invisible visible. They direct the attention to the processes of perception of the spectator and the way the body is embedded in these processes. In these performances, different means are employed to attain the same sensory effects as digital technologies. They separate the sensory modalities of a technology and recreate and recombine them through various techniques. For example, the image of a webcam is interspersed with prerecorded images, the sound comes from a different channel, and considerably lower-tech methods are used to create tactile and olfactory sensations. This results in a fragmentation of reality, which reveals its constructedness. They aim to make the elusive digital technologies visible, often by representing them through the use of low-tech means. Internalised sensory mediation is shown as external material extensions. Aside from making technological mediations visible, these performances aim to make them sensible. The performances construct an experience for the spectator, they confuse and stimulate her sensory faculties and force the spectator to reconsider her sensorium. The resensibilisation of the senses contributes to the awareness of unconscious perceptual processes.

In these performances, the position and viewpoint of the subject is no longer implied in the representation, but it is located in the body of the subject. The spectator is no longer excluded from the representation, but is an important constitutive part of it. Her experience of the represented world is embodied, and thus becomes more subjective. This relocation of the point of view to the subject, instead of the predetermined viewpoint that is constructed in the representation, is also seen in digital technologies. This feature can contribute to an increasing sense of realism, since it is closer to how we perceive the world in everyday life. To further enhance the sense of realism and immediacy, digital technologies make use of haptic interfaces to incorporate the whole body of the subject. They thus require a more corporeal interaction. Their mediation of the world relies on haptic and tactile sensory modes and places the body central to the mediation. As a result, our mode of perception becomes more embodied than in a predominantly visual sensory regime. When we discuss the effects and affects of digital technology on our perception and way of thinking, it is necessary to incorporate the whole body.

I have focused on the critical potential of performance to provide insights into the role of technology in perception. I have outlined a general shift from a visually dominant perception centred on objectivity to an embodied perception related to subjectivity. In my analysis of several performances, I have pointed out some aspects of the changing modes of perception; for a more extensive investigation, it is necessary to look into the functioning of digital technologies and the practices in which they are embedded. In particular the effects of haptic interfaces and the somatory sensations of technology deserve more attention. It would be worth investigating how users interact with haptic interfaces and in what ways haptic sensations affect the experience of technological mediation. For now, I want to conclude that in order to maintain a critical perspective and not become overwhelmed by the ubiquity of technology, it is crucial to learn how to relate to new technologies. We need to become aware of the way our body is constructed in this technologically saturated society and consequently, how our perception is affected. Intermedial performance can help us with this awareness by defamiliarising our perception and making the processes of perception the very subject of the performance.

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