III_13.
Composite Landscapes:
Photomontage by John
Stezaker (land8 2013)

CHAPTER III

THEORETICAL ENCOUNTER

Instruments to renegotiate and reconcile the threshold: *theoretical discourse*

III

Theoretical encounter

THE THEORETICAL ENCOUNTER ARGUES HOW LANDSCAPE ARCHITECTURE CAN BE INTRODUCED AS AN INSTRUMENT TO RENEGOTIATE AND RECONCILE THE THRESHOLD BETWEEN MAN AND NATURE.
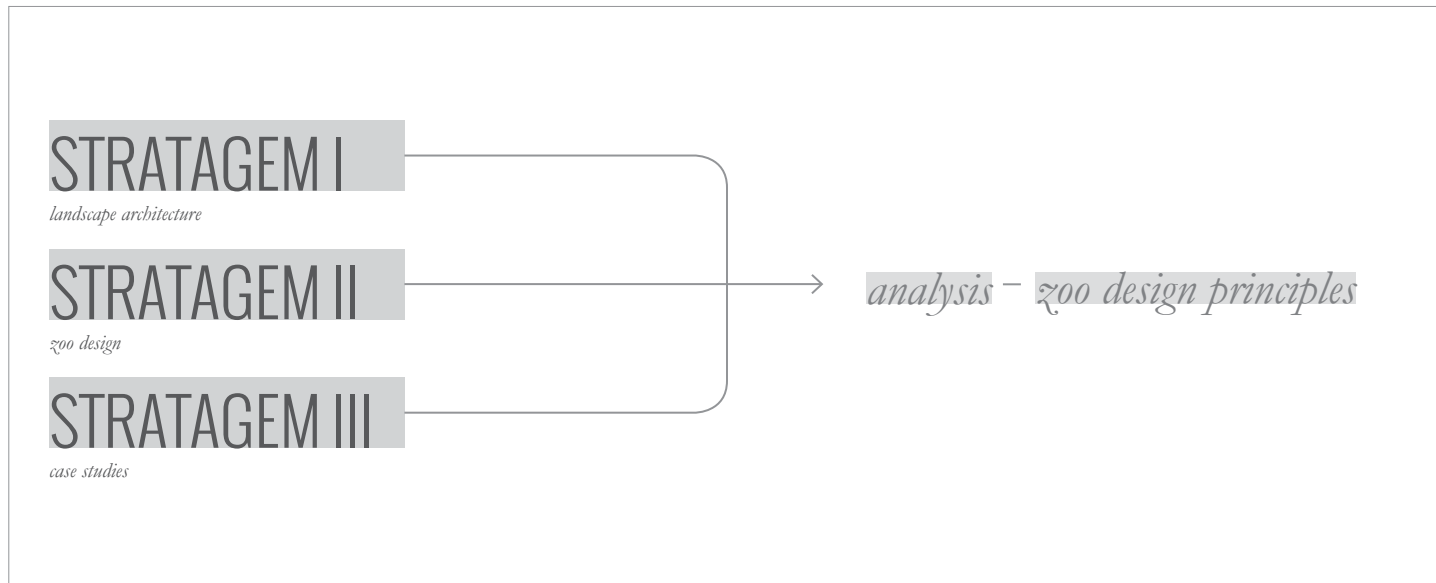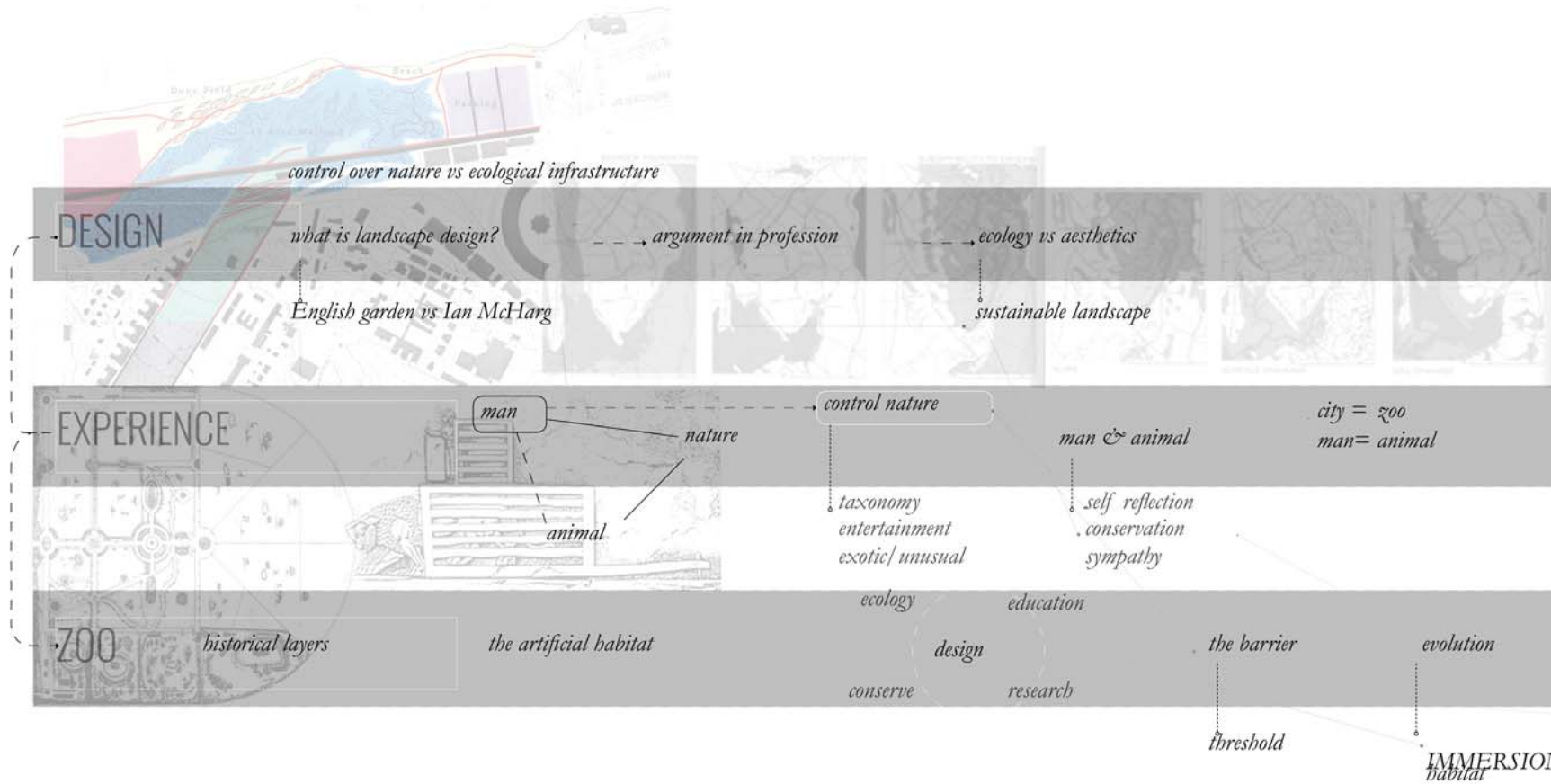
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3.1 *Introduction*

Chapter III analyses the current site conditions and determines possible opportunities for landscape design to be used as an intervention. Chapter III is divided into three strategies for design response: theoretical issues general to the discipline of landscape architecture; theoretical issues specific to zoological garden design; and relevant case studies relating to zoo enclosures. Through the analyses of these three strategies, a new programmatic response and zoo design principles can be determined.

"A park is a work of art, designed to produce certain effects upon the mind of men."

-Frederick L. Olmstead

STRATAGEM I

landscape architecture

STRATAGEM II

zoo design

analysis – zoo design principles

STRATAGEM III

case studies

III_14. Stratagem methodology (Author 2014)

control over nature vs ecological infrastructure

DESIGN

what is landscape design? - - - → argument in profession - - - → ecology vs aesthetics

English garden vs Ian McHarg   sustainable landscape

EXPERIENCE

man - - - → control nature   man & animal   city = zoo
nature   man= animal
animal

taxonomy   self reflection
entertainment   conservation
exotic/ unusual   sympathy

ecology   education

ZOO

historical layers   the artificial habitat   design   the barrier   evolution

conserve   research

threshold
IMMERSION
habitat

III_15. Theoretical
development: 'Zoo'
versus 'Experience' versus
'Design' (Author 2014).

unzoo

"tarzanesque"
barrier-less
future

N

III_16. Nelson Byrd Woltz's
Biohabitats: weir system
III_17. Nelson Byrd Woltz's
Biohabitat: water channel
III_18. Nelson Byrd
Woltz's Biohabitats: water
inlet (Woltz, 2009)

Stratagem I: Theory in landscape architecture

The author will discuss points of debate of *Sustainable beauty* – an approach in opposition with the *Design with nature* approach.

Beauty and aesthetics in sustainable design

Within the landscape architecture discipline, designers and theorists often focus on the ecological aspects of sustainability and design. Ian McHarg's *Design with Nature* (1969) cited the natural world as the only viable model for landscape design. McHarg's theory provided landscape architecture with instructions to avoid decisions of form and design. The *McHargian method* argues that if the design process is correct, the consequent form would be correct and automatically give rise to an appropriate aesthetic. McHarg and his predecessors perceived the discussion of beauty and aesthetics as a trivialisation of landscape architectural ornamentation.

During the nineteenth century, due to their availability, Frederick Law Olmstead designed urban parks to become spaces of social and environmental reform. Olmstead designed parks to be environmental "cleaning machines, open spaces with well-drained soils, shady groves of trees to reduce temperature, absorbing carbon dioxide and releasing oxygen." More importantly, he believed that this urban environmental function was equalled by the "performance of the designed landscape's appearance" (Meyer 2008:6). Olmstead was mainly concerned about the landscape's appearance and its performance.

Olmstead believed that "the experience of that appearance – the combination of physical characteristics and sensory qualities – altered one's mental and psychological state" (*ibid.*). The particular form of appearance is described by Meyer as the 'beauty' performed (*ibid.*).

The landscape served as an experience and an environment that sustained the cultural as much as the required environmental aspects Meyer states that "eco-technologies, such as rain gardens or green roofs, are being described as quantifiable ecological and hydrological processes showing no regard for the performance of appearance" (*ibid.*:7).

Meyer further claims that designers should readmit the aesthetic factor into the sustainability equation of ecology, society and economics. Landscape design should therefore rescue the visual beyond the stylistic or ornamental.

"It will take more than ecological regenerative designs for culture to be sustainable . . . what is needed are designed landscapes that provoke those who experience them to become more aware of how their actions affect the environment, and to care enough to make changes (*ibid.*:6)."

The aesthetic experience of the environment therefore becomes fundamental in "re-centring human consciousness from an egocentric to a bio-centric perspective (*ibid.*)."

This philosophy can be seen in the design of Nelson Byrd Woltz's *Biohabitats*. The waterway intervention may not be a replication of nature, but the hydrological processes of the disturbed urban stream are restored through human intervention. "The design and construction of *natural processes* advances over *natural forms* (*ibid.*)." (see Figures III_16 on page 78)

*III_19. Patio de los Naranjos in
Seville: irrigation as art (Treib 1999)
III_20. Patio de los Naranjos
in Seville: top view of courtyard
and cathedral (Treib 1991)*

Patio de los Naranjos in Seville (Figure III_19 on page 80) is another example of a design that, as described by Marc Treib, "testifies to the limits imposed by its environment, but does not try to replicate the proximate natural landscape" (Treib 1999:31). The patio "elevates the pragmatic requirements for irrigation to the level of art" (*ibid.*).

Treib (*ibid.*) supports this description mentioned above with the argument that the McHargian thinking leads landscape architects to an ecological trend, and results in analysts rather than creators. Treib (*ibid.*) continues to say that such design eliminates form-making, which is central in landscape design. Treib states that "one cannot design *without* nature, but should also be able to design viably *around* it (*ibid.*)."

Meyer concludes the argument by stating that "landscape architecture is more than designed ecosystems, more than strategies and open-ended processes. Landscapes are cultural products with distinct forms and experiences that evoke attitudes and feelings through space, sequence and form" (Meyer 2008:10).

Meyer explains how design can provide an aesthetic, but immersive experience that can lead to the recognitions, "empathy, respect and care for the environment" *(ibid.)*. By listing eleven principles in Meyer's manifesto, the author aims to incorporate it as objectives for programmatic response and intervention.
The author has identified five of these principles that will serve as design strategies for the zoo design intervention of the study area.

The principles include: beyond ecological performance, natural process versus natural form, the hyper-nature, the performance of beauty and dynamic beauty.

3.2.1.1   *Beyond ecological performance*

Meyer (2008) argues that "sustainable landscape design must be more than a functional and ecological" performance system, but it must also "perform socially and culturally."

Meyer's term "Sustainable landscape design" must use natural cycles identified within the given landscape, such as cleaning and filtering of water or replenishing soils and intersect these elements with recreational activities and spatial practices. This will link the dynamic and biophysical aspects of the landscape with the activities of users. Nature is not seen as a separate entity, but interwoven with the human condition.
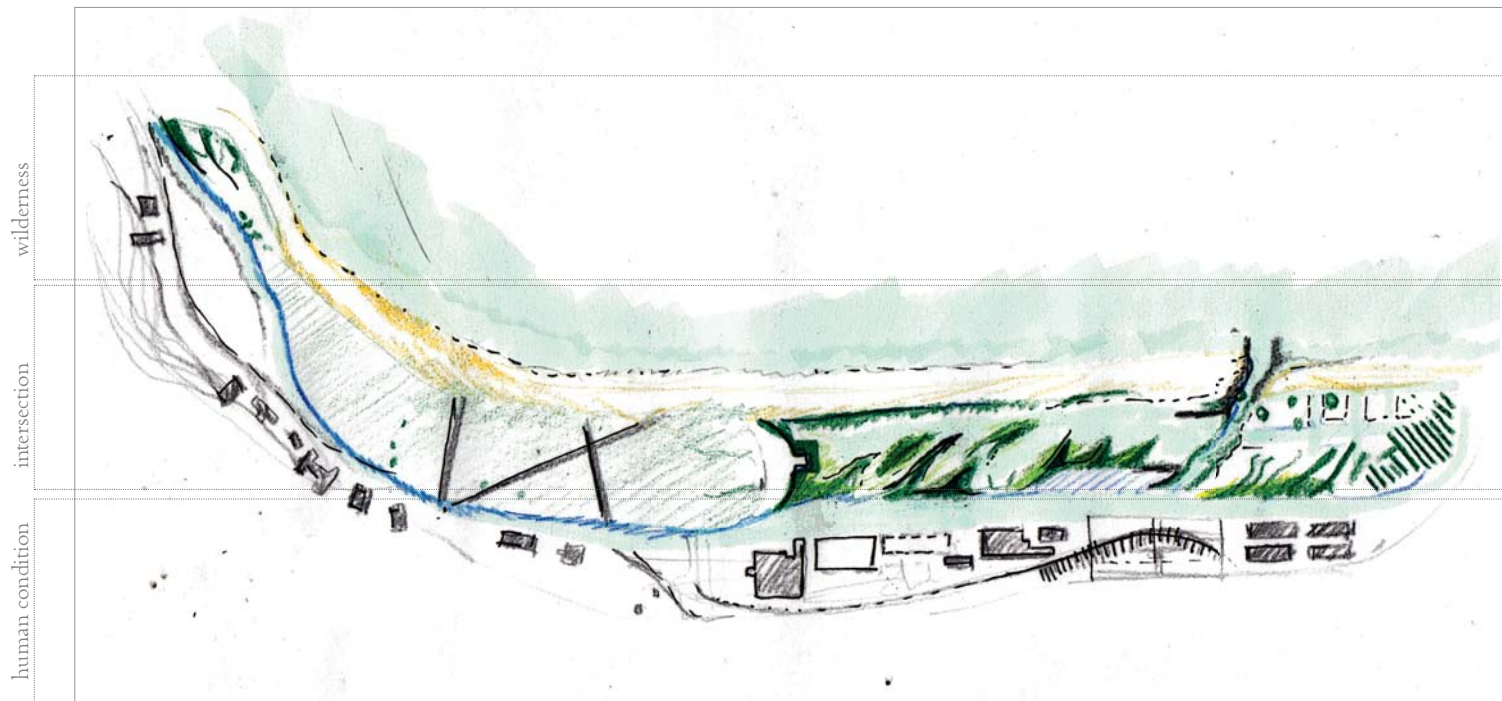
III_21. Human condition intertwined with the natural landscape. Adapted from Hargreaves landscapes' Crissy field park (Author 2014).

Natural process vs natural form

This principle states that the replication of natural processes becomes more important than the replication of the natural form. Meyer (*ibid.*:16) believes that "natural-looking landscapes are not the only genre to perform ecologically." Within a constructed urban condition, there is not sufficient space to support a natural-looking landscape. Natural processes must therefore be designed and constructed in alternative ways and in explored in different configurations. (See Fig. III_22 below)

Hyper-nature: the recognition of art

According to Meyer (*ibid.*:11*)*, "sustainable landscape must be form-full, evident and palpable, so it draws attention of an urban audience distracted by daily concerns of work or the over-stimulation of the digital world".

The designer must therefore understand the landscape as medium. Implementing design tactics, such as "exaggeration, amplification, distillation, condensation, juxtaposition or palimpsest" in the landscape as explained by Meyer (*ibid.:*11*)*.

III_22. Natural process in form of art. Interpretation of Hargreaves landscape (Author 2014).

III_23. Hyper-nature, recognising art in the landscape. Aerial view of crop circles (Author 2014).

3.2.1.4 *The performance of beauty*

Meyer believes that a beautiful landscape influences our psyche. Through a design experience we can de-centre, restore, renew and re-connect to the biophysical world. "The haptic, somatic experience of beauty can inculcate environmental values" (*ibid.:*17).

Art critic and philosopher Arthur Danto argues that beauty is not found or discovered immediately, "it is discovered through a process of mediation between the mind and body, between seeing and touching, smelling and hearing, between reason and the senses, between what is known through past experiences and what is expected in the here and now" (Danto 1999:192-93).

In conclusion, the aesthetic experience of constructed hyper-nature is transformative, not simply in terms of the practices known to Olmstead, but rather as an experience that can result in the appreciation of new forms of beauty that are discovered because of what they reveal as previously unrealised. The relationship between human and biophysical life processes therefore becomes an important aspect.

3.2.1.5 *Dynamic beauty*

The final response in Meyer's manifesto argues the landscape medium as temporal. The user does not only move through the landscape, the landscape also moves, changes, grows and declines. Sustainable beauty design therefore arrests, delays but also intensifies time; "it opens up daily experiences to what Michael van Valkenburgh calls "psychological intimate immensity", the wonder of urban, social and natural ecologies made palpable through the landscape medium" (Amidon 2005:11-27).

III_24. Contructing landscapes that refine landscape and engage culture adapted from PWP Landscape architecture (Author 2014).

culture

refine

landscape

III_25. Creative
ecology: James Corner,
Taking measures across
the American landscape
collage: Hoover dam and
the colorad (Corner 2008)

Creative ecology

J ames Corner contributes to the manifesto above by saying that the "similarities between ecology and creative transmutation are indicative of an alternative kind of landscape architecture, one in which calcified conventions of how people live and relate to land, nature, and place are challenged and the multivariate wonders of life at once" (Corner 1997:100).

Corner urges that landscape architecture and ecology should develop a creative relationship in order to exploit a "potential that might inform more meaningful and imaginative cultural practices than the merely ameliorative, compensatory, aesthetic or commodity-oriented" (*ibid.*:82). Corner further pionts out that creativity in landscape architecture has "all too frequently been reduced to dimensions of environmental problem-solving and aesthetic appearance" (*ibid.*).

Weller (2006:75) points out that in the book *Taking Measures across the American Landscape*s, Corner and MacLean (2000) critically engage aerial imagery and frame the magnitude of what a relevant practice of landscape architecture should be. Weller continues to argue that unlike McHarg's plans and panoramas that, as Charles Waldheim identifies, were predicated on a nature-culture polarity, Corner's montages anticipate and marvel over a synthetic future of constructed ecology (Waldheim 2002). Weller, however, further states that "unlike McHarg's *Design with Nature*, *Taking Measures across the American Landscapes* is not a book with a plan" (Weller 2007:75). According to Weller, Corner does not design the ground he sees; neither does he propose a method for others to do so. McHarg's didactic instruction of how to redesign the world below had an answer for everything (except why the plan can never be achieved). Corner's collages of maps, photos, and site data seem to remain merely representational; they are "graphic recordings of particular intersections of *topos* and technology, a brand of hermeneutic site analysis" (Weller 2006:76). Weller (*ibid.*) suggests that "if we can see the impossibility of McHarg's ecological and methodological fundamentalism, we must also be critical of an overly aesthetic, self-conscious post-modernism in Corner's images". Weller therefore argues a conjunction of McHarg and Corner and a motivation of both. Johan Dixon Hunt concludes this notion by instructing designers towards such a conjunction. According to Hunt, the rarefied practice of gardens and parks can provide models for making whole places (Hunt 2000).

III_26. Crissy Field Park by Hargreaves associates integrates a diversity of recreational uses with a vigorous and dynamic environment. (Hargreaves 2001)

Conclusion

The spatial manifestation of creative ecology and grounding the theoretical discourse within the context leads to the exploration of the mimicry of natural process vs natural form, the hyper-nature, ecology and human life intertwined, and the experience of beauty as design generators within the context of a zoological garden. This concept is applied in Crissy Field Park by Hargreaves associates where a diversity of recreational uses is with a vigorous and dynamic environment. See figure III_26 on page 88.

STRATAGEM I

landscape architecture

sustaining beauty

creative ecology

design generator
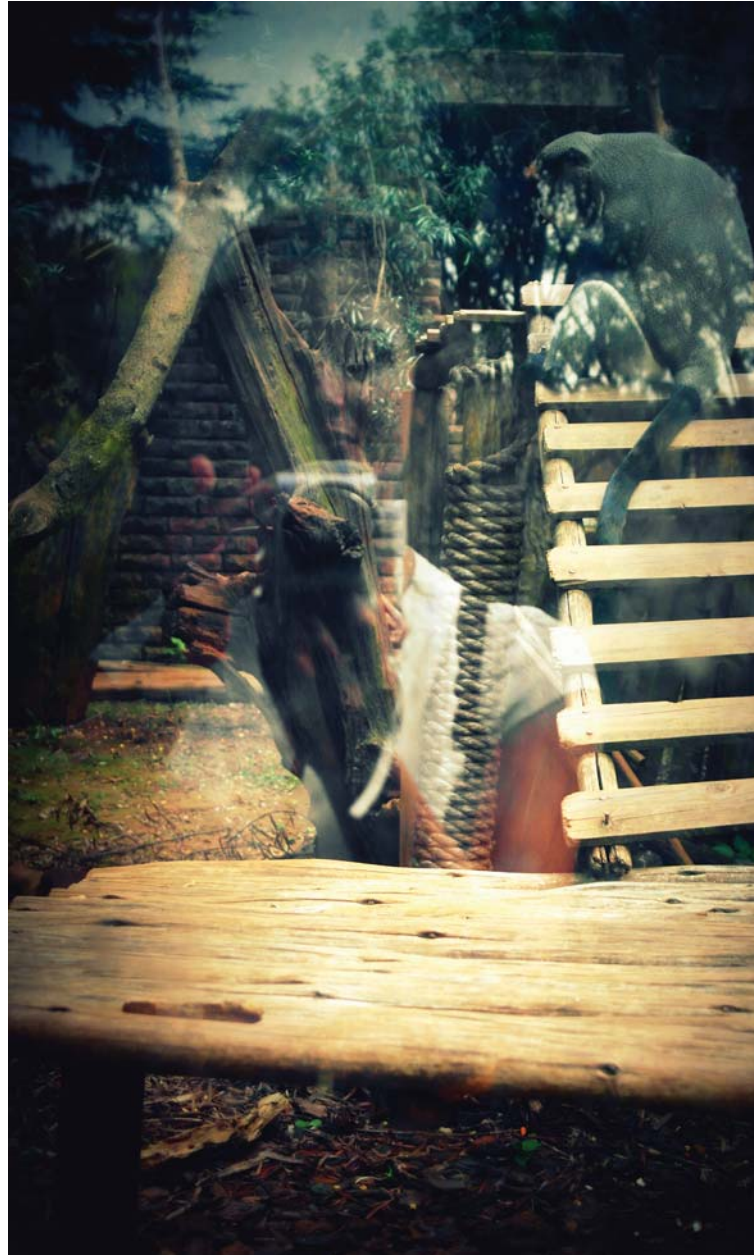
III_28. Photograph showing reflection of Author and primate cage (Author 2014).

The author will discuss points of debate and theory in zoological garden design regarding The Animal-As-Client and The Unzoo movement to illustrate global trends as opportunities for landscape design response.

3.5.1   *The Animal-As-Client theory*

Traditional zoo exhibitions placed focus on the needs of the visitor above the needs of enclosed animals. The needs of the enclosed animals in zoos have more recently become a focus in contemporary zoo design. According to Nuttall (2004) there is no substantial theory to describe how a designer should consider animal needs during the design process. The "Animal-As-Client (AAC) theory" has therefore been developed by Nuttall (*ibid.*) to be introduced in zoo exhibition design. The AAC theory instructs that animal culture should be the focus in the design process and emphasise the need for the animal to participate and collaborate as a user. Nuttall (*ibid.*) introduces the "manipulation of space, time and environmental quality as critical explorations". This dissertation aims to use this theory, among other zoo thoeries, as the second stratagem for the design response.

> *"A poor display can destroy the wonder of the rarest, most marvellous creature"* (Conway 1973:226).

According to Nuttall (2004), the introduction of the AAC theory in zoo exhibition design can begin to communicate the challenges faced with the design of animal exhibitions to the designers. The ACC theory can provide opportunities to evaluate the success of such an exhibition design regarding animal welfare. The ACC theory can be applied to the design of zoo exhibitions by means of ten steps. Each of the steps will be discussed separately as proposed by Nutall.
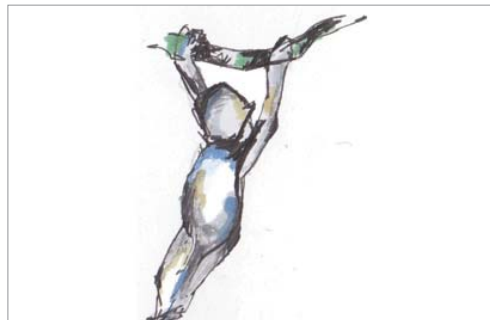
3.5.1.1 *"Understanding the 'in situ life history' of the animal"*

In order to provide for and understand the animal as a client, the designer must begin to identify the differences but also similarities between humans and animals; we do so through our own species-specific lenses. According to Sheets-Johnstone (1996:57), "humans are believed to possess a unique consciousness, which is distinct from other animal life forms, a distinct culture, and unique minds capable of thinking and reasoning". What we percieve about human-beings are therefore "inherently different from that of animals and objects" (*ibid.*).

The traditional view of animals has often categorised animals as "neutral objects waiting to be ordered" (Ellen 1996:105). Ellen decrives that "one cannot directly ask animals about their culture but must instead rely upon facsimile information generated by field workers in ecology, animal behaviour, primatology and anthropology, who have spent years studying the *in situ* lives of animals (*ibid.*)".

According to Nuttall (2004) non-human animal culture is becoming more evident. Goodhall (1965) provides evidence of these behaviours with regards to the chimpanzee species pretenting to 'fish' for termites with plant material. De Waal (1982) also provides research on the "complex emotional responses" that pimates and elephants present.

Nuttall (2004:78) claims, "there is a wealth of *in situ* and *ex situ* information regarding the life histories of animals" and this information can lead to the "first step in design process of including animal presence". See figure III_29 on page 92.


III_29. The "in situ life history" of the animal (Author 2014)

"Constructing the 'life history composite' of the animal"

In order to design for a client, one must understand the client's needs.

The life history pattern, according to Nuttal, can be identified by stages of "major milestones such as birth, achievement of independence, sexual maturity, emigration from the natal social group, establishment of a territory, mating, raising of offspring and death" (Nuttall 2004:79). Designers must in turn design for these patterns in order to conserve animal culture. Nuttall (*ibid.*) claims that the "consideration of the life history pattern suggests that the entire lifespan of the animal is a focus of design". See figure III_30 on page 93 illustrating the conceptualisation of the "life history composite" of the animal (Nuttall 2004:79).

"*In situ* stimuli" and the resources required to elicit behavioural patterns should be investigated by designers, such as grazing methods of antelope and giraffe etc (Nuttall 2004:79). Behaviour in a zoo can preserve the animal culture and enhance the education of the zoo visitor.

The life history composite
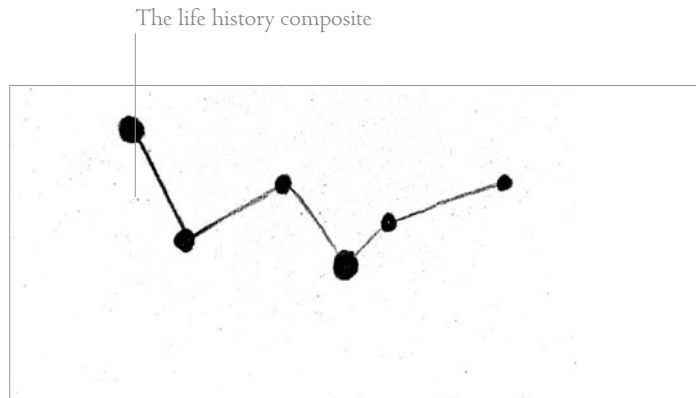
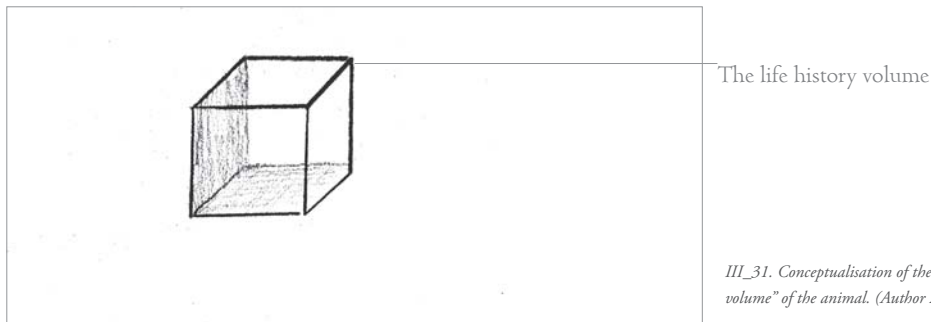*III_30. Conceptualisation of "life history composite" of the animal.(Author 2014)*

3.5.1.3   *"Constructing the life history volume"*

"Animals have inevitably been defined, categorised, interpreted, praised, criticised, hated and loved in a diversity of ways, which have commonly had spatial implications for them" (Philo 1995:677).

Zoos are often being criticised due to insufficient space provided for the animals. According to Wielebnowski (1998), "smaller environments tend to increase aggression and abnormal behaviour... while larger environments tend to promote reproduction". In response to this, the spatial dimension is therfore very important when examining zoo exhibition design theory.

Nuttall therefore instructs the designer to design an enclosure with three-dimensional quality "*life history volume*" (Nuttall 2004:81). "The '*life history volume*' ican be defines as "one facet of an animal's life history that designers are trying to replicate in zoo exhibition design" (*ibid.*). The "*life history volume*" can be defined as "the average total volume occupied by an animal throughout its lifespan" (*ibid.*:94). Figure III_31 on page 94 illustrates the conceptualised *life history volume.*

Nuttal explains that "mathematically, the '*life history volume*' is the irregularly shaped two-dimensional home range area of a species multiplied by the average vertical displacement of the animal (*ibid.*:94)." For example, within the "*life history volume*" of an elephant, "the maximum vertical dimension is six metres, the height up to which foraging can occur" in the wild (Estes 1991:260). "By multiplying the vertical dimension by the two-dimensional extent of the elephant's home range, one can determine that the '*life history volume*' occupies between 0.084 and 18 km^3". The vertical dimension will dictate the total size and shape of the volume that will allow the required scale, aid in visualising the "space occupied by an animal and in turn describe an animal's experience of space" (Nuttall 2004:82).

The life history volume

III_31. Conceptualisation of the "life history volume" of the animal. (Author 2014)
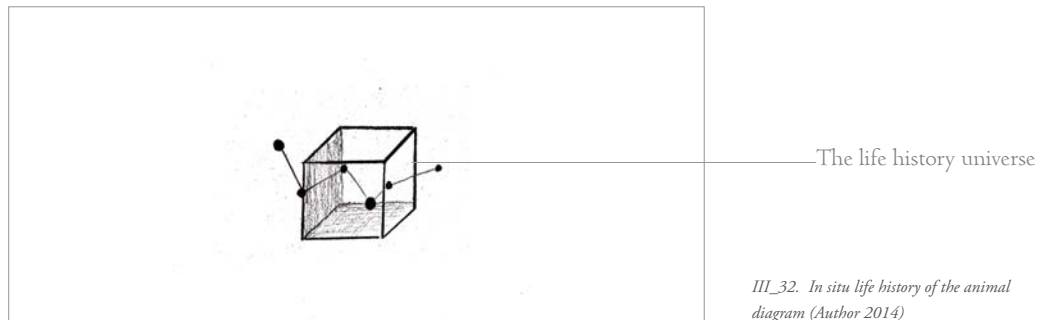
3.5.1.4   *"Constructing the life history universe"*

Nuttall (*ibid*.) continues by instructing designers to "integrate the life history composite with the life history volume". This will allow designers to conceptualise an ideal animal life in a four-dimensional continuum.

Nuttall (*ibid.*) suggests that designers must "consider the in situ animal and its link to both space and time". This will provide the designer with raw material for design.

"The purpose of zoological gardens [is to] present [animals] ... in territories as close to their natural environment as possible. These sections of nature should ... provide the animal with all of its requirements for life development" (Gribl 1975:48).

According to Nuttal (*ibid.*), the designer must maintain "species which are more suitable for some forms of research", "increase the survival rates if animals are released into the wild" and provide more "enriching recreational and educational experience for zoo visitors".
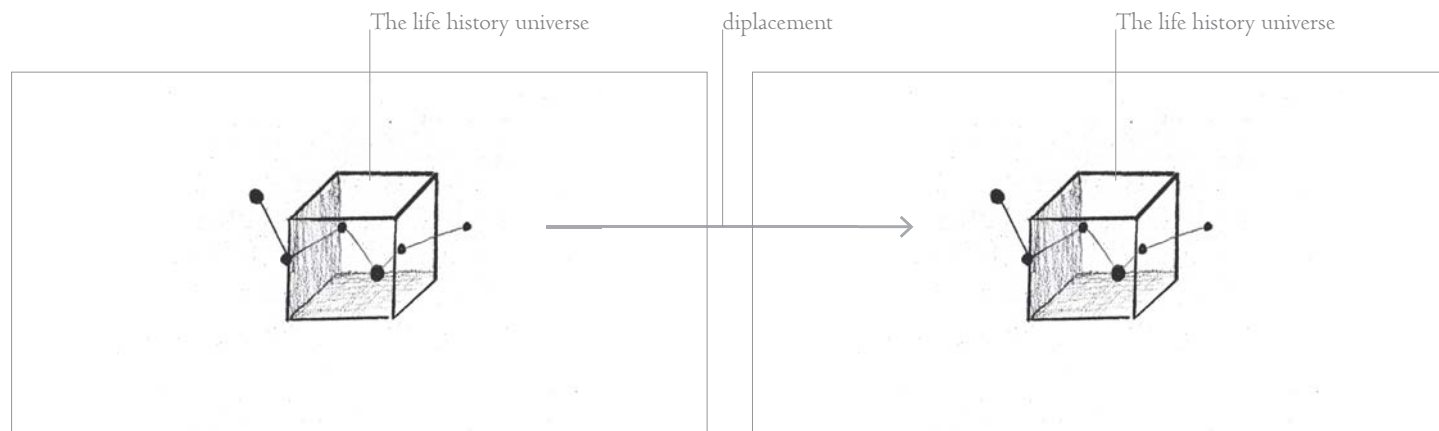
The life history universe

III_32. In situ life history of the animal diagram (Author 2014)

3.5.1.5   *"Displacement and replication of the life history universe"*

During this step of the design process, the designer must understand the *"in situ* life history events of an animal", conceptualise it in the form of the *"life history universe"* and then subsequently displace the replicated volume. Nuttal (2004:82) explains that the "displaced and replicated volume, with its attendant stimuli, resources and animal responses", will result in the designed zoo exhibition (see Figure III_33 on page 96). The purpose of the displacement is, however, still entangled with the entertainment factor in zoos, but the sole opportunity of the displacement is to conserve the species.

"The beauty and genius of a work of art may be preconceived, though its first material expression be destroyed; a vanished harmony may yet again inspire the composer; but when the last individual of a race of living things breathes no more, another heaven and another earth must pass before such a one can be again" (Beebe 1906:18).
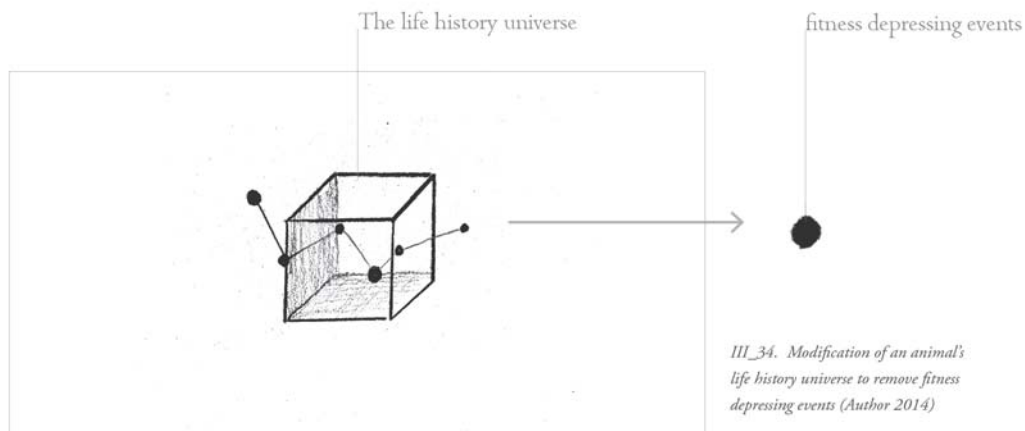

The life history universe   diplacement   The life history universe

III_33. Displacement of the life history volume (Author 2014)

3.5.1.6   *"Modification of the life history universe to enhance animal fitness"*

The immense space required by animals cannot be replicated and displaced in most zoo situations.

Nuttall therefore explains the terms "fitness", ecological term coined by Curtis (1983), referring to the "genetic contribution of an individual to succeeding generations relative to the contributions of other individuals in the population" as a solution. Nuttall states that the "higher the fitness the greater the reproductive contribution". Fitness depressing events, such as disease, starvation, predation and poaching are removed from the zoo exhibition environment equation. Similarly, fitness enhancing events occur in the zoo exhibition environment, such as the supply of food and water and the provision of a mating partner are guaranteed.

Regarding primates, for example, the provision of stimuli for high levels of productivity will result in animals to be able survive in smaller areas. 'Fitness' therefore allows designers to "compress the spatial requirements for animals" (Nuttall 2004:86). Nuttall (*ibid.*), however, states, "as in the wild, the defence of a territory and movement within a home range are directly related to obtaining and guaranteeing access to resources. The question becomes: how much spatial compression is appropriate?". Figure III_34 on page 97 illustrates the removal of fitness depressing events from the *life history universe.*
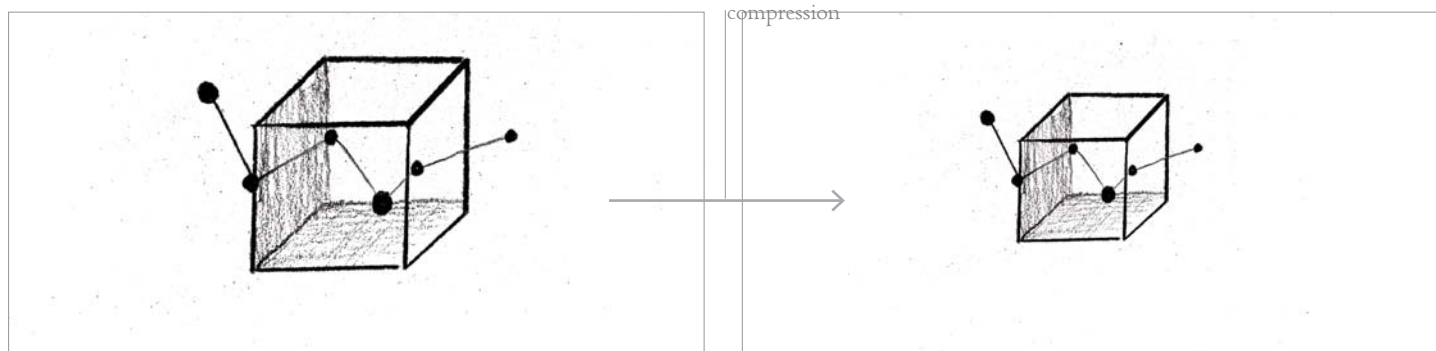

The life history universe

fitness depressing events

III_34. Modification of an animal's life history universe to remove fitness depressing events (Author 2014)

3.5.1.7   *"Spatial compression of the life history universe"*

"No zoo in the world has ever attempted to exhibition a blue whale, due to their enormous spatial requirements and complex life history patterns (*ibid.*:87)". Nuttal (*ibid.*) explains that "at the other extreme, an exhibition for the earthworm will be much more manageable. The *in situ life history volume* is easy to displace and replicate with minimal to no spatial compression". According to Edwards & Bohlen (1996) the "vertical distribution of earthworms ranges from approximately 0 to 1 m below the surface". Ecologist Zicsi (1983) explains, "the mean population density of earthworms in natural forest associations varies between 3 and 8.1 individuals per square metre". According to the AAC Theory, a zoo exhibition volume of $1m^3$ should therefore be adequate (Nuttall 2004:87).

Nuttall, however, argues that the "shrinking of natural habitats will, ultimately, place constraints on animals (*ibid.*)." (see Figure III_35 on page 98). A succesful zoo exhibition design is therefore directly related to Natall's opposition to spatial compression.

Designers have to consider the quality of the space and resources available to the animal of the resulting compressed exhibition. The provision of adequate fitness enhancing resources can however allow designers to shrink the volume occupied by the animal. Nuttal claims that "this suggests that the zoo environment has the potential to become synonymous with a highly productive *in situ* environment, biologically speaking" (*ibid.*). He continues by instructing designers to begin to "imagine variables of area, height, volume, shape, proportion, quality of resources, timing of resources, age, sex and number of animals or access to mates that could be manipulated, which would affect the overall quality of the environment". Nuttall (*ibid.*:89) concludes that "an optimal environment for a displaced animal species is one that conserves animal culture in the fullest sense possible by providing sufficient space and resource levels to achieve positive evidence of a full complement of *in situ* behaviour patterns, as well as a complete absence of pathology in behaviour."

III_35. "Spatial compression" (Author 2014)

3.5.1.8   *"Temporal expansion of the life history universe"*

Nuttall's theory further suggests that spatial compression should coincide with temporal expansion (See Figure III_36 on page 99). For instance, the time increase in prey handling in feeding by means of activity will consequently expand the temporal component. Food locations, food types and foraging will "expand the temporal component" and "eliminate boredom for zoo animals"(*ibid.*:91). Nuttall (*ibid.*) notes that the foraging component occupies a major component of any animal's daily routine and should therefore be an important consideration during the design process and the resulting exhibition.

temporal expansion
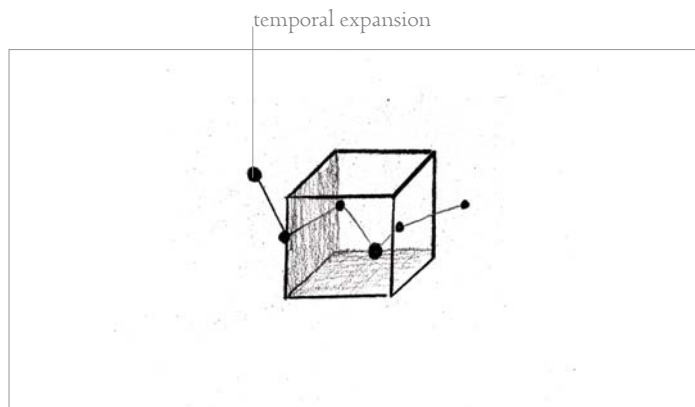
III_36. Temporal expansion of a zoo exhibition (Author 2014).

3.5.1.9   *"Assessing animal welfare in relation to design"*

The information obtained to understand the animals as clients served as the foundation or starting point for the AAC design approach (*ibid.*). Nuttall also argues that the AAC approach becomes a tool to assess success of a zoo exhibition. According to Nuttall, "the role of the zoo exhibition designer is to create a spatially compressed and temporally expanded space that provides similar if not identical forms of stimulation that result in the display of behaviour patterns observed *in situ*" (*ibid.*).

   Given that the designer understands the "*in situ* behaviour, an *a priori* (pre-design) performance standard is established" (*ibid.*). For example, according to zoologist, Estes (1991:229), "digging for water is a *type* of behaviour that black rhinoceros exhibition". The designer can use this *in situ* observation as an experiment to assess the success of the exhibition. Nuttal advises that the physical design of the mentioned exhibition can be altered by means of more "perching locations, the addition of water as a resource for play behaviour or increasing handling time of food items, separating sexes for certain periods of time" (Nuttall 2004:91).

3.5.1.10   *Adaptive design management*

In the final step, Nuttall (2004:92) instructs designers to assess how form and function of the design can be manipulated in order to achieve a successful exhibition. This will make the zoo exhibition environment, according to Nuttal, "responsive and changeful, rather than static and presumptuous" (*ibid.*:92). Animals can therefore collaborate with designers by communicating to us via their response to exhibitions. The design process should therefore incorporate the needs of animals and the proposed form and function are the result of this assessment.

3.5.2   *Conclusion*

We live a world with and ever-shrinking natural habitat. An increased reponsibility for animal welfare is therefore warranted. As Nuttal instructs, "seeing zoo exhibition design as an ongoing and adaptive commitment to supporting intertwined and evolving cultures is imperative in an AAC design process (*ibid.*:92)". Zoo designers must therefore re-assess their role in establishing design strategies that will support the wellfare of animals as their personal clients.

ZOO

UNZOO

With "cages" ——————————————→ Without "cages"

Physical barriers for animals ——————————————→ Physical barriers for people

Display based upon coercion or limitation ——————————————→ Display based upon attraction, motivation

Managed captive animals ——————————————→ Managed free-ranging rehabilitated and wild animals

Animals forced to human schedule ——————————————→ People adapt to animal's schedule

Large animal shows ——————————————→ Small naturalistic shows and demonstrations

Capital intensive ——————————————→ Staff intensive

III_37. Unzoo versus Zoo , adapted from Jon Coe (Author 2014)

The Unzoo alternative

"Stop showing the world's inhabitants behind bars and wire. I don't care how good the cage is, it is still a cage. We are the masters; they who live out their lives behind bars, the possessed. Create a place where the residents share the land. Create a place where the viewer is not the owner but a humble guest. Remind people that we are all connected and that wild places have spiritual and emotional wealth beyond dollar value. Make that your mission!" (Mendez 1999)

The *Unzoo* concept has been introduced into the zoo design field by Jon Coe, a leading international zoo designer from Australia. The *Unzoo* is defined as "a place where the public learns about wild animals, plants and ecosystems through interaction with and immersion in original or recreated natural habitats" (Coe 2005:1).

According to Coe, "the philosophy and technology of zoo design are evolving into the *Unzoo* paradigm (*ibid.*)". Old cages are being replaced with open "barrier-less" grottoes, which in turn are being replaced by "immersion" exhibitions with hidden barriers. Isolated enclosures are being connected to enhance "animal rotation" and mixed specie enclosures are being implemented. Animal shows are moved to natural settings, evolving into "habitat theatre" (*ibid.:*2). Coe identifies the statement of Besten below as a vision for the Unzoo alternative:

"We need another and a wiser and perhaps a more mystical concept of animals. Remote from universal nature, and living by complicated artifice, man in civilisation surveys the creature through the glass of his knowledge and sees thereby a feather magnified and the whole image in distortion. … They are not brethren, they are not underlings; they are other nations, caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of earth" (Beston 1928).

Coe emphasises that an alternative is sought for current zoos. Coe claims that designers have dreamed of the 'cage-less-zoo', however, the possibility to keep animals "safe, secure and visible without close confinement" remains contradictory (Coe 2005:3).

Coe suggests that the *Unzoo* trends should be integrated through design to establish a secure future for zoo design and animal welfare. Coe claims that it will advance the evolution of zoos to *Unzoos,* as illustrated in figure III_38 on page 105, and ultimately eliminate the need of barriers (*ibid.*). The *Unzoo* is supported by *Zoogeography* and *Landscape immersion* as discussed in the next paragraphs.
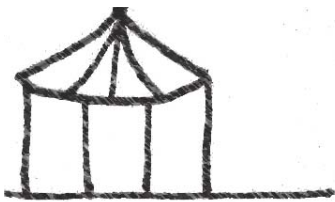
cage
human dominate
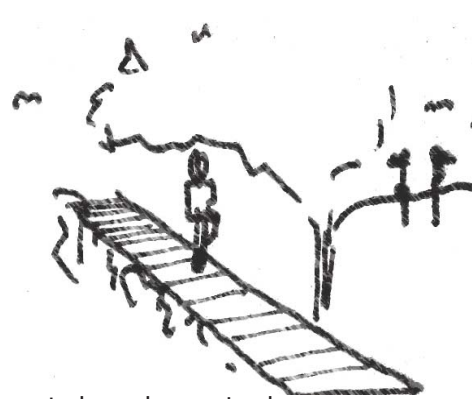*animals-objects*

naturalistic barriers
"naturalistic"

immersion exhibition
hidden barriers
animals dominate

"unzoo"
nature and animals dominate

control people vs animals

boardwalks
skywalks

III_38. Coercion to cooperation:
The evolution in zoo design towards
the Unzoo (Author 2014).

1000 ANIMAUX
ANIMALS · ANIMALES

EUROPE
10 800 m² – Europa

· Forêt de conifères, marais, garrigue, montagne froide…
28 espèces / 28 species / 28 especies
· Conifer forest, swamp, garrigue, cold mountain.
· Bosque de coníferas marisma, garriga, montaña fría.

- Vautours / Vultures / Buitre
- Loups / Wolves / Lobos
- Gloutons / Wolverines / Glotones
- Lynx / Linces
- Vivarium / Vivarium / Vivarium
- Loutres / Otters / Nutrias

SAHEL-SOUDAN
45 215 m² – Sahel-Sudan – Sahel-Sudán

· Savane, delta…
44 espèces / 44 species / 44 especies
· Savannah, delta.
· Savana, delta.

- Zèbres / Zebras / Cebras
- Rhinocéros / Rhinoceros / Rinocerontes
- Lions / Leones
- Autruches / Ostriches / Avestruces
- Oryx / Orices
- Koudous / Kudus / Kudús
- Girafes / Giraffes / Jirafas
- Babouins / Baboons / Papios
- Maison des girafes / Giraffes' house / Casa de las jirafas
- Grande volière / Large aviary / Grande pajarera

GUYANE
12 530 m² – Guyana

· Forêt équatoriale, crique…
67 espèces / 67 species / 67 especies
· Equatorial forest cove.
· Selva ecuatorial, ensenada.

- Singes Laineux / Wooly Monkeys / Monos Lanudos
- Jaguar
- Caïmans / Caimans / Caimanes
- Lamantins / Manatees / Manatís
- Tapirs / Lowland tapir / Dantis Amazónico

MADAGASCAR
9 655 m²

· Forêt tropicale humide…
30 espèces / 30 species / 30 especies
· Tropical rainforest.
· Bosque húmedo tropical.

- Île aux lémuriens / Lemur Island / Isla de los lemúridos
- Tortues / Tortoises / Tortugas
- Oiseaux en vol libre / Free flying birds / pájaros en vuelo libre

PATAGONIE
16 570 m² – Patagony – Patagonia

· Pampa, côtes rocheuses, forêt andine…
7 espèces / 7 species / 7 especies
· Pampa, rocky shores andean forest.
· Pampa costas rocosas, bosque andino.

- Otaries / Sea lions / Leones marinos
- Manchots / Penguins / Pingüinos
- Guanacos
- Pumas / Cougars / Puma
- Pudus / Pudús / Pudíes
- Nandous / Greater Rheas / Nandúes

PARC ZOOLOGIQUE DE PARIS

- Toilettes / Restrooms / Aseos
- Restaurants / Restaurants / Restaurantes
- Point d'information / Information point / Punto de información
- Aires de pique-nique / Picnic areas / Zonas de picnic
- Points gourmands (Vente à emporter) / Snacks / Bares (Venta para llevar)
- Fontaines d'eau potable / Water fountains / Fuentes de agua potable
- Librairie - Boutique / Bookshop / Librería-tienda
- Point de vue / View point / Mirador
- Clinique vétérinaire / Veterinary clinic / Clínica veterinaria
- Kiosque d'exploration / Exploration pavilion / Kiosco de exploración

III_39. Zoogeography in Parc Zoologique, Paris (parczoologiquedeparis.fr 2014).

3.6.1   *Zoogeography*

City inhabitants do not typically have the opportunity to travel and admire wild animals in their natural habitat. A visit to the zoo can replace a family vacation. The zoo lures the public by providing a vicarious experience into a distant and exotic location. Unlike televised presentations, the zoo's "presentation of nature promises an authentic experience of real nature". "The heightened geographical focus of the zoo is mostly manifested in what is called *Zoogeography*" (Graetz 1995).

Zoogeography can be defined as "distinct areas devoted to representative fauna and flora of zoological regions of the world" (Graetz 1995). A site-specific replication of nature is established that results in pockets of nature that are being categorised by their geography, rather than through their habitat, such as a tropical rainforest or a desert biome. Figure III_39 on page 106 illustrates this pinciple in the zoological guide map of Parc Zoologique in Paris.

control

vs

respect

hidden barrier

animal ⟷ visitor

immersion ⟶ post- immersion
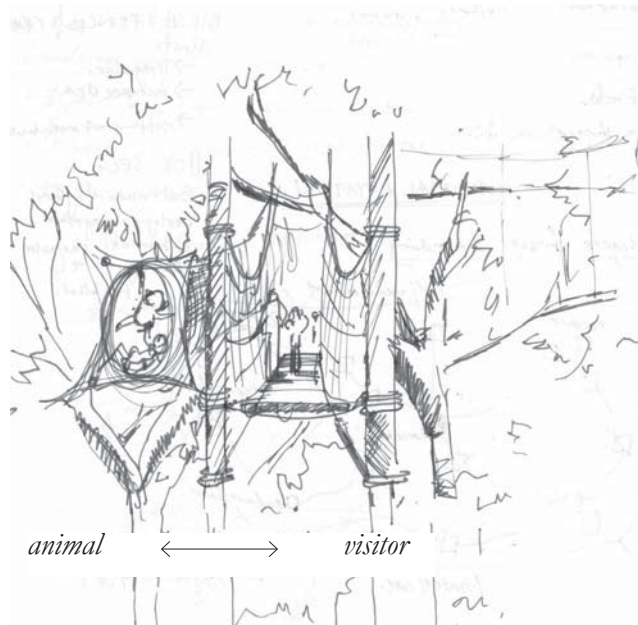
III_40. Illustration of Landscape immersion aims to bring animals and guests within their natural environment habitat or landscape. Animals are separated by sunken fences and people move through sky walks thus allowing as much space as possible for animals and the best views for people.

3.6.2   *Landscape immersion*

In addition to zoogeography, the illusion of nature in the midst of the modern zoo's urban space is also created through landscape immersion. Jon Coe explains this term as the "soliciting of experiences that make people feel part of, rather than external observers of, this nature" (Coe 1996). Much like a theatre, the zoo-goers become the spectators who participate in the theatrical act of the animals (Coe 2012).

Landscape immersion is phrased by Jon Coe as a term coined to describe exhibitions in which visitors share the same landscape with the animals. "Instead of standing in a familiar city park, known as a zoological garden, and viewing the zebra in an African setting, both zoo visitor and zebra are in a landscape carefully designed to 'feel' like the African savannah. Barriers separating the people from the animals are invisible and no matter where the viewer turns, the entire perceptual context appears consistently and specifically 'African'"(Coe 1985:206).

Nature in the zoo is explicitly not a precise simulacrum of wild nature. On the contrary, the zoo differentiates itself from the wild. For example, zoo design must include elements that promote a safe and sanitised environment for both zoo-goers and zoo animals, such as moats, glass windows, air pipes and exit signs. These design constraints merely reinforce the idea that such a wild exists somewhere.

In contrast to the old-style cage exhibits where animals were fully and constantly exposed to the gaze of the public, a convincing nature display inevitably renders the designers of zoo space less control of the animal spectacle.

"The animals are going to do whatever the animals want to do. You cannot control them, nor should you. These are wild animals; they do what they want" (Coe 2012:5).

Architects Jones & Jones, a firm based in Seattle that specialises in zoo design, propose a number of general 'viewing guidelines', which include the following:

1. Ensure that the animals are seen as only a part of the surrounding landscape that they co-occupy with the viewer.
2. Provide selected views only into the exhibit.
3. Augment the sense of anticipation by sequential staging of approach views before the animals are actually seen.
4. Screen out the cross-viewing of other people and exhibits.
8. Eliminate views of animals from outside the zoo and from parking and entry areas (Mullan & Marvin 1999:65).

III_41. Critique of artificial landscape: savannah enclosure (Graetz 1997).
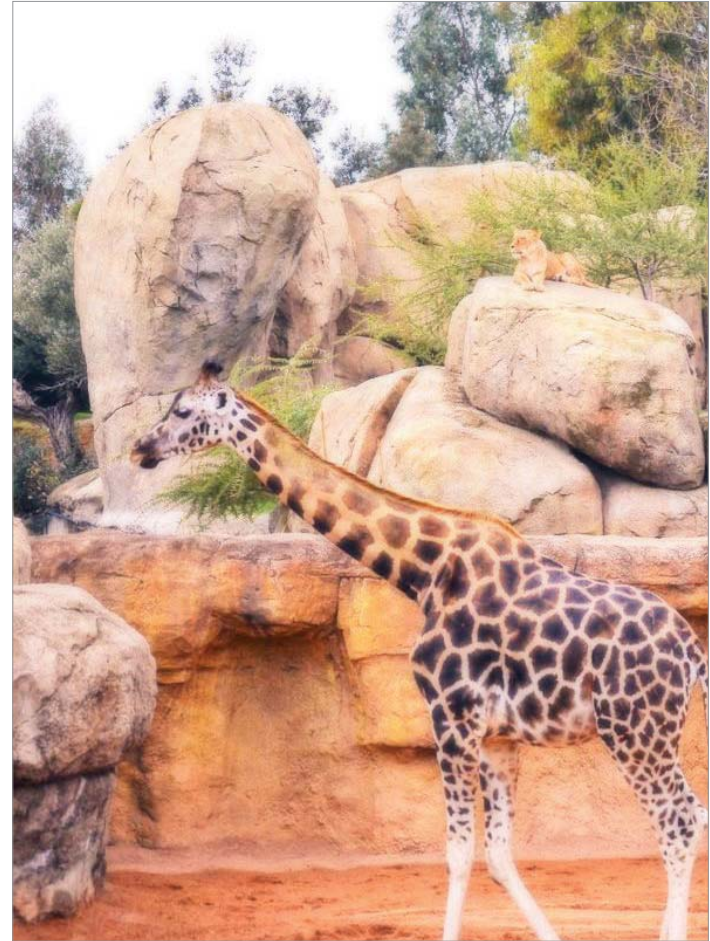
3.6.3   *Critique*

Mitman (2009:199), however, argues that the current trend in zoo exhibition, "although intended to make one feel" part of nature will essentially erode the "boundaries between nature and artefact". Although this type of design is supposed to blind these tricks, one need not conduct interviews with zoo-goers to know that most are well aware that they are not in the African Savannah but in the CBD.

Hancocks criticises the African Savannah exhibition designed by Jones & Jones in Woodland Park Zoo of being "a small mammal exhibition at its centre, cramped and crude, a deformity of lumped rockwork, which the zoo proudly boasts as its own work" (Hancocks 2001:141). Hancocks continues to argue that the critical importance of landscape immersion as a technique for zoo design is that it acknowledges the importance and the value of natural systems.

In this regard, critics have pointed out that "enclosures designed in the interest of perceived naturalism may offer as little habitat as the barren cages of traditional zoos" (Shepherdson 1998:1-14).

Fàbregas *et al.* (2012) conducted a study to prove that "naturalistic designs provide suitable environments for the animals". In Spanish zoological parks, 1381 naturalistic and artificial enclosures were analysed for that purpose. As it is noted by Hutchins (2006), "zoo exhibition design and animal care have advanced considerably over the past few decades and contemporary animal exhibitions tend to be comparatively larger and more complex and studies shows that there are still zoo enclosures in need of improvement". Different levels of interaction can act as a starting point provided on different strata as a platform for enhanced experience.

STRATAGEM II

zoo design
|
Unzoo
|
Zoo geography
|
Landscape immersion

design generator _i
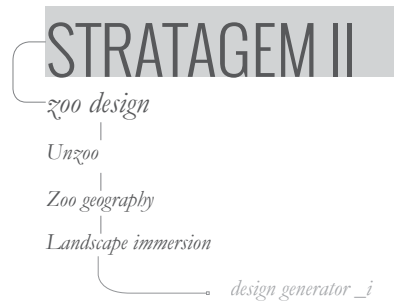
3.6.4   *Conclusion:*

The quality of an exhibition is of paramount importance due to its impact on visitors' attitudes toward wildlife. Hancocks (*ibid.*:144) explains that "the validity of the experience hinges on the functional and visual integrity of the zoo exhibitions". The plea for better design must, however, not be reduced to the aesthetic value of visual balance, harmony and the integrity of materials. Zoo environment must ultimately engender a respect for nature. The study therefore argues that nature must be the constant norm and inherent design philosophy in animal enclosures.

A wild animal seen in the context of its natural habitat carries a natural dignity. The more degrees of distortion in the representation of that habitat, the more unnatural the animal will behave and appear. The study therefore aims to find a manner to replicate a natural habitat that will not require unnatural distortion but still provide experience to the user, without compromising the animal exhibited and the natural dignity of the habitat.

III_43. Disney's Animal Kingdom african safari (Land, 2012).

III_44. Disney Animal Kingdom african safari and artificial Boabab tree (Land, 2012).

Stratagem III: *Case studies*

The third stratagem will discuss and analyse case studies regarding zoo design to illustrate global trends, theories and design approaches.

The case studies will be critiqued in terms of dealing with zoo design, and their relevance will also be established to serve as the final design instrument for intervention. The case studies include *Disney's animal Kingdom, Parc Zoologique* and *Zootopia.*

Disney's animal kingdom

Orlando Florida
-Joe Rohde and Michael Eisner, 1998.

A 48-hectare astoundingly realistic African Savannah exists within Disney's Animal Kingdom. Visitors can tour this large enclosure via an open-air camouflaged vehicle on a carefully crafted soil-coloured concrete road to simulate a real dirt road experience. Traversing a series of orchestrated landscape experiences, the journey encompasses many different types of savannah habitat. A guide points out and explains the features along the way and provides conservational information, such as the exaggerated fact that "we have been losing elephants at the rate of 150 a day" (Hancocks 2001:225).

Hancocks argues that visitors are facing a dilemma when being absorbed by these Disney stories, as it implies that "nature is not quite worthy of sustaining its own stories without embellishment (*ibid.*)." At Disney's Animal Kingdom, staff have been trained to stage this *feeling* to perfection. The savannah enclosure contains hundreds of species of plants, some of which have never grown in North America. Horticulturalists enter the savannah during the early hours of the morning to re-plant new trees, grasses and shrubs for animals to feed on each day. Water drippers for birds are hidden inside artificial termite mounds and feeding troughs are disguised inside artificial tree stumps (*ibid.*). Malmberg (1998) describes this as "an authentic-looking tale of the circle of life, without putting any of the park's animals in harm's way".

3.7.1.1   *Critique*

One might arguably see more animals with this experience than during a real trip to Africa, but Hancocks (2001) argues that it is just too easy. Hancocks (*ibid.*) questions whether the Disney experience will imbue the visitor with a greater appreciation of the natural world. Hancocks (*ibid.*) criticises this experience as a reduction of the natural world and a set of staged experiences.

Essentially, the NZG could never sustain such a performance. It is undeniable that the quality of Disney's savannah has set a very high benchmark, but only provides a basis for the argument that design of the enclosure simulating species' original environments, its ecology and behaviour, can essentially never be replicated with full integrity.

3.7.1.2   *Relevance*

Greatz (2014) argues that if the design only uses other zoos for references, it would do worse than copy Disney's Animal Kingdom, as it is a high-quality zoo in most respects. The Animal Kingdom, however, has its own objectives in meeting a standard for entertainment, style of presentation and storytelling. It is therefore important to recognise where the design's objectives diverge and a better point of reference is the wild habitat of the species the enclosures will display. From high-quality zoos one can learn about integrating the story of the exhibition with design, however, the natural world should be the standard to aspire to

Eco-zoology: Contemporary case studies

Kallipoliti (2011) defines *Ecozoology* classification as to distinguish the contemporary paradigm of zoological developments from earlier typologies. *Ecozoology* classifies the projects that mix performative elements with visual interest to create a hybridised, experiential interaction with nature and animals (Kallipoliti 2011).

According to Kallipoliti (2011), the contemporary zoo emphasises the coexistence of wildlife and human activity without relying so heavily on the necessity of programming to engage visitors. Contemporary zoos thus aim to encourage interactivity between people and nature; insofar that observation does not disturb activities in nature. In the following case studies, there remains an emphasis on educating visitors through engaging them within the context of an undisturbed, native setting.

Kallipoliti further argues that the user's interest in preserving local biodiversity within both urban and rural contexts is informing the sustainably driven design proposals for future zoological park rehabilitation projects. Kallipoliti notes that there is a recent appreciation for observing natural processes and patterns, such as bees producing honey or birds migrating (*ibid.*). The following projects fall under the *Ecozoology* classification and will serve as more contemporary or un-built case studies. The *Ecozoology* projects will establish the direction that zoo design is developing towards.
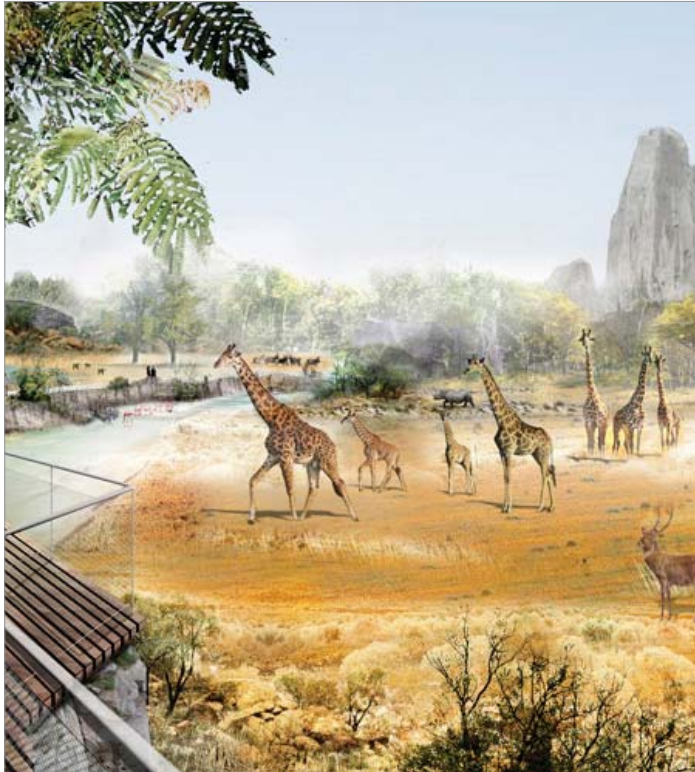
III_45. Zoo de Vincennes proposal for Savannah exhibition (Kebence, 2012).

III_46. Paris zoological garden implemented savannah exhibition (Archdaily 2014).

Parc Zoologique de Paris, France

Architects: Bernard Tschumi Urbanists & Veronique Descharrieres
Landscape Architects: Atelier Jacqueline Osty, 2008-2014

The Paris Zoological Gardens have undergone a total remake of the landscaped spaces rather than adapting the existing.

The Atelier team worked in close collaboration with the NMNH to foster the well-being of each species by respecting their style of life while offering the public as much a change of scenery as possible.

The Paris Zoological Gardens are now composed of six biozones that completely immerse the visiting public. The animals are closely connected with their natural habitats and are shown as an integral part of the whole. Visitors are called upon to discover an enhanced landscape in which the visual, sound and olfactory surroundings increase the sense of a total change of scenery.

The six biozones include Patagonia, the Sudanese Sahel, Europe, Guyana and Madagascar and Equatorial Africa. The biozones resulted from diverse references, such as travel descriptions, animals, materials, plants and colour. The Atelier selected plants similar to those endemic to the animals' regions. The Atelier, however, did not directly replicate one landscape based on another but implemented an in-between situation specific to the Parisian Zoo.

Beckmann (2014) notes that the 'new shapes mix within the landscape to break down the park's formal barriers between visitors and exhibits.'

3.8.1.1 *Critique*

The Paris Zoo serves as an unsuccessful precedent due to the artificiality of the materiality. The honesty of materials is not evident and it has missed an opportunity to be more authentic. The intervention might be technologically ground-breaking, but up close an artificial rock still looks and feels like an artificial rock. These artificial experiences are degrading our view of nature. The designers also implemented a completely new design without considering adaptive re-use or improving existing feature. This seems to be an uneconomical approach and not a possibility for a developing country like South Africa.

The Zoo renovation also released fantastic renderings in 2009 (see figures III_45 on page 118), but the photographical record of the final intervention, however, did not achieve the image intended

3.8.1.2 *Relevance*

The organisational qualities of the biozones can be implemented as a design principle. However, this should be done in response to the site conditions in terms of topography, microclimate, hydrology and geology.

III_47. Zootopia elephant exhibition showing mirror-balls and visitors (CDN, 2014).

III_48. Zootopia zoo, large central square (CDN, 2014).

3.8.2 *Zootopia, Denmark*

-Bjarke Ingles Group, 2014: Unbuilt

Danish architects Bjarke Ingles Group (BIG) have released this ambitious design, a cage-free zoo that reverses the roles of animals and people in Givskud, Denmark. It is a project that provides an intriguing opportunity for, as BIG explain, the creation of a space with 'the best possible and freest possible environment for the animals' lives and relationships with each other and visitors' (Archdaily 2014). According to Givskud Zoo's director, Richard Østerballe, the park's transformation will benefit greatly from this fresh approach to design, one that has been characterised by the integration of nature and natural elements into cutting-edge, innovative architecture.

The project will attempt to 'integrate and hide buildings' within the landscape. Upon entering the zoo, visitors can either enter a large central square or climb the 'building-landscape', allowing them to get a general overview of the layout of the park. From this central element, visitors can access different areas of the zoo. A four kilometre hiking trail connects the different areas (which represent the continents of Africa, America and Asia). Visitors will observe the hidden animals from a view, buried beneath the ground or obscured inside piles of logs.
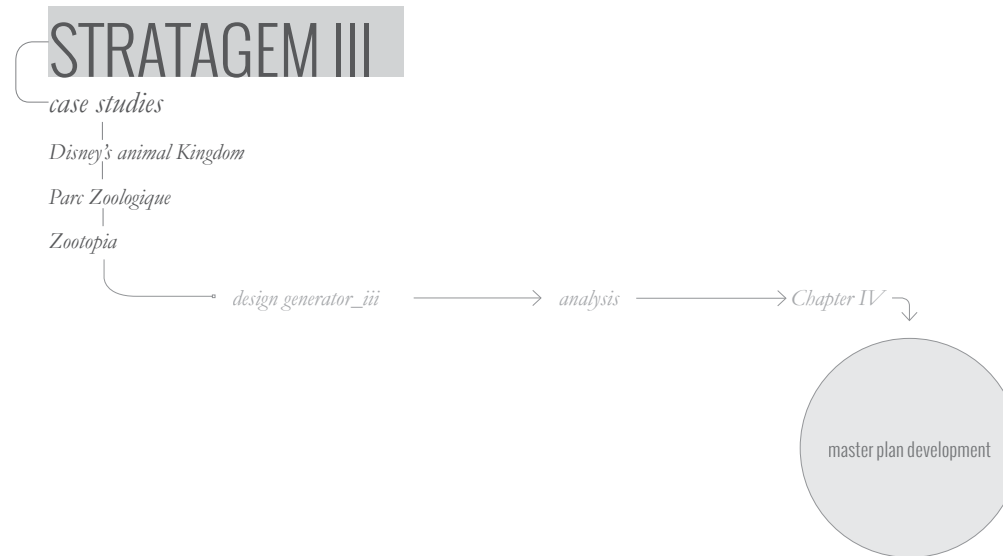
3.8.2.1 *Critique*

This project will be underwhelming unless there is a chance to interact with the animals. Zoos must provide novel entertainment, and simply hiding the people would lead to a dull experience, as the animals are not viewed in their actual natural habitat. The only difference is that the visitors will be isolated from them in sterile cubicles or in what looks like a vast and barren concrete pit. The beguiling picture of elephants knee-deep in lush grasses and with pretty trees is a misrepresentation and will inevitably end up in a space devoid of living vegetation, like any other zoo elephant yard. Zoos are maintained and cleaned by humans, rather than robots. The animals will sense human presence either way.

3.8.2.2 *Relevance*

The concept of the reversal of the spatial occupancy of the animals and visitors is a concept that will be taken further in developing a new set of zoo design principles and an exploration of the threshold this will create.

STRATAGEM III

case studies

Disney's animal Kingdom

Parc Zoologique

Zootopia

design generator_iii → *analysis* → *Chapter IV*

master plan development

Conclusion

The *Tarzanesque* vernacular, as described by Hancocks, can be attributed to zoo designers proclaiming themselves as more enlightened than their predecessors. Designers have pointed out inadequacies and artificiality of other zoos, arguing instead for the more 'natural' principles of their plans. Hyson argues that "there are serious problems within the environmentalist rhetoric that dominate contemporary zoo design and, indeed, much of contemporary landscape architecture in general" (Hyson, 2000:25). A mimetic relationship between landscape architecture and nature appears throughout the profession and in the theory presented. As explored in the *design with nature* controversial theory, landscape architects may risk losing their critical consciousness in design, which is essential to their art. Hyson explains that the works of landscape architecture, including zoo designs, is cultural constructions. The rhetoric of environmentalism may, however, encourage the dangerous view that immersion exhibitions actually *are* nature.

The case studies of zoo exhibits presented therefore suggest reconsiderations of the prevailing environmentalist discourse. Hyson explains that "while the best work of today's zoo designers is impressive, exciting, and invaluable to our appreciation of wildlife, their confident environmentalism is challenged when viewed in the historical context of the planning and the perception of zoos' 'natural' landscapes"(Hyson, 2000:24). Such a challenge may, in turn, prompt a more reflective and historically informed practice of landscape architecture.

The vision of 'zoo-as-paradise', filled with contented creatures enjoying lives of apparent freedom, effectively obscures the very identity of the zoological garden. In the words of journalist and landscape designer Alexander Wilson; "Do the new designs somehow disguise the confinement that is the primary fact of a zoo? . . . Can we really see ourselves looking?" (Wilson, 1992:254). Charles Siebert took this provocative point even further; "Somehow, by the end of a day of peering into deep, landscaped 'natural habitats', looking for the animals we've brought from so far away only to place too far away to really see, I'd decided that it was far less depressing to proceed, as one did in an old zoo, from the assumption of the animals' sadness in captivity than to have to constantly infer the happiness we've supposedly afforded them in our new pretend" (Siebert, 1991).

What Siebert objects to here is the lack of critical consciousness of landscape architects. When zoo designers try too hard to tell the proper environmentalist stories, they risk losing the essence of what a zoo is. Hyson concludes this notion; "By claiming that environmentalist designs truly are an *Edenic* nature, we risk forgetting how landscape architecture really works" (Hyson, 2000:43).

In conclusion, this dissertation therefore argues the replication of natural habitat that will not require unnatural distortion. The study will prove that an enclosure can still provide experience and beauty to the user, without compromising the animal exhibited, the natural dignity of the habitat, or finally, the character of a zoological garden.