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# Humanly modified ground and time-based aesthetics

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## Abstract

The Anthropocene not only questions perceptions of nature, but also inspires us to expand and rethink the aesthetic repertoire of landscape architecture. This article discusses process aesthetics, or time-based aesthetics, in relation to humanly modified ground, particularly the role of erosion and sedimentation. The discussion is centred around a study of the Port of Aarhus in Denmark. The study includes a description of material conditions found at the port and a discussion of their aesthetic potential in sensitizing humans to the environmental conditions of the Anthropocene. The discussion draws on works of art that address time in relation to ground conditions and the experience of the environment.

## Anthropocene / humanly modified ground / time-based aesthetics / erosion / sedimentation

*The anthropogenic transformation of the world's topography is more significant than the 'natural' erosion that is caused, in particular, by water and wind. Perhaps we'd rather not know, because then we'd stop trusting the ground we stand on.<sup>1</sup>*

## Introduction

Since biologist Eugene F. Stoermer and chemist Paul J. Crutzen started using the term Anthropocene to designate a new geologic epoch defined by unprecedented human disturbance of the Earth's ecosystems, it has become widely used in academic discourse across different disciplines. Also, within landscape architectural research, the Anthropocene increasingly serves as an entry point in the discussions on nature-culture relationships and the conceptual implications for thinking and designing landscapes. One of the more valuable contributions to this discussion was written by landscape architect Martin Prominski, who, in *Designing Landscapes of Entanglement* (2019), addresses the philosophy of nature and reflects upon recent changes in how it is interpreted and the relevance of this for landscape architectural research and practice. According to Prominski, the concept of the Anthropocene calls for a non-dualistic philosophy of nature that transcends the dichotomy between nature and (human) culture, which has dominated the Western world for centuries.<sup>2</sup> To develop a foundation for landscape architecture theory and practice based on a non-dualistic, unitary philosophy of nature, Prominski draws on anthropologist Philippe Descola and anthropologist and sociologist Bruno Latour.

Descola makes a clear distinction between the Anthropocene and anthropization. The latter is a process that has been happening for 200,000 years, a co-evolution of humans and non-humans affecting most parts of the planet. Compared with anthropization's relatively local co-evolutionary effects, human impact in the Anthropocene has reached a global and systemic scale, leading to cumulative and accelerated climate change, ocean acidity and biodiversity loss. Descola links the radical development of 'naturalism' with the nature/culture dichotomy. He explains that this is a 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.<sup>3</sup> According to Latour, the Anthropocene is best described as a 'new climatic

regime' with many unexpected connections between human activity and the natural world, obliging everyone to reopen earlier notions of nature and redistribute what had been packed inside. Here, the notion of 'nature' as a counterpart to 'culture' is obsolete. It is a modern conception leading us to believe we are dealing with distinct 'domains' rather than the same 'concept' divided into two parts. In the Western tradition, we never speak of one without speaking of the other: there is no other nature but 'this' definition of culture, and no other culture but 'this' definition of nature. They were born together, as inseparable as Siamese twins who hug each other without ceasing to belong to the same body.<sup>4</sup>

Prominski asserts that the ideas put forward by Descola and Latour show that the Anthropocene is a strong motivator for developing new concepts of the relations between non-humans and humans. However, this motivation is also accompanied by the conviction that the Anthropocene is not simply a neutral description of the enormous consequences of human impact; it is also a call to change and halt adverse developments. Thus, new landscape architectural strategies should help to guide change in a positive and sustainable direction. When reflecting on potential landscape architectural strategies, Prominski uses 'entangling' as a keyword since it summarizes the core of the thinking of Descola and Latour.<sup>5</sup> One set of strategies deals with the entanglement of time and addresses the ability to embrace open-ended processes and integrate them into the design. According to Prominski there is much potential for future landscape architectural research to intensify the focus on process aesthetics and process strategies to increase time-based entanglements of humans and non-humans.<sup>6</sup>

The main objective of this paper is to unfold the idea of entangling time and explore what is referred to as process aesthetics or time-based aesthetics, which Prominski only hints at in his article.<sup>7</sup> The study focuses on geologic processes such as erosion and sedimentation related to humanly modified ground, which seem neglected in landscape architectural research. When addressing time in landscape architecture, biotic processes like ecological succession get more attention than abiotic processes like erosion and sedimentation. The hypothesis is that by including these processes in the aesthetic agency, it becomes possible to entangle geologic time and address human engagement in geologic processes, which otherwise are too slow or too large to be perceived. Furthermore, this attention to human engagement in geologic processes has the capacity to sensitize us to the environmental conditions of the Anthropocene—to help make sense of a situation in which humankind has become a geological force. Without everyday landscapes that offer a chance to experience how human and non-human processes are entangled, we risk unnecessary harm to the environment.

### **Time-based aesthetics as a multisensory way of revealing environmental conditions**

Latour supports the link between time-based aesthetics and the capacity to sensitize humans to the environmental challenges that characterize the Anthropocene. He introduces an essential distinction between 'matters of fact' and 'matters of concern'.<sup>8</sup> Matters of fact are associated with an unfortunate distinction between art and science and linked to the idea of passive objects being observed by active subjects. This abstract arrangement is out of tune with the actual 'nature' of things. We need to sensitize ourselves not to matters of fact, as they are fictionalized in a subject-object scenario, but to matters of concern. The point here is to get closer to facts instead of removing us from them, not to fight empiricism but to renew it by involving sensory modalities. Latour claims that ways of knowing that involve sensory modalities are also ways of rendering sensitivities.<sup>9</sup> Latour used theatrical production to exemplify how a medium can render

sensitivity and applies the theatre as a metaphor when explaining the distinction between the Holocene and the Anthropocene. According to Latour, the Holocene had all the features of a 'framework' within which one could fairly readily distinguish human actions, just as at the theatre, one can forget the building and the wings to concentrate on the plot. In the Anthropocene, this is no longer the case. Here the decor, the wings, the background, the whole building are on stage and compete with the actors for the principal role. The Anthropocene changes all the scripts and suggests other endings.<sup>10</sup>

The theatre is also a helpful metaphor to explain how landscape architecture can be a powerful medium to render us sensitive to the environmental conditions of the Anthropocene, as landscape architecture is all about staging the physical environment with different experiences in mind. Rather than adding to a scenography that sustains the illusion of a world of passive objects in which humans seem to be the main actors, landscape architecture can help reveal how human and non-human processes are entangled, how we are participating in a play with many other actors. Here time-based aesthetics can play a vital role in revealing the dynamics of this 'play' in a multisensory way. The word 'aesthetic' is used in the original Greek sense of *aesthesis*, as perception or making oneself sensitive to objects or the environment. In this case, the aesthetic concerns the ground—the crust of the Earth, which humans are modifying at increasing rates.

### **Humanly modified ground**

Archaeologist Matt Edgeworth has investigated the relationship between stratigraphy in archaeology and artificial ground in geology. According to Edgeworth, the term 'artificial ground' needs to be critically examined because it implies that human agency is the primary force at work in its production. However, most anthropogenic deposits result from a mixture of human and non-human agencies, with human action interleaved with forces of erosion and sedimentation.<sup>11</sup>

Edgeworth prefers to use 'humanly modified ground' rather than 'artificial ground', because no single discipline can claim this term. Instead, the term refers to a transdisciplinary phenomenon manifesting, in one form or another, as a matter relevant to a range of scientific, humanistic, artistic and practical fields—not least to the study of the Anthropocene. Humanly modified ground consists of settlement debris, dumped waste, landfill, reclaimed land, cut features, earthworks, cultivation soils and other kinds of ground significantly modified by humans. It includes ancient strata as well as more recent deposits. All are part of a single, growing global entity, which Edgeworth refers to as the *archaeosphere*, a term that reflects how the disciplines of archaeology and geology have started to merge. Both 'humanly modified ground' and 'archaeosphere' draw attention to the tangible evidence of the intricate entanglement of humans and the environment that characterizes the Anthropocene.<sup>12</sup>

The study presented in this article deals with time-based aesthetics in relation to humanly modified ground as defined by Edgeworth, particularly the role of erosion and sedimentation as a result of a mixture of human and non-human agencies. It focuses on the Port of Aarhus in Denmark. The study includes a description of material conditions at the port and a discussion of its aesthetic potential in sensitizing humans to the environmental conditions of the Anthropocene. The discussion draws on specific works of art by artists Robert Smithson, Carmen Perrin and Olafur Eliasson, which address time in relation to ground conditions and the experience of the environment. While the theoretical framework supports the reading and understanding of humanly modified ground, the material conditions at the Port of Aarhus point toward aesthetic qualities and an approach to humanly modified ground that could serve as inspiration for the practice of landscape architecture.

### The Port of Aarhus as humanly modified ground

The coastline around the city of Aarhus in Denmark has been continuously fluctuating. In the Atlantic Period (8000–5000 BP), the Littorina Sea stretched more than 10 km into the Aarhus River Valley, forming a shallow fjord. However, since the Atlantic Period, the landmasses in the area have risen approximately 2.5 m due to post-glacial rebound, causing the fjord to disappear along with the retracting coastline.<sup>13</sup> In more recent times, the coastline continues to change significantly because of the continuous expansion and transformation of the Port of Aarhus. Over the last 175 years, several stages of extensive land reclamations into the bay have been completed, adding approximately 280 hectares to the area. According to the latest master plan, this area is expected to increase to 420 hectares by 2060 (Figs. 1 and 2).<sup>14</sup> A comparison of the two processes, the relatively slow land rise and the relatively fast land reclamation, serves as a powerful reminder of ‘the human capacity to manufacture geological history’, as stated by geographer Stephen Graham.<sup>15</sup> The development of the Port of Aarhus constitutes a telling example of the processes involved in the formation of humanly modified ground and the evolution of the archaeosphere.

In the 1920s, geologist Robert Sherlock realized that humans were agents of denudation and deposition, comparable to wind or water in their erosive power. Sherlock’s great insight was to connect the two processes, and his approach was to study both as part of the overall impact of humans on the Earth’s surface.

Wherever there is ground missing in the surface, there is likely some material accumulation elsewhere. Thus, one might think about flows of material, human-induced, from one geological context to another. At present, the annual volume of human-induced flows of materials is a least three times greater than the amount of sediment eroded, moved and deposited by rivers worldwide.<sup>16</sup>

When looking at the Port of Aarhus in terms of material flows, it becomes clear that the process of its formation covers an extensive territory, comparable to how sediment deposition in a river estuary involves sediment erosion in a water catchment area (Fig. 3). The planned expansion of the port by approximately 140 hectares for 2020–2060 will involve a substantial volume of materials moved from different locations to the new land reclamation. Apart from all the materials used for constructing piers, docks and pavements, including large amounts of granite imported from Sweden or Norway, an estimated 15 million m<sup>3</sup> of surplus soil and 6 million m<sup>3</sup> of sand will be required as filling.<sup>17</sup> In addition to this an unspecified quantity of rubble will be used to support the temporary roadways for the trucks dumping and moving the filling material. The surplus soil will be made available from construction sites in and beyond the municipality of Aarhus. The sand will primarily be extracted from sites in the Aarhus Bay and the deepening of existing channels and basins.<sup>18</sup> Much of this filling, especially the surplus soil, will contain artefacts and manufactured materials that have travelled much farther.

The human-driven processes of massive accumulation and redistribution of material for the continuous development of the port will simultaneously influence non-human processes such as water currents in the bay. Both the terrain alterations following the excavation of soil on land and the extraction of sand in the bay and the port construction itself will affect existing water currents and their related processes of erosion and sedimentation. The port development exemplifies how human and non-human processes are entangled. Another interaction between the hydrosphere and the archaeosphere are the measures taken to protect the port against the

expected sea-level rise. In the process of transforming a former container terminal into a new urban neighbourhood, the terrain was raised half a metre, adding additional material to the existing layers of construction, forming new strata in the humanly modified ground.

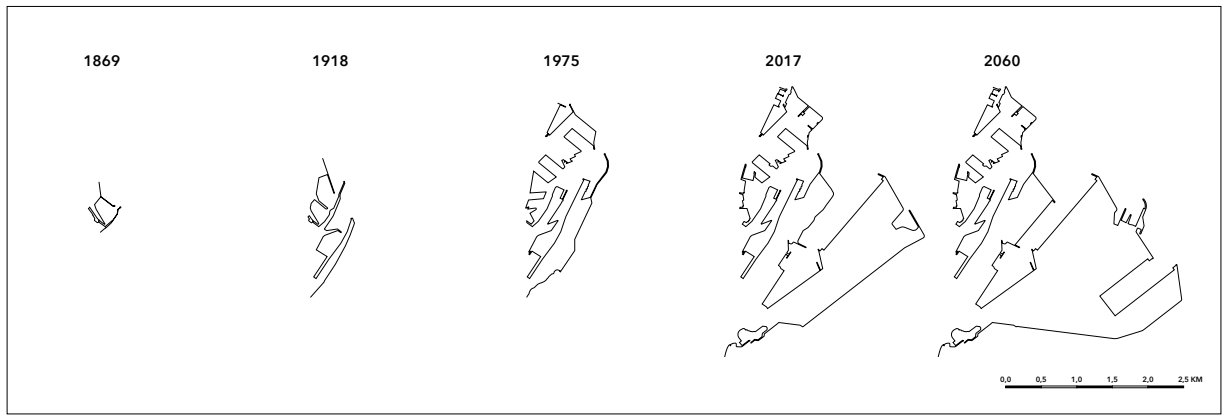
### The experience of time at the Port of Aarhus and time-based aesthetics

When moving around the Port of Aarhus, it is unlikely that people will get a sense of the material processes involved in its continuous formation and recognize its character as ground displaying both human and non-human agencies. Although the many ongoing activities somehow create a dynamic atmosphere at the port, the ground seems static and frozen in time with all its solid hard surfaces and sharp edges. Considering Latour’s theatre metaphor, it appears as a fixed stage for the actors instead of one of the actors participating in the scene. However, there are exceptions to this general impression—material situations that somehow expose the dynamic character of this humanly modified ground and its entanglement of human and non-human processes. These material situations are found in the construction zones where the port is undergoing significant transformations. With reference to American artist Robert Smithson and his text, *A Tour of the Monuments of Passaic, New Jersey* (1969), four of these material situations will be described as ‘monuments’. Similar to the Port of Aarhus, in 1967 the landscape of Passaic was undergoing significant transformations as part of an ongoing suburbanization process. Smithson recorded his observations, stressing the temporary and dynamic character of the site:

Along the Passaic River banks were many minor monuments such as concrete abutments that supported the shoulders of a new highway in the process of being built. River Drive was in part bulldozed and in part intact. It was hard to tell the new highway from the old road; they were both confounded into a unitary chaos.<sup>19</sup>

The monuments described by Smithson address the confusing situation and the entropic condition characterizing the suburban landscape as the irreversible mix of materials and increasing disorder. Through his description of the Monuments of Passaic, Smithson introduced an alternative aesthetic perspective on the ‘generic’ suburban landscape, one that was not defined by architectural monuments or important historical sites. Instead, the incomplete and intermediate conditions fascinated Smithson, and he described the kind of openness in terms of meaning that followed—environments open for new interpretations.<sup>20</sup>

The description of the monuments in the Port of Aarhus serves a similar purpose. It is a way to introduce an aesthetic perspective on the material conditions found in the construction zones where the port is undergoing significant transformations. These zones also represent incomplete and intermediate conditions, thus introducing a kind of openness. The construction zones offer an insight into the materials used and the processes involved in constructing this humanly modified ground. In this context, the monuments can be described as significant markers of material movement that expose the passage of time in the environment of the port and help reframe it as part of the archaeosphere. The four monuments were temporary and disappeared as the construction processes were completed (Figs. 4, 5, 6 and 7).



**Figure 1** Continuous expansion and transformation of the Port of Aarhus

Over the last 175 years, several stages of more or less extensive land reclamations into the bay have been completed, which together constitute an area of approximately 280 hectares. According to the latest

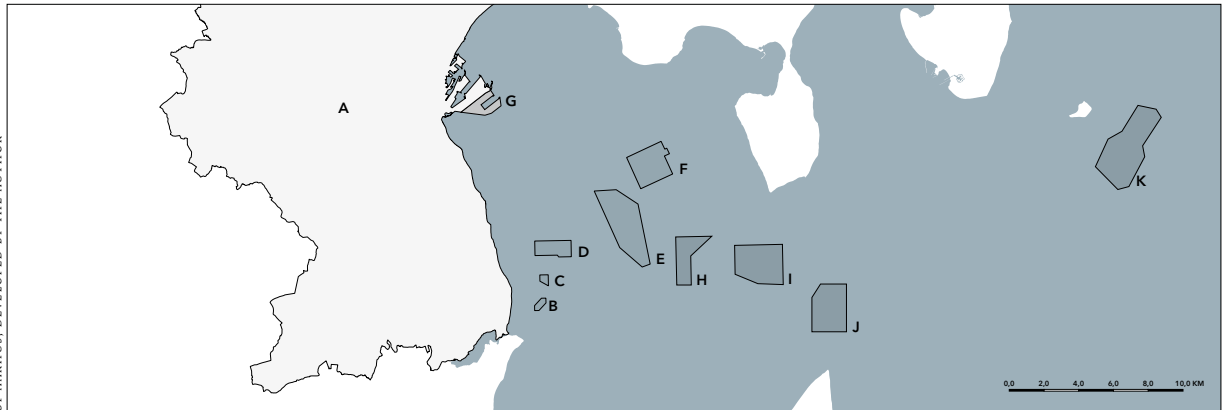
master plan, this area will have increased to 420 hectares by 2060. The planned expansion of 140 hectares will involve a substantial volume of materials moved from different locations to the new land reclamation. An estimated 15 million m<sup>3</sup> of surplus soil and 6 million m<sup>3</sup> of sand will be required as filling (see note 13).



**Figure 2** Littorina Sea and recent land reclamation

The coastline around the city of Aarhus in Denmark has constantly been fluctuating. In the Atlantic Period (8000–5000 BP), the Littorina Sea stretched more than 10 km into the Aarhus River Valley, forming a fjord (A). However, since the Atlantic Period, the landmasses in the area have risen approximately 2.5 m due to post-glacial rebound,

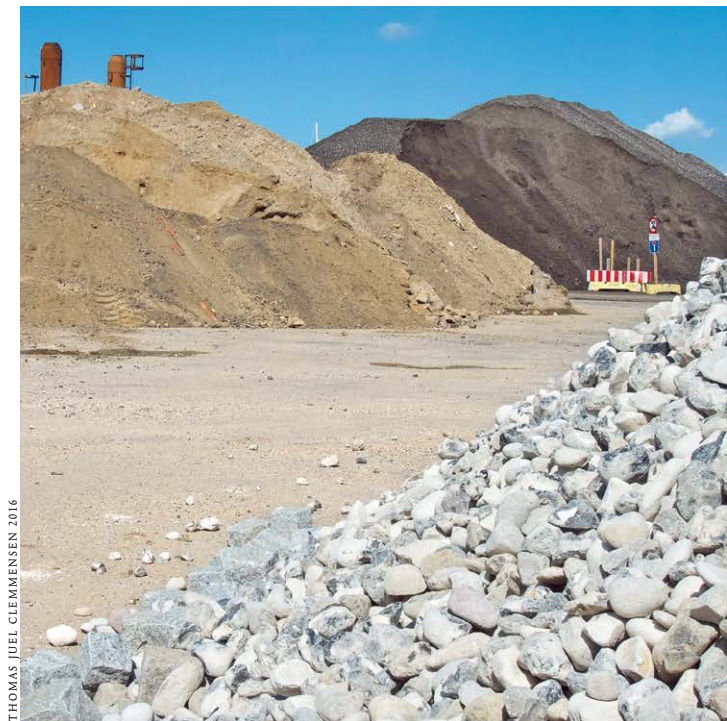
causing the fjord to disappear along with the retracting coastline (B) leaving behind two shallow lakes (C) (see note 12). In more recent times (1869–2017), the coastline has continued to change significantly because of the ongoing expansion and transformation of the Port of Aarhus (D).



**Figure 3** Filling material catchment area

A detailed record of the place of origin of the filling material used in the development of the Port of Aarhus does not exist. However, in 2000–2020 more than 90 per cent of the deposited surplus soil came from excavating construction sites within the municipality of Aarhus (A). The port also has permission to deposit so-called soil-like materials, for instance sediments from stormwater reservoirs, but they represent less than 10 per cent of the soil fillings (source: Aarhus Municipality,

mail correspondence with geologist Mette Højmark Thomsen, September 2020). The massive amounts of sand used as filling material have been primarily pumped in from existing extraction sites (B–F) in the Aarhus Bay. These areas are now closed for extraction, which means that the Port of Aarhus, for the planned expansion (G), is currently exploring new extraction sites (H–K) further out in the bay (see note 13).



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**Figure 4 The Miniature Mountains Monument**

Piles of different ground construction materials stored on the flat surface of the former container terminal. The area is being transformed into a new urban neighbourhood. In the foreground, flint nodules mixed with a few granite setts and lumps of asphalt; in the middle



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ground soil containing blocks of crushed concrete and other building materials; and in the background, vast quantities of granulated asphalt. Between the piles, a traffic sign adds a sense of scale to these miniature mountains.



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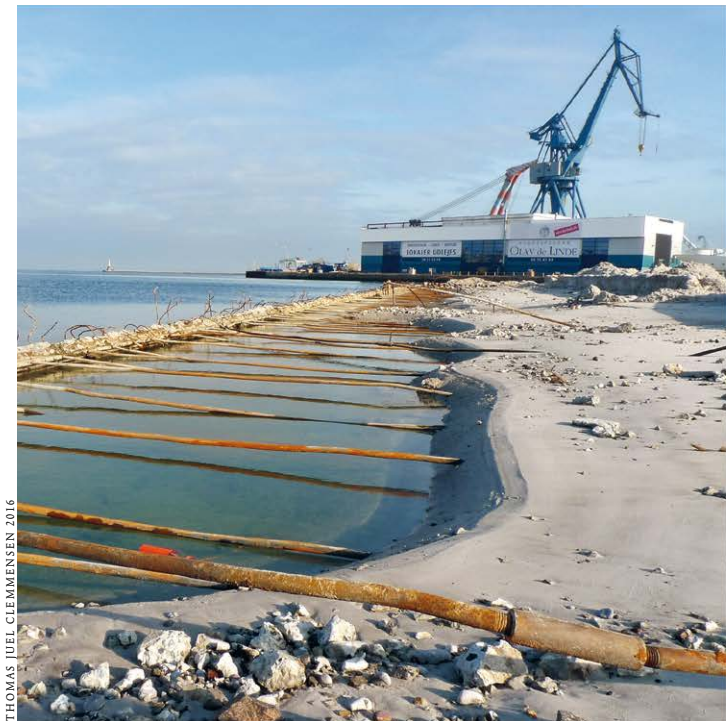
**Figure 5 The Sunken Garden Monument**

An excavated construction site framed by corroded sheet pile walls. Because the project was put on hold for several years, this rectangular excavation has evolved into a sunken garden protected from the harsh winds and saline environment. The soil between the concrete piles pushed deep into the ground to support the future building is gradu-



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ally covered by a rich carpet of herbs and flowers. Among the colonizing species are *Epilobium angustifolium*, *Galium verum*, *Trifolium repens*, *Ranunculus acris* and, in the lower areas where the rainwater collects (not shown in the picture), larger patches of *Typha latifolia*.



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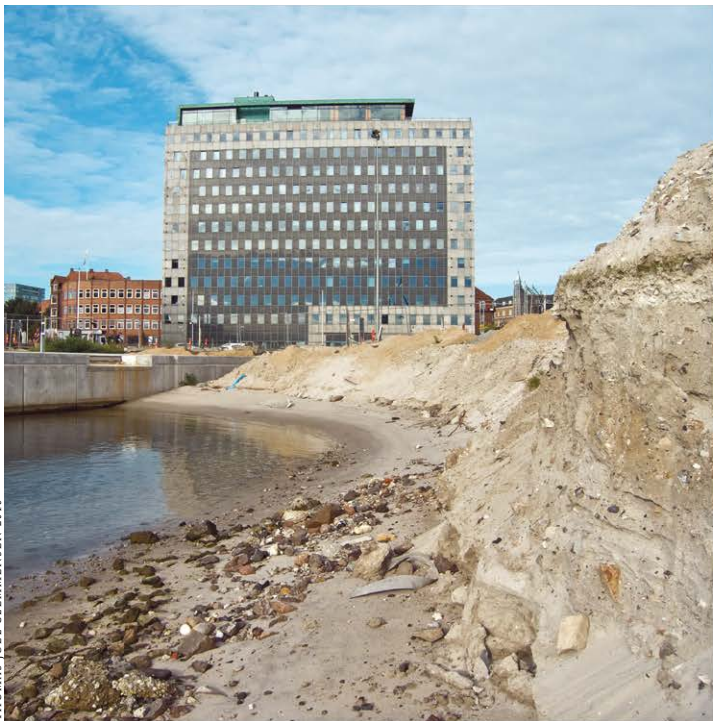


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**Figure 6 The Sandbox Monument**

A segment of an older pier on the inner port is being demolished. The upper part has largely been removed, exposing the sand used as filling. The remaining construction is almost level with the sea, allowing the waves to wash over the interior, eroding the fine sand

away, enhancing the leftover lumps of concrete and revealing the corroded tie rods that stabilize the sheet pile walls, and the stones hidden below the sand. The degree of erosion fluctuates with the tide, wind patterns and traffic on the water.



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**Figure 7 The Beach Monument**

A diverse blend of sand, soil and rubble has been pushed over the existing quayside into the water to allow for storage and handling of ground construction materials for the new urban spaces and the inner port. This deposit of materials is exposed to erosion of wind and

water, giving shape to a beach-like situation where stones, bricks and other rubble are being washed out and exposed to the sandy deposits. The beach's amorphous shape and dynamic character stand in contrast to the immediate surroundings.

## Entropy made visible

Time is a central theme and an essential medium in the work of Robert Smithson. For him, time is never only a disembodied abstraction, but always a tangible and material reality; it must have coordinates in space and be made manifest in a specific place. Thus, time inhabits as well as contains the material world. Moreover, it is crucial to the notion of entropy that emerged as one of the overriding concerns of his work.<sup>21</sup> Smithson's interest in time and entropy is evident in his text *Frederick Law Olmsted and The Dialectical Landscape* (1973), referring to the landscape architect and his work in New York City's Central Park. According to Smithson, Olmsted knew how to create a park landscape that escapes one-sided and idealized perceptions of nature—a dialectical landscape:

We cannot take a one-sided view of the landscape within this dialectic. A park can no longer be seen as 'a thing-in-itself', but rather as a process of ongoing relationships existing in a physical region—the park becomes a 'thing-for-us'. . . . Dialectics of this type are a way of seeing things in a manifold of relations, not as isolated objects.<sup>22</sup>

In his essay, Smithson takes the reader on a tour through the park, describing specific features through words and photographs. One of these features is The Pond, partly silted up with mud from the brook running under the Gapstow Bridge. Smithson's photograph captures the picturesque qualities of the situation with the old stone bridge behind the extensive mud slough (Fig. 8). He writes:

Maintenance on The Pond seems long overdue. The mud should be dredged out. This maintenance operation could be treated in terms of art, as a 'mud extraction sculpture'. A documentary treatment with the aid of film or photographs would turn the maintenance into a physical dialectic. The mud could be deposited on a site in the city that needs 'fill'. The transportation of mud would be followed from point of extraction to point of deposition. A consciousness of mud and the realms of sedimentation is necessary in order to understand the landscape as it exists.<sup>23</sup>

For Smithson, the mud not only seems to add a compelling contrast to the romantic stone bridge, but also to point to the geologic processes that inscribe the park in a much broader context both in time and space—the park as a process of ongoing relationships existing in a physical region. More than 14,100 m<sup>3</sup> of soil were imported from Long Island and New Jersey in creating the park landscape. This soil will inevitably be exposed to the forces of erosion and slowly be exported out of the park with the water running through the park and by the dredging of muddy sedimentations. As a result, the original form of the carefully designed park landscape will gradually dissolve as the degree of disorder increases. This way, the mud is evidence of the entropic condition that characterizes the Earth's surface.

The significance that Smithson ascribes to mud and the realms of sedimentation can be applied to reading the monuments on the Port of Aarhus. Just as the muddy pond in Central Park makes entropy visible, so does the Beach Monument at the Port of Aarhus (Fig. 7). In this case, not by collecting eroded sediments, but by exhibiting the erosion of the material blend used as filling for the port. The material intended to create new land is slowly being ground down and washed out in the water at the beach. When it comes to the sand extracted in the bay, this means a return to its orig-

inal domain, a process with entropic qualities that reveals how the port exists not as an isolated and fixed domain, but as part of geologic processes involving human agency. This aspect seems amplified by how rubble such as old broken bricks is being dismantled and smoothed on the beach, a process in which the distinction between natural and human-made materials is increasingly blurred.

## Displaced materials

In her text *Erratic Imaginaries: Thinking Landscape as Evidence* (2013), landscape architect Jane Hutton discusses erratic boulders. These huge glacially deposited rocks are foreign to the surrounding geology because they have travelled with the ice many kilometres from their original location. According to Hutton, the erratic boulders have not only served as critical distributed evidence in the development of the theory of glaciation, they also continue to be cultural artefacts provoking and 'inscribing' ideas about time.<sup>24</sup> They are curious things prone to being used as markers of human events and spaces, yet they are also markers of deep time, having travelled long distances in nearly unimaginable environments. Through this conflation of vastly different timescales, the boulders span a seemingly unbridgeable divide between geologic time and human action.<sup>25</sup>

The unique qualities of the erratic boulders described by Hutton are recognizable in *Une pierre noire s'enfonce dans la glace* (1991), a work of art by artist Carmen Perrin. This work of art was commissioned by architect Georges Descombes, who in 1987 was invited by the canton of Geneva to design a section of the Swiss Way, a 35-km-long walking path around Lake Uri conceived to mark the 700th anniversary of the Confederation of Switzerland.

Descombes also invited artists Richard Long and Max Neuhaus to collaborate. The four of them developed a shared approach and creative strategy. The overall objective was to make the complexity of the landscape present and tangible along the path. Their strategy involved not adding anything new, but clarifying existing features and forces to amplify the landscape's character through subtraction and modest, though highly calculated, interventions.<sup>26</sup>

This strategy or procedure of clarification is evident in the work of Perrin, who places attention on a series of erratic boulders deposited during the last glaciation. Perrin decided to clean away the thick cover of grass, lichen and moss to reveal the bright white granite below (Fig. 9). This way, the white boulders re-emerged along the forest path as evidence of the wandering glacier. However, the cleaning of the erratic boulders also recalled human events in a not-so-distant past. At the beginning of the twentieth century, some of these boulders were broken down and used as a building material. From the path, one could see these broken boulders, which sometimes looked like piles of snow in the forest.<sup>27</sup> Thus, two stories are linked through the simple act of cleaning the erratic boulders, affirming the connection between geologic time and human action.

The idea of addressing displaced materials as evidence of significant landscape transformations that otherwise are hard to understand is relevant when unfolding the aesthetic qualities of the four monuments at the Port of Aarhus. All of them display displaced ground materials to different degrees. The most obvious example is the Miniature Mountains (Fig. 4), with the different piles of ground construction material, which have been moved here from somewhere else. However, the piles themselves do not reveal much about the journey. A more remarkable example is the Sunken Garden (Fig. 5). The rectangular construction site framed by



ROBERT SMITHSON, 1972/THE HOLT/SMITHSON FOUNDATION/ROBERTSMITHSON AND NANCY HOLT PAPERS, 1905-1987. BULK 1952-1987. ARCHIVES OF AMERICAN ART, SMITHSONIAN INSTITUTION



Figure 8 The Gapstow Bridge with mud slough, Central Park, New York City

This photograph by artist Robert Smithson featured in his text *Frederick Law Olmsted and The Dialectical Landscape* (1973), which deals with the landscape architect's work in New York City's Central Park. In his text, Smithson takes the reader on a tour through the park, describing specific features with words and photographs. One of them is The Pond, which is partly silted up with mud from the brook running under the Gapstow Bridge.



Figure 9 White erratic boulder in the forest at Lake Uri in Switzerland

This photograph shows one of the erratic boulders in the forest at Lake Uri in Switzerland, which was part of the work *Une pierre noire s'enfonce dans la glace* (1991) by artist Carmen Perrin. Here, Perrin decided to clean away the cover of grass, lichen and moss to reveal the stark white granite below. This way, the white boulders re-emerged along the forest path as evidence of the wandering glacier.

CARMEN PERRIN, 1991

SOURCE: OLAFUR ELIASSON, EROSION 1997. WATER, HOSE, PUMP, SUCTION FILTER, INSTALLATION VIEW: 2ND JOHANNESBURG BIENNIAL, 1997 PHOTO: OLAFUR ELIASSON, PRIVATE COLLECTION. BOLZANO, ITALY. © 1997 OLAFUR ELIASSON



Figure 10 Water reservoir being emptied onto a street in Johannesburg

One of nineteen photocopied images featured in a booklet documenting the unannounced intervention *Erosion* (1997) by artist Olafur Eliasson during the Second Johannesburg Biennale. Eliasson organized the emptying of a water reservoir located opposite the exhibition hall in which one of his photo series was on show. The water was pumped onto the street, turning into a small stream, running approximately 1.5 km through the city, carrying dirt, leaves and litter with it, before disappearing into a stormwater sewer. The intervention lasted for about three hours.

corroded sheet pile walls appears like an opening revealing the otherwise hidden subsurface of the port. A sense of terrain replaces the sense of surface as the experience of the port becomes more three-dimensional. This experience is amplified when moving down into the excavation, stepping away from the hard pavement onto the softer ground, which seems to be a blend of sand and surplus soil. The rich carpet of herbs and flowers covering the ground and the smell of moist soil enhances the sense of being in a different environment and reveal how soil is being excavated, moved and deposited in the process of reclaiming land constructing the port. The herbs and flowers serve as evidence of this displacement. The soil contains seeds from its original locations, and the exposed ground is also colonized by pioneering species that disperse seeds by the wind. In both cases, the vegetation points to connections reaching far beyond the immediate site.

Exposing the subsurface of the port, revealing the displaced soil and leaving it open to ecological succession can be seen as a similar gesture to the cleaning of erratic boulders performed by Perrin. Both gestures highlight specific material qualities and address different temporalities linking natural processes and human action. In the Sunken Garden, the ecological succession that has been set in motion introduces a sense of time resonating with the ongoing process of excavating, moving and depositing soil. This relatively slow humanly driven sedimentation process has been part of the port's growth for more than 175 years.

### Erosion at work

Like Robert Smithson's work, the work of artist Olafur Eliasson expresses a strong interest in landscape dynamics and the concept of time. It is a recurring theme in Eliasson's discussion of his work, and many of his installations are explicitly temporal. They are designed to be experienced during a specific period, or they change character over time so that the experience of the work very explicitly acquires a temporal dimension. While one could say that Eliasson uses time as an aesthetic device, he also interprets it in a broader cultural perspective.<sup>28</sup>

These different aspects are evident in his work *Erosion* (1997), done as an unannounced intervention during the Second Johannesburg Biennale. Here, Eliasson orchestrated the emptying of a water reservoir located opposite the exhibition hall in which one of his photo series was on show. The water was pumped onto the street, where it turned into a small stream, running approximately 1.5 km through the urban fabric, carrying dirt, leaves and litter with it before disappearing into a stormwater sewer (Fig. 10). The intervention lasted for about three hours.

Eliasson describes the temporary stream as a poetic work about 'giving time back to the city' to liberate it from static pictures of spaces and historical events.<sup>29</sup> Herein also lies a critique of contemporary culture, especially entertainment culture and the consumer industry, which according to Eliasson tends to favour timeless objects or images because they are easier to sell and therefore more profitable. However, by excluding time, one also excludes the possibility of change. Moreover, if we do not recognize that our actions directly affect our surroundings, we lose our sense of responsibility.<sup>30</sup> Eliasson argues that friction is needed to exercise criticality, as it offers the possibility of arguing from different points of view. In urban planning, friction evokes a moment when one suddenly sees oneself and the city differently. The stream in Johannesburg created friction. It was an interruption of how the people usually moved and thus introduced a temporary critical glance at the well-known, intensively used public space of Johannesburg.<sup>31</sup>

Similar to Eliasson's temporary stream through the urban fabric of Johannesburg, the monuments in the Port of Aarhus created some friction by introducing a different sense of time, challenging ideas of permanence and stability concerning urban spaces. The Sandbox and the Beach (Figs. 6 and 7) very literally display the transformative power of erosion, and the Sunken Garden changes according to the ecological succession of its plant community. The Miniature Mountains (Fig. 4) are also subject to change through wind and water erosion, which causes the different materials to be dispersed and mixed. In addition, the piles of materials also figuratively speaking signal changeability, as materials are stored temporarily before continuing their journey.

The performance of the monuments is tied to their specific material qualities. Just as the running water in Johannesburg revealed the subtle ground of the urban fabric and the basic effects of erosion, the monuments reveal the port as a quasi-natural environment, partly fixed construction, partly dynamic landscape. This aspect is perhaps most evident in the Sandbox, where the sandy interior of the old pier is left open to the eroding forces of the waves, creating a situation in which the ground appears like a hybrid between natural geology and human-made construction.

### Conclusion

While working with time and processes in landscape architecture obviously is not something new, the study of the Port of Aarhus and its temporary monuments does provide an interesting direction on how to address time-based aesthetics. In particular, it works toward addressing humanly modified ground and sensitizing humans to some of the environmental conditions that characterize the Anthropocene. Concerning Prominski's identification of the potential for future landscape architectural research in time-based entanglements of humans and non-humans, the monuments demonstrate how abiotic processes such as erosion and sedimentation might play a new role in the aesthetic agency. These processes make it possible to entangle geologic time and address human engagement in geologic processes, which otherwise are too slow or too large to be perceived.

In the monuments at the Port of Aarhus this connection is evident in how the different filling materials used in the land reclamations were arranged, albeit unintentionally. By revealing these otherwise hidden materials and exposing them to natural processes such as ecological succession, erosion and sedimentation, the immediate experience is linked to material processes, which are almost impossible to get a real sense of—the massive amounts of materials being excavated, moved and deposited in the continuous transformation of the port. Spatially, the experience at the port is enlarged by including the various extraction sites distributed throughout the region. Temporally, the experience is amplified by addressing different timeframes. In addition to the here-and-now experience, the monuments recall material processes relating to the continuous expansion and transformation of the port and geologic phenomenon involving a long-term time perspective—the continuous fluctuations of the coastline.

Concerning Latour and his application of the theatre as a metaphor when explaining the distinction between the Holocene and the Anthropocene, the monuments demonstrate how time-based aesthetics in connection with humanly modified ground can render us sensitive to some of the environmental conditions that characterize the Anthropocene. Rather than adding to a scenography that sustains the illusion of a world of passive objects in which humans seem to be the main actors, the monuments help reveal how human and non-human processes are entangled, how we

as humans are participating in a play with many other actors. This connection is evident in how the monuments were instrumental in creating environments in which the port could be experienced not as a static thing-in-itself, but rather as a process of ongoing material relationships existing on a regional scale. Following Latour and his claim that ways of knowing that involve sensory modalities are also ways of rendering sensitivities, it is possible to argue that the monuments were helping to sensitize humans to some of the environmental conditions that characterize the Anthropocene. In particular, the increasing amount of humanly modified ground and the entanglement of human and non-human processes.

## NOTES

1 Günter Vogt and Thomas Kissinger (eds.), *Mutation and Morphosis: Landscape as Aggregate* (Zurich: Lars Müller Publishers, 2020), 51.

2 Martin Prominski, 'Designing Landscapes of Entanglement', in: Ellen Braae and Henriette Steiner (eds.), *Routledge Research Companion to Landscape Architecture* (Abingdon: Routledge, 2019), 171–183. See also: Martin Prominski, 'Andscapes: Concepts of Nature and Culture for Landscape Architecture in the "Anthropocene"', *Journal of Landscape Architecture* 9/1 (2014), 6–19.

3 Ibid. See also: Philippe Descola, *Beyond Nature and Culture* (Chicago: University of Chicago Press, 2013).

4 Bruno Latour, *Facing Gaia: Eight Lectures on the New Climatic Regime* (Cambridge: Polity Press, 2017), 7–40. See also: Bruno Latour, *We Have Never Been Modern* (Cambridge: Harvard University Press, 1993).

5 The idea of entanglement relates to actor-network-theory (ANT) as promoted by Bruno Latour, among others. See, for example: Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2007).

6 Prominski, 'Designing Landscapes', op. cit. (note 2).

7 While Prominski describes process aesthetics, I prefer to use the term time-based aesthetics. Ibid.

8 Bruno Latour, 'Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern', *Critical Inquiry: Special Issue on the Future of Critique* 30/2 (2004), 225–248.

9 Ibid. See also: Bruno Latour, 'Sensitizing', in: Caroline Jones, David Mather and Rebecca Uchill (eds.), *Experience: Culture, Cognition, and the Common Sense* (Cambridge: MIT Press, 2016), 315–338.

10 Bruno Latour, *Down to Earth: Politics in the New Climatic Regime* (Cambridge: Polity Press, 2018), 43. See also: Latour, *Facing Gaia*, op. cit. (note 4).

11 Matt Edgeworth, 'The Relationship between Archaeological Stratigraphy and Artificial Ground and Its Significance in the Anthropocene', in: Colin Waters et al. (eds.), *A Stratigraphical Basis for the Anthropocene*, *Lyell Collection Special Publications* 395 (London: The Geological Society of London, 2013), 91–108.

12 Matt Edgeworth, 'Humanly Modified Ground', in: Dominick DellaSala and Michael Goldstein (eds.), *Encyclopedia of the Anthropocene* (Oxford: Elsevier, 2017), 157–161.

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14 Port of Aarhus, Masterplan for udvidelse af Aarhus Havn–Yderhavnen 2020–2060 (Aarhus: Port of Aarhus, 2018), 11–16.

15 Stephen Graham, *Ground: Making Geology. Vertical: The City from Satellites to Bunkers* (London: Verso Publishers, 2016), 436–485.

16 Edgeworth, 'Humanly Modified Ground', op. cit. (note 12). Edgeworth refers to the ideas of geologist Robert Lionel Sherlock published in: *Man as a Geological Agent: An Account of His Actions on Inanimate Nature* (London: H. F. and G. Witherby, 1922).

17 Port of Aarhus, Masterplan, op. cit. (note 14), 23.

18 Port of Aarhus, mail correspondence with Kim Meilstrup, Head of Infrastructure, September 2020.

19 Robert Smithson, 'A Tour of the Monuments of Passaic, New Jersey', in: Jack Flam (ed.), *Robert Smithson: The Collected Writings* (Berkeley, CA: University of California Press, 1996), 68–74/70–71. This text was originally published as 'The Monuments of Passaic', *Artforum* 7/4 (1969), 48–51.

20 Tom Nielsen, *Formløb: Den moderne bys overskudslandskaber* (Aarhus: Arkitektskolens Forlag, 2001), 13.

21 Jack Flam, 'Introduction: Reading Robert Smithson', in: Flam, *Robert Smithson*, op. cit. (note 19), xiii–xxv.

22 Robert Smithson, 'Frederick Law Olmsted and The Dialectical Landscape', in: *ibid.*, 157–171: 160. This text was originally published as 'Frederick Law Olmsted and The Dialectical Landscape', *Artforum* 11/6 (1973), 62–68.

23 Ibid, 170.

24 Jane Hutton, 'Erratic Imaginaries: Thinking Landscape as Evidence', in: Etienne Turpin (ed.), *Architecture in the Anthropocene: Encounters Among Design, Deep Time, Science and Philosophy* (Ann Arbor: Open Humanities Press, An imprint of Michigan Publishing, 2013), 111–124. Hutton has mapped a series of boulders that were plucked, transported, and deposited by the toe-line of the retreating Late-Wisconsin and pre-Wisconsin ice sheets in North America and subsequently named, relocated, and celebrated by people. See Jane Hutton, 'Distributed Evidence: Mapping Named Erratics', in: Elizabeth Ellsworth and Jamie Kruse (eds.), *Making the Geologic Now: Responses to Material Conditions of Contemporary Life* (New York: Punctum Books, 2013), 99–103.

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26 Georges Descombes, 'Shifting Sites: The Swiss Way, Geneva', in: James Corner (ed.), *Recovering Landscape: Essays in Contemporary Landscape Architecture* (New York: Princeton Architectural Press, 1999), 79–85.

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