

Designing landscapes of entanglement

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The philosophy of landscape architecture consists of many strands, including ethics, ontology and aesthetics, which constantly have to be re-interpreted in a rapidly changing world. This chapter addresses one of these strands, the philosophy of nature, and reflects upon contemporary changes in how it is interpreted and the relevance of this for landscape architectural research and practice.

Why nature? Because in my view nature is currently the most seriously challenged key concept within landscape architecture – a concept that needs to be reassessed philosophically. The strongest argument for such a reassessment comes from the field of geology, which has announced a new geological epoch, following the Holocene: the Anthropocene. This term was coined by Paul Crutzen and Eugene Stoermer in 2000 and designates a completely new geological situation, in which humanity now influences every square metre on the Earth's surface and its atmosphere, too, for example through carbon or nitrogen emissions. Geology is able to trace human impact in the Earth's sediments, and the influence is so strong that a return to the Holocene seems to be impossible. Consequently, there is no nature left in the classical philosophical sense. According to this notion there is a dichotomy between nature and human culture, and nature is a powerful agent in its own right with its own inherent value, independent of human influence – a concept that has dominated the Western world for centuries.

The philosophical challenges posed by the concept of the Anthropocene are considerable. The introductory statement by the curators of the 'Anthropocene Project', a

transdisciplinary international project currently running for several years at the Haus der Kulturen der Welt in Berlin, expresses it aptly: "Nature, as we know it, is a concept that belongs to the past. No longer a force separate from and ambivalent to human activity, nature is not an obstacle nor a harmonious other. Humanity forms nature. Humanity and nature are one, embedded from within the recent geological record." (Scherer/Klingan 2013, p. 2) Acknowledging the Anthropocene amounts to an unmistakable call to transcend the West's dualistic concept of nature versus culture towards a non-dualistic, unitary philosophy of nature. To express myself clearly: Unitary concepts of nature and culture are nothing new, especially not in non-Western cultures, but by acknowledging the Anthropocene their importance has risen enormously. Thus, we can build upon existing attempts at defining non-dualistic philosophies of nature in order to develop landscape architectural approaches to research and design in unitary, synthetic ways. To develop such a foundation for landscape architectural theory and practice, this chapter starts by discussing the philosophies of Philippe Descola, a French anthropologist, and Bruno Latour, a French sociologist. For them, the Anthropocene is a productive category for developing concepts of the human and non-human that transcend the nature-culture dichotomy. In contrast to them, Donna Haraway is introduced as a critic of the Anthropocene notion, thereby raising the question as to whether we already need an alternative term for the contemporary situation.

Dethroning Naturalism – Descola's relative universalism

In a recent lecture, the French anthropologist Philippe Descola characterised the Anthropocene as a new era in which man has become a natural force (Descola 2016). He distinguishes clearly between the Anthropocene and Anthropisation. The latter is a process which has been happening for 200,000 years, a co-evolution of humans and non-humans affecting most parts of the Earth – even the Amazon rainforest is not untouched nature; it is a largely anthropogenic ecosystem. This sounds similar to the characterisation of human effects in the Anthropocene – yet Descola sees a difference between the two. Compared to the rather local co-evolutionary effects of Anthropisation, today's human impact has reached a global and systemic scale, leading to cumulative and accelerated

climate change , ocean acidity and biodiversity loss. Descola explains this radical development with the term of "naturalism". By naturalism, he means the specifically Western type of relationship between humans and non-humans, according to which the privilege of possessing mind and soul is only bestowed on humans, while non-humans are just physical matter. One of the main motives for his work is to explain that this concept – with all its destructive consequences – is just one of four possible ways in which humans relate to non-humans and that we need to modify Western naturalism in order to escape from its "contemporary tyranny" (Descola 2016, p. 112). In his opus magnum, *Beyond Nature and Culture* (2013), Descola develops his framework of four ontologies regarding the relationship between humans and non-humans. In addition to naturalism, by analysing a huge number of ethnographic examples from all over the world, he identifies animism, totemism and analogism as such ontologies. The latter three all operate without the dichotomy of nature and culture (for a short summary see Descola 2008).

When Descola addresses nature conservation as an example of the potential positive effects of acknowledging multiple ontologies, his thinking becomes immediately relevant for landscape architecture. He criticises the fact that international nature conservation politics is closely linked to the cosmology of naturalism, which has dominated European thought for at least two centuries. This relatively young cosmology is certainly not shared by all others on the planet. What, then, would a more universal ethics of nature look like? In terms of nature conservation, it would mean that arguments used by naturalism, such as the preservation of biodiversity, ecosystem services and carbon storage, might be of secondary importance for proponents of animism. According to the latter, humans have intersubjective relationships with non-humans. Animals are treated like humans, yet hunting them is allowed if done respectfully and carefully. To illustrate this ontology of animism, which sounds utopian in Western ears, Descola cites a document which the indigenous community of Sarayaku in the Ecuadorian Amazon presented at the Climate Summit in Paris in December 2015 and which calls for a new legal category of protected territories called *Kawsak Sacha* ("Living Forest"):

"Whereas the western world treats nature as an undemanding source of raw materials destined exclusively for human use, *Kawsak Sacha* recognizes that the forest is made up entirely of living selves and the communicative relations they

have with each other. . . . These selves, from the smallest plants to the supreme beings who protect the forest, are persons (*runa*).

Kawsak Sacha is where [we] interrelate with the supreme beings of the forest in order to receive the guidance that leads [us] along the path of *Sumak Kawsay* (Good Living). This continuous relation that we . . . have with the beings of the forest is central, for on it depends the continuity of the Living Forest, which, in turn permits a harmony of life among many kinds of beings, as well as the possibility that we all can continue to live into the future." (In: Kohn 2016)

This approach expresses a diversification of conservation strategies beyond the dominant Western dualistic concept of nature versus culture. Descola aims at defining an ecology of relationships, in which the different relationships between human and non-human are analysed and developed in a differentiated way. The merit of Descola's concept for the Anthropocene as well as for landscape architecture lies in offering consistent alternatives to the predominant Western naturalism. Reflecting on them in an integrated manner and applying them specifically in each design context could lead to less destructive human actions in relation to the Earth.

In the Anthropocene, everything becomes a matter of design – Bruno Latour's philosophy of design

Another eminent French figure in the fields of anthropology, philosophy and sociology who has reflected on the consequences of the Anthropocene for our understanding of nature is Bruno Latour. Since his book "We have never been modern" (1993), he has been grappling with the modern distinction between nature and culture. For him, the Anthropocene is another reason for re-focusing on new entanglements between the former adversaries: "'Tomorrow,' those who have stopped being resolutely modern murmur, 'we're going to have to take into account even more entanglements involving beings that will conflate the order of Nature with the order of Society; tomorrow even more than yesterday we're going to feel ourselves bound by an even greater number of constraints imposed by ever more numerous and more diverse beings.'" (Latour 2013,

p. 10). From this starting point – the abandonment of the distinction between nature and society – Latour develops a nexus of thought which is of particular interest for landscape architecture. If everything on Earth (and beyond) is steeped in human activity and meaning, then there are inevitably countless relations between humans and non-humans in an “entangled pluriverse” (Latour 2010, p. 481). We cannot reflect on these relations passively, from a distance, as matters of fact; we are called on to work actively on these relational matters of concern. Latour calls this active work “composition” and goes as far as writing a “Compositionist Manifesto” (Latour 2010). It includes a comprehensive reflection on the meaning of composition: “Even though the word ‘composition’ is a bit too long and windy, what is nice is that it underlines that things have to be put together (Latin *componere*) while retaining their heterogeneity. Also, it is connected with composure; it has clear roots in art, painting, music, theater, dance, and thus is associated with choreography and scenography; it is not too far from ‘compromise’ and ‘compromising’, retaining a certain diplomatic and prudential flavor. Speaking of flavor, it carries with it the pungent but ecologically correct smell of ‘compost’, itself due to the active ‘de-composition’ of many invisible agents. ... Above all, a composition can fail and thus retains what is most important in the notion of constructivism (a label which I could have used as well, had it not been already taken by art history). It thus draws attention away from the irrelevant difference between what is constructed and what is not constructed, toward the crucial difference between what is well or badly constructed, well or badly composed.” (Latour 2010, p. 473f)

For a landscape architect, this description of composition has a familiar sound: putting together heterogeneous assemblies based on creativity, compromised by the site’s conditions and the client’s brief, and acknowledging that there is no true solution, only good ones or bad ones. Thus, there is no large step from composition to design, which is landscape architecture’s mode of action. In Latour’s reflections on design (Latour 2008), he explains that it had a rather limited meaning until very recently, especially in his native France: it meant putting a cosmetic sheen on things invented by serious engineers or scientists. But today, he asserts, design is more than just the surface; it is part of the very substance of production processes and “has been extended from the details of daily

objects to cities, landscapes, nations, cultures, bodies, genes and to nature itself." That shaping a landscape is a design task will raise no eyebrows among landscape architects – but Latour's ambition goes much further, and the manner in which he includes nature and genes makes the radicalism of his arguments apparent. He concludes that everything is designed today and quotes "Dasein ist Design" (Latour 2008, p. 7) – the marvellous German pun coined by the Dutchman Henk Osterling, which means being is designing. Latour draws similar conclusions to those of Descola regarding nature conservation: "Not only has nature disappeared as the outside of human action (this has become common wisdom by now); not only has 'natural' become a synonym of 'carefully managed', 'skilfully staged', 'artificially maintained', 'cleverly designed' (this is true especially of so called 'natural' parks or 'organic foods'); but the very idea that to bring the knowledge of scientists and engineers to bear on a question is to necessarily resort to the unquestionable laws of nature, is also becoming obsolete. Bringing in scientists and engineers is quickly becoming another way of asking: 'How can it be better redesigned?' The bricolage and tinkering elements always associated with design have taken over nature." (Latour 2008, p. 10)

To sum up, the Anthropocene is for Latour a final, strong indicator that any hope of differentiating between science and politics, between facts and values, between nature and culture, has died (Latour 2013, p. 10). The entanglements between humans and non-humans are ones of composition, an issue of design. Arguing in this way, he enlarges the field of activity enormously as well as the responsibility borne by designers, including landscape architects.

Do we already need an alternative term for the Anthropocene – Donna Haraway's Chthulucene

A concept which has gained influence so quickly and become so widespread as the Anthropocene easily attracts critique in academic circles and beyond. One of the most prominent critical voices is Donna Haraway, Professor Emerita in the History of Consciousness Department at the University of California in Santa Cruz, well known for

example for her Cyborg Manifesto from 1991. I would like to reflect on her Anthropocene critique to find out if we should replace the term with another, better one.

Her main objections to the concept of the Anthropocene are as follows (Haraway 2016, p. 49). First, the agents of the Anthropocene are not humans as a species – Anthropos – it is rather the practices of some humans which could be summarized as capitalism (therefore she also mentions “Capitalocene” as an alternative term to the Anthropocene (Haraway 2016, p.47f)). Second, the story associated with the Anthropocene has a bad ending, and the actor is also bad – she would prefer a positive story to change the situation. Third, “the sciences of the Anthropocene are too much contained within restrictive systems theories and within evolutionary theories called the Modern Synthesis, which for all their extraordinary importance have proven unable to think well about sympoiesis, symbiosis, symbiogenesis, development, webbed ecologies, and microbes.” (Haraway 2016, p. 49). In this statement, she is probably referring to the geoengineering mentioned already in Crutzen’s influential article in Nature (2002), which could be understood as the Earth’s systems management, including such mechanisms as ocean iron fertilization and stratospheric sulphur injections to enhance the Earth’s albedo (Crutzen 2006). Finally, Anthropocene is a term for Westerners; it is not amenable to adaptation by indigenous peoples. All this criticism is justified – but does this have to lead to an alternative term? And is her alternative proposition, Chthulucene, an improvement? She explains it as “a compound of two Greek roots (khtkôn and kainos), which together name a kind of timeplace for learning to stay with the trouble of living and dying in response-ability on a damaged earth.” (Haraway 2016, p. 2) A direct translation would mean the age of subterranean or earthbound beings. Well, neither the comprehensibility of the word nor the breadth of its meaning are convincing. It is the attributes that Haraway assigns to the Chthulucene that arouse sympathy. She expands the identity of the actors by stressing that not only humans count in today’s situation: “Unlike the dominant dramas of Anthropocene and Capitalocene discourse, human beings are not the only important actors in the Chthulucene, with all other beings able simply to react. The order is reknitted: human beings are with and of the earth, and the biotic and abiotic powers of this earth are the main story.” (Haraway 2016, p. 55) In this complex web of relations, she argues for M. Beth Dempster’s term sympoiesis as a means of interaction; “it means ‘making with’. Nothing makes itself; nothing is really autopoietic

or self-organizing. [...] is a word proper to complex, dynamic, responsive, situated, historical systems. It is a word for worlding-with, in company." (Haraway 2016, p. 58) This emphasis on humans and non-humans ("all critters", as she likes to say) and sympoiesis is important and not included in a limited, technology-driven understanding of the Anthropocene. However, as we have already seen in the case of Descola and Latour, a broader understanding of the Anthropocene is possible and can embrace these issues. A complicated new term such as the Chthulucene, which most Westerners will hardly understand (but they should, because they are the main reason for today's trouble), is not helpful. I suggest following Donna Haraway's own advice, who said: "I know that we will continue to need the term Anthropocene. I will use it too, sparingly; what and whom the Anthropocene collects in its refurbished netbag might prove potent for living in the ruins and even for modest terran recuperation." (Haraway 2016, p. 47)

Once the Anthropocene Working Group, which is part of the Subcommittee on Quaternary Stratigraphy of the International Commission on Stratigraphy, has formalised the Anthropocene as a geological epoch (this ongoing procedure is complex and includes many questions, such as when the Anthropocene started; Waters et al. 2016; Working Group on the 'Anthropocene' 2016), it will be in all school textbooks and influential at the very base of society. In my view, it is more productive to discuss the qualities and deficits of the concept using the term itself instead of inventing new ones – as long as there is no quantum leap in meaning, which I have not seen so far. It is a quality of the Anthropocene concept that it is broad enough to include high-tech freaks as well as "five-minutes-past-midnight pessimists". Personally, I find these extremes misleading and would rather argue for multi-layered, intermediate approaches such as relative universalism, compositionism or sympoietics as discussed above, or conviviality (Hinchliffe/ Whatmore 2006), enlivenment (Weber 2013), *mésologiques* (Berque 2011), *andsapes* (Prominski 2014) or "sociality among all living things" (Imanishi 2002).

Anthropocene and landscape architecture

The discussion of the ideas put forward by Descola, Latour and Haraway has shown that the Anthropocene is a strong motivator for developing new concepts of the relations

between non-humans and humans. This motivation is accompanied by the conviction that the Anthropocene is not only a neutral description of the enormous consequences of human impact; it is also a call to change and halt negative developments. According to Jan Zalasiewicz, who is the convenor of the Anthropocene Working Group within the Subcommittee on Quaternary Stratigraphy, "much of this global change will be to the detriment of humans. Not all of it (Greenland, for example, is currently greening and booming), but the present and likely future course of environmental change seems set to create substantially more losers, globally, than winners." (Zalasiewicz et al. 2010, p. 2231). Thus, the new concepts should contribute to guiding global change in a positive, sustainable direction. In the following, I will ask what role landscape architecture can play in this process. I will use "entangling" as a keyword since it summarises the core of Descola's, Latour's and Haraway's ideas (and it has also been used by many others, see for example Tietjen 2011; Hight 2014, p. 101; Meyer 2015), and will reflect on the options in landscape architecture to entangle non-humans, humans and time.

Entangling non-humans

Landscape architecture is the design discipline which – like no other – has the privilege of dealing with non-human living things. There are hardly any projects in which plants or soil are not addressed. So is it even necessary to raise this issue here? Well, there is a difference between *addressing* non-humans in a design and *entangling* them in it. If we as humans do not relate, via our senses, to non-humans, it will not be an entangling design. For example, ironically, in those tasks which address non-humans most intensively, i.e. in nature conservation areas – a separating approach prevails, based on naturalism in Descola's sense of the word (see above). Entanglements between humans and non-humans are avoided and sometimes even forbidden by nature protection laws, for example in the European Union. Jon Hoekstra, chief scientist for the World Wildlife Fund (WWF), calls this a "fortress conservation" which "sets nature apart from people" and "forces a mutually exclusive trade-off between conserving biodiversity and meeting human needs" (Hoekstra 2013). What is needed are designs which take care of plants and animals as well as human users in open spaces and allows them to relate to one another.

A good example of this is the “Buchholzer Bogen” (Buchholz Arc) in Hannover. When the decision was made, in 1995, to widen the Mittelland Canal in the built-up area of Hannover, the destruction of valuable habitats along the existing canal bank had to be compensated for according to German Environmental Impact Assessment Law. The landscape architects at NSP (Nagel, Schonhoff & Partner) took the opportunity to initiate a new habitat while at the same time enhancing the means of experiencing and accessing the canal landscape, which plays an important role in Hannover’s open space system. At Buchholz Arc, they proposed that a small bulge in the canal bank should be constructed, thus creating an unusual water-land locality on the otherwise straight canal edge. The multi-layered structure of indigenous plants attracts a lot of insects and birds and the site is characterised by above-average biodiversity, so this is the entanglement of non-humans. Instead of protecting this new habitat from humans, it was carefully integrated into the linear open space system along the canal by installing a walkable sculpture. The Japanese artist Tadashi Kawamata designed a raised wooden boardwalk, which is spanned across the waterbody and serves as a pathway as well as a platform for observing flora and fauna below (fig. 1). Thus, the Buchholz Arc fulfils the strict demands of nature conservation by means of a completely man-made design and offers rich experiences of the interplay between humans and non-humans. It is an example of how to overcome the divide between nature and culture, or naturalism as characterized by Descola. However, such projects which entangle humans and non-humans are by no means the norm in landscape architecture. How can the discipline live up to Latour’s prediction, cited above, that in the Anthropocene “we’re going to have to take into account even more entanglements involving beings that will conflate the order of Nature with the order of Society” (Latour 2013, p. 10)? In his Compositionist Manifesto, Latour suggests one possible option, that of having to “tackle the tricky question of animism anew.” (Latour 2010, p. 481). To consider animism as a productive ontology for designing entanglements of non-humans and humans, we would have to acknowledge that other entities, such as animals, plants, or minerals, have an “interiority” (Descola 2016, p. 109). He associates interiority with attributes usually assigned to the soul, mind or consciousness such as intentionality, subjectivity, reflexivity or emotions (ibid.). The problem of such an approach has already been identified by Latour himself: “It immediately gives a sort of New Age flavor to any such efforts, as if the default position

were the idea of the inanimate and the bizarre innovation were the animate" (Latour 2010, p. 481). However, there are some recent scientific findings which should convince even the most stubborn proponents of naturalism that plants can see, feel or remember (Chamovitz 2013). This knowledge increases our understanding of how humans and plants are entangled, but the implications for landscape architecture of this new understanding have not been researched so far and still wait to be addressed. For entanglements between animals and humans, there are already some research findings relevant to design. The project "Animal Aided Design (AAD)" (Hauck/ Weisser 2015) researches how one can design using the life cycle of six exemplary species to enhance urban wildlife. One might criticize here the fact that one has almost lost sight of the human role in entanglement. To sum up, in terms of the entanglement of non-humans and humans, landscape architectural practice and research is waiting to be re-animated.

Entangling time

As Donna Haraway pointed out so precisely, the Anthropocene (in her language the Chthulucene) is characterized by "dynamic, ongoing (...) forces and powers of which humans are a part, within which ongoingness is at stake" (Haraway 2016, p. 101). It is about "real and possible timespaces" (ibid.) and she proposes "chipping and shredding and layering like a mad gardener, [to] make a much hotter compost pile for still possible pasts, presents, and futures." (Haraway 2016, p. 57) For landscape architecture, this entangling of time fits very well to a dynamic, open understanding of ecosystem design which has been discussed and developed in landscape architecture for decades (Spirn 1984; Corner 1997; Prominski 2004) and was recently well summarized in "Projective Ecologies", edited by Chris Reed and Nina-Marie Lister (2014).

River landscapes are an appropriate example to illustrate the challenges of time-based design. The classical engineering-based approach has tried to control river processes and limit interactions by confining rivers within channels. Recent landscape architectural designs propose to break up these channels and enable unpredictable future entanglements of water, sediments, plants, animals and people. Many good examples have been realized, such as River Ebro in Zaragoza (Prominski et al. 2017, p. 198f) or

River Isar in Munich (Prominski 2011, p. 192f), and I would like to illustrate the approach in more detail by using the example of the River Aire close to Geneva (cf. Prominski et al. 2017). This design by George Descombes and the Atelier Descombes & Rampini SA is remarkable for two reasons. First, it avoids introducing any “naturalistic” aesthetics to the morphodynamic processes of erosion and sedimentation which the river generates. A completely new, 80-m-wide riverbed has been designed by converting agricultural land to provide more space for floodwater. The riverbed’s initial form consisted of precisely shaped lozenges, through and over which the river has been allowed to flow through, slowly transforming the geometric shapes into the organic shape of a braided river over the years (Fig. 2). Here, one sees the artistic interplay of human and non-human agents with an unpredictable outcome. Second, the project not only choreographs future processes, it also entangles the past. The historic canal running parallel to the new riverbed was retained as a cultural artefact by transforming it into a linear series of gardens placed along and partially above it. The juxtapositioning of, and the contrast between, the historic, linear canal structure and the newly introduced dynamic river space running next to it provokes reflections on the river’s state before and after and on the ecological and cultural aspects of the current river. I do not know of any other landscape architecture project which entangles past, present and future in such a creative, multidimensional way.

In the case of such examples, is it appropriate to say that landscape architectural research and practice is already doing well in entangling time? I would disagree. Beyond river projects, it is difficult to find inspiring examples. There are many fascinating competition entries, such as the proposals by OMA for La Villette from 1982 or Field Operations for Downsview Park from 2001, but they have not been realised. It seems that clients – and often designers as well – prefer fixed, controlled appearances, which are not intended to change over time. Thus, there is a lot of potential for future landscape architectural research to intensify the focus on process aesthetics (e.g. Meyer 2008) as well as process strategies (e.g. Reed/ Lister 2014) in order to increase time-based entanglements of humans and non-humans.

Entangling humans

Landscape architectural projects are usually used by people, thus a focus on humans goes without saying in the discipline. However, this focus is often abstract rather than concrete. For example, when landscape architects imagine a public space in their offices, they conjure up images of the future use and users in their creative minds, but are not in direct, physical contact with the users and the site. A true entangling of humans calls for more levels of design interaction. For Bruno Latour, the design of a thing – e.g. a park or a public square – is a “gathering” (he follows Heidegger here) and thus automatically a “collaborative design” (Latour 2008). What options are there for a complex collaboration or entanglement of designers and site users? The Gleisdreieck Park in Berlin (Landscape architect: Atelier Loidl; competition 2006, completion 2013; see for example Lichtenstein/Mameli 2015) is an excellent case study for examining this question, which addresses issues that have been discussed intensively since the 1960s. One major and widely applied path towards entangling humans in the design process is public participation. At Gleisdreieck Park, the participation was a mixture of established and new methods (Senatsverwaltung für Stadtentwicklung und Umwelt 2013). The first phase started in 2005 with a questionnaire which the administration and a social research institute had developed together with focus groups. It was sent to 1,600 randomly chosen households which lived in a 20-minute radius of the park on foot. The 400 answers revealed that 50% did not even know that a park was going to be built in their neighborhood, thus the administration decided to offer guided tours of the site. 2,200 people participated in the 34 tours. This was followed by workshops with 32 groups of up to 30 people, who developed recommendations for the competition brief. Parallel to this, there was a moderated internet forum. 70,000 visits by 7,800 users were counted, and in a moderated phase a text with recommendations for the competition brief was written jointly by 200 participants. These recommendations submitted by the public played a crucial role in the brief for the first phase of the park competition, in which 86 landscape architecture firms participated. The nine jurors, including one representative from the community initiatives, chose 11 contributions to proceed to the second phase of competition. With these 11 designs, a “planning weekend” was held, at which the public were invited to discuss the plans directly with the designers and the jurors. 600 people attended this weekend. The

results of these dialogues were integrated into the recommendations for the 11 teams as to how they should improve their designs in the second, decisive phase of the competition. According to one juror, this weekend had a significant impact on the development of the 11 designs as well as the decision criteria for the jury (Gebhard in: Senatsverwaltung für Stadtentwicklung und Umwelt 2013, p.55). This type of intense public participation, in this case highly successful, still leaves the subsequent decisions on shaping and transforming space to the experts, i.e. to the landscape architects and the administration.

A less widely applied, but even more intense means of entangling humans is "communing", whereby people transform the space themselves. According to David Bollier, communing is a social practice characterized by "acts of mutual support, conflict, negotiation, communication and experimentation that are needed to create systems to manage shared resources. This process blends production (self provisioning), governance, culture, and personal interests into one integrated system" (Bollier 2015, p.2). At Gleisdreieck Park, this approach was significant for several reasons. First of all, today's park was only able to become reality because many local initiatives saw the derelict railyard site as their own urban common land and from the 1970s had fought against ideas of changing it into a highway, an amusement park or a residential area. Later, while designing the park, community groups managed to claim some areas as their "commons". Here, they were able to realise their own ideas, such as intercultural gardens, allotment gardens or a space for experiencing nature (Fig.3). This process was not without conflict, the landscape architects, and even more the community groups, had to compromise, but in the end the park was seen as a great success (Müller 2016) and the administration has labeled it the "Park of 1000 voices" (Senatsverwaltung für Stadtentwicklung und Umwelt 2013, p. 6). Furthermore, the entanglement will continue in the future, because in November 2014, a group of ten civic representatives was elected by residents, park users and interested parties to decide, together with other stakeholders, on future developments in the park (Müller 2016, p. 155f).

This example expresses the enormous potential of landscape architecture for entangling humans. The toolbox of public participation is already well equipped. However, the most intensive entanglement – commoning – is tricky because it demands that the designer

take a back seat because it is the people who are realising their own ideas and transforming the space rather than him or her. In an era in which commons are gaining more and more momentum (Bollier 2015), the relationship between designing and commoning is one of the most challenging topics of landscape architectural research.

Conclusion and outlook

Charles Darwin started the final paragraph of "The origin of species" with a poetic image: "It is interesting to contemplate an *entangled* bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent on each other in so complex a manner, have all been produced by laws acting around us." (Darwin 1859, p.459; italics MP). His contemplation of entanglements operates from a distance and expresses the modernist philosophy of nature with a separation of objects and subjects. In the Anthropocene, we need a new perspective on the entangled bank. A distanced contemplation has become impossible if non-humans and humans are inextricably intertwined. As humans are an active part of any entangled bank, we can conclude that these complex entanglements are always a matter of concern and an issue of design.

This leads to consequences for landscape architecture. I interpret this new perspective as a call to focus on entanglements on different levels. I have categorized three types, i.e. the entanglement of non-humans, humans and time, and it is important to add that these types ideally overlap in each project. I see the integration of all three categories as an indicator of excellence in landscape architectural projects – a project such as the Gleisdreieck Park serves as an example of this. I have also developed ideas and questions for landscape architectural research that arise from the three types of entanglements and hinted at new directions, such as re-animism, time-based aesthetics and design strategies, and designing commons.

However, this research into entanglements will face difficulties in obtaining funding in a global research culture which is largely based on divides such as science versus politics,

facts versus concerns, basic versus applied, etc. (e.g. Latour 1993; Nowotny et al. 2001) rather than entanglement. If taken seriously, the Anthropocene demands a new mode of science enabling entangled research which incorporates actors of all kinds. Is this an unrealistic, naïve call or can we discern the first contours of such a science on the horizon? In fact, there does appear to be a glimmer of optimism. It radiates from the European sustainability discourse, where the concept of “Transformative Science” was proposed in 2013 (Schneidewind & Singer-Brodowski 2013; Schneidewind et al. 2016). Its main characteristic is precisely the entanglement of societal actors in the production of knowledge. It focuses on co-design and co-production in transdisciplinary processes, in which non-academic stakeholders are necessarily involved. “The ‘ideal-type’ form of transformative research is the newly emerging concept of research in real-world labs. This concept is still young and a broadly shared definition does not exist as of yet. According to our understanding, real-world labs provide contexts for real-world experiments, which aim at an improved understanding of transformation processes and actively facilitate them.” (Schneidewind et al. 2016, p. 10) Design research is conceptually close to these real-world labs (Prominski 2016; Seggern et al. 2015) and it is a valuable task to explore the inspiration shared by transformative science and design research. A significant contribution by landscape architectural research to future transformative science could consist of entangling non-humans in the production of knowledge, because so far transformative science focuses “only” on entangling humans and time (developing desirable futures plays a crucial role in real-world labs). In the Anthropocene, it would be only logical to include these non-human actors.

To summarise, landscape architecture has already experimented with answers to questions raised by the Anthropocene. Landscape architectural theory and practice – as could be seen when reflecting on the three projects above (and there are many more) – are already able to operate from a non-dualistic perspective and are currently developing complex entanglements between non-humans and humans in space and time. Is there any other discipline that works so creatively at the vibrant interface between humans and non-humans? The door is open now for landscape architectural research to leave its underdog position and to articulate its unique qualities in the context of transformative science and the Anthropocene.

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Figures



Figure 1 (©Martin Prominski): A bulge or small bay has been created on the edge of the Mittelland Canal (in the background) at the Buchholz Arc in Hannover. The bulge, a habitat with over-average biodiversity, is spanned by a walkable sculpture, which is connected to the local path network.



Figure 2 (©Fabio Chironi): The two juxtaposed river courses of the River Aire near Geneva: The retained canal to the left with a linear series of gardens, the new riverbed to the right with partly eroded lozenges.



Figure 3 (©Martin Prominski): The “Nature Experience Space” in the eastern part of Gleisdreieck Park in Berlin, which has been designed and built by a community initiative.