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CHAPTER TWO

THEORY

Introduction

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2.1

Introduction

*Instead of network and organism, the new infrastructure creates enclave and impasse:
no longer the grand récit but the parasitic swerve.*

(Koolhaas 1994:1264)

Most of our natural systems, especially water in the urban context which is irresponsibly interpreted as a standing resource, have fallen victim to unprecedented control by society, through the advance of modern civilisation and industrialisation in the 20th century.

... [A]n open field, unchallenged and without impediment to free colonisation.

(Gans 2004)

This statement clearly communicates man's perception of the natural landscape as introduced by the industrial revolution, discussed by Gans in the article "The sky above and the ground below Emscher", on the investigation of 'brownfields' – sites destroyed and contaminated through the development of urbanism and industry, and which include examples ranging from great water thoroughfares to landfills.

Consequently, this position resulted from a paradigm that created a clear separation between cultural society and the biophysical environment, and was mostly influenced by the theoretical positions proposed by Francis Bacon, Rene Descartes and Isaac Newton following the Age of Enlightenment, also known as the Age of Reason.

In non-Western societies, including South Africa, this ontological division has resulted in a critical disparity in not only the relationship between human and nature, but also in social relationships, by enabling the control of people through the control of natural resources. The South African Modern project and specifically the Apartheid planning strategies, involved urban transformation processes and infrastructural developments underlined by political ideologies, such as racial or class segregation in spaces, settlements and movement networks, as well as the provision and management of infrastructural services to selected areas. These were implemented as a mechanism for control and dominance, rather than in recognition of the interconnected relationship between cultural and natural entities.

Today this creates immense challenges for the integration of cities that were once divided on several social and spatial levels (Nuttall & Mbembe 2007).

The consequences of this modern paradigm are discussed further in the following section through a focus on water and natural environments in our urban landscapes, as supported by the writings of Bruno Latour, J.L. Monroe and Peter Sloterdijk. Latour specifically recognises the importance of comprehending the dichotomy that underlies the modern paradigm in order to progress towards new ways of critically reconstructing the abovementioned relationships (Latour 1993:10).

In current architectural discourse, fundamental questions are being posed regarding the rehabilitation of our post-industrial urban landscape, to encourage a balance between ecological and human needs. The tension between the demands of ecology and development need to be investigated when approaching these sites of concern to ultimately integrate multiple perspectives from different disciplines.

The theoretical premise of this dissertation argues that the spatially fragmented public realm of our cities' present condition owes its existence to the great divide between nature and culture of the modern paradigm, and the development of industrialisation and urbanisation controlling natural resources in isolated networks of infrastructural systems, as vehicles for political, social and economic agendas. Despite these infrastructural developments allowing urbanisation to take place in previously dangerous and impractical locations, the presence of nature in cities has been rendered anonymous, its potential opportunities as resource and amenity with enigmatic characteristics have been removed from society and the city. A reinterpretation of our development processes is required that acknowledges non-human natural systems as agents and also acknowledges the constraints of human practices in moving towards an ecosystemic approach .



Figure 2.1: Water Infrastructure being implemented on the Kleine Emscher in Duisburg (Wuppertal 2013)
Image edited by author



Figure 2.2 "Artist's interpretation of Safavid-era Isfahan, typically described as the pinnacle of garden cities interspersed with harmoniously-designed pavilions and spacious thoroughfares" (AJAM Media Collective 2012)



Figure 2.3 A graphic illustration for the invitation of the Winter 2011, University of Michigan Taubman College, The Raoul Wallenberg Competition Studios. The competition studio aimed to investigate "... ways of redefining the highway's relationship to the city, the studio will explore possibilities of transforming the often undifferentiated and mono-functional network into a performative and productive urban system, which utilizes their potentials as the "spatial" infrastructure beyond its original utilities of mobility and conveyance." (Hwang & Moon 2011)

2.2

 Exploitation, Convenience and Control:
 Will the river die of thirst?

Without water there is no life; therefore it is only natural that it should occupy a great place in the history of humanity and the world.

(Manore 2006:230)

Water is a discreet component with a pervasive presence in our natural and built environments. Not only fundamental to life, but rather life itself, it is an integral component of the cellular structure of living organisms and facilitates every occurrence of human habitation. Water as unifying element of all living ecosystems defines the landscape. Encompassing much more than the combination of hydrogen and oxygen molecules, it has been assigned various identities throughout history in the spheres of politics, economics and religion, imagined in terms of its power, fertility and fortune.

2.2.1

The First Dichotomy

The regulation of water through the management and control of rivers during the sixteenth century, anticipated the mechanisation of the natural systems during the seventeenth century, with the revival of the Roman development of science, specifically hydraulic engineering through the construction of aqueducts (Manore 2006:232).

The advent of the seventeenth century threatened the organic view with a paradigm of mechanisation and was soon to be replaced by a new theory of natural and cultural organisation. The most influential theories that stimulated this paradigm shift are considered to be that of Francis Bacon (1561 - 1626), Rene Descartes (1596 - 1650) and Isaac Newton (1643 - 1727).

In his book *Novum Organon Scientiarum* ("The new instrument of science"), published in 1620, Bacon proposed his 'true' directions regarding his interpretation of nature. His reductionist theory of rational thought proposed that, through a scientific investigation and the use of reason, humanity has the potential to master all things.

Let the human race recover that right over nature which belongs to it by divine bequest.

(Bacon 1620:115)

Similarly, Descartes, in his publication *A Discourse on Method* (1637), proposed that the natural world consisted of inert particles, lifeless and mechanistic in its processes.

Newton's theory further advanced Descartes' arguments by suggesting that nature's particles were not inactive, but rather moved as a result of external forces. The ability to comprehend and manipulate these forces was thought to enable every human desire. Their theories together positioned humans as separate from and dominant over the natural world. "They rearranged the cosmos, society and the self in terms of the machine" (Manore 2006:232). Herein lay the foundation of the nature-culture opposition significant to modern society's theoretical fundamentals and the philosophies of development.

The refining of natural science as a unity of facts, and a realm separate from society and culture, is how Bruno Latour describes this modern paradigm in his book *We have never been modern* (1993:11):

... [A] partition between a natural world that has always been there, a society with predictable stable interests and stakes, and a discourse that is independent of both reference and society.

(Latour 1993:11)

The development of modernism, with this new separation between humans and the natural world, and an emphasis on order and power as the ability to actively control the affairs of the natural environment through the process of industrialising the world, ultimately removed any consideration for restrictions on environmental exploitation.

For most of the year they typically amount to a steady trickle; then with a sudden thunderstorm or an early thaw they raged and rampaged, tearing out everything put in their way, wreaking havoc over a vast floodplain. All those natural imperfections would have to be set right. Science demanded a nature without flaws.

(Worster 1985:154)

For water in the urban environment, this meant the manipulation of and aspiration to transform the integrity of natural systems into agents of power and control and to successively mitigate any possibilities of change, uncertainty and unpredictability. Donald Worster (1985:154) encapsulates the conditions that encouraged the desire for the modernisation of these natural forces.

During the course of modernisation and urbanization, rivers have been systematically engineered to provide particular

services and functions to our societal functions, but as an unintended consequence, our engineering resources ultimately removed their ecological potential (Mador 2008:48). Most rivers and water bodies have been manipulated as projects to serve singular objectives, taming, subduing and marginalising these former lifelines of all pre-modern environments into inanimate, artificial objects of which the division of the modern paradigm is an underlying problem.

2.2.2

The Second Dichotomy

Assurances of Nature's abundance and Man's abilities continued to prosper during the industrial development and urbanisation of the 20th century. The intrinsic design qualities of pre-modern natural and artificial places have been encroached on by the imposition of uniform networks of infrastructure, driven by mechanistic development and efficiency. Environmental resources have been overpowered by the supposed need in the present urban landscape for control, functionality and connectivity. Despite its utilitarian importance to the service of urban development, the distinction between these two realms have given rise to the dominance of culture over the suppression of natural resources, instead of the recognition of their inherent hybrid composition. Today however, we are able to recognise the shortcomings of these great achievements and technological advancements.

Our natural environment is no longer viewed simply as a collection of resources to be exploited, and neither should our infrastructural implementations be considered as projects dedicated to isolated functions and services. "Instead, the world and the many formations which compose it, be they continents, cities, industries, habitats, bodies (human, nonhuman organic, nonhuman technological), are all hybrid assemblages of, and in, heterogeneous entanglements or networks" (Jones 2009:6).

The past decade has seen many initiatives attempting to challenge the modernist world view of a nature/culture

duality through the immersion of ecological interventions. People are once more considered integral components of the larger ecological system under this 'ecological' view of society, with the objective of creating communities in equilibrium with their environments. The premise of these interventions are the search for a symbiotic relationship between and interconnectedness of all human and non-human agents as well as a concern for nature as a living entity.

To do so would require an agreement that no river would be appropriated in its entirety, nor be constrained to flow against its nature in some rigid, utilitarian strait-jacket, nor be abstracted ruthlessly from its dense ecological pattern to become a single abstract commodity. ... Where watersheds are degraded by urbanisation, then rivers will also be degraded. Maintaining or restoring watersheds and rivers with wetlands and healthy soils, minimises damaging flash floods and the risk of drought, cuts down soil erosion and so the amount of sediments washed down in the riverbed, increases the ability of the river system to break down and filter pollutants, and provides diverse wildlife habitats.

(Manore 2006:243)

What is required is a new metaphor for human-nature collaboration, as opposed to dualism or dichotomy, through a revival of the countless opportunities provided by ecological potential.

2.2

Hybridisation: Cities as Collective Cultural-Natural Artefacts

The first advancement in acknowledging our present hybrid reality would be to progress beyond the recognition of nature and culture as existing yet interrelated entities, towards a realisation of the world where its attributing aspects can no longer be classified as either realm, but only identified as a culmination of less significant differences between the two realms (Jones 2009:17).

The new metaphor and position put forward by Latour is the idea of hybridisation and agent parity between non-human and human actors in an interdependent network. He argues that the world is organised of hybrids between fact and myth, nature and culture, and society and science. It is impossible to separate these arrangements and we can only interpret and create hybrids in our understanding of reality (Latour 1993:10).

Hybridity therefore emphasises the impurity of individual entities as opposed to an assembly of elements from both nature and culture.

All of culture and all of nature get churned up again every day. ... Headings like Economy, Politics, Science, Books, Culture, Religion and Local Events remain in place as if there were nothing odd going on. The smallest AIDS virus takes you from sex to the unconscious, then to Africa, tissue cultures, DNA and San Francisco, but the analysts, thinkers, journalists and decision-makers will slice the delicate network traced by the virus for you into tidy compartments where you will find only science, only economy, only social phenomena, only local news, only sentiment, only sex. ... By all means, they seem to say, let us not mix up knowledge, interest, justice and power. Let us not mix up heaven and earth, the global stage and the local scene, the human and the nonhuman. 'But these imbroglios do the mixing,' you'll say, 'they weave our world together!'

(Latour 1993:2)

Latour's introduction of a theoretical position which prioritises negotiations, interpretations and the heterogeneous relations that associate objects (human and non-human) challenges the intellectual divisions that modernity introduced, in order to arrive at an adequate understanding of how humans relate to science and technology (Lecomte 2013:463).

He further confronts modernisation with ecology. In a Latourian understanding, ecology challenges the preservation of nature through an emphasis on the infrastructures and multifaceted associations that exist between and support both the domains that modernity separated. He argues that the uninterrupted networks that allow us to simultaneously interpret scientific knowledge, political action, nature, economy and culture, do not 'mysteriously circulate', but are collected, calculated and associated with great consideration and effort, which is of great significance to our interest in constructing environments as architects (Lecomte 2013:464).

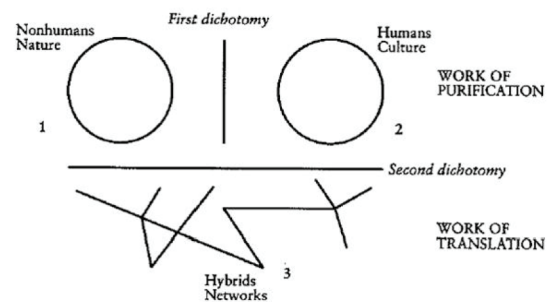


Figure 1.1 Purification and translation

Figure 2.4 Graphic illustrating the theoretical principles of the First - and Second dichotomy of the Modern paradigm (Latour 1993:11)

2.3

The Spheres Theory

A brief synopsis of Peter Sloterdijk's spheres theory provides insight into the relevance and opportunities of this hybrid reality for the design profession and, more specifically, architecture. In relation to architecture, Peter Sloterdijk has united the divided modern entities into "spheres" or environments. These "spheres", as termed by Sloterdijk, are used to describe the carefully designed artificial environments humans find for themselves to inhabit and is well encapsulated by a quote by Latour from the keynote lecture for the Networks of Design meeting of the Design History Society at Falmouth, Cornwall.

... [W]e are enveloped, entangled, surrounded; we are never outside without having recreated another more artificial, more fragile, more engineered envelope. We move from envelopes to envelopes, from folds to folds, never from one private sphere to the Great Outside.

(Latour 2008:8)

He further states that the ecological crisis has revealed the inherent hybrid identity of a cultural-natural reality and that a pure "outside" natural environment no longer exists (Latour 2008:8). Sloterdijk's main argument is that whoever designs and whoever occupies an environment also determines and regulates the actions and occurrences within it. Through this premise, Sloterdijk has reconstructed a fundamental principle of modernity, in pursuit of a comprehensive ecological design and the organisation of potentials and expectations that come along with it.

An amalgamated emergence of an innovative reconstruction is required, based on balancing human infrastructural needs with ecological systems. Understanding these systems within the urban context is important to unveil not only living nature, but also its ability to restore individual and collective livelihoods in the city.

2.4

Architecture, Nature and Artificial Environments

The definition of the Greek word Phýsis is used to describe what is constant and what is irreversibly transforming at the same time, and is used to define that which is continually generated or produced. Hence nature is understood as a series of laws that govern change (Natoli 1992:102). This 'generation' reaches its full consciousness in the human life cycle. In their artificial actions, human beings are merely conforming to nature's laws.

Human beings are therefore "natural artificers" in which the natural world and the artificial world come together in a perfect cycle.

(Natoli 1992:103)

Human beings are not denying nature or its laws, but are artificially constructing this natural generation or production when changing the environment through the imitation of nature.

We can therefore acknowledge that the manipulation of nature is perfectly natural; however, nature as sacred is entirely unnatural and challenging to sustain. It is critical in this regard to determine when the manipulation of nature becomes autocratic and when technological advancements become hazardous rather than supportive.

Even though the laws of nature are regarded as everlasting, their forms of production are not. Death can be delayed, but it is inevitable. Therefore there is no point in attempting to return the environment to a more natural state, but the ability of human beings to control nature is limited or restricted. With our current technological developments, the possibilities of manipulating nature is advancing to the core of its functioning and structure – for example artificial intelligence and genetic engineering – and is no longer restricted to its appearance, making natural forms more adaptable without damaging them (Natoli 1992:103).

It is critical to consider the compatibility of these developments with their environments and determine what could be adapted and what should stay constant, while being fully aware of the counter-effects that our technological innovations may initiate. An innovative approach does not submit to limitations, but rather redefines them. Nature is unavoidably altered by the technical advancements of men and is visually understood as a cultural perception, hence it becomes apparent that nature as a pure entity is considered fictional. If artificiality is an inevitable realisation in the relations between man and objects, it is fundamental that we abandon the artificial strategies employed to control nature (Natoli 1992).

Architecture has always been an imitation of nature, although its fundamental intention is considered to be shelter from natural elements. Similarly, the city has always been an artificially constructed urban landscape of consumption and exploitation to the expense of natural resources.

In this regard it is important to separate imitation from authority and to acknowledge architects such as Alvar Aalto and Richard Neutra, who have through the modern movement acknowledged natural dynamics as a framework for architecture (Hagan 2001:22). According to Hagan in *Taking Shape: A new contract between architecture and nature* (Hagan 2001:16), architecture has always held an ambiguous position and is moving towards greater ambiguity with an emphasis on artificially pursuing environmental sustainability.

The simultaneous acknowledgment of this new integrated paradigm and the possibilities of our technological advancements, presents an unfamiliar yet excitingly favourable territory for redefining and reimagining architecture and infrastructure within the realm of the artificial, to create an overlapping and integrated domain founded in both nature and culture (Hagan 2001:16).

