PUPILS: Post-Urban Post-Industrial Landscapes

Technical Mediation & Nature Expression

Master of Science Thesis

Philosophy of Science, Technology and Society

UNIVERSITY OF TWENTE.

By Nico Vermeulen

ENSCHEDE November 8, 2011

Primary supervisor	Prof. Dr. Petran J.H. Kockelkoren
Secondary supervisor	Drs. Steven Dorrestijn

PUPILS: Post-Urban Post-Industrial Landscapes

Technical Mediation & Nature Expression

Master of Science Thesis

Philosophy of Science, Technology and Society

UNIVERSITY OF TWENTE.

Author	Nico Vermeulen (S0090425)
	Wilhelminastraat 44-33
	7511 DP ENSCHEDE
	November 8, 2011
Primary supervisor	Prof. Dr. Petran J.H. Kockelkoren
Secondary supervisor	Drs. Steven Dorrestijn

Photograph on front page	Chernobyl, by Jeroen Koch © 2011

Prologue

Philosophy of Science, Technology & Society

This is my Master of Science thesis for the *Philosophy of Technology* track of the *Philosophy of Science, Technology and Society* programme at the University of Twente, The Netherlands. The main question is how environmental philosophy can benefit from the philosophy of technology. This question stems from the need for repurposing former urban and industrial landscapes.

During the writing of my graduation paper I explored a debate that was completely new to me. I have always been interested in my environment. As an industrial design student I examined the aesthetics and soft impacts of products in public space. Additionally, as a resident of Enschede, the availability of *nature* is self-evident to me. It always takes me less than a quarter of an hour to 'escape' the city so I frequently visit the city's periphery: In my spare time I go cycling and hiking.

During my time as a student I have experienced the expansion of Enschede and other cities in the Netherlands, but I have also experienced the growth of natural areas. That is probably because Europe adapted Natura 2000 legislation in 1992 by which governments committed themselves to the establishment of a network of natural areas (the *Ecologische Hoofdstructuur*—EHS). This apparent contradiction (expansion of both cities and nature) fascinated me and inspired me to explore the debate concerning nature conservation and nature development.

I would like to thank my supervisors Petran Kockelkoren and Steven Dorrestijn for their commitment in helping me finish my thesis. At times they have been strict, but there was always room for humour. I could always turn to them for advice, every day of the week, sometimes face-to-face but often in technically mediated ways. I would also like to express gratitude to my friends who gave me more than enough possibilities to take a distance from my work. Lastly, I would like to thank my family for offering me a stable, warm and encouraging environment.

Enschede, November 8 2011

Introduction

Technical Mediation & Nature Expression

All over the globe, since the Neolithic revolution, the populations of settlements expanded. This was caused by improved agricultural techniques. Later, when modern industries boomed (from 1800 onwards), more people migrated to urban areas. Rising industries were accompanied by large-scale housing projects and other construction works (Ponting 1997). Municipalities built infrastructural works for traffic, communication, water and energy in order to accommodate a transforming society. Despite their merits for human welfare these developments seemed to encompass an impoverishment of natural and rural landscapes. Canals, roads and railways separated once connected ecosystems; Buildings and parking lots occupied once vital forests.

It is hard not to see modern technology as the main cause for a loss of natural and semi-natural landscapes. According to philosophical anthropologist Petran Kockelkoren the diversity of Dutch landscapes was at a maximum in the middle of the 19th century (Kockelkoren 2000). Nature was constantly challenged to react to human (agricultural) activities. People were digging peat, draining moors, ranching livestock and logging woods. These activities resulted in the formation of meadows, fens and polders; terrains with a distinctive and particular evolution of flora and fauna. Thereafter however, people's large-scale (agricultural) industrial machine-assisted activities depleted natural resources and elicited a decrease in landscape diversity.

From the 1980's and 1990's onwards people wished to countervail the abovementioned loss of landscape variety. New nature was developed at former (agri-)cultural landscapes. The 'spontaneous' coming about of a self-regulating ecosystem (the *Oostvaardersplassen*) inspired nature conservationists to make a network of landscapes with primeval ('real') nature that is not disturbed by people (Keulartz 1999; Van der Windt et al 2007). Authorities soon left hold of this ideal: it was expensive and it did not satisfy a desire for recreational landscapes. However, today, many industries that caused cities to expand—and natural landscapes to contract—have ceased to exist or have moved to a different place. This happened in

several European and American cities like Detroit and cities in the Ruhr-area. Buildings are now unoccupied and lots lie fallow as most new businesses have located their offices at intersections of highways. That is: They settled outside the city centres (Nijhof 2008). Subsequently large urban areas are in need of transformation. Some old buildings do find new purposes, whilst others remain empty and pauperise or are pulled down. Nature spontaneously comes about where human beings have left the scene. What to do with those post-urban post-industrial landscapes, which I will refer to as ***PUPILS***?

Because those landscapes have a technical origin my suggestion is that the philosophy of technology might offer a fruitful approach. I will examine the ways in which the philosophy of technology (in which human-nature relations have played an important role) can contribute to the debate concerning nature protection

Alienation and visions on nature conservation

The philosophy of technology originated in times of major societal and material transformations as a result of industrialisation. Early philosophers of technology have characterized industrialisation and modernisation as phenomena that alienated people from the world and from themselves (Verbeek 2005). Philosophers like Heidegger and Jaspers argue that modern types of subsistence rendered direct contact of humans with nature impossible. Technology instigated an instrumental vision on nature: a vision of domination and control (Roothaan 2006). Heidegger therefore romanticised pre-technological tools and, correspondingly, pre-modern semi-natural landscapes. The debate concerning nature conservation has dealt with those romanticised views on nature. An enjoyable and beautiful landscape could not contain technology, because technology would imply a loss of authenticity. In a cacophony of those romantic, scientific, and other ideas environmental philosophers Jozef Keulartz, Henny van der Windt and Sjaak Swart distinguished three distinct visions on nature conservation. I will examine romantic thinking about technology and the contemporary nature debate in chapter one.

Technical mediation and hybridisation

Theories on technical mediation, as presented by among others philosophers Don Ihde and Peter-Paul Verbeek, allow for an alternative approach toward nature preservation and nature development. Verbeek and Ihde argue that technologies (artefacts) mediate people's relations with the world (Verbeek 2005). Technologies do not alienate people from their surroundings but bring them into contact with reality it in different ways. Furthermore, according to them, technologies are not just

neutral tools that assist people in achieving what they want, but mediate human experiences and human actions. “It [technology] gives direction to our senses, our perceptions and our behaviour” (Kockelkoren 2008). Technologies thus help determine what we do and what we see, hear, smell, taste and feel.

Technologies do not just mediate bodily perceptions (the senses) but also influence the ways in which people conceive of phenomena. That is what philosopher Don Ihde calls macro-perception, or cultural hermeneutics—people’s perceptions of a phenomenon are informed by their cultural background (1990). Ihde’s theory focuses on the cultural interpretation of technology, mainly the events in technology transfer, but may also be applied to a cultural understanding of nature in relation to technology. Cultural interpretations of nature always show in bodily (micro-)perception and action, and interaction with nature will have an impact on people’s understanding of it.

Theories on technical mediation show that the nature/society(technology)-dichotomy is not as obvious as it seems. Our perception of nature and our actions in it transform with the technologies that we use. Hence, nature can only be discerned as a category when it is taken up in networks of actants, humans and non-humans, such as philosopher and sociologist Bruno Latour argues (Verbeek 2005). What nature is and what technology is depends on the relations that they enter into. In his book ‘*Politics of Nature: How to Bring the Sciences Into Democracy*’ Latour offers a framework for understanding the relations between humans and non humans. In chapter two I will explore Latour’s work and Ihde’s and Verbeek’s ideas on technical mediation.

Understanding post-industrial post-urban nature

In the third chapter I will study two distinct cases of industry-nature, or post-industrial city-(land)scapes. I will also look at the Dutch situation. The first case that I will turn to is the German *Ruhrgebiet*, where heavy (coal mining) industries have collapsed and new types of nature emerge. Another extensive transformation has been taking place in Detroit, America where 1 million citizens have migrated because the city’s most prominent employers went bankrupt. Now, farms appear in the city centre. Lastly I inspect the effects of urban crimp on Dutch post-industrial city-landscapes.

Content

Prologue

Introduction

C | 1 Views on Nature and Alienation from Nature 8

C | 2 Hybrids and Technology 14

C | 3 Cases of mediated industry-/city-nature 22

C | 4 Conclusions and Recommendations 27

Bibliography

C | 1 Views on Nature and Alienation from Nature

Valuations of the Landscape

In what ways can the philosophy of technology contribute to the debate concerning nature conservation? The rise of modern technology and science came with major transformations in society and the individual lives of people. It has not only altered people's ways of being and perception—their existence and experiences—; it also changed the way in which people used the land. Industrialisation was accompanied by city growth and the large-scale exploitation of natural resources (Ponting 1997). Human beings built increasingly more artefacts and used increasingly more space and more raw materials. Nature was in jeopardy and a growing number of people took effort to conserve natural landscapes. Sometimes they even reproduced historical natural landscapes. What motivations did they have and what kind of nature did they pursue? In this chapter I will look at views on nature protection. I will give special attention to romantic perspectives, because philosophers of technology have understood the effects of technology on human-world relations in terms of alienation—as diverting from authentic ways of dealing with nature (Verbeek 2005).

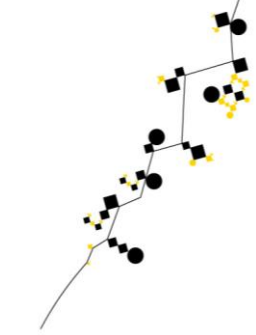
Which different views on nature exist?

Particularly the landscape is the place where cultures express their desires. Therefore it also is the place where we can discern a society's relation with nature and culture (Lemaire 2010). How do people form an image of the type of nature they want to conserve and what are their reasons to engage in conservation? The debate concerning nature development flares up when there is controversy over a new or forgotten landscape (Latour 2004; Van der Windt et al 2007). In other words: existing views on nature protection and landscape management destabilise when new entities—entities that do not fit existing conceptual frameworks—thrust oneself upon society. The nature development vision, for example, has been founded on the situation at the *Oostvaardersplassen* in the Netherlands. The *Oostvaardersplassen* were a large piece of land that human-independently developed into a self-regulating ecosystem (Keulartz 1999; Van der Windt et al 2007). The coming about of this *wild* landscape in a country as crowded as the Netherlands has previously not been considered possible. It seemed that nature was reproducible by creating the right conditions (Kockelkoren 2003). The question was what type of nature should be reproduced.

Both landscape conservation and landscape reproduction are taking place. Distinct members of society have heterogeneous ideas about what destination a piece of natural land should get and about which landscapes should be conserved. Some people cherish natural landscapes for their intrinsic values; others for their instrumental worth (Keulartz 1999). Maintaining or creating nature according to intrinsic values will mean a focus on self regulation and spontaneity. Concurrently, proponents of functional nature protect nature for practical reasons. A forest may be used to store carbon dioxide, a lake for leisure activities and a meadow for food production. On this basis, Dutch environmental scholars have categorised three distinct visions on how and why nature should be conserved: the functional, the classical/arcadian and the wilderness vision (Van der Windt et al 2007). I will explore the first and the last approach, as they point out the extremes in the amount and type of cultural intervention that is allowed and required to achieve the desired result.

The functional vision on nature basically is the vision of everyday use. Nature provides people with resources for food, goods, recreation and energy (Van der Windt et al 2007). The functional vision accepts the cultural contextualisation of nature, as long as there is enough *nature* in general. It therefore does not distinguish between nature conservancy areas or any other kind of nature, like city parks or industrial nature (Keulartz 1999). Nature can express itself by taking advantage of human constructions (artefacts) and activities. Conversely, the nature development vision explicitly rejects anthropogenic influences. Wilderness areas ideally are developed in such ways that they can in principle become self regulating. Ironically this culture-free landscape is being established with the help of heavy machinery to remove all distorting (cultural) elements from the milieu (Keulartz 1999). “People at once create the conditions of possibility; the rest will happen according to a natural succession series” (Kockelkoren 2003).

Genuine wilderness nature, according to the nature development vision, does not simply come about once humans have abandoned an area. The image of wilderness nature is founded on the landscape situation before humans started farming in permanent settlements (Keulartz 1999; Ponting 1997). In order for it to thrive all traces of culture—buildings, domesticated animals, fertilised soils—have to be erased. From this perspective technology cannot be used, because “an undisturbed development of plant and animal communities, [is] irreconcilable with the demands of exploitation, the significance of cultural-historical landscape elements and the importance of the richness of varieties” (Keulartz 1999 : 3).



In contrast, the functional approach holds that nature preferably is everywhere and that we should not discern between natural landscapes and cultural landscapes. Philosopher Kockelkoren has argued that we live in a modern city-(land)scape. This means that anthropogenic traces can be found everywhere. He claims that cultural exploitation and nature go hand in hand, as long as exploitation methods are adapted to the behaviour of animals and plants. Technologies are being perceived as potentially beneficial to nature and are designed as to be both economical and environmentally friendly. Nature can then hitch on to instigated cultural developments and grow and live on technical artefacts. In other words: nature can be culture-following, or pseudo-domesticated (Kockelkoren 2003).

The concept of alienation

Van der Windt, Swart and Keulartz' distinguished three motives to engage in nature conservation. Those visions on nature conservation are idealisations and do not necessarily correspond to conservation and development in practice and policy, which often is a multi-stakeholder process involving among others farmers, conservation organisations and spokespersons for recreationists (Van der Windt et al 2007). Especially the viewpoints of tourists are frequently coloured by romantic motifs. In order to understand what romanticism means I will interweave the ideas of two philosophers of technology with Lemaire's philosophy of the landscape.

The consequences of landscape change for people are not just of an aesthetic nature (the loss of natural landscapes); the advance of cities and other cultural creations, together with social transformations through industrialisation, has led sociologists and philosophers to believe that humans would become alienated from their milieu, from society and from themselves. These ideas have been attributed to the Romantic Movement. From around 1750 romanticism became a trend in art, literature and philosophy. It developed in reaction to scientific and rational ways of seeing nature. The Romantic Movement argues against the cold scientific rationalisation of nature. It is concerned with subjective sensory and emotional experiences of reality rather than a reduction of the world to facts and figures.

Several late 19th and 20th century philosophers of technology, like Heidegger and Jaspers, had romantic motifs in their verdict of modern technology (Verbeek 2005). In early and classical philosophy of technology, technology was often understood as a disruptive force. Philosophers argued that technology forces people to give up traditional ways of living and that it hinders people to have an original relation to nature (Verbeek 2005). Jaspers expressed this as technology's tendency to create large-scale mass-rule leading to people's loss of authenticity—a true self, what it

really means to be human. As a result of ontological and existential changes caused by modern technology and science, human beings cannot have a harmonious relation with their surroundings and cannot live in peaceful coexistence with nature. According to philosopher Martin Heidegger modern technology unveils nature as "a storehouse of raw materials"—a standing reserve (Verbeek 2005 : 54). Heidegger believed the essence of technology to be a matter of *enframing (Das Gestell)*: The way humans order their world and reveal it. In philosopher of technology Hans Achterhuis' words many philosophers believed that "nature is "disenchanted" in the hands of the technical projects of modernity, cut up into however many ways or into however many pieces of matter that humanity finds useful" (Achterhuis 2001 : 1). In contrast, romantics like to focus on the *wholeness* of things.

The rationale behind alienation is that people are capable of accessing reality (in this case nature) itself in direct ways. Phenomenologists deem an unmediated and direct experience of things that exist in reality possible. They suggest that, with proper method, people can encounter the *things-in-themselves*. Modern technology hinders people from achieving authentic existence and alienates them "from the world in denying them a meaningful place to exist" (Verbeek 2005 : 99). Symptoms of alienation are that people's experiences become less rich and people's engagement with nature is obstructed. According to Heidegger archaic technologies did not have such an effect. Pre-industrial tools allowed for spontaneity and mistakes, and for letting things be; as opposed to the rationality of modern technology.

Although alienation does sometimes occur, according to Verbeek: "Classical philosophy of technology prestructured its analysis in such a way that it could not *but* discover alienation [original italics]" (2005 : 7). Verbeek argues against the premise that technology always causes alienation. He however one-sidedly understands alienation as a negative state-of-mind, in a pathological sense, as something that should be avoided. In contrast philosopher Petran Kockelkoren argues, in line with philosopher and sociologist Helmuth Plessner, that human beings are alienated by nature (Kockelkoren 2003). Alienation, if it exists, is part of the human condition. Plessner's claim disputes the assertion that because of the usage of modern technology "something originary gets lost" (Verbeek 2005 : 74). We cannot argue that traditional relations between people and their world are being distorted due to technology, because traditional relations (or a natural basis) do simply not exist and have not existed.

Concluding, the alienation thesis—that frequently shows up in the classical philosophy of technology—suggests that a scientific way of gaining access to reality

is inferior to more original ways of experiencing reality. Contemporary philosophers of technology have argued that original human-world relations do not exist. However, those thinkers like Verbeek have discarded alienation in total. I argued above that feelings of estrangement—the belief that we do not belong to culture or to nature—may occur and may not be negative. Kockelkoren even shows, by means of Plessner, that alienation is part of the human condition (1999).

The ways in which people relate to nature—whether scientifically or romantically—reflects in the ways in which they deal with nature and wield the landscape. Nature development, the (re)construction of wilderness, is motivated by something, whether it is alienation or something else. In the next paragraph I will explore the relations between estrangement and people's ideas about the conservation of nature.

How does the concept of alienation relate to wilderness creation?

In the first paragraph I contrasted functional (anthropocentric) nature with wilderness (ecocentric) nature. I showed that nature developers aim to establish pre-technical landscapes that are free from cultural traces. They argue that true nature encompasses only those species of plants and animals that have colonized a region on their own accord (Keulartz 1999). In the second paragraph I examined a romantic strand of thinking, as one possible way to speak of landscapes with theories from the philosophy of technology. The next section serves to sketch a romantic vision on landscape conservation and landscape development.

Anthropologist and philosopher Ton Lemaire wrote about how people experience the landscape and engage with nature. In his book 'The philosophy of the landscape' he describes how landscape painters felt alienated from culture—the modern mindset—and from material culture—the rise of industries and urbanisation. Romantic painters and poets therefore wanted to escape the city and fled to the quiescence of 'wildernesses' and the countryside to paint their works of art (Lemaire 2010). The Romantic Movement pursues the protection of natural and cultural values: It celebrates prehistoric independent wilderness nature and historical landscapes in which nature and culture were in balance.

Currently, when landscapes need repurposing, people can turn to the reconstruction of wildernesses and cultural-historical landscapes. The landscape has become reproducible, especially in the Netherlands. It is therefore also subject to the taste of the masses (Kockelkoren 2003). Technology has been blamed for causing a loss of authentic landscapes. However, pre-technological cultural landscapes and wildernesses have been romanticised in visual arts and literature, and were pictured

as the counterparts of functional, rational, technical nature. However, landscapes were not as idyllic as people believed they were; landscape painters eradicated technical and cultural 'disturbances' from their paintings (Keulartz 1999; Kockelkoren 2003; Lemaire 2010). Nowadays organizations do not strive for nature without human interventions. Pre-technological nature is not the reference anymore: this is expensive. Tourism and recreation are allowed (Van der Windt et al 2011).

From alienation to mediation

The evanescence of nature motivated authorities and individuals to conserve nature by demarcating natural landscapes as distinct from urban and industrial areas. Wildernesses and historical cultural landscapes were recognised and protected. People can relate to nature in multiple ways. Van der Windt, Swart en Keulartz have distinguished the functional-, arcadian- and wilderness vision on nature (2007). These visions differ primarily in the amount of cultural control that they permit. Nature developers aim to establish ecosystems that resemble a pre-technical landscape, whilst others see nature as a source of raw materials and therefore strive to have at least enough nature. Propagators of the arcadian (classical) view cherish the rich variety of landscapes that exist(ed) because of traditional ways of exploitation. I also showed the ways in which human beings appreciate technology. Some thinkers have understood it as an instrument to a better and prettier—pastoral utopian—world. Many classical philosophers of technology saw it as a cause of alienation. With the help of Kockelkoren and Plessner I showed that human beings are always alienated from their world.

Van der Windt, Swart and Keulartz three positions are inadequate to describe what happens with and what happens to PUPILS. PUPILS are not *a priori* functional; nor are they truly wild according to the popular definitions. Those landscapes show characteristics of pseudo-domestication—of half-nature (or culture-nature)—and may therefore be seen as exponents of an arcadian approach toward nature conservation. However, most arcadian landscapes are still controlled by human beings. Conversely, PUPILS exhibit a great deal of ecological autonomy, but they thrive on technical remains.

C | 2 Hybrids and Technology

The Practice of Mediation

How can the existence of PUPILS be explained if they are not represented in the three common views on nature? In the previous chapter I described the debate concerning nature conservation. Furthermore, I examined how one type of understanding technology—a romantic kind, in which technology is seen as the cause for a loss of authenticity—can help understand developments in nature conservation. A romantic understanding of landscapes and technology explicitly rejects modern technology and therefore is of little use to the evaluation of post-urban post-industrial landscapes.

In this chapter I will study contemporary philosophers of technology. I will pay attention to Ihde and Verbeek's post-phenomenological approach, in which technology is seen as something that mediates relations between people and their world, and Latour's politics of nature, in which he discusses the hybrid character of political ecology. On this basis I will develop a framework in which theories on technical mediation and hybridisation are combined with ideas on nature conservation.

What is technical mediation?

Technologies, artefacts, are things that make a difference. This proposition seems redundant, but it is the basis for thinking about technology in terms of mediation. Among others technologies make a difference in how we speak about landscapes and nature, a difference in how we conceive of ourselves in relation to the environment and a difference in what we do with landscapes. Philosophers have understood this *difference* differently: instrumentally, in terms of mediation and substantively (Verbeek 2005). I will draw an account of their analyses.

Since the mid nineteenth century thinkers have tried to understand how artefacts change the lives of individual human beings and how they affect social relations. Philosophers like Max Weber and Jacques Ellul saw technology as an autonomous, controlling influence on civilization. Others, like Karl Jaspers, argued in instrumental fashion that technology is not inherently good or bad, but simply a neutral means to a human-defined end. A further divide between philosophers is between those that hold dystopian and those that hold utopian views on technology, respectively

qualifying technology as something that threatens human existence or something that can solve every social problem (Verbeek 2005).

For long the focus in the philosophy technology has been on changes in human thinking that have made the introduction and spread of technology possible. Philosophers of technology did often not discuss the effects of technical artefacts on human life, but examined modes of human existence that transcend humanity's use of technology. Verbeek typified this focus on conditions of possibility as *transcendentalism*. Conversely, later philosophers have tried to grasp from a first-person point of view what individual things do to how individual humans exist in the world. A so-called phenomenological approach to technologies allows us to study phenomena in terms of how people experience them—in how they appear to people (Verbeek 2005).

A basis for thinking in terms of technical mediation is that we should not presuppose the mastery of human subjects over material objects: not over technical artefacts, not over animals, not over plants and not over dead matter. Technical mediation describes how technologies coshape the actions and experiences of human beings (Verbeek 2005). Philosopher Don Ihde approached the question what technology does in terms of human-technology-world relationships (1990). A hiker´s relation to a landscape is quite different from someone that is seated in a car. People relate differently to the world through the usage of technologies. So actions and understandings are transformed by technologies at the moment they use them, embody them or immerse in them.

Technologies have an impact on how human beings act and how they perceive the world. Ihde has distinguished between micro-perception—sensory experiences of reality—and macro-perception—the cultural background that helps to understand sensory experiences (Ihde 1990). Technologies thus mediate the ways in which human beings perceive the landscape, both with their senses and hermeneutically (interpretation and understanding). Particularly this latter relation will be of importance in an examination of technologies and cultural identities. I will highlight the macro-perceptual dimension of experience in order to understand people's valuations of nature. However, macro-perception is firmly intertwined with micro-perception. For example, if I open the service Google Maps to look at a landscape my understanding of it comes about through the pictures made by Streetview.

Classical phenomenology presupposes alienation: it could not but see technology and science as a cause for functional and dominating visions on nature. Therefore philosophers of technology Don Ihde and Peter-Paul Verbeek have typified it as

possibly a *romantic throwback*. Heidegger's phenomenology—his study on how the world appears to human beings through technological artefacts—is nevertheless useful for understanding the effects of technology on the lives of human beings. Lemaire shows how space technology—satellite images of the globe—made people realise that the world is an enormous and highly complex ecosystem.

To allow for phenomenology to describe the effects of particular technological artefacts it needs some modifications. The tradition of continental philosophy, that includes the phenomenological movement, has namely encountered several paradigmatic transformations including the linguistic turn—which holds that "the language in which human beings speak about reality is thought to determine what may count as reality" (Verbeek 2005 : 1)—and postmodern developments that state that truth about reality is not out-there in the world as something that is ready to be discovered, but that truth is a (social) construct.

Contemporary philosophers of technology made those necessary adjustments to phenomenology (Ihde 1990; Verbeek 2005). First, Verbeek and Ihde argue, phenomenology must not aim to describe reality itself but study how reality appears to human beings. In this alternative account phenomenology analyses the relations between people and their world, namely how people experience reality via their senses. The new (post-)phenomenology of technology shows how technologies influence the relations between people and their world. Philosophers cannot always pinpoint the exact ways in which technology brings about changes in human-world relations, but hold that technical artefacts always affect the ways in which people act and the ways in which people perceive things.

The debate concerning nature conservation (which takes place on the macro-level of cultural interpretation) is informed by people's technically mediated experiences of nature. This means that knowledge about reality is always mediated too. This is the central theme of the next section. Technical mediations play a decisive role when human beings collectively construe a common language to describe and order reality.

What are hybrids?

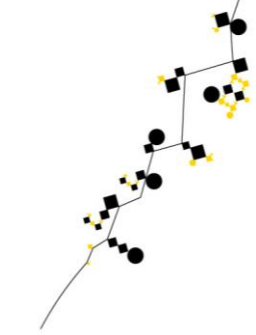
In the last section I showed that technical mediation is a term to describe how the world appears to human beings through the use of artefacts. Technologies coshape the actions and experiences of human beings: a fight between two people becomes another fight when there is a gun involved, and the world looks differently through binoculars than through a microscope. Ihde showed how this mediated type of

micro-perception affects people's understanding of the world, which he calls the cultural hermeneutic (macro-) side of perception.

Modern philosophers of technology—those that held instrumental or substantive positions—understood action in terms of rational autonomous subjects (people) that use objects (like technology or raw materials). Objects, including entities like animals and technical artefacts, were believed to have no influence on people's actions (Verbeek 2005). Indeed, the modern project was to purify human beings and their external world in order to maintain a rational and free subject, which was necessary for doing ethics (Latour 2004). Yet, this type of understanding of technological and of natural entities neglects the way in which artefacts and other *things* affect people's actions in the world and understanding of the world. For example, the spontaneous appearance of vegetation at the *Oostvaardersplassen* made people reconsider the ways in which they thought the landscape should be used. Thus, another approach toward knowledge and action is needed.

In his book 'Politics of Nature' Latour strives to offer a better take on political ecology. With political ecology Latour denotes the green political movements: groups of people that bring environmental issues (nature) into politics. According to Latour, the idea of nature (visions on nature) "depends on a certain [incorrect] conception of science" (2004 : 213). His main concern is to bring the sciences into democracy; in current debates concerning environmental policy scientific data (so-called facts of nature) are granted a privileged position, above values. Latour shows how participants in political debates short circuit discussions by bringing those facts of nature to the table. Scientific knowledge however is not a direct representation of *nature*, but a highly mediated and political affair (Latour 2004). Knowledge about nature is hybrid: in order to make knowledge about reality scientists have to enrol human beings, nonhuman entities and technologies. Thus, science cannot preserve its privileged position. To put scientific arguments and ethical, political arguments on the same level on the political agenda we need to treat nonhumans and humans symmetrically. I will explorer this insight, because it can be of importance to the understanding of post-urban and post-industrial landscapes.

Scientists present facts as a deciding force in decision-making, because matters of fact stand for entities (and relations between entities) that exist. The claim 'global warming is a fact' equals 'global warming exists', or better: the relationship between humans letting technologies emit carbon dioxide and an increase in the world's mean temperature exists. Conversely, *matters of value* signify a reality that someone wants to exist—a possible reality to which someone attributes significance. Latour



argues that matters of fact should not have a privileged position in political discussions, because (scientific) information about reality is always incomplete and possibly incorrect, because scientists are biased in their search for true reality and because scientific knowledge is not a matter of discovery in nature, but the result of negotiation and debate amongst the members of scientific communities (2004).

In the case of hybrid phenomena agency—a term that stands for an entity's capacity to act—is shared and distributed between human and nonhuman entities. Questions about what incited an action—*id est*: what caused an event to take place; what brought a new reality into being—cannot be answered by turning to sociological or technical determinism, but require a framework that integrates hybrids.

Hybrids are those types of phenomena that cannot be fitted in one conceptual category. They are neither solely natural nor solely social, neither exclusively nonhuman nor human. The ozone layer and cyborgs (fusions of humans and machines) are such *hybrid* phenomena. Those phenomena came about—came into existence—not just because humans caused it, nor naturally or spontaneously, but as the co-constitution of human and natural actions (Latour 2004). Because problems and profits caused by them cannot be attributed to human individuals, nor to natural processes, hybrids require special treatment. This treatment involves the distribution of agency over the actors within a network.

Actor networks are hybrid assemblages of humans and nonhumans actors: they contain human beings, non human beings and things. According to Latour, entities can be called actors if they make a difference in the actions of the assemblage (2004). Bruno Latour surmounts this problem of shared agency by approaching new hybrid phenomena as the product of actor networks. The principle of shared and distributed agency helps to solve philosophical dichotomies like the culture-nature divide, because it sees actions as the combined product of human and nonhuman entities. Actor-network theory also helps to understand how new phenomena—novel entities in the world—become a recognised and stable member of society. An analysis of an *action* in terms of actors and networks discloses the processes that brought that particular action about.

Particularly that last argument is important. Scientists do not simply witness phenomena in nature and theorise about their behaviour; and when they experiment they do not isolate phenomena by discarding variables and external factors. Rather, scientists construct networks of humans and nonhumans—that include other scientists, but also techno-scientific instruments and the phenomenon itself—to practice the truth of that entity. They act together in order to make a new

member a stable part of the collective. New entities (including the latest technologies and novel scientific facts) stabilise as facts because of successful negotiations between actors in a network, not because they have a one-on-one relationship with reality. Scientific 'facts'—'natural' entities and their behaviour—are not 'more real' or 'more true' than cultural values. In both cases knowledge about (and agreement upon) 'what is the case' is negotiable. For these reasons science should not be granted a special position in debates about what the world is made of and what consequences that has for ethics and politics.

Latour proposes a framework by which politics, nature and science can symmetrically inform public decision making—that is: a democratic framework. He proposes to conceive of scientists as well as politicians as spokespersons, respectively of groups of nonhuman things and of groups of people. Nonhumans and humans that do not have their own voice need spokespersons. Both types of spokespersons have no immediate knowledge and experience of what the groups they represent are conveying, but need techniques (methods, tools, and instruments) to gain that knowledge and simultaneously to make this knowledge public. These processes of 'getting-to-know about' are dirty, whilst the results are presented as clean. Another point is how to deal with minority groups (of either nonhumans or humans) and deviant voices. Scientists, just like politicians, have preconceptions about what the 'voices' of their constituency should be and tend to search precisely for the voices that fit their preconceptions. The 'things' that they are not looking for will not be heard. And if they discover voices that do not conform to their ideas those voices will be ignored or even silenced. Science thus is not a neutral activity; it is as value-laden as politics.

How can an understanding of PUPILS in terms of hybridisation and distributed agency help the nature conservation debate? We can conceive of landscapes as networks of human and nonhuman actors that collectively produce new, hybrid, entities. Next I will further inspect the mediation and hybridisation of the landscape.

Technical mediation of the landscape

To study the role of technical mediation in landscape change and visions on nature conservation we need to look at how technology materially alters the outlook of the environment. In this case too, the subject/object (or cultura/nature) dichotomy is problematic. Sociologist, philosopher and historian of science Andrew Pickering argues that scholars in natural sciences have a way of experiencing (and analysing) the world in which people are absent. Oppositely, within the paradigm of social sciences the material world is absent (Pickering 2001). Rather, things and people,

humans and non-humans, 'live' together. Humans and nonhumans coexist—they cohabitate the world—and are attached to each other (Latour 2004). Think for example of things like energy and water, food and climate.

Van der Windt, Swart and Keulartz argue that, because they involve societal and scientific perspectives, the concepts landscape and nature should be seen as hybrids (2007). Rather I argue landscapes are best understood as hybrids because they contain entities with both nonhuman and human 'causes'. Landscapes in action are under the influence of those human and nonhuman forces. They are shaped by amongst others geological, ecological and cultural-technical powers. With the help of Latour and Van der Windt we can argue that landscape management politics—decision making processes in which all kinds of actors co-decide upon what a landscape should be like—involves spokespersons for humans and nonhumans. Ecologists act as spokespersons for nonhuman entities like endangered species of animals, promoters of cultural heritage speak up for heath and foresters help new trees to exist (Lemaire 2010; Van der Windt et al 2007). Those spokespersons introduce human and nonhuman groups of entities in the debate and continue to make sure that they are known amongst other members of the collective. That way the meaning of a landscape can stabilise.

The evolution of the landscape is best described by Andrew Pickering's concept: the *dance of agency*. Pickering philosophises about how the collective should deal with hybrid phenomena. The dance of agency explains how the relations that people have with nature are neither a matter of complete control, nor of complete neglect (like within the philosophy of technology). Humans and non-humans sequentially react upon each other's doings. This knowledge can be implemented in policy on how to deal with natural phenomena, like spontaneous vegetation but also more severe events like natural disasters. Pickering argues that human beings must not strive to fully suppress and control nature, but rather accept the dance of agency and structure spaces such that they are not completely swept away in case of an emergency (Pickering 2001).

In post-industrial (city)landscapes the dance of agency is enacted by technologies, nature and human beings. People, technology and nature co-shape the landscape and co-constitute each other within this landscape. That is: they only exist and only have their particular shape/role because they act together. Once minority groups (like vegetation and animals, but also subcultures) will gain ground in the city-landscape—not in a top-down regulated fashion but via bottom-up deliberative or spontaneous processes—people's attitude toward the landscape may change. Such a development may only occur once ideas about the modern domination over

nature and society, of the manufacturability of people and landscapes, fade away. Manifestations of subcultures (either in the form of people or nature) must be recognised, accepted and even appreciated.

To the cases

Technology is not a means to human-defined ends. Neither does it rule society, like Heidegger argued, because it discloses everything in the world as raw material. Sociological and materialists accounts do not adequately describe technology's effects on relations between human beings and their world. Mediation theory is an alternative to the abovementioned approaches. In Latour's understanding technical mediation involves the transaction of characteristics between humans and nonhumans. In the next chapter I will explore cases of post-urban post-industrial nature in which the mediation between human and nonhuman characteristics is very explicit.

C | 3 Cases of Mediated Industry-/City-nature

Contemporary Landscape Developments

In this chapter I will appreciate technology not just as a source of landscape distress but as a mediator of the milieu. I will scour Detroit, the *Ruhrgebiet* and a few cities in The Netherlands for traces of technology-nature. At the German Ruhr-area heavy industries have collapsed leaving coalmines and blast furnaces to be eventually consumed by nature (Hospers & Timmermans 2008). Subsequently, in Detroit (USA) automobile industries left "Motor-city" from the 1950's onward resulting in urban decline. City-farms take their place (Poppenk & Poppenk 2009; Temple 2010). Lastly, within the Dutch town of Hengelo a twenty acre industrial city-landscape is being repurposed whilst the municipalities of Delfzijl are considering the demolition of neighbourhood blocks to cope with the effects of urban shrinkage.

In what way are these cases hybridised forms of nature and technology, of lifeless things and living matter? How are human and nonhuman characteristics In order to understand the hybridisation of nature and technology I will identify the differences and resemblances between these cases. I will explain the course of events in each case and look at whether the end results are a type of nature in co-operation with humans and technology or nature in reaction to humans and technology.

'Spontan Vegetation' in the 'Ruhrgebiet'

The *Ruhrgebiet* was a vast industrious area in western Germany. Its coal mining companies advanced the industrial revolution in Europe. Decades with several wars and crises made the Ruhr economy wither but then again bloom. The Wirtschaftswunder—development assistance after the second world war—gave it a last impulse before the coal crisis and steel crisis gradually put most heavy industrial activity to a standstill (Hospers & Timmermans 2010). This could have caused major unemployment and economic decay, but Ruhri's (citizens of the Ruhr cities) discovered the chances that a post-industrial landscape had. This required them to blend nature and technology (industry) in the context of tourism and recreation. The *Ruhrgebiet* has always been a relatively green region, but was nevertheless being perceived as filthy and grey (Hospers & Timmermans 2010). I argue that in the case of the Ruhrgebiet not the transformative effects of industry on the landscape, but the separation of industry and city from the landscape—the establishment of

autonomous industrial, residential and business sites—has caused this negative image.

According to Hospers and Timmermans decisions for the locations of industrial complexes and technical infrastructure were solely informed by pragmatic (functional) arguments: the presence of raw materials. With their focus on efficiency developers did not consider aspects regarding environmental qualities or the liveability of the landscape. There were little operative safety rules, let alone environmental regulations. Industrialists simply placed machines and factories most proximate to coals and other resources. The lack of regulation caused industrial sites to become unbearable and harmful places. As a straightforward security measure factories were shielded from the public by 9600 kilometres of wall in total (2008).

Despite extensive industrial activity the Ruhr basin is a very green region. Even at its industrial peak 69% of the Ruhr valleys areal consisted of farmland or forests (Hospers & Timmermans 2008). But in the remaining space heavy industry caused serious pollution of soils, water and air. This filthy image has been popular amongst people living in other parts of Germany. That is because in the Ruhr valley industry was disconnected from the landscape. Rather than striving for the co-development of industry and landscape, companies have turned their sites into restricted domains. Both people and nature were excluded from the industrial landscape.

The permanent stop of heavy industrial activity—or most of it—made room for other activities. Nature was the first to claim this space in the (now) post-industrial landscape. Abandoned piles of coal, unused railway tracks and idle factories were unexpectedly engulfed with nature. Ruhri's fondly christened this natural process *Post-industrielle Spontanvegetation*. From 2000 onwards policy makers promote spontaneous vegetation by developing post-industrial parks and networks of hiking/cycling routes (Hospers & Timmermans 2010). Decaying chimneys, rusty pipes and overgrown structures have become part of the Ruhrgebiet's new identity. The deterioration of industry has strategically been transformed into a catalyser for recreation, art, education and services.

Post-industrial decline in Detroit

In this second case I will examine a specific city rather than a region: Detroit, a large metropolitan area in the United States of America. In the 1950's Detroit housed over 2 billion people. Many of them worked at Ford and Chrysler, two of several world-famous motor companies that turned Detroit into a metropolis. But the modern city's employers have moved to the suburbs, causing a 'white flight': the departure of wealthy people from Detroit's central neighbourhoods. After the 1986 riots people were scared to live downtown, leaving only poor Afro-Americans that could not move to a new place behind (De Bruijn 1998). Within half a century Detroit has lost half of its citizens. As a result, the city's economy was in permanent decline. One in five houses stands empty, and buildings and fallow lots run wild. In 2010 "40sq miles of the 139sq mile inner city have already been reclaimed by nature" (Temple 2010). That is 100square kilometres. Free-ranging feral dogs roam the empty streets (Temple 2010). Trees grow in skyscrapers without people. And neighbourhoods have been characterised as the prairies of Detroit city (Guardian 2010).

Municipalities and citizens are trying to cope with these socio-economic transformations. Detroit's former (1993-2001) mayor Archer planned to demolish disused buildings and replace them with casinos, to bring the money back into the city (De Bruijn 1998). Yet, just outside the city centre landscape developments take a different course. The newborn wildernesses invited people to recultivate the land, but now with different than industrial purposes. Some residents turn abandoned neighbourhood blocks into farmlands. The lack of proper supermarkets—many shops closed because of descending visitor rates—required those people to grow healthy food for themselves and for their children (Maris & Donkers 2009).

The Dutch situation

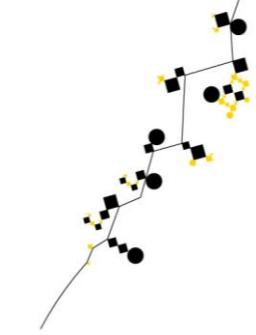
Lastly I will study landscape developments in the Netherlands. I will do so by discussing Delfzijl and Hengelo. Hengelo has experienced the exodus of industrial activity from its city centre to the periphery and Delfzijl is losing many of its citizens, especially younger people. Hengelo is an industrial city *pur sang*. It grew from a population of 8.000 in 1850 to 80.000 today. Especially the Stork Engineering Company was a significant employer. It built factories, warehouses, school and even an entire neighbourhood for its workers called *Tuindorp* (a garden village). Stork is still in business but has ceased to be such an important actor. Its factory sites and those of other companies are now available for reuse and repurposing. Already several buildings have been transformed. An educational centre inhabits Stork's foundry and a museum is located inside the Wilhelmina Factory School.

Delfzijl is losing its citizens, especially younger people (Gemeente Delfzijl 2009). The citizens of Delfzijl are predominantly poorly educated because jobs in Delfzijl's port and industry did not have high requirements. Today's high-tech industries get their employees from outside Delfzijl. Within the city of Delfzijl the demand for housing is low. Because of that many houses and other buildings are vacant. Like in Detroit some neighbourhood blocks are being demolished. Those places can be used as green areas to make a more liveable city. But green spaces have to be maintained and maintenance is expensive. Authorities therefore consider to give these lands back to nature or to give them an agricultural purpose. Concurrently, in Delfzijl's periphery new high-tech industries settle at the Eemshaven (Delfzijl's harbour). Awaiting the construction of buildings and infrastructure some areas can be used as temporary nature. Construction sites often lie fallow for decades. They can be used as natural landscapes and contribute to the flourishing of plant and animal communities. In time however, the natural landscape will make place for human-made structures.

Reflection

After a period of growth areas like Detroit, Hengelo, Delfzijl and the Ruhrgebiet experienced the departure of industries, sometimes accompanied by the departure of residents. The transformation from an urban and industrial culture into a post-urban and post-industrial one challenges municipalities and spatial planners to understand landscape development in novel ways. Companies and people move to the periphery of cities, leading to the drainage of city centres and industrial centres. The spaces that fall vacant evolve in different ways. In some cases, like Detroit, entire neighbourhoods run wild and are left untouched. On the other hand, vegetation that started to grow in industrial complexes in the Ruhrgebiet is accepted and designated as natural landscape. Elsewhere, like in Delfzijl, neighbourhood blocks are consciously being demolished in order to create a greener living environment for the remaining population. Lastly Hengelo is not losing its residents, but major companies like Stork are using increasingly less space.

The cases that I discussed display the hybridisation of the natural landscape and technical artefacts. I discerned post-industrial spontaneous vegetation and temporary nature as occurrences of landscapes in which humans and non-humans receive symmetrical treatment. In these cases technical artefacts are not perceived as disruptive to wildernesses or as instruments for cultural exploitation, but merge with flora. Different processes lie at the root of technology-nature, but in principle their origination cannot be traced back to either human or non-human actions.



Rather it must be sought in the co-evolution and co-productions of those actors. By creating proper conditions of possibility— humans grant nature sufficient agency to come into existence.

C | 4 Conclusions and Recommendations

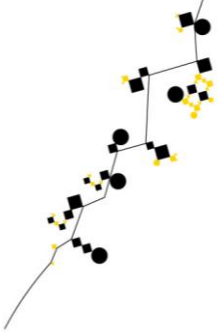
The value of technology-nature

Within the nature conservation debate negative developments, like a loss of biodiversity, are often attributed to modern technologies and industrial activities. Like I mentioned in the introduction it is hard not to see technology as the main cause for the disappearance of many natural and semi-natural landscapes. When thinking about nature there appears to be tension between things that are made by humans and things that come about spontaneously. Yet, technology does not necessarily cause landscape deprivation; this is not an inherent property of technology. The ways in which we think about technology and the ways in which we think about nature need to be brought together—that is: assembled. To do so, we have to rethink those concepts at once.

Thinking about technology and nature

What can the philosophy of technology contribute to the debate concerning nature conservation? Philosophers of technology have studied the effects of technology on the lives of people. They broadly distinguish three ways in which to think about technology: technology as neutral instruments, technology as a determining force on society and technology as something that mediates relations between people and their world. In the first case technologies are perceived as neutral means to reach human-determined ends; in the second case technology is believed to change culture in order to make technology function efficiently and in the last case technology is seen as something that influences the actions and perceptions of people.

Instrumentalism does not grant technology sufficient power to make a difference in the actions and experiences of people. If we apply it to the nature conservation debate technology would be perceived as something that is simply used to shape the landscape according to human desires. This is what currently happens when machines are used to create the conditions of possibility for wilderness nature to come about. The conservation debate would likely not benefit from this strand of thinking about technology, because it sees landscape change primarily as the result of human will. Conversely, substantive theories conceive of technology as something that turns against the will of people. Philosopher of technology Martin Heidegger



saw technology as a way of thinking with which human beings could not but see nature as a storehouse of raw materials. Substantive theories conceive of technology as something that harms nature and disturbs the ways in which people can relate to nature. The application of substantive philosophies to the nature conservation debate would result in a romantic appreciation of pre-technological landscapes and the abomination of technology-nature.

Theories on technical mediation do not conceive of technology as something that is either good or bad for nature and either something that is under human control or something that turns against humanity; from a (post-)phenomenological perspective technical mediation describes how technologies coshape the ways in which the world the world appears to people. Nature is perceived differently through technical artefacts: the sensory data that comes to human beings is different if they experience a tree through a microscope than if they perceive that same three through binoculars. In turn the mediated ways in which people perceive the world affect the ways in which they conceive of it—they will interpret it differently. It is important to know that when speaking about nature and about nature conservation our cultural understanding of it is always mediated by technology.

A different kind of technical mediation has been examined by Bruno Latour. His actor-network theory describes how assemblages of human beings, non human beings and things (including artefacts) come to act together. Technologies mediate the relations between actors in a network by redistributing agency—the capacity to act—over human and nonhuman actors. As such, the actions of a particular assembly cannot be attributed solely to human beings, but are the coproduction of human and nonhuman entities. In the light of nature conservation landscapes can be seen as actor-networks in which humans, technologies, organisms and dead matter take part. Those networks produce new realities with new entities that cannot be categorised as *cultural* or *natural*, but may better be understood as hybrids with nonhuman and human characteristics. Therefore, the landscape itself must also be conceived of as a hybrid concept.

The classical vision on nature conservation—the arcadian nature vision—cherishes this type of interplay between humans and nonhumans. The type of nature that is being conserved comes about in reaction to cultural stimuli: it is semi-natural, or pseudo-domesticated. Yet, the types of mediation that it allows are pre-technological and not modern technological. This vision rejects technical mediation.

Reconsidering current vision on nature conservation

Nature conservation visions are derived from typical examples. In chapter three I studied occurrences of a particular kind of nature: post-urban and post-industrial nature. This type of nature has a fair amount of ecological autonomy (it is wild), but flourishes on modern technical remains. The resulting landscapes are technology-nature hybrids that contain entities with both human and nonhuman characteristics.

PUPILS are being conserved, but do currently not fit within existing views on nature conservation. Post-urban post-industrial nature is not functional nature. However, it is nature that hitches on to human activities. It is not a classical culture-nature landscape. Yet, it is a modern type of culture-nature. It is wilderness nature, but has modern technology as its basis. Hence, PUPILS might be conceived of as landscapes in which all three nature conservation visions are combined. But that would bring technology-nature in a vague and undefined position. I therefore propose to supplement the current scheme:

- Functional nature
- Classical nature
- ***Technically mediated nature***
- Wilderness nature

The conservation of technically mediated types of nature requires a new way of looking at nature conservation in relation to technology. Ecology—the study of relations between organisms and their environment—should not provide the norms for nature conservation. Something like *real nature*, or nature without people, does not exist. Landscape change always stems from hybrid assemblages—networks of human and non-human actors—that co-constitute action. This is true even in the case of nature development, where people attempt to establish autonomous and self-regulating ecosystems by creating and controlling conditions of possibility for wild nature to exist. The natural sciences do not offer an account of the world as it essentially is (with or without people); rather, scientific knowledge is the coproduction of multiple human beings, artefacts, dead matter and non-human beings. Within a new politics of nature scientists are not conceived as actors who discover and disperse the truth, but simply as spokespersons that give groups of non-human beings and non-human things a voice in politics. Landscape management might benefit from such a politics in which humans and non humans, things and beings, receive democratic treatment. It renders arguments that rely on 'what nature really is' impossible and grants technically mediated nature (as a hybrid of human and non-human actions) the voice that it needs to exist.

Recommendations

The amount of power and the type of power that people exert on landscapes differs per place per time: it fluctuates. The post-industrial and post-urban developments in Detroit, the Ruhr basin and cities in the Low Countries are the products of such fluctuations of agency (Pickering 2001). They are no singulars but exemplars of processes that now occur primarily in Western countries, but that are likely to occur all over the world. Urban shrinkage and industrial decline offer opportunities for non human beings and plant life to come into existence. Many species of animals and vegetation are currently being endangered by human activities and may soon be extinct. Nonhumans seem to flourish in the absence of human beings, because a proclaimed *natural balance* of predators and prey is restored. At the same time however, pseudo-domesticated species are being 'endangered' by the departure of human beings—like in PUPIL-cases. Biodiversity is not necessarily impoverished through human activities; On the contrary, it may increases because of cultural contextualisation—including technical mediation. Hybrid forms of nature prosper in the aftermath of technical human activities and may cause greater landscape diversity and biodiversity.

Cases of industrial-nature and city-nature show that human-nature interactions result in unconventional landscapes in which human and non-human characteristics receive equal appreciation. New and transforming technology-nature relations will lead to the evolution of both natural entities and human entities. A conservative approach toward novel landscapes will likely lead to processes of purification: nature is then benchmarked in respect to situations in the past and human interference takes the character of *restoration*. This makes nature very vulnerable because human-adapted species of plants, animals, bacteria, and fungi, will continue to 'threaten' *original* types of nature. It makes sense to explore landscape-realities where the desired manifestation of nature is not dictated. We can then make urban wildernesses, post-industrial parks, pocket arcadia's, and city-farms that can be found amongst those culturally mediated types of nature—technology-nature—their proper place within the collective.

Bibliography

Achterhuis, H. (2001). *American philosophy of technology: The empirical turn* (R. Crease, Trans.). Bloomington, IN: Indiana University Press.

Drenthen, M., & P.J.H. Kockelkoren. (1999). Het milieu van de filosofen: 20 jaar milieufilosofie in Nederland. In *Filosofie & Praktijk 20*(4), 197-191.

Gemeente Delfzijl. (2009). *Krimpen en groeien in Delfzijl*. Delfzijl: Government Printing Office.

Hospers, G. & P. Timmerman. (2008). *Het Ruhrgebied voor Romantici*. Venlo: Uitgeverij Smit.

Ihde, D. (1990). Technology and The Lifeworld: From Garden to Earth. Bloomington, IN: Indiana University Press.

Keulartz, J. (1999). Engineering the Environment: The Politics of 'Nature Development'. In F. Fischer & M. Hajer (Eds.), *Living with nature: Environmental politics as cultural discourse* (pp. 83-102). Oxford: Oxford University Press.

Keulartz, J. (Ed.). (2000). *Rustig, ruig en rationeel: filosofische debatten over de verhouding cultuur-natuur*. Baarn: Kasteel Groeneveld.

Kockelkoren, P.J.H. (1996). Natuurexpressie in een technotoop. In *Ruimte als voorraad* (pp. 24-30). Den Haag: Rijksplanologische Dienst VROM.

Kockelkoren, P.J.H. (1997). De ethiek van het gecreëerde landschap. In F. Becker (Ed.). *De inrichting van Nederland: Het achttiende jaarboek voor het democratisch socialisme* (pp. 134-162). Amsterdam: De Arbeiderspers.

Kockelkoren, P.J.H. (2000). De esthetiek van het landschap. In A. Bousema (Ed.) *Over Schoonheid - architectuur omgeving landschap*, 15-24. Zwolle: Het Oversticht, Waanders.

Kockelkoren, P.J.H. (2003). Het landschap in het tijdperk van zijn technische reproduceerbaarheid. In *Open 1*, 27 - 31.

Kockelkoren, P.J.H. (2008). Culture and Technology. In D.J. van Eijk (Ed.) Cultural diversity and design. Delft: Delft University of Technology.

Lemaire, T. (2010). *Filosofie van het landschap*. Amsterdam: Ambo/Anthos.

Nijhof, P. (2008) A wider view op industrie landschappen. In *Vitruvius* 5(1), 44 - 50.

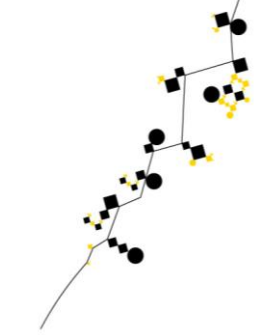
Pickering, A. (2001, February). *In the thick of things*. Speech presented at the University of Oregon, Eugene, OR.

Roothaan, A. (2006). Terugkeer van de natuur. De betekenis van natuurervaring voor een nieuwe ethiek. Kampen : Klement.

Temple, J. (2010, March 11). Detroit: the last days. *The Guardian*, p. 10.

Verbeek, P.P.C.C. (2005), *What Things Do: Philosophical Reflections on Technology, Agency, and Design*. University Park, PA: Penn State University Press.

Windt, van der H.J., J.A.A. Swart, & J. Keulartz. (2007). Nature and landscape planning: Exploring the dynamics of valuation, the case of the Netherlands. In *Landscape and Urban Planning 79*, 218–228.



PUPILS: Post-Urban Post-Industrial Landscapes

Technical Mediation in Nature Development

Documentaries

Bruijn, de W. (Producer). (1998, June 17). Laat op de avond na een korte wandeling [Television broadcast]. Hilversum: VPRO.

Gerrits, B. (Producer). (2004, October 28). *De Donderdag Documentaire: Tuinverhalen* [Television broadcast]. Hilversum: IKON.

Gobbels, S. (Producer). (2010, January 4). *De Zee Lacht Me Toe* [Television broadcast]. Hilverseum: NCRV.

Maris, J. & J. Donkers. (2009, May 10). Detroit een stad in vrije val [Radio broadcast]. Hilversum: VPRO.

Poppenk, M., M. Poppenk. (2009, September 22). Grown in Detroit [Television broadcast]. Cambridge, MA: Cambridge Documentary Films.

Schaaps, M. (Producer). (1996, September 11). *Veldpost* [Radio broadcast]. Hilversum, The Netherlands: VPRO.

Temple, J. (Producer). (2010, March 13). *Requim for Detroit?* [Television broadcast]**.** London: BBC.