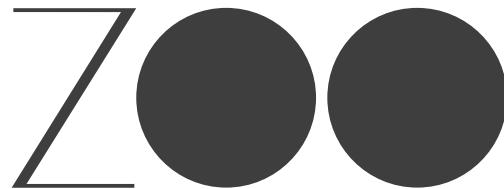




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architecture as escapism
animatechnic

V I R O U P A

23 MRT 1929 - 27 FEB 2011

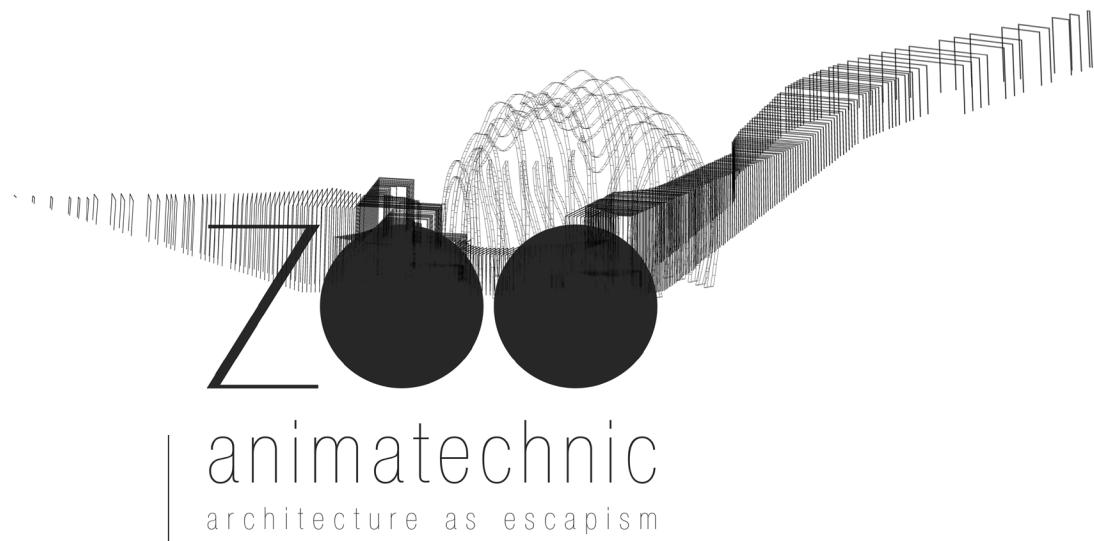
"A master in the art of living draws no sharp distinction between his work and his play, his labour and his leisure, his mind and his body, his education and his recreation. He hardly knows which is which. He simply pursues his vision of excellence through whatever he is doing and leaves others to determine whether he is working or playing. To himself he always seems to be doing both." (Jacks, 1932)

Submitted in partial fulfilment of the requirements for the degree MArch(Prof),
Faculty of Engineering, Built Environment and Information Technology

Department of Architecture, University of Pretoria (UP)
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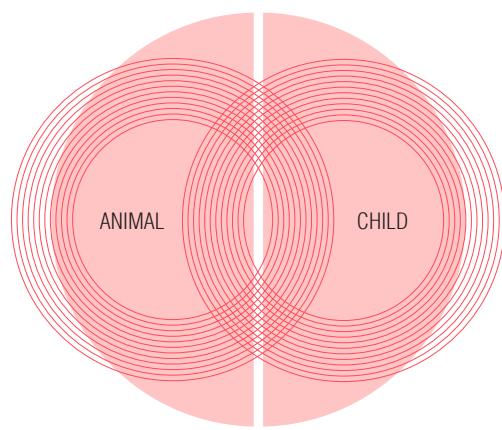
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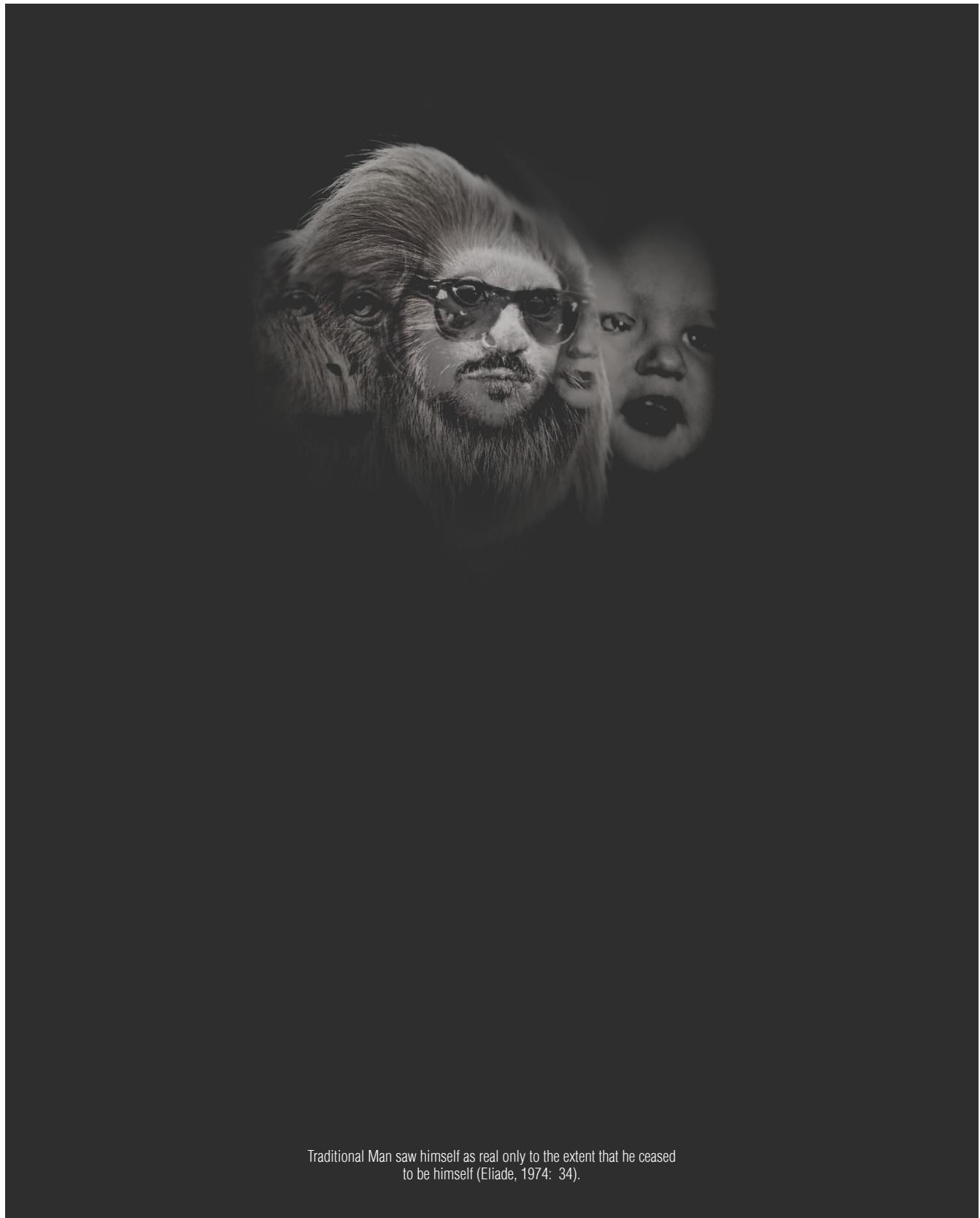
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architecture as escapism

"But throughout my life I have rarely if ever achieved what I wanted by tackling it in a logical fashion. So, naturally, I went and got the animals first and then set about the task of finding my zoo. This was not so easy as it might seem on the face of it, and looking back on it now I am speechless at my audacity in trying to achieve success in this way. So this is the story of my search for my zoo, and it explains why, for some considerable time, I had a zoo in my luggage." (Durrell, 1960)



IMG 001: The dualism of intuition



Traditional Man saw himself as real only to the extent that he ceased
to be himself (Eliade, 1974: 34).

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Space + Music
S. Hart

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Mike Jordan: Animal Collection Plan, NZG

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Dave Morgan: PAAZAB & NZG

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Dr Kathy Lehnhardt: Curator of Education, Guest Experiences, Animals Programs Administration: Disney Animal Kingdom & IZE

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Dries Verbeek, Ben Kunz & Charle Botha: Neo Dimensions

Len Verdoorn

Colin Scott: Bild Architects: Monday 5 September 2011

Mark Pencharz: TC Design Architects: 7 September 2011

Derek Townshend: UP

ENGINEERING:

André Fullard: Full-Struct

Prof. Walter Boertzig: UP

Hannes van Dalsen & Charles Kingsley: Aurecon Group Tuesday 6 September 2011

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Angus Taylor and Rina Stutzer: 21 June 2011

BUILDINGS & EVENTS:

African Association of Zoos and Aquaria (PAZAB) Conference - 2011

Dislodge art exhibition at UJ, Featuring works by Angus Taylor & Rina Stutzer - 2011

Disney's Animal Kingdom - 2006

FNB Stadium / Soccer City Stadium - 2011

Foreign Affairs Building – 2011

Freedom Park - 2011

Maropeng – Official Visitor Centre for the Cradle of Humankind World Heritage Site - 2011

Menlyn Shopping Centre - 2011

Safari Nursery and Event Centre - 2011

NOTES ON THE TITLE TRILOGY

Anima is the feminine Latin root for 'soul' or 'spirit', also 'animal life' (related to a creature's breath); it also has the root meaning 'air' and 'life force'. Carl Jung's [1991] psychology assigned the word to the sensitive feminine nature found in a man; the inner self, in touch with the subconscious. It is an archetype of the collective unconscious which transcends the personal psyche, and not an aggregate of vicarious behaviours. The masculine form *animus* has the meaning 'mind' or 'intellect'. While *animus* does also mean 'spirit', it has a secondary meaning of passion or wrath. 'Animosity' is derived from this secondary meaning of the Latin root *animus*.

Technic is from the Latin *technicus* which means 'details' and 'methods'. The English language referred to *technic* in the formation of the words *technology* and *technique* which paradoxically alludes to the execution of an artistic work or a scientific procedure, effective in achieving an aim (South African Concise Oxford English Dictionary, 2002).

Combined, the words *anima* and *technic* refer to the 'imaginative, spiritual creative ability', mediation between the unconscious and conscious mind. Animatechnic becomes a mythological state of process and becoming in which the art of making or representation blurs the boundary between the emotional artisan and the technician.

Architecture as Escapism presents the post-modern theoretical debate regarding representation in the current age of production and consumerism, where the authenticity of product and experience start playing a vital role. Ornamentation and representation provides objects with narrative lines and places objects in a metaphorical position against each other. The relevance of this understanding to the dissertation is in a possible neo-archaic approach – targeted at entirely rational methods – to inventiveness and meaning in an age of production devoid or illusive of sacred being or awareness.

ZOO becomes the metaphysical space where the situations of enclosure and escapism accumulates in multiple forms. The concepts within this situation crystallises in the National Zoological Gardens of South Africa (NZG), in Pretoria. A place on a micro scale, which stages in every sense the case of the macro and mythical conditions. ZOO is regarded as a collective, a world within a world, a representation in itself of the post modern situation, a microcosm.

During the ZOO chapters the discourse and main body of the work advances to an image orientated approach; further discussions will therefore be treated as annotations to the graphic work. The conscious free structure – although unconventional – should aid the readers understanding of the interconnectedness of all elements in the design development, and emphasize the delightful, in part illusive nature of the design process. The font will facilitate the conversion by changing from the formal serif to a san-serif font type.

ZOO

architecture as escapism
animatechnic

THEORY APPLIED WITHIN THE SITUATION OF ZOO & NZG AS SITE

THEORY IN RELATION TO POST MODERN TIMES

THEORY ON A MYTHICAL LEVEL



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PROLOGUE

The dissertation hopes to inform and demonstrate the intuitive nature of design which is often regarded as inferior to rational design approaches; Revolting against the numerous initiatives that select ‘off-the-shelf’ proven applications and materiality rather than imaginative, adaptive, temporal designed solutions. Thus architecture that is invigorated by the intuitive, illustrative, inventive world (IMG 004); the informative exploded threshold (inter-subjective) between the Social and the Formal parameters (IMG 018). The dissertation questions the accepted pre-eminence of the rational over the intuitive in negotiating societal change, which directly influences the progression of architecture and man.

To better illustrate the intuitive nature of architectural design the dissertation will incorporate theoretical concepts on a mythical scale and progress through macro theories, micro theories and lastly the synthesis of all concepts into the practical concepts (IMG 003). Communicating the influence and interconnectedness of these levels of conceptual discovery within an architectural scheme.

The prologue takes on the form of a myth and being a summary or concentrated version of the dissertation serves as a guide to the dissertation as a whole (IMG 005). This notion of the macro scale truncated to a summarised version or micro scale exemplifies the concept of collection that is strongly connected with the hypothetical situation of ZOO.

PROLOGUE

ANIMA AND MAN

In the beginning, Man was born from Animal, but as day became night, Man, encircled and filled with water (in the womb of this world) had no memory of being animal, not even in his dreams. The water in and around him drained, washed away these memories, and man was alone, hollow, in the vast openness of space. Man felt nature under his feet and sensed another being. In actual fact, there was. A being called Anima, who had expected him, called: "Man"; and he replicated the call by responding with his first breath.

Man followed this being. Its song became Man's song. A song full of wisdom, for Anima evolved with and within nature. Anima gracefully stepped between man and nature. And the animal taught man all there is to know about the world to which they belonged. She shared with him her animism.

In darkness Anima and man playfully danced in circled continuum around the fire (a gift from the middle of the earth), their shadows intertwined, and at day they danced to their song where she dwelled. As Man grew taller his eyes lost contact with hers and found the horizon.

Man dreamed.

He dreamt men walked alone on a measured straight line, harvesting the powers of nature, with the hope of crossing the horizon. With the passing of this thought, Man encountered his shadow lurking on the ground, and the darkness of his shadowy self, his persona, crawled into his hollow body. With this ego man pushed anima into the fire, breaking their sacred dance, but her soul did not die and flashed into the sky. Her body was split in two by the sharp flames. The one half fed Man and the fire, with intent. The other was enslaved, locked up, and Man hid her wings. Man's appetite discovered the structures in her legs, the muscle and tendon that joined them and he used these as design to drive his search for power, for progress.

For Man, the dreamt line that crossed the horizon was evidently that of production. Man burned nature in Anima's absence. He burned grass for light to further design on the rock face, he burned the trees and his own breath to provide heat, and so melted the rock that monumentalised his constructions and solidified his thought. Man went from mimicking Anima, to bending nature, to breaking nature and later, to burning and melting nature. He set out South, downhill, so that his equipment could roll along. The song they once shared turned breathy in the wind - a whistle through the trees - and disappeared, drowned by the screeches of the technic machine. Man became a monster that with his own order created chaos - a product of his greed and production. He consumed himself, and evil Man was born from his stomach. All life pointed to war, for that is what the fortresses he built invited. The fires of the war burned all the soft craft of animism, along with the knowledge imbedded therein; only Man's solid constructions remained, nothing was left except brutal hardness. Man came to see death in that life, the image of death; he saw the end.

With the heat of the flames still warm on his face, Man was reminded of the night he pushed Anima into the fire and in despair painted his face with ash. He was unaware of the fact that in the moment Anima's body split, so too her soul was torn in two – of which the part not tied to the night sky, now lived in him. Man's tears unlocked her, and she escaped from this inner world becoming the medium between his ego and subconscious.

Man, still alone, but much older – did not move or progress, for he found himself once again sitting next to fire. The fires and Man's tears made way for a new beginning. Anima - before man - had seen such a world and returned humbled – but she kept this quest secret.

Man returned to the grounds where they dwelled and had danced to assign Anima a place, out of respect. He promised her that he would combine the knowledge gained on his journey, a memory of his muscle, and her memory of spiritual wisdom in the creation thereof. Anima's spirit also sent Man to learn from his own child for there is nothing that comes after man except this child; a being without memory; a gift of 'beginning'. She instructed Man to release Child from the imitation of men. This short human could once again see eye to eye with Anima, and through their interaction Man remembered. He remembered the breath he took when Anima called him in the beginning of time and animated her remains by breathing life into it. He called her new being Animatechnic. This was the birth of the spiritual shared creativity between man and animal.

Man handed Animatechnic to Child, who added the purity of imagination. And through play in the place Man assigned to her, Child took ownership of the whole wisdom, but never again of Anima. (Author, 2011)

IMG 005: opposite: Mythological prologue as a summary or concentrated guide to the dissertation



ARCHITE

ZOO

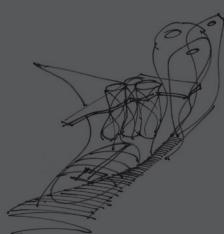


ANIMATECHNIC TECTURE AS ESCAPISM



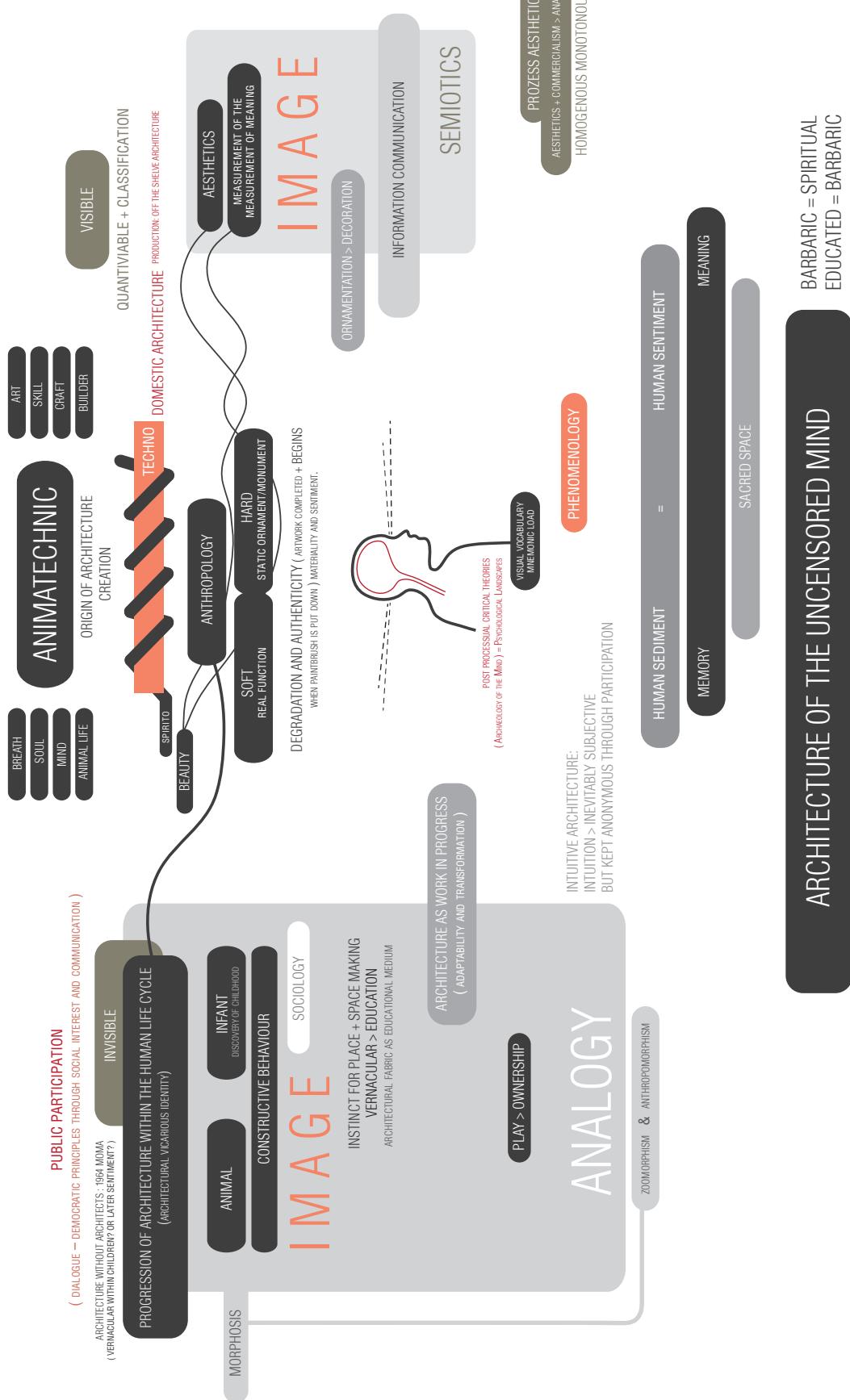
RETURN TO THE ORIGIN

NZG



ANIMAT

TECHNIC



1. MACRO

THEORY

The deeper we move into history, the more situations have in common, until we reach the level of myth, which is their ultimate comprehensible foundation. Myth is the dimension of culture that opens the way to the unity of our experience and to the unity of our world. In its essence, myth is an interpretation of primary symbols that form spontaneously and that preserve the memory of our first encounters with the cosmic condition of our existence. (Vesely, 2004: 368)

The architectural field is reduced to the conventional history of art if restricted to micro theories (Egenter, 1992: 43). The macro theories within this dissertation will form an analogy around the architectural discipline as synthesis of the social and the formal (IMG 018); the synthesis of Animatechnic as illustrated in IMG 006; and will further attempt to comprehend the seemingly rational advances of architecture and the building industry; in relation to various concepts of time - including time as human generations, archaic cycles, and the notion of linear Western time. Within this aforementioned time, the discourse will include the historicisation of architectural knowledge and investigate the effect that vicarious knowledge has on it (IMG 012).

What had previously been an unconscious experience now became consciously exploited by rulers and officials anxious to use all instruments to maintain or modify the social order. Yet it was the unconscious and instinctive nature of people's response to architectural forms which continued to guarantee their power... At one level unconscious reactions were formally recognized and brought to the level of consciousness. (Onians, 1993)

Fagan (2001) mentioned that the diffusion of ideas and objects from one people to another was recognized early as an explanation for prehistoric cultural change; however, the copying of style, conservative traditions and vicarious identity may constrain cultural change and creative innovation.

The theoretical discourse within this dissertation is assembled by means of deductive or axiomatic methods, from interdisciplinary texts to attest a rich context and ensure that the work will be devoid of a homogenous (linear) course of thought.

1.1 ROUND TIMES

Before Man came to recognise the world scientifically, he recognised it mythically. Aesthetic cognition is considered primary in regard to the development of science and is believed to be the more ancient cognition (Egenter, 1992: 59). The anonymous cosmic movement becomes a communicative movement through the natural world which penetrates and determines all areas of culture. We can recognise its presence in the dialectical play of sameness and difference in the structure of metaphor, imagination, and reasoning (Vesely, 2004: 377). Man found pleasure in the formal - the consciousness of rhythm -, structuring and patterning his universe accordingly (Rykwert, 1972: 33). The arts emerged from the amorphous matrix of feeling, and the mysteries of this world, from the continuum of temporary natural powers and the power of the unknown or invisible. Reality has always been the synthesis of the virtual and the material.

Through repetitions of the cosmogonic act, concrete time is projected into mythical time, transforming profane space into a transcendent space (the centre), synthesizing reality (Eliade, 1974: 20-21). This cycle is the round times. Man felt the need to become contemporary with the mythical moment of the beginning of the world, in order to regenerate himself, free himself from the recollection of sin and of a succession of personal events that collectively constitute history (Eliade, 1974: 75-77).

Through involvement in another's unique experience of space, space becomes visible and interactive. This leads to an understanding that human behaviour and social practices are inherently spatial, and that the organisation of space is a social product to which the body inseparably belongs. The human body has become the ancient centre of the world. Through social play the body becomes the sacred temple of mankind.

Heaven was imagined as a solid covering, stretched over mankind like a tent; for that man the roof he built or the tent he made of skins, or the vault of clay or straw, became a symbol of this higher dome of heaven (Egenter, 1992: 113). Archaic man's rejection of linear historical time, could be the symptom of a precocious weariness, a fear of progression in which history becomes accepted or his re-identification with the round modes of nature. The imaginative notion described by Egenter exposes similarities to a childlike being. It's regrettably easy to imagine the loss of the admired man who required no comforts, whose comfort came from the spiritual relationship he had with the natural world (Dudek, 2005: 155-176).

Human beings not only looked up to the sky, but such looking up has long provided natural metaphors for the way human beings are never imprisoned in the here and now but are always 'beyond' themselves, ahead of themselves in expectation, behind themselves in memory, beyond time altogether when contemplating eternity. Such power of self-transcendence is part of the meaning of 'spirit' (Harries, 1998: 160).

1.2 THE LINEAR TIMES

There is a close and rather unfortunate relationship between the narrow, formalized notion of style and the shape of the modern history of art and architecture (Vesely, 2004: 361). In order to know the past we rely on some form of document; in the case of architecture we have to rely heavily, though not solely, on visual evidence. The fatal reliance of the humanities on written history has covered up the genetic relation between a material and spiritual criteria (Egenter, 1992: 83). With the advent of the paradigm of Reason, ornament went from ubiquity to dubiety, from being the norm for the complete detailing of a Gothic edifice to being the critical classification of abnormal architectural elements (Frascati, 1991: 36).

Historically, Christian existence (equated with human existence) was entirely bound up by the Old Testament's idealistic linear frame of creation (Egenter, 1992: 29-33). In the fifteenth and sixteenth centuries inventing a new order

was no problem. But in the seventeenth century, a new order meant almost tampering with revelation (Rykwert, 1972: 77).

The use of historically derived rational design methodologies handed architecture a standard or benchmark to which the profession could be calculated (IMG 023). Structuralism's dominance could be due to its capacity to be employed on a purely efficient formal level, removed from the intellectual and political critique of consumer society inherent in socially based theories (Da Costa & Van Rensburg, 2008).

The continuum of the rational has forced us into a homogeneous environment. It has brought us semantically empty geometry, continuous monotonous facades (Egenter, 1992). Our expectations of what a house should look like become dually shaped by houses we have seen and by illustrations of houses (Harries, 1998: 206). Fagan (2001) argues that the environment can restrain human behaviour. *An excessive interest in the correct and a desire to simply copy may hinder imagination and invention* (Brawne, 2003: 110). A piece of architecture that merely copies what already exists has little chance of becoming classic, however impeccable its technique (Frascati, 1991: 84).

The dilemma at the heart of the modern notion of style is ultimately a problem of representation, a certain residue of an imitative symbolism (Vesely, 2004: 363); a symbolism without creation. Without participation in the sacred life, life is passed in profane time, which is without meaning: in the state of 'becoming' (Eliade, 1974: 35).

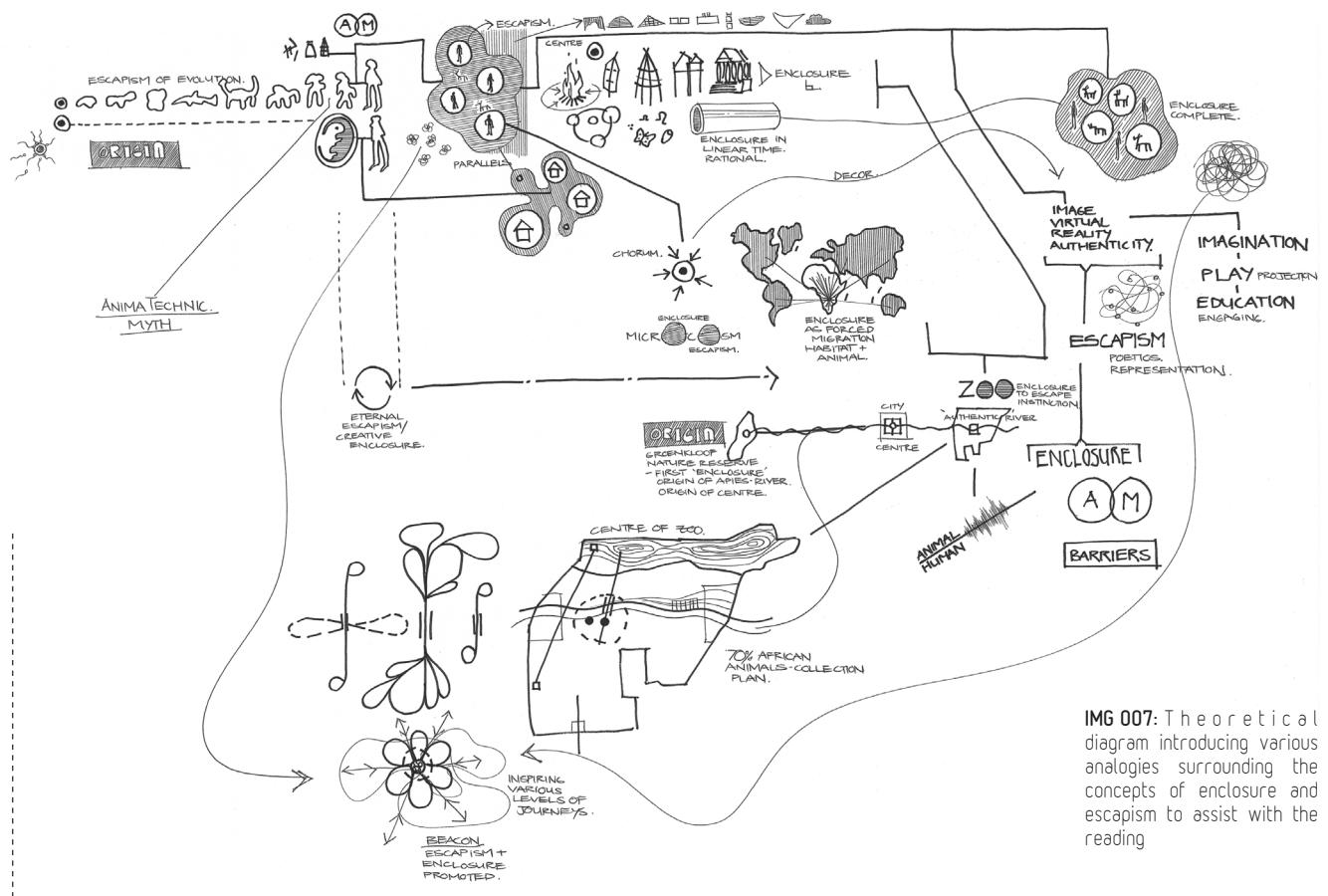
1.3 CONCLUSION

Modern man - who claims to accept history - condemns archaic man, imprisoned within the repetitive mythical archetypes, with creative impotence and his inability to accept the risks entailed by creative acts. Yet, modern man can be creative only insofar as he is historical; all creation is forbidden him (Eliade, 1974: 155-156). Contemporary design decisions are generally guided by formal principles, geometries of space, purity of style, economy of production and by personal experience, all as contained within history. At least archaic man, although enclosed in a round time, retained the freedom to annul his faults, to wipe out the memory of his 'fall into history,' and to make another attempt to escape definitively from time. Archaic man repeats the act of creation; modern man the product through measurement of that which was already derived from nature, which announces the death of meaning beyond political or economical 'meaning'. To Eliade (1974: 158) archaic man who annually takes part in the creative act *par excellence*, the repetition of the cosmogony has the right to consider himself more creative than modern man.

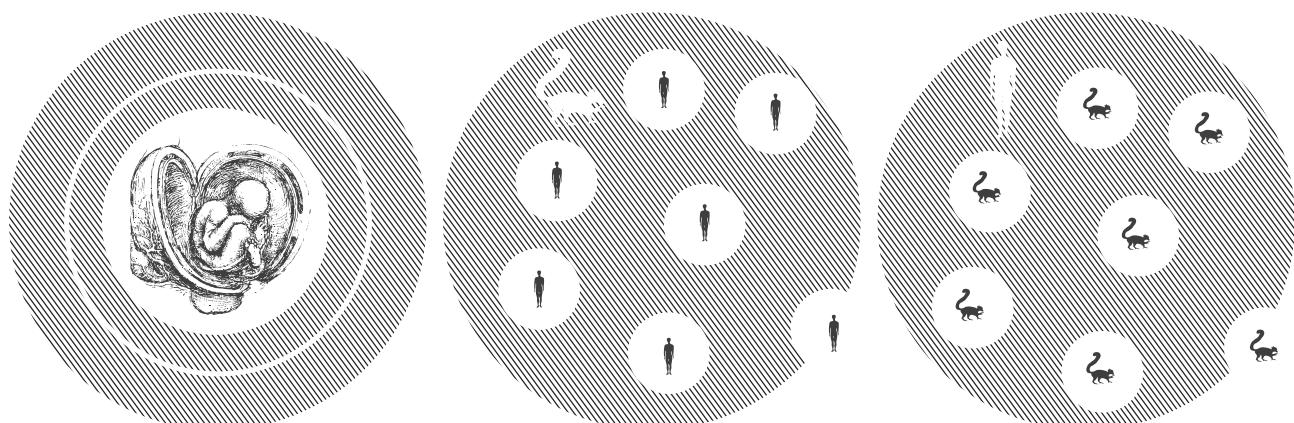
The representation of sacred architecture belonging to another age appears to have the modest function of bathing a building in an aura of significance, to declare that a building is a work of architecture. Traditional architecture is plundered by the architect to dress up functional buildings in borrowed finery (Harries, 1998: 102). The linear within architecture, consisting of the rational and geometrical may not be deprecated completely. Vesely (2004: 379) reminds that formal principles and geometry originated in the deep structures of reality and that their objectivity is therefore not a result of our choice.

Works of architecture do not just denote the kind of building they are: they do so by representing buildings (Harries, 1998: 96). Architecture is an art of representation, but what is represented becomes the issue (IMG 009). Frascari (1991: 33) states that the role of the architect is to demonstrate through tangible signs the intangible that operates in the tangible.

The absolute spiritual which derived its spatial structure from the spatial structure of universally found semantic and symbolic architecture has been lost. Architectural form has become programmed with great rhetoric as a semantic quotation from the repertoire of architectural history. Man did build himself but in the process of rational production he built the *anima* spirit, and breath out of himself.



IMG 007: Theoretical diagram introducing various analogies surrounding the concepts of enclosure and escapism to assist with the reading



IMG 008: The spatial experience from the womb, to a time when animal surrounded man and the modern times where man surrounds animal



IMG 009: A linear progression of form



2. REVISITING THE ORIGIN

The return to origins (the primitive hut) implies a rethinking of what you do customarily, an attempt to renew the validity of your everyday actions, or simply a recall of the natural and divine (IMG 010). Rykwert (1972: 192) suggested that the primitive hut will retain its validity as a reminder of the original and therefore essential meaning of all building for people: that is, of architecture. The primitive hut is no model for the architect to build from as assumed in linear times; it should only be viewed as attempts to unravel the mysteries of architecture. It remains the

underlying statement, the irreducible, intentional core. Man's desire for renewal is perennial and inescapable. Ideologies are rooted in ideas, they are constructs for shaping meanings, rather than templates for realities.

The search for architecture's origin intertwines with the search for the origin of community; to seek the essence of architecture in the provision of physical control would be to reduce architecture to mere building (Harries, 1998: 141).



2.1 ARCHITECTURAL ANTHROPOLOGY

Architectural anthropology entails the study of human origins (IMG 011), institutions, events and rituals, including age old constructive and dwelling behaviour. Architecture becomes a general human phenomenon which includes all cultures (Egenter, 1992: 85). The diversity of cultures turns out in part to be different ways of accomplishing similar ends (Beals & Hoijer, 1966). An anthropological outlook includes everything that has been built by man and possibly by his precursors (Egenter, 1992: 77). The term *architecture* is denied its aesthetic exclusivity and becomes a general term of a discipline with an objective and universal anthropological outlook. In an evolutionary sense this places architecture analogous to zoology (behavioural at least),

scientifically defined and inter intuitively certain; unmasking the merely evaluating character of aesthetically described architecture (Egenter, 1992: 79). Settlement research related to architecture should now consistently deal with accumulations of semantic and domestic architecture (IMG 014), which means that cults formerly consigned to religious research must be integrated into architectural research (Egenter, 1992: 159). Architectural composition and aesthetics might become a real value again. Doubtless it will also become obvious how barbarically the architect of today uses the social and spiritual complexity of architecture (Egenter, 1992: 163).

2.2 ANIMAL BEGINNINGS

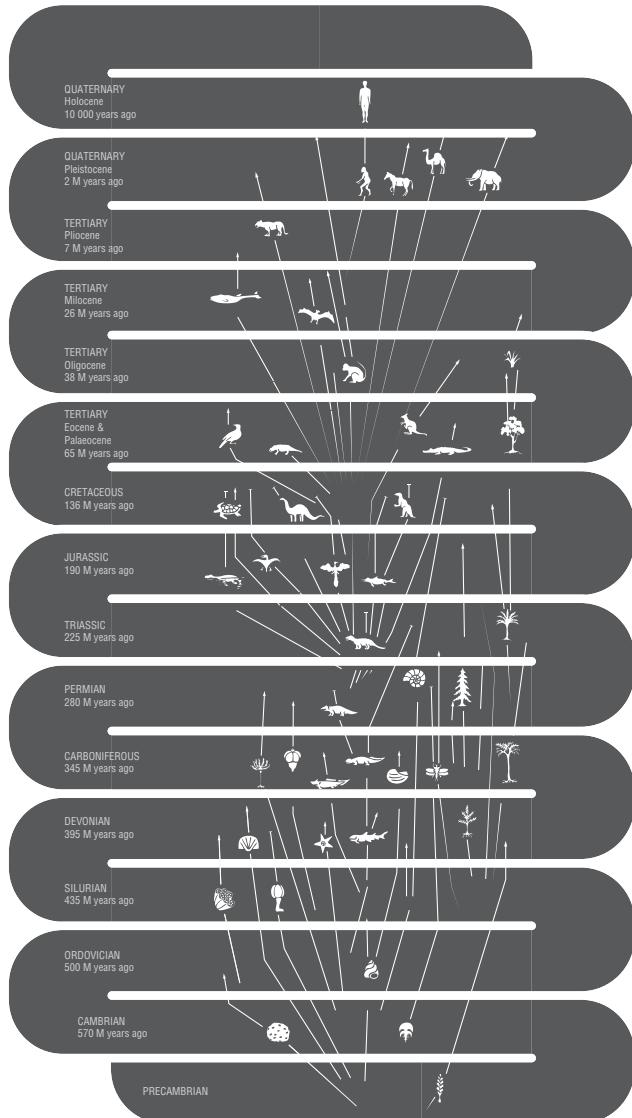
Domestic architecture theoretically loses its conventional autonomy in the context of architectural anthropology (IMG 011). Seen diachronically, domestic architecture is found at the end of a large field of constructive animal behaviour which in theory could have practically conditioned the whole phase of hominisation (Egenter, 1992: 157). Nest-building is a genuine subhuman tradition (Egenter, 1992: 139). Adult higher nomadic primates build personal resting places before nightfall on arriving in a new place. Within the extensive system of evolution that led to the human form, all species' forms of construction should be considered within architectural discourse.

"Only the animal is truly innocent." The primitives did not always feel themselves innocent, but they tried to return to the state of innocence by periodically confessing their faults. Can we see, in this tendency toward purification, nostalgia for the lost paradise of animality? Or, in the primitive's desire to have no "memory," not to record time, and to content himself with tolerating it simply as a dimension of his existence, but without "interiorizing" it, without transforming it into consciousness, should we rather see his thirst for the "ontic," his will to be, to be after the fashion of the archetypal beings whose gestures he constantly repeats? (Eliade, 1974: 91)

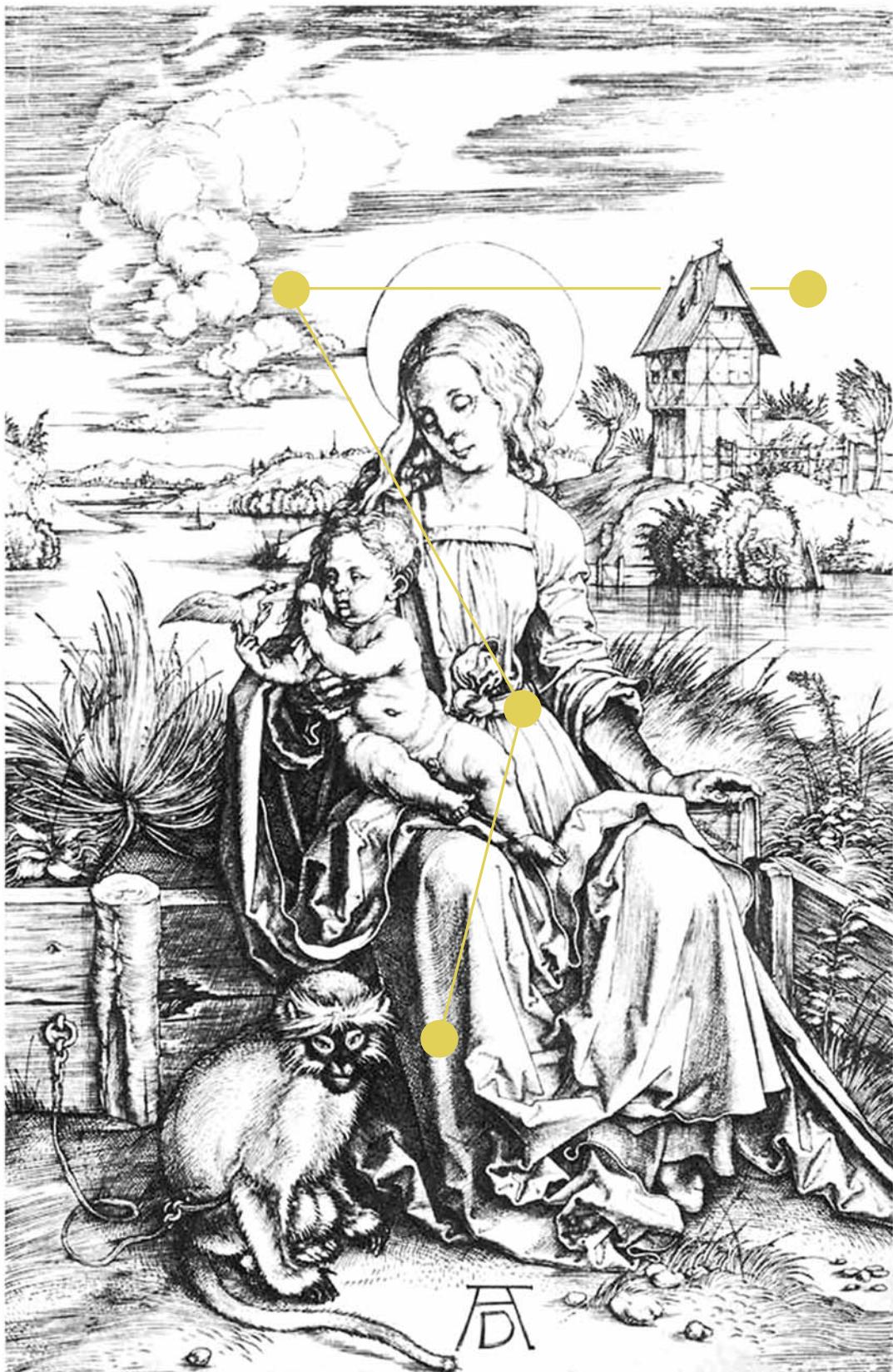
Rykwert (1972: 22) claims that man distinguished himself from beast by difference of conception in instinct; man attached meaning to his task. It implied a real 'taking charge' of space and time through the mediation of symbols (Rykwert, 1972: 21). The primitives, amazed at their own first spontaneous and creative free gestures, repeated their veneration *ad infinitum*. Man felt guilty on having hardly emerged from the paradise of animality (from nature), a feeling that urged him to re-identify with nature's eternal repetition the few primordial, creative, and spontaneous gestures that had signaled the appearance of freedom (Eliade, 1974: 155). Animals are genuinely at home in this world; before the universal destruction of habitats, they had a home.

To be genuinely at home in this world, we have to affirm our essential homelessness, a homelessness illuminated by shifting ideals of genuine dwelling, figures of home, and precarious conjectures about what it might mean to dwell near the centre. Something in human beings is fascinated by impermanence, demands change, and finds platonic order stifling and bloodless; we prefer the organic over the inorganic, for though the former lacks the permanence of geometric forms, it lives (Harries, 1998: 241).

Genuine dwelling welcomes ruins and escapism. The appeal of picturesque ruins hints at something in us that desires the death of architecture to rediscover in organic nature lost divinity and humanity's true home, to become part of it, not to master it (Harries, 1998: 244). Ruins are exceptional spaces of unusual complexity, which offer unique relations between access and barrier the open and the closed, the diagonal and the horizontal, ground plane and wall. But how can buildings simultaneously promise security and the precariousness of dwelling. Bachelard addresses this apparent paradox when he speaks of nests: The word "nest" connotes confidence in shelter but, at the same time, fragility. In its germinal form, therefore, all of life is well - being (Harries, 1998: 256).



IMG 011: The evolution of organisms through the ages to man



IMG 012: The mother and child, with animal and building in the background¹:Madonna with a monkey by Albrecht Durer



SEDENTARY ARCHITECTURE

SEMANTIC ARCHITECTURE

DOMESTIC ARCHITECTURE

SUBHUMAN ARCHITECTURE



IMG 014: Phaseological schema of architectural anthropology that could be used to reconstruct a constructive continuum in parallel with the evolution of man (Adapted from Egenter, 1992).

IMG 013: Gorilla enclosure night room at NZG

IMG 015: opposite: Soft to Hard: Ornamentation of the female figure



2.3 PLAY

All men respond to space, but adults have lost the sense of needing to experience and respond to a space; loss Nicholson (2005: 45-62) ascribed to the anaesthetic qualities of the widespread unsightly adulterated (corporate) environments. In viewing objects and images, adults too transcend and load extra meanings on to the matter (over and above the intended surface meaning); but unlike children adults do not react uncensored to these impulses. Fortunately children's natural way of being includes investigation, experimentation, and trying out novel experiences. Laris (2005: 14-29) holds that abstracted objects, including diverse shapes and materials open a wide range of imaginative interpretations made by the children themselves. Abstracted elements allow children to project their own imaginative interpretation on to the setting immediately, taking temporary ownership, and giving objects multiple uses through play.



IMG 016: A linear progression of form

The context and character of the common passionate social children's game of building enclosures, or *adopting*, for taking possession of an enclosed volume under a chair or table as a *cosy place* for making a *home* illustrates the double parentage of the original house: the *found* volume of the cave and the *made* volume of the tent in a radically reduced form. Psychologists associate this ambivalent play on exclusion and inclusion with the child's relation to its mother as it is focused in the fear and desire of the womb. The return to origins is a constant of human development and in this matter architecture conforms to all other human activities (Rykwert, 1972: 191).

2.3.1 TECHNOLOGY AT PLAY



IMG 017: Spatiality of the womb¹

Humanity cannot escape the biological, organic nature of existence, which is inextricably bound up in the technological realm mankind has created (Hall, 1996); more precisely the human lineage is evolving not only through its adjustments to the natural environment, but also to the dependence on indefinite technological advances it can conjure up. The degree of change experienced by the past three generations rivals that of a species in mutation (Dudek, 2005: 155-176).

The virtual world psychologised space through visual stimulation, but for players who negotiate their way through it, the virtual evolved into a real physical world with a strong architectural presence. Exceptional players learn to tactically read hidden designed spaces and objects which offer players certain 'affordances' (Dudek, 2005: 155-176). Computer games instantaneously afford players a space liberated from rules and boundaries that may create a

craving for more extreme virtual worlds. This denies children their potential to stand back and develop thinking skills and the power of their own imagination. Dudek (2005: 155-176) found that more traditional forms of play surfaced in the absence of the digital given. Electronic playgrounds cancel the need for children to invent their own fantasy within the real playground, and serve as a seductive narcotic for many children (Dudek, 2005: 155-176).

2.3.2 PLAY STRUCTURE

The distinction of internal structure and external cladding respectively, inescapably constructed a comparison with the skin and bone of invertebrates and the clad container (Aldersey-Williams, 2003: 15). The container may express and prance externally but internally it is the things contained that are of importance, and the person or persons manipulating those things, who may well desire additions (enlargement or of comfort) by dismantling and arranging parts (Martienssen, 1976: 153). The animation of structure does not have to function simply on surface level, it could become a multidirectional morphic ritual. Dudek (2005) stated that children do not perceive any difference between an exterior landscape and an interior landscape, and that they would relate to both in similar ways if allowed. A clear distinction should be made between surface representation and a tendency to move into the depth of architectural reality toward an order still understood in terms of a certain ethos; the shift toward ethos brings architecture into the realm of humanistic culture (Vesely, 2004: 363).

Environmental art often requires a considerable measure of audience participation, to set collaborative kinetic constructions to work. The term *play-sculpture* is borrowed from Martienssen (1976: 151) to describe such structures. The idea emanates from the growth-like invasion observed when children appropriate sculptural architectural arrangements; the building should provide its own visual fulfilment whether participants are present or not; and when people are present, they should explore and experience the building itself rather than to use it as a mere setting (Martienssen, 1976: 151). Physical interaction with the structure will prevent play from becoming a mere *fascination* (Leach, 2000: 78). If technological and skilful equipment is in balance it should facilitate fascination through learning, and enchantment through playing.

Building elements all have their individual developments from their origins in the semantic class (Egenter, 1992: 159). The semantic build-up of each separate element should provide a rich meaning to the whole (IMG 024).

2.3.3 PLAY EDUCATION

Place-based education focuses on the place where education occurs. *Reinhabitation* is a process of understanding this educational place of and taking action through putting things (physical and metaphysical) together (Jilk, 2005: 31-42). This could be done through the concept of a *montage of gaps*: A montage is a composite of juxtaposed elements which requires the creative engagement of the user to complete the setting; this theory builds on some late twentieth-century architectural theories including the *idea of uselessness* and the *architecture of disjunction* (Jilk, 2005: 31-42):

Concept of uselessness is the idea of rejecting determinism about the future use of space. The programme or use is established by the user, through appropriation of this interactive place after construction. The whole should be divided into equal parts *useful space* (intense infrastructure) and *useless space* (minimal support infrastructure) (Jilk, 2005: 31-42).

Architecture of disjunction concerns spaces, events, and movements and their separation. It is in the nature of the human mind to create order; the frag-

ARCHITECTURE

mentation of building elements invites engagement. Hence the user displays constructional and conceptual creativity consistent with our purpose. The shift is from objects in space to place making space (Jilk, 2005: 31-42). Children need to continue discovering ways of using their environment, changing it, understanding it and even re-imagining it (Chiles, 2005: 102-112).

Friedrich Fröbel (developed the first kindergartens in the early nineteenth century), encouraged children to *read* and interpret their physical environment. Hence students would follow streams to their sources and reason where the water came from, or they would discover a pattern in time when a certain bird appeared in spring (Herrington, 2005: 216-242). Animals live in the landscape, it is rained upon, it floods, winds blow through it and the sun rises and sets (Herrington, 2005: 216-242). The structure could become a natural animated landscape. The material qualities of landscape offer a rich source for imaginative events. Introduction of plant material parts as play props to the play space, could also offer an opportunity for the development of the infant's fine motor skills (Herrington, 2005: 216-242). The use of biodegradable plant material as building material offers the structure a poetic say in the degradation of the monument (an anti sediment build-up, yet pro-sentiment build-up).

2.3.4 SPATIAL PLAY

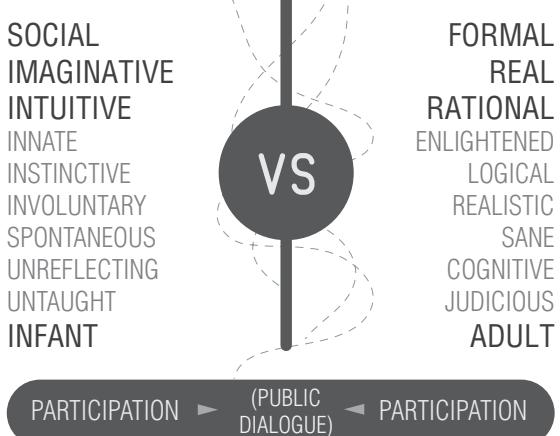
Two types of conceptual space namely Footpaths and Nests are proposed (adapted from Laris, 2005):

Footpath: A concept modelled on labyrinths - constituting of a single fixed predictable, stable, ordered, and introverted path - which throughout history and in many cultures, by promoting contemplative thought has symbolized the notion of rebirth, spiritual growth, renewal and transformation. The type of change is essentially part of organic processes and not manipulation, distortion, or mutation.

Nests: Are single social container spaces ideal for relaxed observation. In addition the whole as well as the parts are moveable and transformable which allows for multiple uses, spatial arrangements and groupings aligned with the view of Da Costa *et al* (2008) that territoriality occurs temporarily. Thus the space is in tune with the users and as a result promotes a sense of ownership of the space. The nest is unpredictable, constantly changing (to the extent of becoming fluid), chaotic and extroverted, welcoming temporal ownership through creative intervention.

By placing these concepts in equilibrium the arrangement can be transformed by the user, in return transforming the user; children do not consciously set out to train their sense of agility, flexibility, or proprioception. Like the visitor to the labyrinth, they are simply transformed by the space within which they find themselves (Laris, 2005: 14-29). Herrington (2005: 216-242) adds that paths could create both a physical experience and cognitive measurement or mnemonic markers of the space. By providing transformable nest spaces, paths could become iconic landscape elements that may structure the child's understanding of the environment through play and constantly changing social interaction (Figure 15).

Think of the community created by a successful outdoor music festival, or by a sports game. Here we have instant communities, often intense in their own way, yet of only short duration. Communities are increasingly of that type—not very long lasting, created by shared but inevitably changing interests, communities that we can join and leave with ease (Harries, 1998: 249-250). A woven architecture is one in which any constituent piece is inextricably bound up in the whole (Betsky, 2000: 90). The interweaving of individuals take place within the real and virtual, archaically a collective mind, in modern culture an all seeing eye of information.



IMG 018: Dualism within the synthesis of architecture



IMG 019: Nests of the african weaver (Adapted from J.G. Wood)

2.4 SPATIAL ORNAMENTATION THROUGH METAPHORS OF THE CENTRE

Primitive man made himself a tiny independent world in which the cosmic law acted in a miniature system—and within the system as a totality, and in such play man satisfied his cosmogonic instinct (Rykwert, 1972: 31). Every terrestrial phenomenon or reality is a function of the imitation of a celestial archetype (a transcendent invisible term), conferred through participation in the “symbolism of the Centre” (Eliade, 1974: 5). Architecture should bridge the gap between humanity and divinity, to provide both individual and community with an integrating centre. Pyramids and ziggurats were built as cosmic artificial mountains (Eliade, 1974: 15). The summit of the cosmic mountain was not only the highest point of the earth; it was also the earth’s navel, the point at which the Creation began (Eliade, 1974: 16). Works of architecture are primarily symbolic markers, pointing to the divine power dimly felt to preside over both nature and humanity (Harries, 1998: 140). The centre was the zone of the sacred, of absolute reality. Similarly, all the other symbols of absolute reality (trees of life and immortality, Fountain of youth, etc.) are also situated at the centre (Eliade, 1974: 17-18).

Because architecture is in essence a visual discipline, causal thinking can never fully grasp its true reality. We can better achieve such a grasp by accepting the role of similarities, analogies, and metaphors in understanding the visible world. It is mostly owing to the metaphorical structure of the visible world that we can identify and use the contributions from different levels of reality bringing them into the sphere of architecture (Vesely, 2004: 388).

Science and technology has brought us great mobility and freedom; yet such mobility has made us less willing to accept the place assigned to us by nature or history and has caused a loss for ground or measure in the infinite realms opened up. We are left with dreams of lost meaning, lost plenitude, of a communal existence strongly rooted in both space and time. It is no accident that ornament should have come to figure what is felt to be missing (Harries, 1998: 66-68).

Architecture should mark places that are absolutely real with metaphors and personifications of the world, while opening us up to the infinite realities and possibilities of our sprawling universe. Architecture must be the poetry of revealing us to ourselves. Such architecture would inhabit the world of myth, a world reflecting on time and place, where reality is continually shaped. The

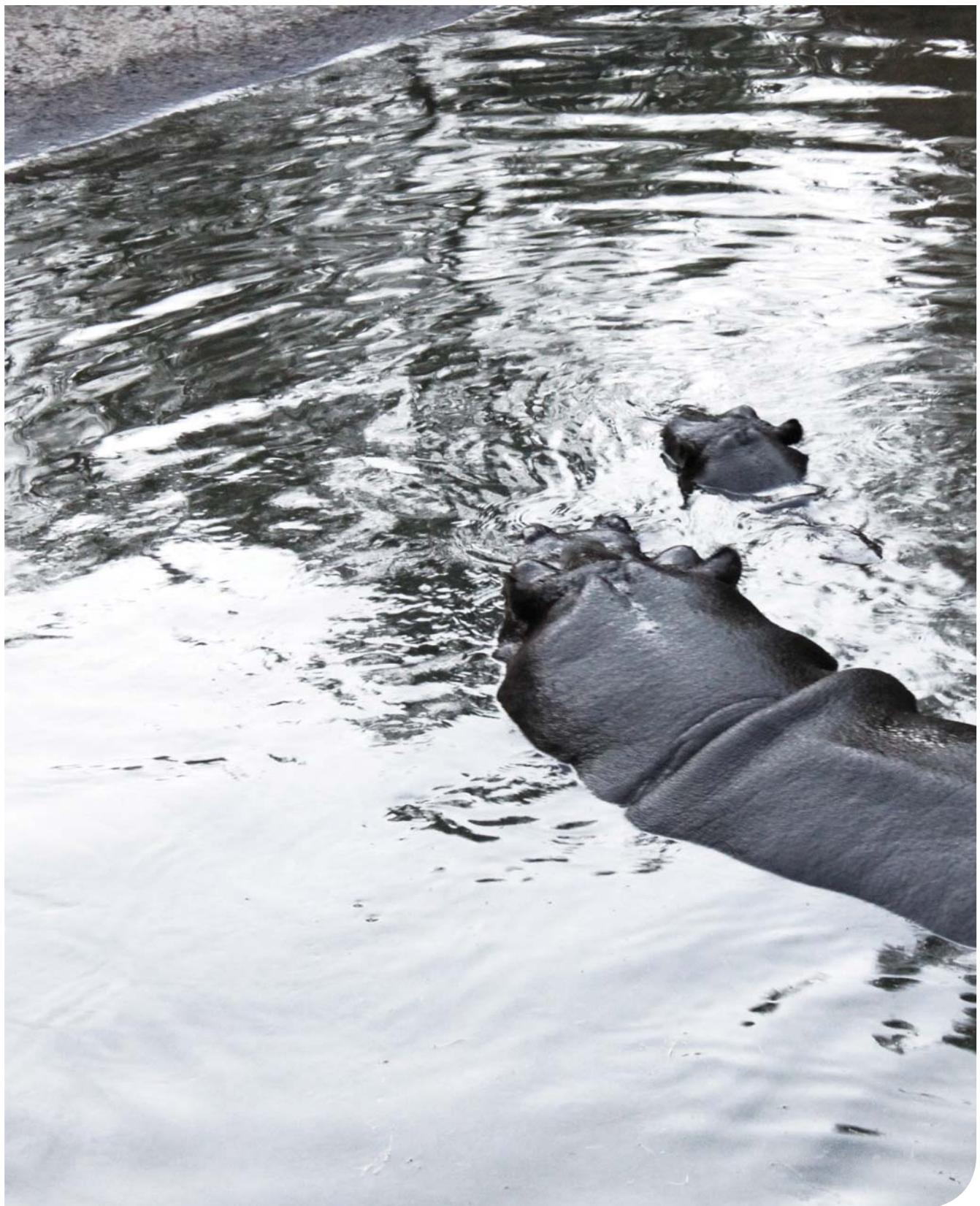
electrosphere is a floating world; it is no place, yet everywhere, imbedded with information (Betsky, 2000: 60). Architecture must reveal who and where we are in a reality that seems more and more confusing. The reference point in the transitory world of sprawl should somehow be the viewer, the user, the body itself, free from materiality (Betsky, 2000: 55).

Architecture must raise herself through the intellect, and derive her system of imitation from ideas about more universal things, things far removed from human sight (Rykwert, 1972: 63). The structure of space itself can generate its own purpose. When we visit a great work of architecture our attitude is shaped in part by a still almost religious reverence and respect, but also by a sense that what truly matters lies elsewhere (Harries, 1998: 357). Metaphors and dimensions contribute to the identity of a situation, while at the same time serving as a key to exploring its inexhaustible richness. The world of translucency in which all spaces and all times dissolve into a seductive blur can coalesce in three forms: icons, interfaces and narratives (Betsky, 2000: 71-72).

Icons: the objects that manage to sit still in a world of continual motion. They work, respond to and reflect our bodies, condense technology and hint at much larger systems. The most important aspect is its ability to bring to our awareness what is in our experience but is not yet visible or known. The invisible is the mysteries that must become known – without losing its mystery. The cave is mysterious partly because of its darkness, but mainly because it is undefined externally; one cannot read from the outside either its shape or its extent (Martienssen, 1976: 54).

Interface: a moment on an object driven by technology that lets you activate its invisible power. An interface makes visible those aspects of the electronic reality animating that object so that we can understand it.

Narrative: bridges time and space, weaving together a world that is completely elastic in its boundaries. Its rules create connections between minute observations of small objects, the everyday scene, or the body, and the larger import of each phenomenon. What gives situations a very high degree of stability is their repetitive nature originating in the daily cycle of human life, which has its ultimate source in primary cosmic conditions and movements (Vesely, 2004: 376).

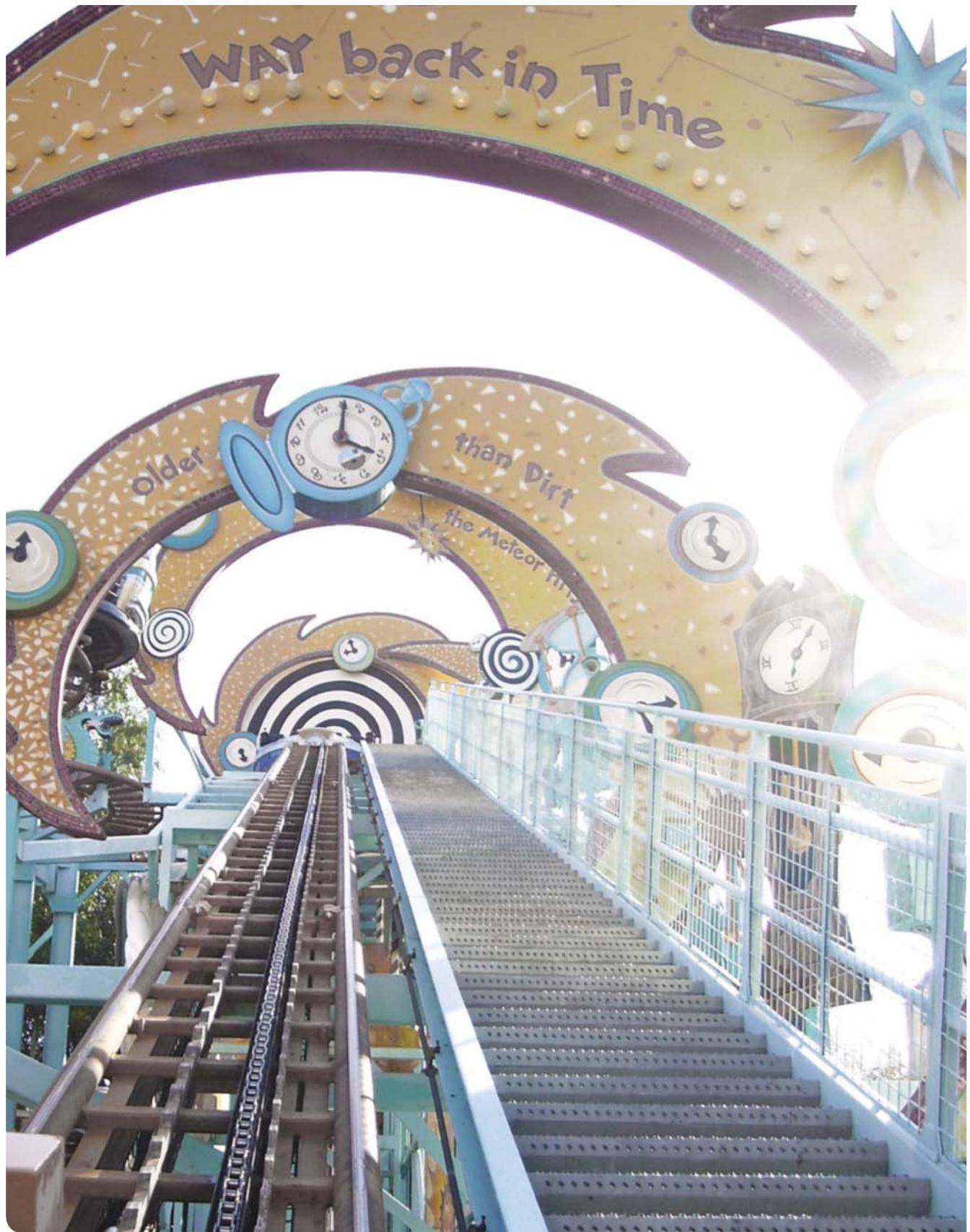


IMG 020: Mother hippopotamus and her young surfacing in the hippo enclosure at NZG: The body underneath the surface

ARCHITECTURE

LECTURE

CAPISM

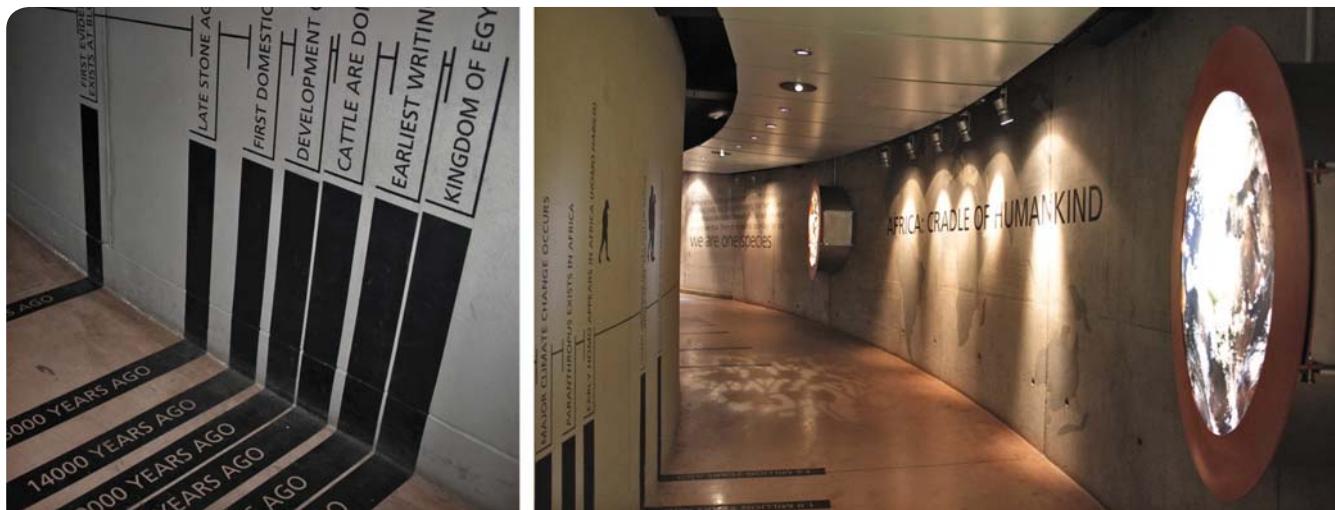


3. MICRO

THEORY

The micro theoretical discourse within the following chapter presents the issues within representational aesthetic categories which derive from the level of the image, production and the object. This micro level however does project into the metaphysical, the virtual, and challenges man's perceptions of authenticity and reality (IMG 022).

IMG 021: opposite: Representation of a journey into the past on a 'dinoland' rollercoaster in Disney's Animal Kingdom, to communicate extinction



IMG 022: Representation of a journey from the past into the future on a ramp or tunnel in Maropeng

3.1 REPRESENTATION

Architecture is a mimetic art not to be reduced to imitation. Play is a representation (*mimesis*) of action (*praxis*) in that it also for that reason represents people as doing something or experiencing something (Vesely, 2004: 367). The outlines of the archaic mind had to be welded to brute matter by something, which makes the outline comprehensible or perceptible, and that is ornament. Decorations and ornamentation give structures a quality unique to their designer and maker, a reminder that they were made and conceived by people who had laboured and left their mark (Brawne, 2003: 139). It can be

deduced that this personal mark is viewed as almost spiritual. Modern man's vandalism, idolisation of fashions and brands are debatably exemplary of the fact that buildings do not allow for the making of one's mark.

Vesely (2004: 269) illustrated the confusion and deceit of the modern situation: how art, a revelation of the truth of reality preserved in symbolic representation, differs from aesthetic representation, created and experienced as a source of sensation. The crude product of nature, the object fashioned by



IMG 023: Measuring from the measurements of nature: Henry Parker, student measuring the Temple of Castor & Pollux in Rome. Soane Museum London (Adapted by the author from Brawne, 2003:113)



the industry of man acquires their reality, their identity and value, only to the extent of their participation in a transcendent reality (Eliade, 1974: 5). Among countless stones, one stone becomes sacred; through a force that may also reside in the substance of the object or in its form; a rock reveals itself to be sacred because it is incompressible, invulnerable, it represents that which man is not (Eliade, 1974: 4). The spirit that animates ornament is said to be the very same spirit that animates the architectural whole (Harries, 1998: 53).

According to Betsky (2000: 26) power is no longer contained in plants or animals or even in materials we extract from the land, but in the information that courses through the sprawling networks of the electrosphere that span the globe, coalescing on demand in nodes of coherence: computers, telephones and servers which have also become comfortably individual, and mobile. Mobile technologies and art point out to humanity new paths and directs to the future tearing man from his comforts; the work of art is revolutionary the house conservative, conserving comfort in the present. Harries (1998: 51), states that decoration betrays the revolutionary potential of art, by mediating between art and the everyday and accommodating the comfort of public. The word ‘aesthetic,’ belongs to the domain of instrumental representation where art is subjected to the criteria of science but, as a consequence, is isolated from the practical markings of life and from ethics. This is the basis of the ‘crisis of representation’ (Vesely, 2004: 371-372).

3.1.1 SOFT EVIDENCE

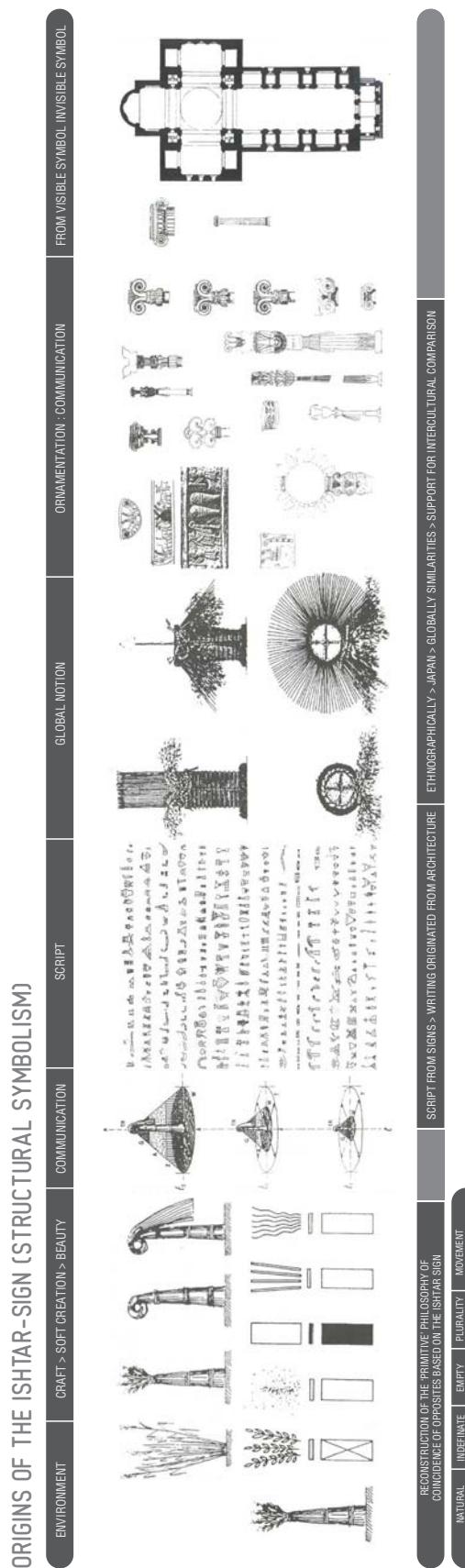
The decay of material evidence is a recurrent problem that troubles archaeologists (Egenter, 1992: 129). The *primitive stage* was represented by fibrous organic materials (lost soft evidence) that could be worked by hand alone; the hand should be regarded as the first tool. In this way ornamentation more or less becomes a structural relic of vanished soft technology (Egenter, 1992: 119). The soft technologies of crafting with the hand should be viewed as true representation and ornamentation.

The Ionic column, as example, shares a remarkable sequence (IMG 024); it was originally sacred, bore the vestments of a goddess and protected the first city as beacons in the open (exterior or not enclosed). It was then brought under the Greek's temple roof, retaining a traditional significance. Thence it journeyed to Europe, from where it was distributed all over the world as a symbol of European prestige. Is such symbolism more enduring than stone (Egenter, 1992: 125)? As the creative idea and symbolism of the Ionic column shifts from environment to environment, its physical and metaphysical function changes. In effect, the spiritual function (still with physical use) is traded for the physical function (symbolism is degraded to decoration).

Man's creations were originally made in conjunction with and directly from nature (including organic and anorganic matter) and natural material. It is evident that the natural has been retracted from this equation as man became entrapped in a lineage of ‘measuring the measured’ (IMG 023); that which is already related from the natural. This loss of the natural could explain the monumentalisation of architecture.

3.1.2 SEND & RECEIVE

Scientific judgements on beauty (subjective) can only be made if based on how effectively information is transmitted (Egenter, 1992: 63). What complicates the matter is that what a building communicates depends on what we want to see, what our eye expects to have presented (Brawne, 2003: 11). Beals and Hoijer (1966) claims there is sophistication and maturity in the art of all peoples but it can only be appreciated if a comprehensive understanding of the specific culture that produced the work exists. All of art everywhere communicates whether or not the artist is conscious of such communication, and whether or not a society recognizes the art medium as a means of communication; thereby eliminating the concept that only high art (excluding crafts) is capable of symbolic communication.



IMG 024: Soft to hard: The evolution of the Ionic column, from the red type signs of the Sumerian goddess Ishtar, as predicted by German archaeologist, Walter Andæ (Adapted from Egenter, 1992)

Despite general assumptions that the inundation of images leads to an *information society* which promotes high levels of communication, this *ecstasy of communication* has precisely the opposite effect: *we live in a world, where there is more and more information, and less and less meaning*. The sign no longer has any meaning (Leach, 2000: 1). *Thus meaning is exhausted in the staging of meaning* (Leach, 2000: 2). The most economic and efficient store of information about the real world is the real world itself (Vesely, 2004: 312). The wholes established by technology do not make us feel complete or satisfied; they are still experienced as splintered wholes.

According to Leach (2000: 9) art will always have a *meaning*, but that *meaning* is merely projected on to art and is determined by factors such as context, use, and associations. Hence Leach argues that to decontextualise a work is effectively to desemanticise it, and, by extension, to recontextualise it is to invest it with another meaning. This is not to deny that aloneness and emptied spaces do not evoke powerful emotions, and perhaps the distancing from a real situation does itself promote and transmit an 'art' quality (Martienssen, 1976: 12). However, the appreciation of things depends heavily on the premeditative state of the viewer instilled by the site.

Within the depthlessness of our current culture of the instantaneous, the significance of context is eroded (Leach, 2000: 87). The loss of meaning equates to the loss of place and the focus on surface. In the process of reading an object as a mere image, surface driven practice – deeper meaning is lost. The image is all there is. Everything is transported into an aesthetic realm and valued for its surface appearance, its logo (programmed for homogenous space) (Leach, 2000: 5). Human contact too has become a surface to surface, depthless encounter. Betsky (2000: 136) - urging architecture to once again be the hearth around which society gathers - would settle for an architecture that is 'no more than the flicker of a screen' if it is able to intrigue society.

3.1.3 FLAT IMAGE

The lower an ornament's representational profile, the greater the need for colour to render the ornamentation sufficient (Harries, 1998: 126). Ornamentation has deflated to a flat colourful depiction of reality: the image. The image itself has become the new reality or hyperreality (Leach, 2000: 3). It is a world of appearances propagated by the media, a commodified world of advertising (Leach, 2000: 57), where *the great majority of the public feel real satisfaction in 'recognizing' a work of art instead of recognizing themselves in it* (Restany, 1998). All that once was directly lived and deeply experienced has become mere surfaced representation. Frascari (1991: 26) adds another dimension, in stating that dissection (a means of formulating anatomical knowledge) is a favourite conceptual tool of many contemporary architects for dealing with the problem of architectural representation.

Even with the notion of the 'world as picture' in mind, we have to look beyond the directly visible spectator's setting to understand the structure that holds the scene together and that gives it meaning (Vesely, 2004: 191). Harries (1998: 132), views all the world's creatures as a book, a picture, a mirror, and a truthful sign of man's life, death, condition, and destiny. The image of a place should no longer be the static appearance or reflection of the thing but its icon's presence in the story that is built up around it. The face (brand) of the product is in a state of continuous change, for architecture to escape such a world, representation needs to once again reach deeper than surface on all levels.

3.1.4 PRODUCT

The history of architectural theory shows an obsession with product, very little importance is placed on process. Stone ornament simply replaced the body of timber construction - unfaithful to its timber origins (Rykwert, 1972: 109-110). Man turned obsessed with the visual attributes of buildings rather than how they came to be (Brawne, 2003: 81). According to Penn (2005: 180-192) the ferocious commercial agenda (often targeted at infants) producing overstimulating environments modelled on the excess of the shopping mall and amusement park, and the hyper-material culture has the same effect; where

children are only introduced to the packaged 'present' of commercial product lines, the product's 'past' and 'future' remain mysteries.

The modern aesthetic nature of architecture is the *fashionable*, which as a means of deconstructing the material independence of the discipline becomes the mediator between the tectonics of architecture and the experiencing body, *making architecture more palatable and, ironically, something to be consumed* (Da Costa et al, 2008). The fashionable moves freely, in small cycles, within the bigger movements of the collective.

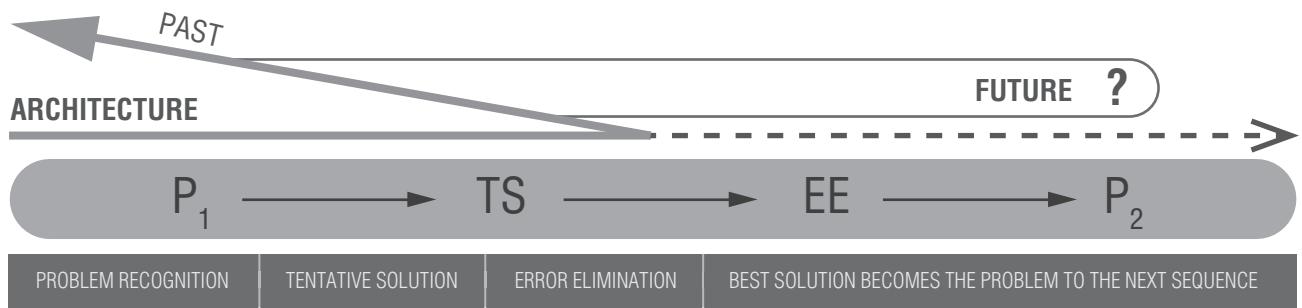
It should, however, be noted that by its very nature architecture is opposed to the economic imperative that demands first of all efficiency (Harries, 1998: 29). Martienssen (1976: 2) stated that the definitive names of the parts of a building: floors, walls, roofs, doors, windows etc., restrict the architect to a certain kind of performance. To escape from this production and rational restriction 'the names of the parts' should be viewed as mere metaphors. If we were to allow the economic imperative to embrace the whole of life, human being, too, would be reduced to just other resource material for the process of production (Harries, 1998: 50). As Egenter (1992: 103) rightfully points out, technical society no longer has any idea about the use of art, apart from its investment value. The dominant straight line is not a creative, but a reproductive line, which belongs to the world of production (IMG 026).

In the condition of excess - when everything becomes political, sexual, and aesthetic - any specificity in these domains is lost. When everything becomes aesthetic, the very notion of art disappears; the art world folds back on itself, then forced to dematerialize itself through minimalism, erases itself (Leach, 2000: 6-7).



3.1.5 SEDUCTION & MEANING

Seduction extracts meaning from discourse and detracts it from its truth (IMG 021); it attempts to enchant the viewer purely through visuals, to prevent any deeper level of inquiry. Leach (2000: 71) therefore contrasted seduction to interpretation. However, there was once a *golden age* of seduction, when *seduction*, *valour*, and *honour* were all part of a polite world of intrigue. This age has been covered by the deceitful filter of commercialism and rationalism. With the advent of the industrial revolution, seduction became eclipsed by an emphasis on *production*, with its concern to make everything clear and objectifiable (Leach, 2000: 73). True artwork, (with origin as valuable sacred ritual objects) became secularized as aesthetic forms, and later lost all meaning in the age of mechanical reproduction. Leach (2000: 75) gathers that seduction, like art, has been reduced to *the endless reproduction of a form without content*. Production has eclipsed the romantic seduction in all aspects of cultural life. The world is without seduction and meaning, without Anima.



IMG 025: Diagram illustrating the issues related to the progression of architecture (Adapted and illustrated by the author from Braune, 2003: 33)

IMG 026: Bending the straight line: A metaphor to the style of the freehand line





3.2 ENCLOSURE

Martienssen (1976: 153) formed the metaphor of the *play-pen*, defined as a small space where the child can assemble his own desired equipment and provide for his own small industries. The opportunity presents itself to elaborate on Martienssen's *play-pen* for the child by adding the concept of the 'cage' for the animal, and the enclosure of man within himself paradoxically desperate to escape both from boredom, and an overload of spectacle (IMG 029). Most environments that do not work are static and sterile. Adults in the form of professional artists and architects have all the fun playing with their own concepts and planning alternatives; the builders have all the fun building environments; thus all the fun and creativity have been stolen; the community (including children) has been deprived of creative freedom.

According to Benjamin consciousness serves as a reservoir of energy to dampen the energies outside acting as a guard against stimuli (Leach, 2000: 42). Thus excessive spectacles can lock man up in himself. The ancient Greek term, *aesthesia*, referred not to abstract theories of beauty but to sensory perceptions; the raising of one's consciousness of sensory matters in excess – smell, taste, touch, sound, and appearance – allows a corresponding indifference to descend like a blanket over all else. It becomes a womblike enchanting of the individual, a semi permeable membrane that ensures a state of constant gratification by filtering out all that is undesirable (Leach, 2000: 44).

In the excessive intoxicating world of the image, the aesthetics of architecture threaten to become the anaesthetics of architecture (Leach, 2000: 45). Distraction becomes a form of business (Leach, 2000: 77). We are enclosed in a realm of flashing distraction, made effortless by invisible technologies. The flicker of form we see in distraction, out of the corner or our eye, makes more sense than the monuments intended to hold our attention (Betsky, 2000: 52).

IMG 027: opposite:
Architecture encloses:
Caspar David Friedrich.
Woman by a Window.
1818. Nationalgalerie.
Berlin (Adapted from
Harries, 1998: 197).

3.2.1 MEMORY

The transformation of building space into place depends on a prior sense of place (Harries, 1998: 213). Human understanding needs a mental vocabulary of images (based on memory) for abstract categories can only be reached through such graphic representations (Frascari, 1991: 45). A visual vocabulary is utilised to make visual choices and these choices are most frequently made on the basis of known, preferred forms (Brawne, 2003: 71). Brawne (2003: 57) states that even within highly original projects this mental baggage is present.

However, before mental baggage was predominantly visual propaganda it consisted of a wider range of situations experienced – which is still present but not accessible due to the overload of images of product. Vesely describes this type of memory as never being of an isolated thing, it seems to be triggered by global similarities to previously experienced situations rather than by any number of individual facts and features (Vesely, 2004: 101). Perhaps instinct should be viewed as a pure memory, free of the doctrines of historic and worldly memories.

Children's memories are temporarily (before the real world sets in) free of this *sediment*; their creations are thus hypothetically un rationalised and uncensored by reality. The child perceives the world as new, hypothetically similar to how first man viewed the world as new; everything is strange and exciting (poetic), it could be permissible to conceptually deduce that the child is therefore the closest form of being on earth still related to archaic man. It should also be noted here that technology may flood society's memory (anaesthetic of memory) at a rate previously unknown to man, thus depriving man of sentiment, and romanticism, concepts that are easily equated with artistic and poetic notions. The Jungian view - *that the abundance of animal symbolism in the art of all periods indicates a wish to embrace into our lives not the extrinsic nature of each beast, but their shared*

intrinsic quality (the instinctual) - seems to apply well here (Aldersey-Williams, 2003: 41). Memory could metaphorically be viewed as a photo-tropism hormone that directs man's progress.

3.2.2 STYLE

Contemporary architecture should reject style (the continuous reiteration of the sediment of creativity, condemning invention to a static existence). This is not to be confused with Leach's statement that *the absolute rejection of style becomes style* (Leach, 2000: 11). Thus static architectural design is an architecture bound to the laws of solid historical stylistic and material continuity (formal human sediment). This sediment is due to human sentiment, monumental and commemorative in nature, produced by following a strict rational approach to design. This emerged into the current static, monotonous state of cities that are placed (sit heavily on top of the earth) as opposed to blended within the physical and metaphysical surrounding. To clarify, every architectural problem rightfully demands an entirely innovative solution, (Brawne, 2003: 121). Thus, the existing visual language from a style should not be used directly (without internalising the process and context of the intervention).

The author's interpretation is that *Style* originated from a temporal art (collective to earth), a part of the shared spirit of place (the notion of space was still young), nationalism localised style (style became representative of the collective ego of communities), imperialism distributed style with the claiming of space, revolution turned against imperialism (ironically decontextualised style remained, the owner changed), with democracy, individualised, without place society is left confused. Without reason to congest – there is no enemy, and no excitement. The formation of identity has started over, unfortunately formed around branding (style), a scramble for economic success. Style is not, and should not become an issue (IMG 028).



IMG 028: top: NZG Bear enclosure photographed in 1911, in use as a bear exhibit. **centre:** NZG Old bear enclosure used for educational exhibition space. 1992. **bottom:** The bear enclosure is currently used as a souvenir shop. 'Zoovenir,' decorated with Ndebele patterns. 26 April 2011

IMG 029: opposite: Lion entertainment ride in NZG competing with the real escapism the lion exhibit can provide

3.3 ESCAPISM

What prevents the world from ‘soaring out of the earth’s sight,’ what opens human beings to material transcendence, this transcendence within the sensible, is above all, the body. To be in the presence of the earth is inevitably to be affected, moved, claimed (Harries, 1998: 159). Through signs and similes, we ascend by the means of visible things to those things invisible (Frascari, 1991: 51). This gateway between the visible (reality) and the invisible (virtual) has been open since the beginning of time. For Bataille the only way for man to escape the architectural chain gang is to escape from, or lose his own head (dismemberment of meaning); in other words, to create architecture that doesn’t force semantics and subjective thought but is only set on space (Hollier, 1993).

It is the author’s opinion that in war driven ages or times of need, art serves as an essential means of escape; in times of peace it becomes an individual luxury, driven by critique. Perhaps the world’s current obsession with the *image* should be viewed as *escapism* from boredom. Design becomes driven by the escapism of the designer’s mind (sub-conscious image), hence the *landscapes* of memory and the dream become the ‘place’ to reference nostalgically, to react on. The product becomes hyper naively positive, and thus an idealistic form of progression – a premeditation of the ideal reality.

The human being is a citizen of two worlds, entangled by his body in matter and rationale, but also able to transcend such entanglement, lifted by spirit to a realm of thought and freedom.

3.3.1 IMAGINATION & DREAM PROGRESSION

The pursuit of aesthetic purity has to lead the architect to create utopian fantasies, difficult or impossible to realize. Reality demands compromises, non aesthetic considerations (Harries, 1998: 26).

According to Frascari (1991: 46) dreams could be seen as a hypothetical design of the unknown; a rhetorical procedure within the labyrinth of the reflections about the physical and metaphysical possibilities of things. A dream is a mode of production by which the images (*submotions*) can be manipulated through dimensional and scale changes (*aumentazioni* and *diminuzioni*), combinations and analogies (*proporzioni*) resulting in the generation of new forms and understandings (Frascari, 1991: 46). Image always precedes reality, without the ideas in comic books the first moon landing would have been impossible.

Brawn (2003: 33) states that all built outcomes enter the stock of existing buildings and influences our perception of the next problem (IMG 025). What we know contributes to what we make, and what is already made contributes substantially to what it is possible to know (Vesely, 2004: 6). However dream-architecture directs architectural progression beyond the rational. Genuine dwelling means not so much a being at home but at most a continuous journeying home, a continuous homecoming, haunted by changing dreams of home (Harries, 1998: 213). Architecture should accommodate such dream journeys by becoming dream architecture – a brief escape from reality.

Public space has always been where we come to appear in finery, to participate in rituals and to lose ourselves in a fantasy world where we have a role beyond ourselves (Betsky, 2000: 50). Frascari (1991: 84) requests a return to *Mysterium Tremendum*, a forgotten dimension of Western thought, the sacred space of the active imagination, a space of extraordinary fantasy that is different from the space of ordinary fantasy and imagination.

The journey of the eye which does not involve movement of the body provides perhaps one of the most important aesthetic experiences in architecture. A zone may be occupied, used in fact, if it is visually available (Marttienssen, 1976: 16). The child projects imagination on to images when engaging with it, hence taking ownership of it. Both these notions metaphysically *plasticise* the rational into something the mind plays with before the body can engage physically.

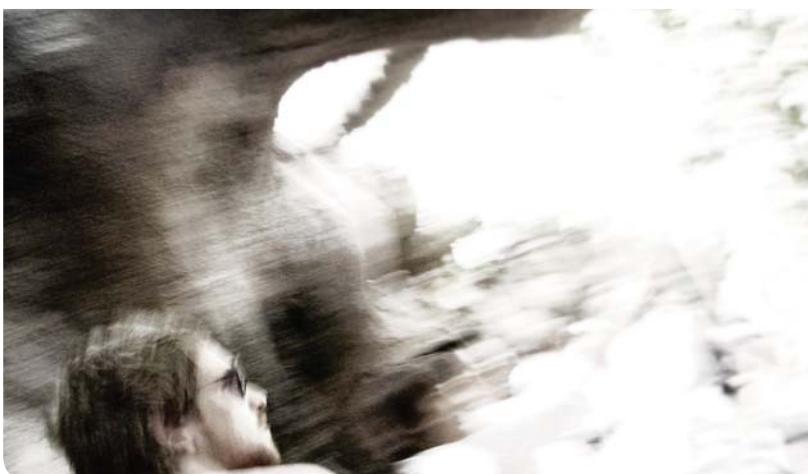
3.3.2 SKETCH

Man’s first recorded attempts to define reality were not words but drawings (Egenter, 1992: 105). Designers similarly come to understand their problems through sketches. This process might be called analysis through synthesis. *In a professional culture of parallel motions, set squares, tracing paper, and ultimately, computers, a culture trapped within the ideological strictures... of capitalism, the separation between spatial practices and representations of space has become complete* (Leach, 2000: 10).

Freehand illustrators question the predominantly square environment; computers have become the digital age version of paper and pen, just as fluid in nature. Computers can no longer be blamed for this rectilinear phenomenon. Hundertwasser wanted mould - subjected to its organic law of expansion - to ferment and explode the straight line in structures (Restany, 1998).

Sometimes the hand does something that the eye then re-interprets and you get an idea from it (Lawson, 1994: 98). Sketches should be adapted, illustrated in detail (beyond popular diagrammatic drawings); detail illustrated environments could aid in the formation of analogy. By completing drawings and making them beautiful, awareness is created of the real elements that will account for such beauty in the completed structure. Architecture should once again place its trust in the intuitive mind and the intuitive hand, as tools of the intuitive spirit (IMG 031).





"Personally I am wary of the modernist contention that ornament functions as literal 'sign' and is therefore restrictive of interpretation. Rather, I think ornament functions as a kind of virtual narrative gateway to alternative spaces implied by the ornament.... Carved wave motifs suggesting actual sea, historical details like columns suggesting both the times and regions of their origins. Or spaces and ideas entirely supplied by the viewer with no relation to the original intent. Most importantly, I feel that the concern over ornamental signification is moot, because meaning is entirely inferred by the reader of space not the author... (more or less Derrida's contention as to text, only here applied to the grammar of ornament). What ornament supplies is not a constraining narrative determined by the author, but a liberating fund of imagery out of which each reader constructs personal narrative. Environments that are rich in ornament are attractive precisely because of this enabling function and environments without ornament are notoriously difficult to attract people to, despite their popularity in critical discourse," (Rohde, 2011).

REALISTIC NATURAL HABITATS

REAL HABITAT REPRODUCED
IN GENERAL APPEARANCE,
LAND FORMATION, PLANT
LIFE, MAXIMUM RESULTS
FOR ANIMAL BEHAVIOUR &
VISITOR EDUCATION

EXTENSIVE RESEARCH
REQUIRED, TIME
CONSUMING, EXPERTISE &
MONEY NEEDED

MODIFIED NATURAL HABITAT

REALISTIC NATURAL
HABITAT NOT POSSIBLE
DUE TO CLIMATE, LAND
FORMATIONS, & EXISTING
VEGETATION

ELEMENTS OF THE REAL
HABITAT USED BUT
SUBSTITUTES VEGETATION
& LAND FORMS TO
INTEGRATE HABITAT INTO
EXISTING SURROUNDINGS

NATURALISTIC HABITATS

LITTLE OR NO ATTEMPTS
MADE TO DUPLICATE
ELEMENTS OF REAL
HABITAT
STYLISTIC & DECORATIVE
USE OF NATURAL
MATERIALS

IMG 030: far left: top: Children's play cave at Maropeng. bottom: Authentic swallow's nest in the representation of a cave: Children's play cave at Maropeng

IMG 031: far left: The blurred world of seduction: Author experiencing the enchanted virtual narration at Disney's Animal Kingdom

IMG 032: left: Replication of animal habitats

IMG 033: opposite: top left: View of the river in Disney's Animal Kingdom. centre left: The Tree of Life² serving as the central icon of Disney's Animal Kingdom: note the forced perspective. bottom left: Visitors exiting Disney's Animal Kingdom with the iconic 'Tree of Life' beacon structure in the background. top right: The immersion of the Gorilla exhibit at Disney's Animal Kingdom. centre right: Capturing the essence of the real places that is depicted in Disney's Animal Kingdom. bottom right: Entering Asia: the attention to detail in Disney's Animal Kingdom



The experience of viewing the Tree of Life can be likened to that of looking for animals in the clouds (The Imagineers, 2007).



ZOO

Internationally visits to ZOO ranks among the most popular of leisure pursuits (IMG 033). People find wild animals fascinating and have the need to be in contact with the wild. Unknown worlds and diverse forms of life are revealed. The exhibiting of wild life is an age old act of man through which humans place themselves in relation to the world.

ZOO is a symbol of the evolution of the intent of humans towards nature taking into account exploitation, control, curiosity, domination and examination. This takes place in a landscape of enclosure, in cages or artificially copied habitats, representations to provide escapism. ZOO is where Animal and Man meets; it is a space that is constantly renewed, projecting the attitude and view of the society, a space where Animal and Man can be observed.

Does ZOO have a spirit? Or should it perhaps be viewed as the graveyard of various decontextualised *genius loci* or spirits of place? ZOO is a

The ZOO situation challenges the 'truth' behind man's perceptions of reality, between science and narrative, the real and the spectacle. ZOO is the habitual situation of Anima and Technic. Artificiality, that constitutes reality.

of ZOO can be linked to colonization and ethnocentrism. An evolution started from the 16th and 17th Centuries when the exploration of Asia and the Americas became a curiosity. Animals were brought to Europe in great numbers. Development of a single enclosed place of exhibition came about in this time (Baratay & Hardouin-Fugier, 1998).

Walking through ZOO, much can be perceived about the society that developed it, and the way they enclose themselves and the animals they surround.

microcosm of the world; a habitual gathering, the collection of man and animal from a global spectrum (IMG 036); the mythical tempus of Paradise, of primordial plenitude (Eliade, 1974: 73).

The situation of ZOO dates back to antiquity when animals were kept for hunting and food on the grounds of the wealthy. The act of ZOO was turned into a spectacle. The development of ZOO can be linked to colonization and ethnocentrism. An evolution started from the 16th and 17th Centuries when the exploration of Asia and the Americas became a curiosity. Animals were brought to Europe in great numbers. Development of a single enclosed place of exhibition came about in this time (Baratay & Hardouin-Fugier, 1998).

HYPOTHESIS

Place has returned to the vastness of space (an evolving ‘programmed’ electrosphere and digital landscape). The weaving of the virtual into the real has created a situation similar to the design process that architecture has known from the beginning of time. This is however not the problem; the problem is the intervening of political and economical agendas. A building should primarily be a stage from which its potential function is outlined, irrespective of stylistic trends. Architecture should function as a filter between past and future; buildings should be degradable. Architecture must take on new meaning beyond the provision of matter and physical needs to embrace the ultimate in human expression - that of the spiritual potential of life, embracing the ancient human process of ‘making’, of giving birth to order and meaning, to spaces that all living species inhabit. No structure should ever be complete; it should function in a world – ever changing – as an ever changing organism, bound only in process.

Porter (2004: 124-125) defines *sacred space* as spaces that convey intense meaning, communicated through collective memory to an individual or a group, in whom it evokes an emotional response. Such places further embrace an extended cosmological and physical context, intuitively, balancing feeling with necessity. ‘In the beginning’ objects gave immediate expression to their inner nature, which, uncontaminated, was in unison with the fundamental laws of all creation (Rykwert, 1972: 16). Structure should become a multi-layered lesson in its own right, communicating with its users, rich in texture and symbolism, a microcosm of the traditional environment on all levels and on all scales. Every whole should be a part and every part a whole.

Architecture should fascinate and inspire – like the first dances around fire. Here architecture appears – if only for a moment and from a particular point of view – as the free space in which we can be

(represent ourselves). For conceptual architecture to penetrate the everyday it has to become tangible. It has to become a lived experience.

Play should provide escapism for the child from a boring static environment, and for the animal from his inauthentic habitat – reintroducing ritual and event as programme for human beings and behaviour and ‘freedom’ for animals, thus reintroducing the real nature to virtually induced children and introducing the virtual to animals who stand muted and stationary by the real. No being can ever truly become a spectator.

If architecture were to be renewed, if its true function were again to be understood after years of neglect, a return to the dawn of consciousness could reveal those primary ideas from which a true understanding of architectural forms would spring (Rykwert, 1972: 28). The child is the eternal return to the dawn of man into consciousness that he shares only with himself, only with mankind. Nothing can endure if it is not animated through a sacrifice (Eliade, 1974: 20). Man sacrifices himself to be given a new beginning on creation, permanence and longevity of body and object steel the renewal of paradise and the natural seductive play that comes with its renewal.

Architecture should appear to be natural – in a sense unfinished (growing and changing), more like a fragment or ruin than a complete creation (building). This unfinished nature is intentional, and expresses the possibility of completion (infinitely impossible) or engagement. The power of nature creates no final product; neither should the power of architecture do so. Aristotle declares that the poet must be a ‘maker’ not of verses but of stories [*mythos*], since he is a poet in virtue of his ‘representation’ [*mimesis*], and what he represents [*imitates*] is action [*praxis*] (Vesely, 2004: 368). A primitive hut situated permanently perhaps beyond the reach of the historian or archaeologist, in some

place must be called Paradise. And Paradise is a promise as well as a collective intuitive memory.

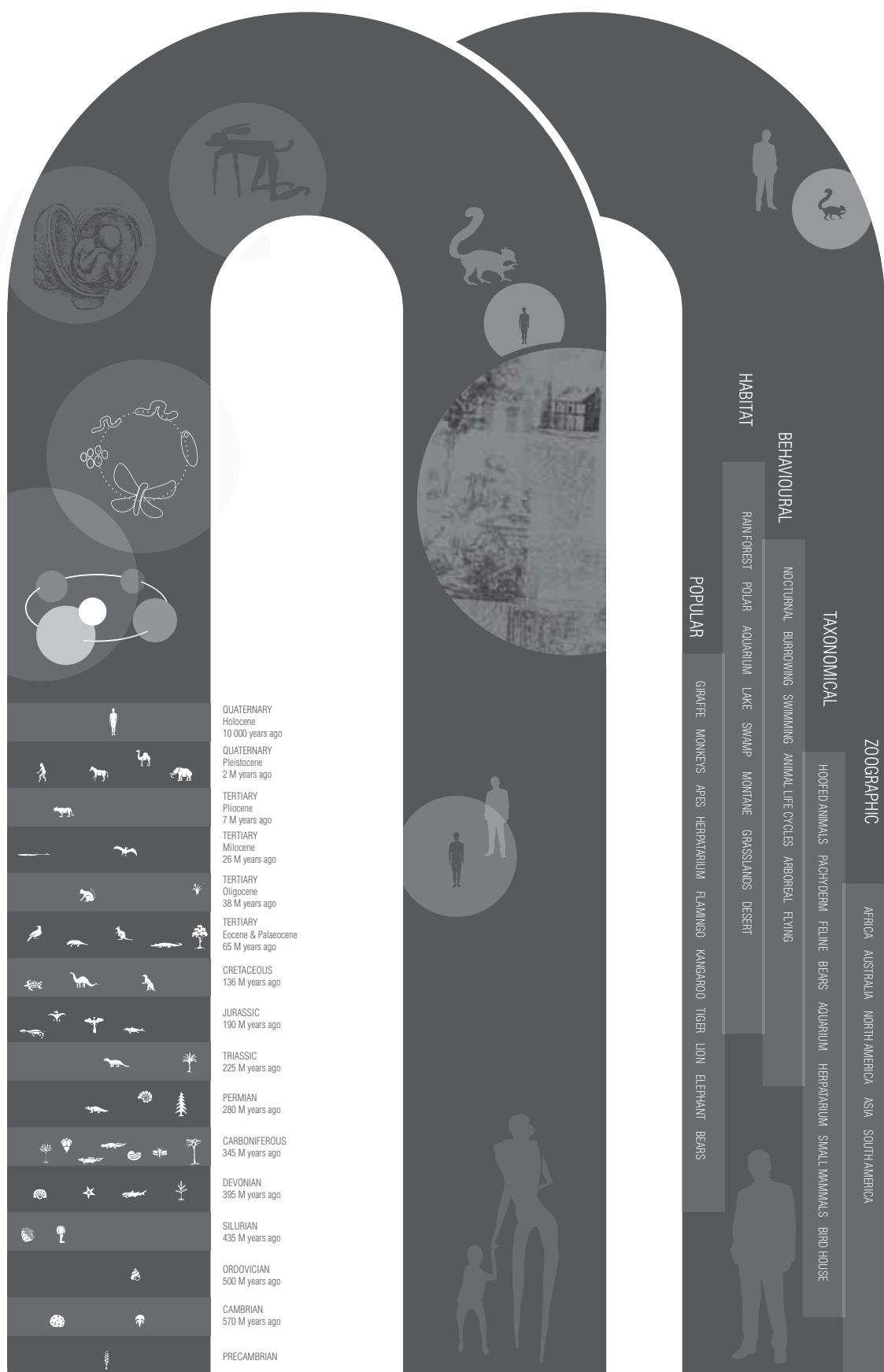
The escapism of paradise is bathed in natural light infiltrating structure, animating, breathing life into objects in moving shadow and colour, and awakening the movement and sound within animals; it provides a medium by which we can better see the link between the visual and vast spatial acoustic articulation of ZOO. Architecture must be a knot at the centre of the world around which we gather to tell the stories that weave our society together. ZOO becomes an integral instrument in communicating the real and virtual in our world.

NZG should take advantage of being various centres, and various levels of enclosure throughout these transparent layered centrums; flow and attraction of animal, man and nature, and all scientific knowledge on them – invisible or transparent; weaving as pathways, journeys, and information waves. Weaving into a thickening of the invisible world; the building as ornamentation of the tangible and intangible, poetically mimicking this flow in order to grasp the surrounding, the whole; layering multiple concepts and metaphors to construct the tangible as global sediment onto the flow.

The act of demarcation lies at the core of what we do as human beings. The architecture should become a multiple-metaphor of the environment in and around NZG. To humanize nature, is to breathe spirit into matter (Harries, 1998: 358). To be human, this spirit should be breathed in. Animatechnic is the playful escapism of making, the ‘imaginative, spiritual creative ability’, the mediation between the unconscious and conscious mind.

IMG 034: opposite: A hypothetical summary of enclosure

IMG 035: following page: Timeline of the evolution of ZOOs from the Stone Age to Modern times, containing international and national entries³



STONE AGE	2900 - 2200 BC	First Zoos by Egyptians and Chinese
	1501 - 1447 BC	Plants Animal birds in temple garden in Syria
	1100 BC	Chinese Keiser Win Wang Zoo of 1500 Ackers
	900 BC	Semiramis of Syria keeps animals
ANTIQUE AGE	669 - 626 BC	Assurbanipal of Syria
	605 - 562 BC	Babylonian king Nebukadneser
MIDDLE AGES	2000 - 300 BC	Collections of animals in all major Greek cities of the time
	323 - 247 BC	Alexander the Great – Alexandria
	116 - 27 BC	Private Roman Zoo Monte Casino Italy
RENAISSANCE	742 - 814	Zoos established by Karel the great; Aken (Germany); Nijmegen (Netherlands); Ingleheim (Germany)
	1100 - 1135	England - Henry 1st small Zoo established Woodstock
MODERN TIME	1519	Zoo in Mexico discovered by Spanish Conquerors
	1530 - 1550	Zoos in Chantilly (France); Carlsburg (Romania); Cairo (Egypt); Constantinople (Turkey);Saint Germaine Belgium
	1552	Eberrsorf
	1558	Prague
	1613	Zoo built up at the Louvre
	1765	Schonbrunn Austria
	1699 - 1706	W.A. Simon van der Stel established a Zoo in the Garden of the D.E.I. Company in Cape Town
	1809	Menagerie At Green Point
	1826	London Zoo established
	1828 - 1865	Zoos est. in Dublin (Ireland); Antwerpen (Belgium); Bristol (England); Berlin (Germany); Frankfurt (Germany); Rotterdam (Netherland)
	1860	<i>Section of Daspoort farm bought for the est. of the Zoo</i>
	1870	Zoos established in New York; Buffalo and Chicago
	1891	Cecil J. Rodes established Groot Schuur Zoo Cape Town
	1895	ZAR bought ground from JF Cellier's estate for est. of a Zoo
	1899	21 Oct official date opening of NZG – Pretoria
	1901	Museum and Zoo placed under civil ruling with a new set of rules.
	1902	Request for extension of the Zoo granted
	1903	Name change to Transvaal Museum and Zoological Gardens
	1904	Johannesburg Zoo established
	1906	<i>Land for extension of the Zoo granted</i>
	1907	<i>Arrival of Indian Elephant, Mary, donated by Sammy Marks</i>
	1907	Hippo bull donated
	1910	Elephant and Rhino enclosures built.
	1911	Sammy Marks fountain moved to the Zoo
	1912	Duck ponds and breeding camps were put in use
	1913	First Part time vet appointed
	1913	Dora, African Elephant arrived
	1913	Museum and Zoo are separated
	1915	Bloemfontein Zoo established
	1921	<i>Sale of Giraffe to London Zoo</i>
	1926	Kruger National Park
	1928	Orchestra podium built for monthly Sunday afternoon concerts
	1932	Abattoir was built
	1933	Dassie Hill was built
	1933	Zoo incorporated as an Institution that is Government supported
	1938	Five Lions and five tigers let into the newly built cages
	1940	Dr T. G. Nel appointed as the first lecturing guide
	1942	New Main entrance built
	1946	Grietjie, the Hippo arrives
	1946	Rhino Calf brought from Hluhluwe park
	1959	309 Zoos established worldwide
	1972	Second lecturing guide appointed
	1974	Aquarium and Reptile Park Opened
	1975	Parrot cages built
	1980	Main Entrance revamped
	1982	Farm yard was established
	1982	Frank Brand building completed
	1978	883 Zoos established worldwide



THE PASSION FOR COLLECTING (1500s – 1700s)



ANCIENT TROPHIES



POPULAR PLEASURES



THE ARISTOCRACY'S NEW-FOUND CURIOSITY



BAROQUE SCENOGRAPHY



THE NEED FOR CONTROL (1800s)



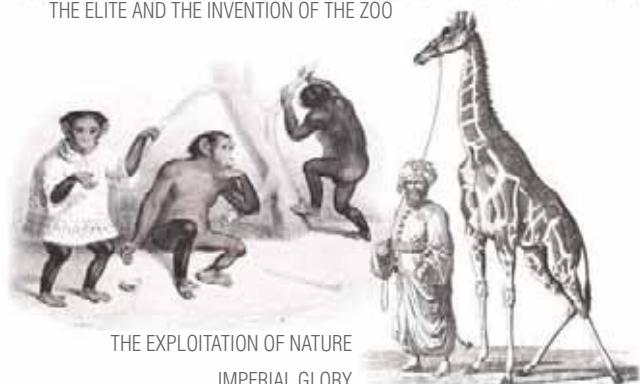
THE YEARNING FOR NATURE (1900s)



THE ELITE AND THE INVENTION OF THE ZOO



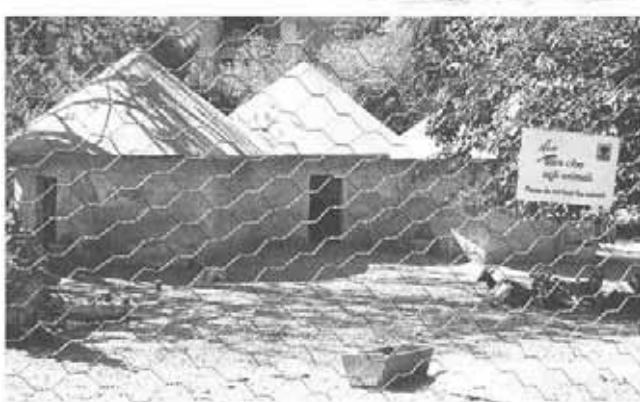
A PUBLIC QUEST



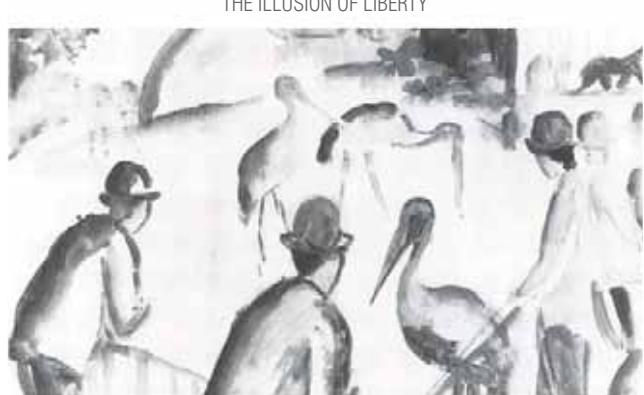
THE EXPLOITATION OF NATURE
IMPERIAL GLORY



THE ILLUSION OF LIBERTY



THE THRILL OF THE WILD



THE IMITATION OF NATURE



THE WORLD

AFRICA

SOUTH AFRICA

GAUTENG

TSHWANE

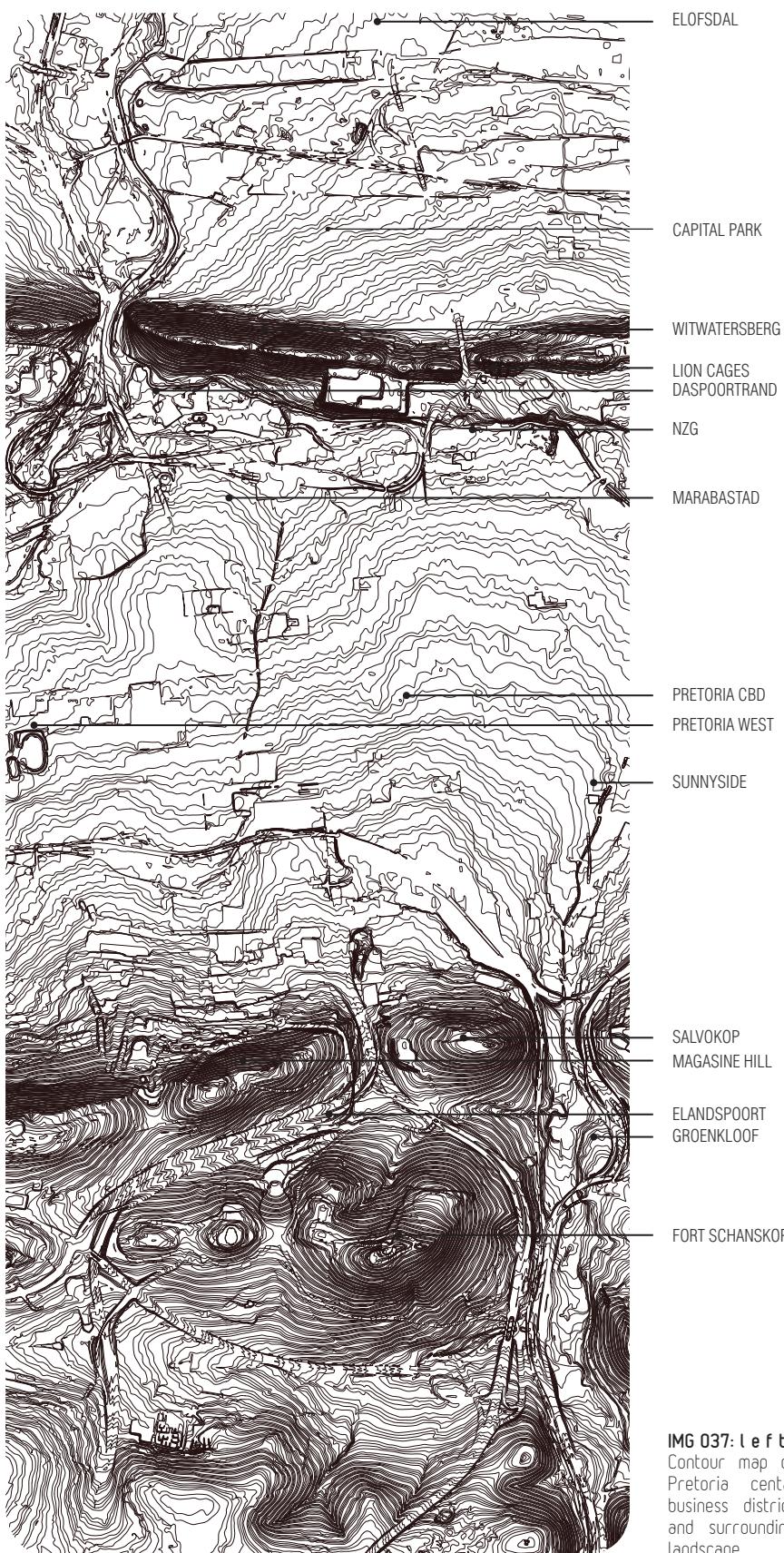
001	KOALA	077	OKAPI
002	QUEENSLAND KOALA	078	PERE DAVID'S DEER
003	PARMA/WHITE-FRONTED WALLABY	079	SPOTTED DEER
004	RED KANGAROO	080	HOG DEER
005	ROCK HYrax	081	MANCHURIAN Sika DEER
006	SOUTH AFRICAN BUSH ELEPHANT	082	NORTHERN BARASINGHA
007	LINNE'S TWO-TOED SLOTH	083	FALLOW DEER
008	GIANT ANTEATER	084	NILGAI
009	SOUTH AFRICAN HEDGEHOG	085	CAPE BUFFALO
010	RING-TAILED LEMUR	086	DWARF FOREST BUFFALO
011	BLACK LEMUR	087	DOMESTIC CATTLE, BREED UNSPECIFIED
012	MONGOOSE LEMUR	088	DOMESTIC CATTLE, NGUNI
013	SOUTHERN LESSER GALAGO	089	GAUR
014	BLACK-AND-WHITE RUFFED LEMUR	090	BUSHBUCK
015	BLACK-EARED MARMOSET	091	NYALA
016	GOLDEN LION TAMARIN	092	EASTERN BONGO
017	COMMON SQUIRREL MONKEY	093	LESSER KUDU
018	LION-TAILED MACAQUE	094	GREATER KUDU
019	HAMADRYAS BABOON	095	SOUTHERN GREATER KUDU
020	CHACMA BABOON	096	COMMON ELAND
021	RED-CAPPED MANGABEY	097	CAPE ELAND
022	SOUTH AFRICAN VERTET	098	BLUE DUiker
023	MOZAMBIQUE SAMANGO MONKEY	099	GREY/COMMON DUiker
024	LESSER SPOT-NOSSED MONKEY	100	ROAN ANTELOPE
025	BLACK-AND-WHITE COLOBUS	101	SABLE ANTELOPE
026	PATAS MONKEY	102	SCIMITAR-HORNED ORYX
027	RED-/BUFF-CHEEKED GIBBON	103	GEMSBUK
028	LAR GIBBON	104	ARABIAN ORYX
029	WESTERN GORILLA	105	ADDAX
030	CHIMPANZEE	106	SPRINGBOK
031	EGYPTIAN FRUIT BAT	107	BLACKBUCK
032	CAPE SEROTINE BAT	108	MHORR GAZELLE
033	EGYPTIAN FREE-TAILED BAT	109	ADDRA GAZELLE
034	LION	110	STEENBOK
035	LEOPARD	111	KLIPSPRINGER
036	TIGER	112	SICHUAN TAKIN
037	CHEETAH	113	TRANSCASPIAN/ARKAL Urial SHEEP
038	CARACAL	114	DOMESTIC GOAT, KALAHARI RED
039	Serval	115	DOMESTIC GOAT, CAMEROON DWARF GOAT
040	SMALL-SPOTTED GENET	116	NUBIAN IBEX
041	STRIPED HYENA	117	CHINESE GORAL
042	SPOTTED HYENA	118	COMMON WATERBUCK
043	WHITE-TAILED MONGOOSE	119	SOUTHERN LECHWE
044	MARSH MONGOOSE	120	REEDBUCK
045	SLENDER MONGOOSE	121	AFRICAN IMPALA
046	YELLOW MONGOOSE	122	SOUTH AFRICAN IMPALA
047	BANDED MONGOOSE	123	BLACK-FACED IMPALA
048	SLENDER-TAILED MEERKAT	124	GREY RHEBOK
049	AFRICAN WILD DOG	125	TSSESEBE
050	BAT-EARED FOX	126	BLESBOK
051	BLACK-BACKED JACKAL	127	RED HARTEBEEST
052	MANED WOLF	128	BLACK WILDEBEEST
053	KODIAK BEAR	129	BLUE WILDEBEEST
054	RED PANDA	130	DOMESTIC RABBIT
055	STRIPED POLECAT	131	SCRUB HARE
056	SOUTH AMERICAN FUR SEAL	132	CAPE GROUND SQUIRREL
057	SOUTH AFRICAN FUR SEAL	133	TREE SQUIRREL
058	DONKEY	134	AFRICAN CRESTED PORCUPINE
059	SPANISH DONKEY	135	GUINEA PIG
060	DOMESTIC HORSE		
061	PRZEVALSKI'S WILD HORSE		
062	COMMON ZEBRA		
063	MALAYAN TAPIR		
064	SOUTHERN WHITE RHINOCEROS		
065	SOUTHERN BLACK RHINOCEROS		
066	BACTRIAN CAMEL		
067	SULAWESI BABIRUSA		
068	WARTHOG		
069	RED RIVER HOG		
070	SOUTHERN BUSH PIG		
071	DOMESTIC PIG, BREED UNSPECIFIED		
072	DOMESTIC PIG, SOUTH AFRICAN LANDRACE PIG		
073	DOMESTIC PIG, VIETNAMESE POT-BELLIED PIG		
074	PYGMY HIPPOPOTAMUS		
075	HIPPOPOTAMUS		
076	GIRAFFE		



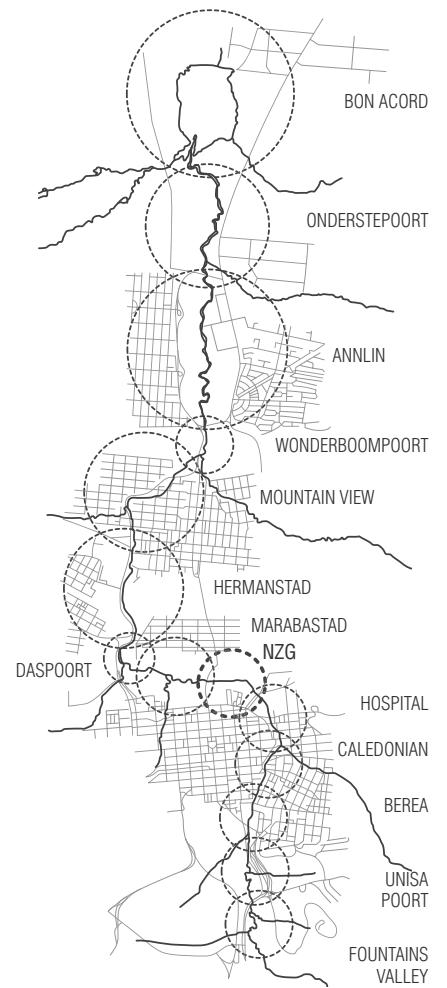
4. NZG/SITE



IMG 036: Listed 'forced migration' of mammalia in NZG: Animals from their original habitats to ZOO⁴



IMG 037: left:
Contour map of
Pretoria central
business district
and surrounding
landscape





IMG 038: Views to the north and to the south (towards the city) from cable car building on the highest ridge of NZG



IMG 039: opposite:
Apies River precincts around NZG in Pretoria

IMG 040: Metropolitan circulation routes around NZG



IMG 041: Locality plan of areas surrounding NZG within an 8km radius of the site

IMG 042: opposite: Factors to consider when working with a zoo master plan (Adapted from Fiby & Worstell, 2003)

4. NZG/SITE

4.1 DEVELOPMENT OF NZG

ESTABLISHING A DOMINANT ORGANIZATIONAL THEME & PRIORITYZING SPECIES (SEE COLLECTION PLAN BY MIKE JORDAN)

SITE ANALYSIS OF EXISTING NATURAL & BUILT CONDITIONS

SHAPING CIRCULATION PATTERNS

VISUALISING CURRENT AUDIENCE & VISITOR NEEDS

DETERMINING FACILITIES FOR VISITORS & ANIMALS & STAFF TO BE INCLUDED IN DEVELOPMENT

4.1.1 BACKGROUND

The development goals of zoos should be guided with knowledge and understanding of the contradictions between philosophies and the realities of animals, people, nature and technology within the dictates of the current social context and time to provide facilities that will enhance the functioning of the zoo. The development of zoos universally includes the following goals: Recreation, Education, Conservation and Research (Dry, Mokoena & Partners, 1991).

NZG is a vital science advancement platform in South Africa being the largest zoo in the country (85-hectare) and the only one with national status (NZG, 2011). NZG is currently affiliated with the South Africa's National Research Foundation (NRF); as such, its mandate is not only to conduct and facilitate research, but also to advance awareness and knowledge of the natural sciences (Oberprieler: 2011).

Recreation is arguably the most important goal as it is the reason why most people attend a zoo. However, through an integrated designed experience visitors can be educated via interpretive messages. Education in turn could inform visitors and inspire change in their actions and views on conservation and the research contributing to the improvement thereof. The discussions held during the PAZAAB conference 2011 presented various opportunities and challenges surrounding current issues in the zoo community in their attempt to provide holistic conservation education. Conservation Education is an important component of environmental education aimed at increasing public awareness of conservation issues

and changing the attitudes and behaviour of the public to promote environmental conservation (De Jager, 2011). This is echoed in NZG's mission: *Inspired conservation of wildlife through knowledge, understanding and connection.*

Craig Allenby (2011) believes that the experience management of animal enclosures within zoos has evolved greatly as a result of research and the contemporary trends of immersive design. The interest in improving the quality of life of captive animals has lead to the development of environmental and behavioural enrichment, which offers stimulation and enhances animal health. Enrichment provides captive animals with opportunities to express species-specific behaviour and allows them to make choices. *Immersion design* means simply immersing visitors in the theme of the story. Whether it's placing visitors in a re-creation of an Asian rainforest, or a South African safari lodge, people, animals, plants and built forms all share the unique, memorable setting, free from distracting or discordant elements. According to Allenby the visitor's experience has not received the same attention as the work done on animals and if the vision of NZG - *Nature and Humanity in Balance* - was realised the realities and authenticity of both the animal and human visitors would progress.

4.1.2 NZG MASTER PLAN

The only master plan of NZG to date was commissioned by the Department of Public Works and Land Affairs on 24 August 1989. This 'Master Plan for the National Zoological Gardens of South Africa'; Volume 1 and Volume 2 were completed by the firm of Dry and Joubert Architects in 1991.

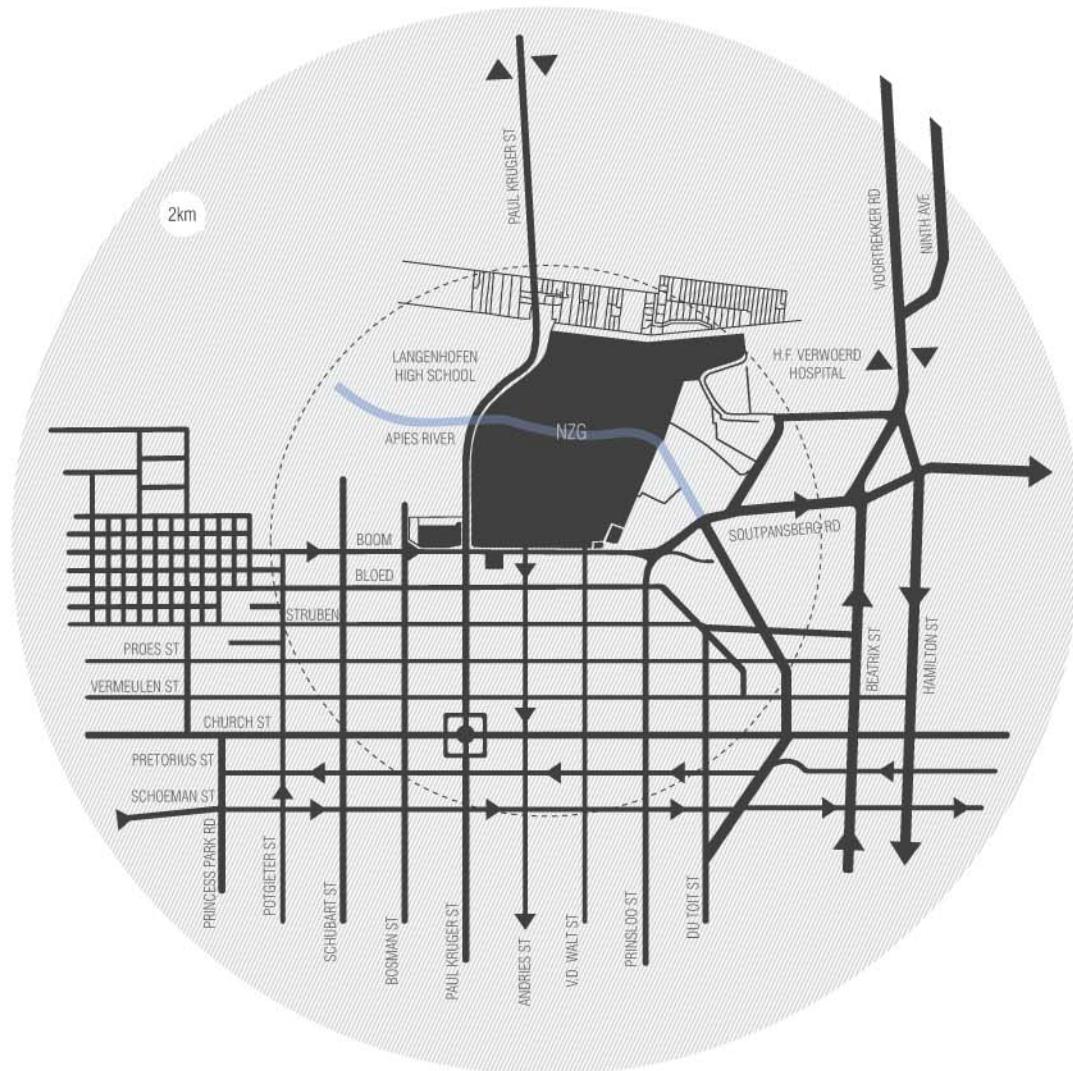
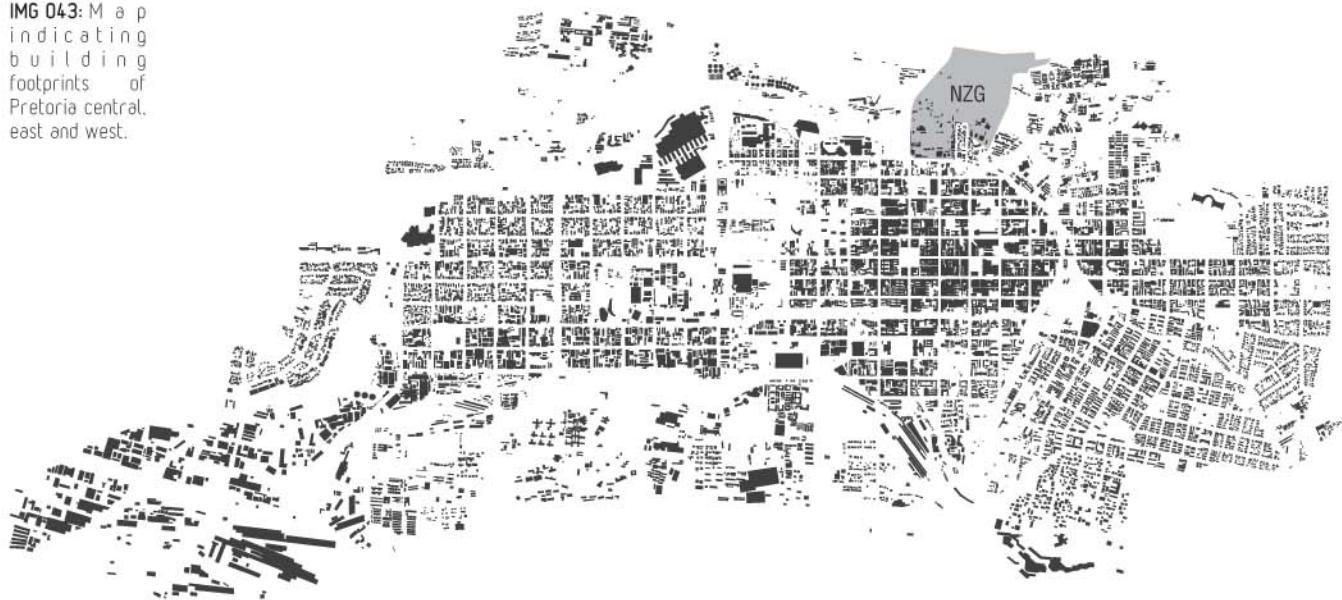
In June 1996 the firm Dry Mokoena & Partners was instructed by the Department of Public Works to expand the original document. The assignment related to specific problems and areas that have changed or developed since the original document was produced.

Historically the expansion of NZG's animal collection was managed on an *ad hoc* basis (Craig Allenby, 2011). This unsuitable growth is bound to change under the new 'Animal Collection Plan' being prepared by Mike Jordan (2011) as senior advisor on the collection. This will dictate an increase in local and African species (to 70%) and a decrease of the exotic species (to 30%). The plan will facilitate a shift to a more focussed research and conservation based ideal.

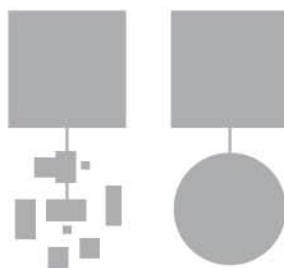
4.1.3 CLIENTS

Good clients create good buildings (Edwards, 2005: 67-96). SAASTA is a business unit of the National Research Foundation (NRF)⁵ with the mandate to advance public awareness, appreciation and engagement of science, engineering and technology in South Africa. SAASTA derives its core funding via the NRF from the Department of Science and Technology (DST). SAASTA's contribution to the NRF's vision is to grow the pool of quality learners through three key strategic areas that are interdependent, each enhancing the effectiveness of the other (SAASTA, 2011). Further the NRF itself is a science council and as such is a non-profit entity; therefore the project will most likely be a joint venture between the NRF and private investors.

IMG 043: Map indicating building footprints of Pretoria central, east and west.



IMG 044: Access routes and the position of the NZG site within the city of Pretoria

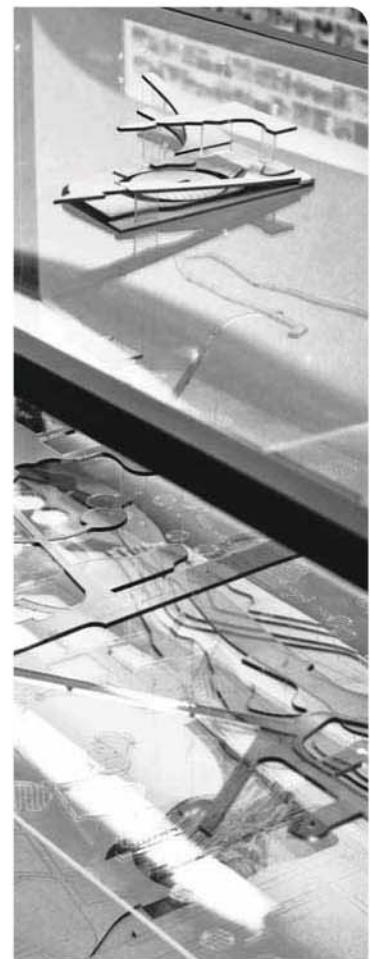


Ultimately, the look and feel of ZOO exhibits is symbolic of the linkages we try to make between our increasingly urban world and the receding domain of nature (Bierlein, 2003).



IMG 045: above: View of the city from the carnivore enclosures at the foot of the ridge showing the juxtaposition of the city against the NZG gardens

IMG 046: left: Isometric view of the Jardin des Plantes, Paris. 1842. as emphasis, showing or indicating the juxtaposition of the formal against the informal type gardens



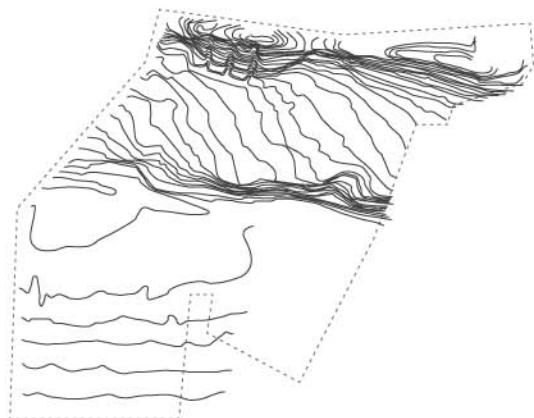
IMG 047: left: Exploded view of NZG indicating the topography along with the pathways and the existing buildings

IMG 048: above: Drawings of the physical site model that illustrates the layering of the grounds along the Apies River

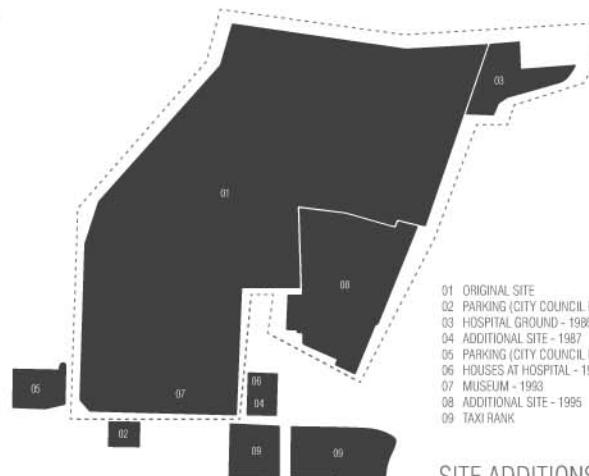


IMG 049: Perspective of NZG's entire site

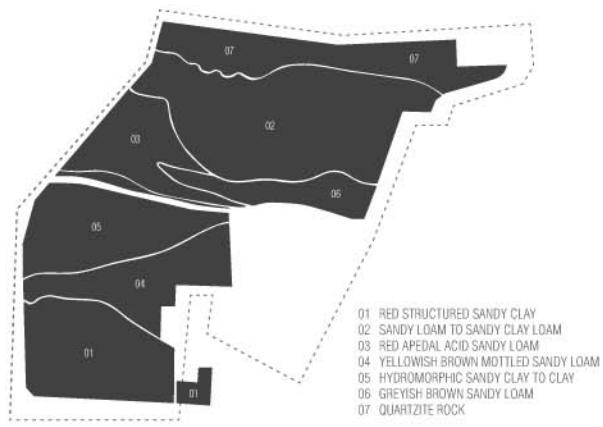
IMG 050: following page Summaries of various conditions within NZG, adapted from existing Masterplanning



CONTOUR PLAN



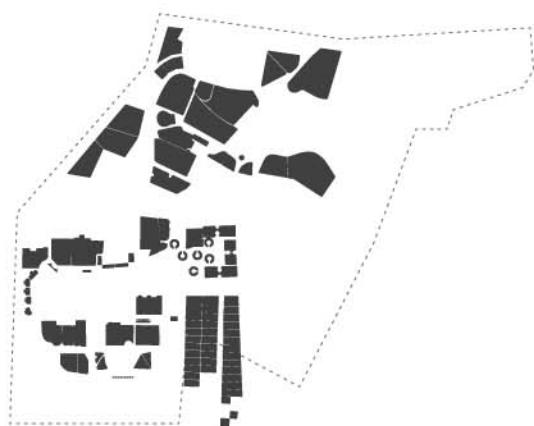
SITE ADDITIONS



DETAIL SOIL SURVEY



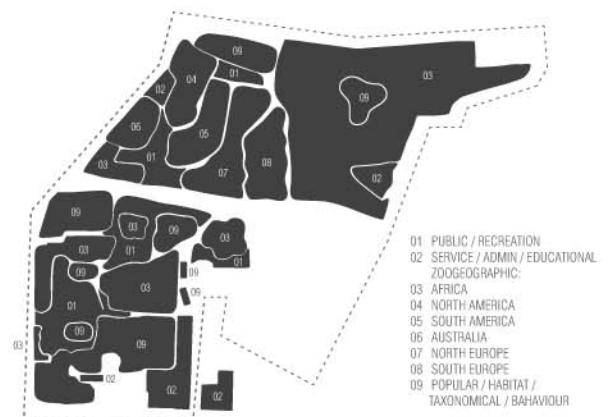
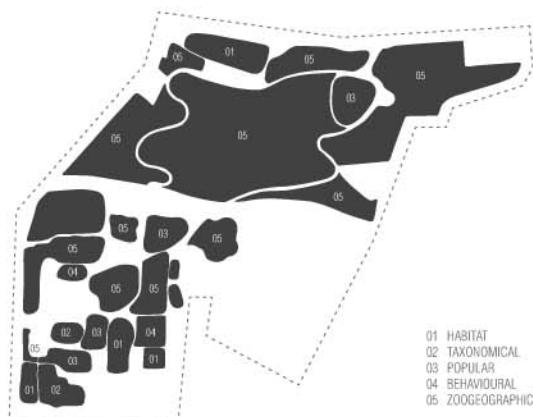
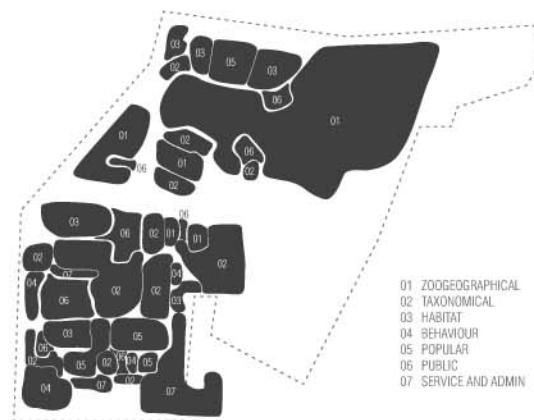
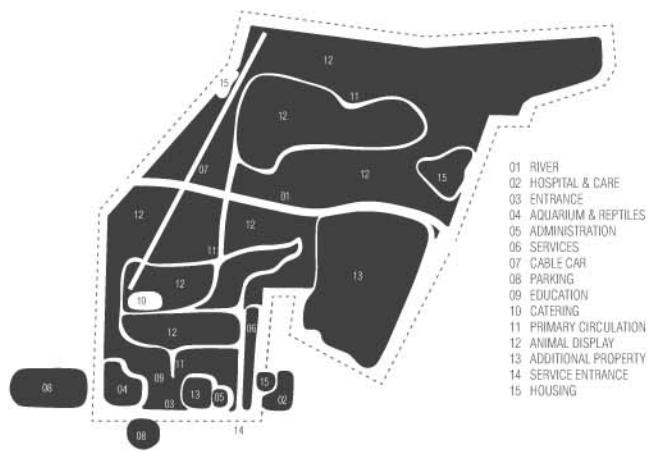
EXISTING ACCOMMODATION



ACCOMMODATION TO BE DEMOLISHED

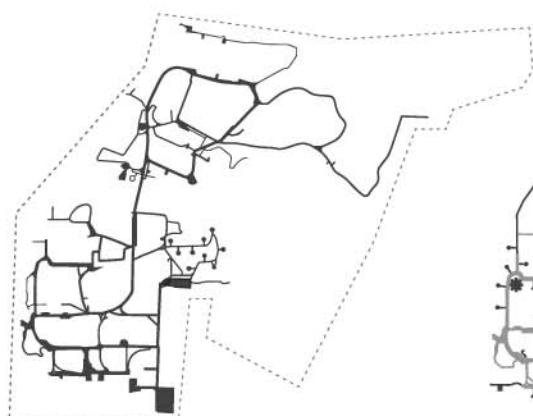


ACCOMMODATION TO REMAIN

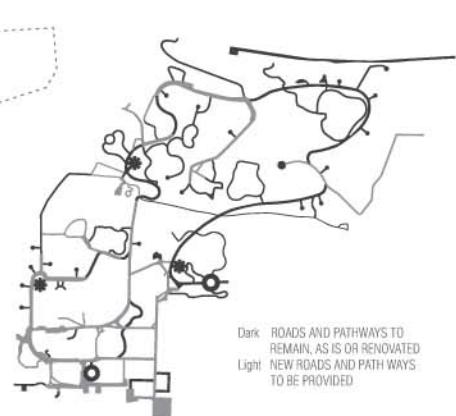


PROPOSED ZONING

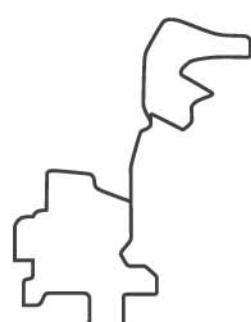
PROPOSED DETAIL ZONING



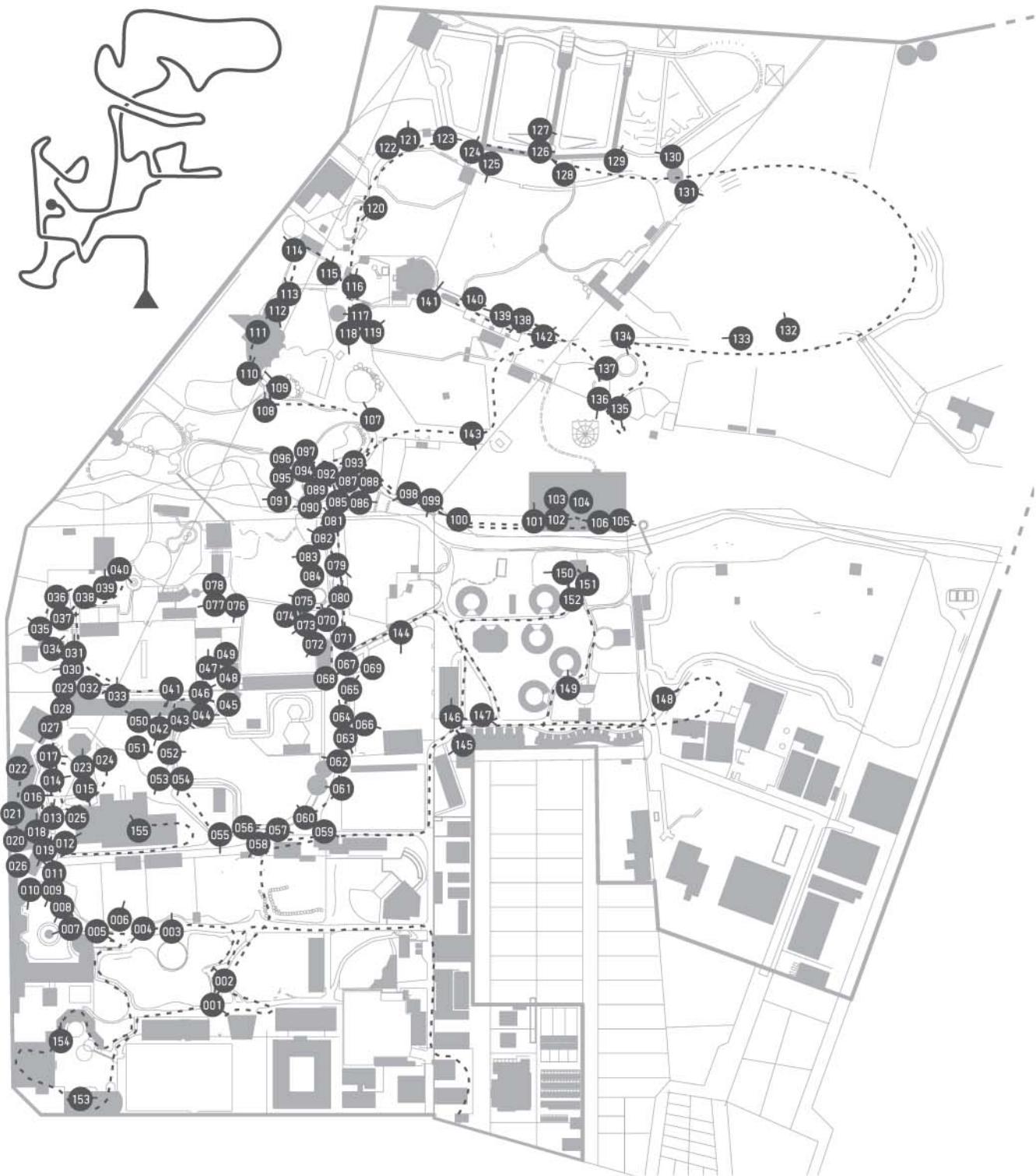
CIRCULATION EXISTING



PROPOSED CIRCULATION



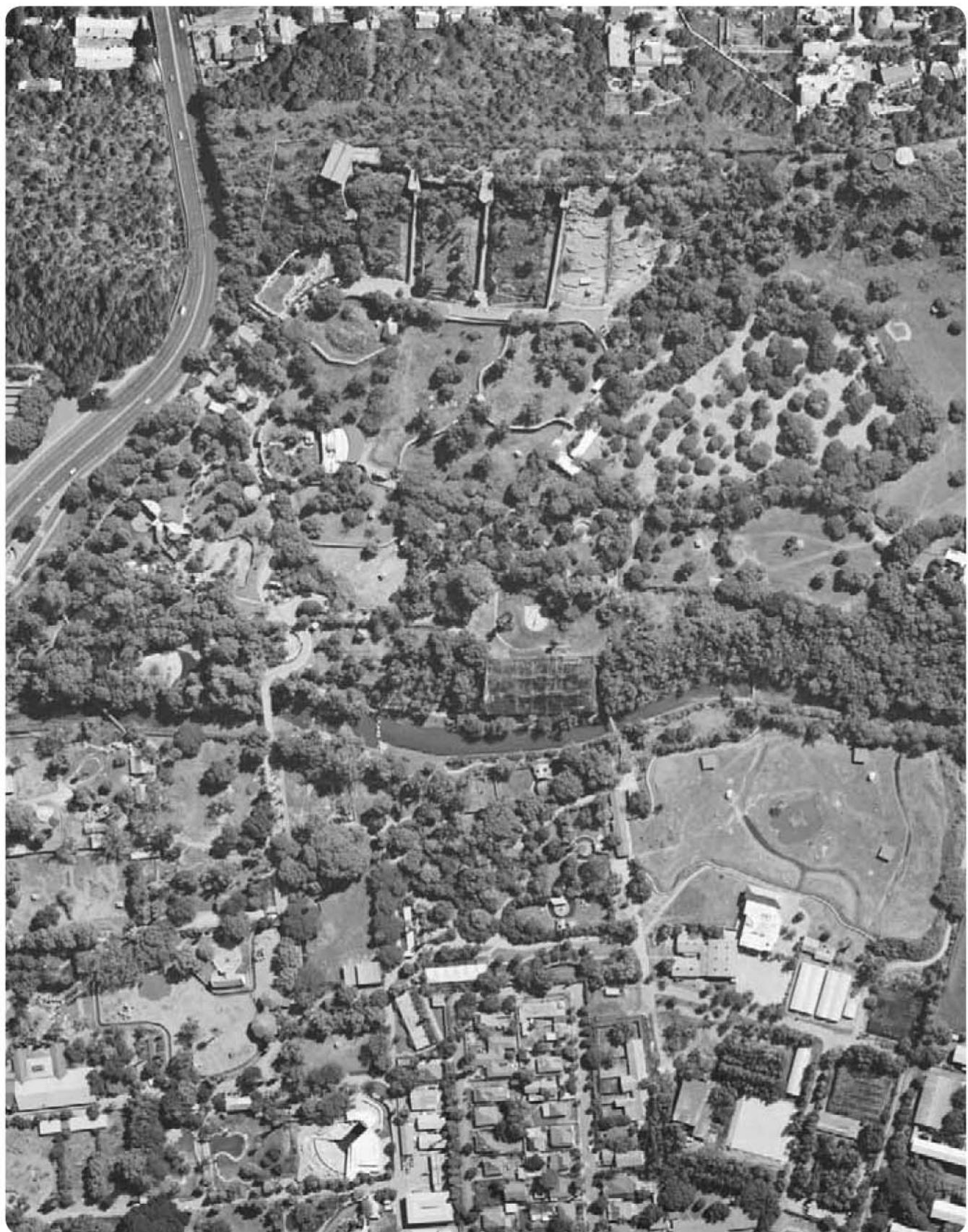
ZOOLOOP



IMG 051: Site plan of NZG mapping author's journey on 26 April 2011

IMG 052: opposite: Aerial photograph of NZG

IMG 053: following page: Photographic journal of author's journey in NZG – Numbered according to map of journey







001 NZG MAIN ENTRANCE 002 RUBBER TREE VISIBLE ON ENTRANCE 003 MHORR GAZELLE EXHIBIT 004 HISTORICAL STEPS 005 HISTORICAL STEPS 006 ARABIAN ORYX EXHIBIT 007 HISTORICAL SAMMY MARKS FOUNTAIN 008 SAMMY MARKS FOUNTAIN & HISTORICAL INFORMATION SIGNAGE 009 BIRD EXHIBITS 010 BIRD EXHIBITS 011 APPROACH TO CABLE CAR BUILDING 012 TEMPORARY PRESENTATION 013 CABLE CAR LINES CROSS PATHWAY 014 CABLE CAR LINE STRUCTURES 015 RESTAURANT DROP OFF 016 RESTAURANT 017 OPEN SPACE IN FRONT OF RESTAURANT 018 PATHWAY FROM CABLE CAR BUILDING 019 CABLE EXITING 020 MEDIUM SIZED PRIMATE EXHIBITS 021 MEDIUM SIZED PRIMATE EXHIBITS FEATURING PLASTERED ART ROCK 022 ENCLOSURE CUTS THROUGH TREE'S CANOPY 023 LION RIDE ON GAMING PLATFORM 024 COVERED GAMING PLATFORM 025 JUNGLE TRAIN AND TICKET OFFICE 026 CABLE CAR BUILDING WITH BRUTALIST BUILDING IN BACKGROUND 027 MEDIUM SIZED PRIMATE ENCLOSURES 028 PLANTED BARRIER WITH RAILINGS TO SIDES 029 PLANTED BARRIER WITH RAILINGS TO SIDES 030 BLACKBUCK, HOGDEER & NILGAI EXHIBIT WITH UNEARTHED ROOTS OF WITSTINKHOUT TREE 031 PATHWAY TOWARDS FARM YARD 032 BIRD CAGES 033 AFRICAN BUFFALO EXHIBIT 034 GUMPOLE FARM YARD ENTRANCE 035 NGUNI CATTLE KRAAL WITH NZG BOUNDARY WALL IN BACKGROUND 036 SEATING 037 WAGONS & VIEW OF FARM YARD 038 FARM YARD ENTRANCE & DOMESTIC PIG ENCLOSURES 039 STABLES 040 BON FIRE CIRCLE 041 STEEL DECORATION DETAILS ON BIRD CAGE 042 RESTAURANT 043 ELEPHANT ENCLOSURE 044 PAVED WALKWAY 045 FRIENDS OF THE ZOO BUILDING 046 LAR-GIBBON ENCLOSURE 047 MALAYAN TAPIR ENCLOSURE 048 LAR-GIBBON ENCLOSURE 049 COVERED WALKWAY 050 KEEPER'S ENTRANCE TO BIRD CAGES 051 FENCE 052 ELEPHANT ENCLOSURE 053 RESTAURANT 054 RESTAURANT 055 FLAMINGO ENCLOSURE 056 DRY MOAT BARRIER & FENCING AT ELEPHANT ENCLOSURE 057 HISTORICAL BEAR HOUSE 'ZOOVENIR' SHOP 058 HISTORICAL LION CAGE 059 HISTORICAL CAGES ENCLOSED BY CONTEMPORARY STRUCTURE 060 ELEPHANT ENCLOSURE 061 ELEPHANT SHOW KITCHEN 062 HISTORICAL ELEPHANT HOUSE 063 WATER MOAT AT GIRAFFE ENCLOSURE 064 CENTRAL PATHWAY TO BRIDGE 065 GIRAFFE EXHIBIT 066 GIRAFFE STABLES 067 LIFTED FOR BETTER VIEW 068 LEMUR ENCLOSURE 069 ISLAND AND SLATE WORK IN GIRAFFE EXHIBIT 070 PICNIC KIOSK 071 PATHWAY TO BRIDGE 072 ELEPHANT CONFERENCE FACILITY BORDERING PICNIC TERRAIN 073 PICNIC TERRAIN 074 PICNIC TERRAIN 075 PICNIC TERRAIN & FARM YARD IN BACKGROUND 076 KEEPER'S ENTRANCE 077 FARM YARD VIEWED FROM PICNIC TERRAIN 078 FARM YARD 079 WHITE RHINO EXHIBIT 080 CHILD VIEWING WHITE RHINO 081 PICNIC TERRAIN ON APIES RIVER 082 PICNIC TERRAIN 083 PICNIC TERRAIN 084 PICNIC TERRAIN 085 BRIDGE OVER APIES RIVER 086 RIVER TO EAST FROM BRIDGE 087 RIVER'S EDGE 088 RIVER'S EDGE 089 RIVER'S EDGE 090 RIVER TO WEST FROM BRIDGE 091 RIVER TO WEST FROM BRIDGE 092 BRIDGE RAILING 093 WATER FEATURES 094 VIEW TO HIPPO POOLS 095 HIPPO POOL 096 HIPPO POOL 097 HIPPO POOL VENUE 098 BRIDGE 099 RIVER TO EAST OF BRIDGE 100 PATHWAY NEXT TO RIVER 101 CHILD CLIMBING ON LANDSCAPED WATER FEATURE IN 'BIRD PARADISE' AVIARY 102 AVIARY WALKWAY 103 EDGE OF WALKWAY 104 RAISED PLATFORMS IN AVIARY 105 SMALLER BRIDGE OVER RIVER 106 AVIARY WALKWAY 107 WATER FEATURE 108 KOALA FACILITIES 109 KOALA DISPLAY ENTRANCE 110 KOALA ENCLOSURE 111 KOALA FACILITY CLINICAL INTERIOR 112 KANGAROO EXHIBIT 113 WALKWAY IN 'AUSTRALIA' 114 NZG BOUDORY VISIBLE 115 WALKWAY 116 GORILLA EXHIBIT 117 HISTORICAL EILEEN ORPEN AVIARY 118 PATHWAY 119 PATHWAY 120 FUR SEAL EXHIBIT 121 BEAR ENCLOSURE 122 BEAR ENCLOSURE GLASS BARRIER 123 CARNIVORE ENCLOSURES 124 HISTORICAL LOOKOUT TOWERS 125 CBD FROM CARNIVORE ENCLOSURES 126 LION ENCLOSURE 127 LION ENCLOSURE WALL 128 VIEWING HUT 129 BARBARY SHEEP EXHIBIT 130 BARBARY SHEEP EXHIBIT 131 EDUCATIONAL SIGNAGE 132 BLACK RHINO EXHIBIT 133 PATHWAY 134 DASSIE HILL 135 SKYLINE BEYOND AVIARY 136 SKYLINE BEYOND AVIARY & SUNDIAL 137 RED RIVER HOG EXHIBIT 138 HOG EXHIBITS 139 WALKWAY TO GORILLA FACILITY 140 LOOKOUT TOWER 141 VIEW OF CARNIVORE HILL 142 OKAPI 143 AFRICAN WILD DOGS 144 GIRAFFE STABLES 145 VISITOR INTERACTION 146 OWL HOUSE 147 PRIMATE ENCLOSURES 148 VENUE ON SAVANNAH 149 CIRCULAR ENCLOSURES 150 SPOTTED HYENA 151 BIRD PARADISE AVIARY 152 SPIRAL PAVING 153 KOMODO DRAGON EXHIBITION FACILITY 154 SNAKE EXHIBIT 155 RESTAURANT INTERIOR

4.2 PATHWAYS

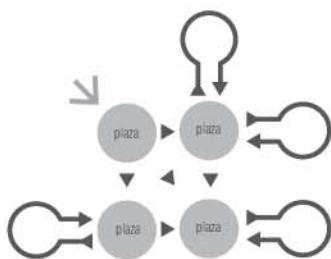
More than 600 000 people visit the grounds annually walking the approximately 6km total length of walkways (NZG, 2011). Small beacons aligned with the pathways intrigues and draw the visitor into directions from a distance; the full-grown wild fig tree (*Ficus Microphylla*) at NZG's main entrance, and the Sammy Marks Fountain serves as good examples.

To have a successful visitor experience it is not enough to work at the level of each individual exhibit, but it is mandatory to organize visitor circulation for the whole of NZG. There are infinite circulation configurations because each zoo has its own development history, mostly over a long period of time, with many small improvements, and without much planning. However, there are some basic schemes that tend to be repeated: those without hierarchy and those with some degree of hierarchy.

Since visitor circulation is a key element that defines the visitor experience, and combats visitor fatigue, it must be planned and designed to maximize the zoo experience and to provide the structure for a coherent story line. This structure guides the visitor through the Zoo and enables the visitor to absorb the Zoo message subliminally and directly.

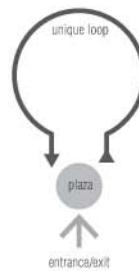
Landscape immersion can further add to circulation coherency by providing a landscape consistent with each theme. A seemingly natural, often disorienting, meander of the circulation system helps in further convincing the visitor of the reality of the unreal. It is also important for the visitor to have periodic contact with the original distribution spaces to allow re orientation. This re contact provides access to visitor services as the need occurs (Collados, Harrison & Yanez, 2005). A main central theme would be ideal to help with orientation and relaxation to work against fatigue due to the lengthy zoo loops.

The section of the Apies River, that divides NZG into its southern and northern parts, is one of the few sections where the river still appears in a natural state as opposed to the common concrete channelling. This natural strip provides an opportunity to expand the 'Zooloop' to the eastern and western parts of NZG. The dense growth and Witstinkhout (*Celtis Africana*) forest on the river banks creates the possibility to raise walkways into the canopy shelter. A diagrammatic proposal will be made that incorporates the concepts of circulation routes and central iconography as beacon to sprawl. The combined central themes further suit the concept of ZOO as *microcosm of the world*.



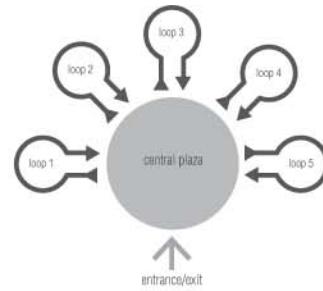
WITHOUT HIERARCHY

The most common configuration of zoos, due to development without planning. This presents multiple circulation options from a multitude of disparate distribution spaces. Visitors are easily disoriented, become lost, and as a result, miss many animal exhibits. It is consequently difficult to develop an appropriate educational story line.



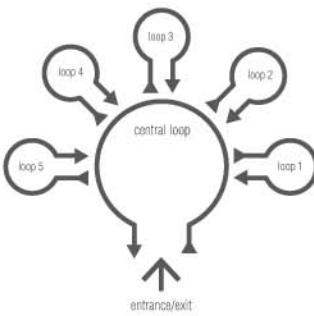
HIERARCHY & UNIQUE LOOP

The simplest example of a circulation pattern that emphasizes hierarchy. A single access point is provided, one distribution space and one loop through a complex of animal exhibits. Works well for small zoos with a single theme. For larger zoos with many parallel themes, a single, unique loop system is not practical since the animal exhibits along the loop become excessively and exhaustively long.



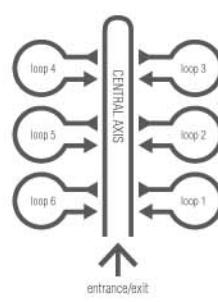
HIERARCHY & MULTIPLE LOOPS

For larger, complex zoos, several exhibit loops can begin and end at a central distribution space. Different themes can be developed for each loop, with the distribution space as the transition from one theme to the other. Visitors can select the zones and plan their own path. Service circulation can be located on the periphery of the zoo, thereby minimizing the conflict of crossings with visitor circulation.



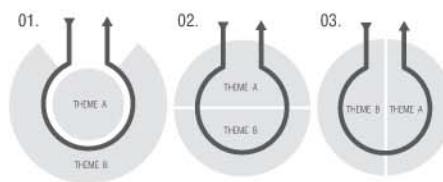
HIERARCHY & CENTRAL MAIN LOOP

A variation of the multiple loop type. A main loop functions as the central distribution space. This is typical for zoos that have an icon in the middle, such as a lake or a heritage structure, or a space that provides a traditional activity.



WITH HIERARCHY, CENTRAL AXIS

A further variation incorporates a central axis which functions as the distribution space. Its primary benefit is that it allows a long, distribution corridor that provides the opportunity for more loops originating from it and ending in it. This allows greater dispersion of visitors into the various exhibit zones.



SUB THEME ZONES

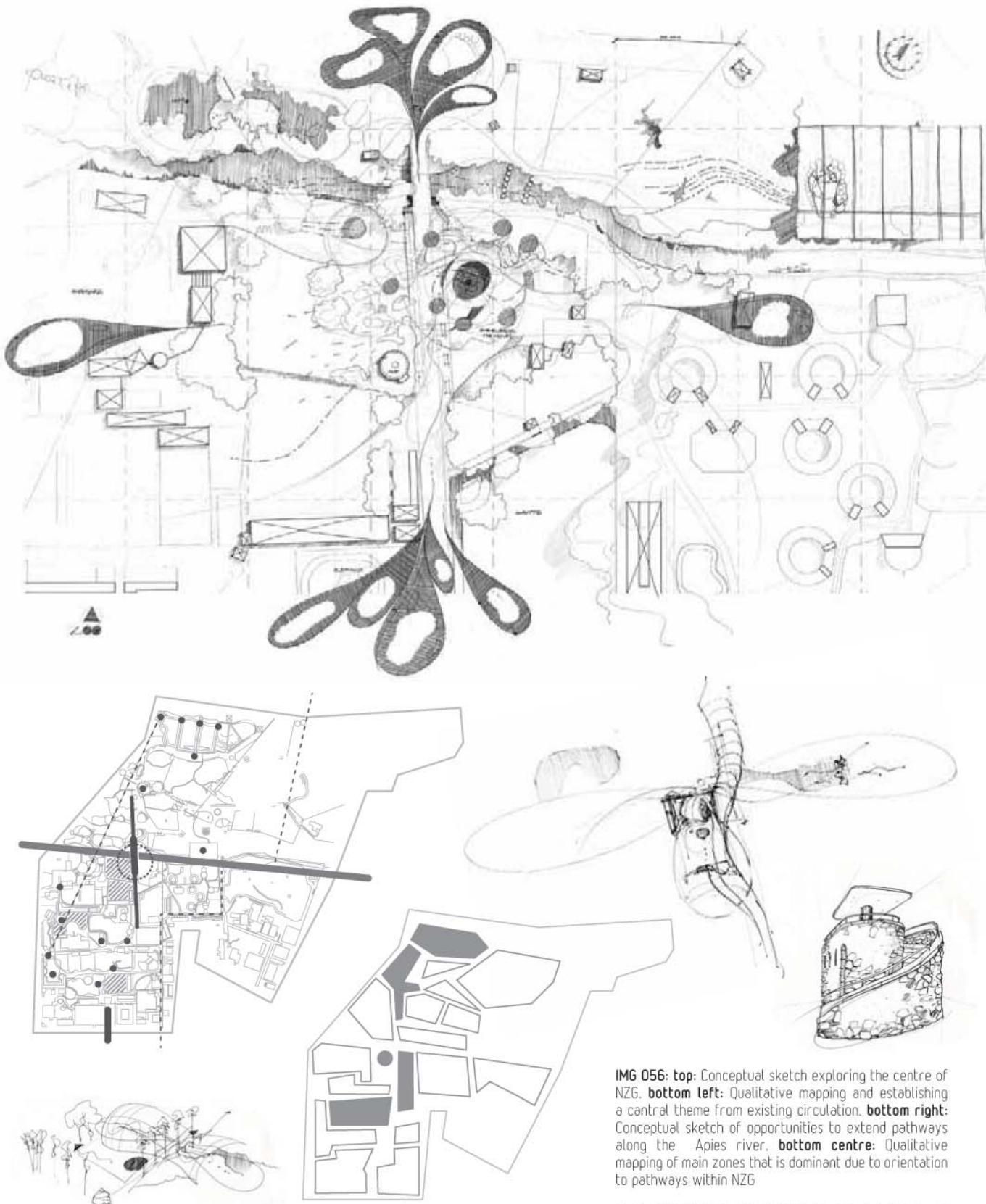
Sub themes may arise within each theme zone or exhibit loop:

- 01: Themes on both sides of the visitor path is not recommended since attempts to create an immersion experience are lost. Interpretation of the parallel story lines is rendered impossible.
- 02: Passing through both themes on a unique loop presents an unfavourable problem in the return to the original distribution point, wherein it is necessary to retrace the path of the originating theme.
- 03: The most practical and useful solution is to position one theme at the beginning of a loop, succeeded by a single transition zone.

IMG 054: Main visitor circulation and visitor distribution configurations



IMG 055: top: Sketch of the bridge over the Apies river bottom: Sketch of the hippo pool facilities



IMG 056: **top:** Conceptual sketch exploring the centre of NZG. **bottom left:** Qualitative mapping and establishing a central theme from existing circulation. **bottom right:** Conceptual sketch of opportunities to extend pathways along the Apies river. **bottom centre:** Qualitative mapping of main zones that is dominant due to orientation to pathways within NZG

IMG 057: opposite: Aerial photograph of possible site as central point in NZG



4.3 ARCHITECTURAL STYLE

The various architectural styles found in NZG embodies the disorganised fashion in which development in zoos normally take place. The 1991 NZG Master plan emphasizes the need to differentiate between building styles for animal use and human use in determining a style for NZG. With contemporary zoo development being inclined towards nature the Master plan suggested that future development refrains from making monumental or extravagant architectural statements; *to produce buildings that support rather than clash against the garden surroundings* (Dry & Joubert, 1991).

Dry and Joubert (1991) proposed that terracotta coloured concrete roof tiles be combined with clay bricks, for according to them this combination would present a basic, organic, non-obtrusive type building to which all future buildings should conform to help develop a homogenous, pleasant and definite architectural style.

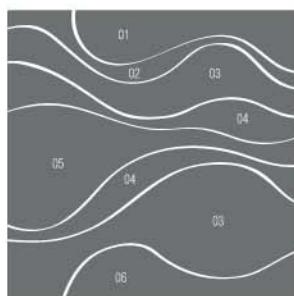
It was gathered from discussions during the PAZAAB Conference 2011 that the zoo is no place for architecture. This common perception could be ascribed to the tendency within the zoo community not to clearly distinguish between the design of exhibits and the other facilities needed by zoos as well as the aftermath of the human enclosure typologies (cages) that was used as animal enclosures. Yet there is still an opportunity to incorporate natural elements and create an inspiring type of architecture that blends better with the 'garden surroundings', for nature (which is inspiring and should be viewed as iconic) in essence encloses man and animal alike.

Terracotta and brick, although natural clay products is rather limiting as units – and less able to mould into forms than for instance concrete as material. The building as well as its setting can be merged through design to provide a sense of movement, mystery, and exploration through the use of an integrated approach to zoological architecture. It is believed that the contrary is true; a natural use of form (sculpted buildings) will be less intrusive and fuse better with the 'garden surroundings' than the small square shaped brick buildings that is scattered over NZG.

The typologies of animal enclosure along with the natural elements on site provides architectural intervention with a rich design vocabulary from which designs can be developed in which to 'exhibit' the visitors to NZG; a reinterpretation and representation of enclosure typologies for man and animal.

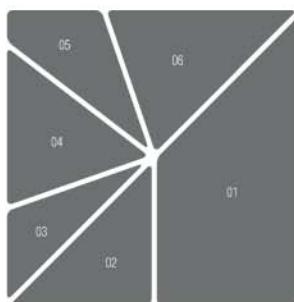


IMG 058: Bird paradise aviary's raised platforms



ZONING STRATEGIES

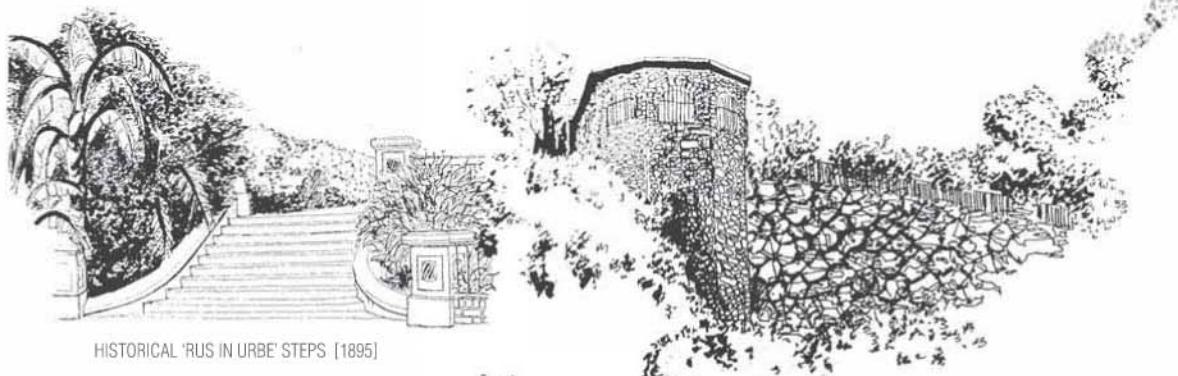
- 01 MOUNTAIN
- 02 DESERT
- 03 SAVANNAH
- 04 TROPIC
- 05 AQUATIC
- 06 ADMIN



- 01 AFRICA
- 02 AUSTRALIA
- 03 N.AMERICA
- 04 S.AMERICA
- 05 EUROPE-N.ASIA
- 06 S. & S.E. ASIA

IMG 059: left: Zoning featuring zoographic and habitat orientated strategies

IMG 060: opposite: Historical buildings in NZG

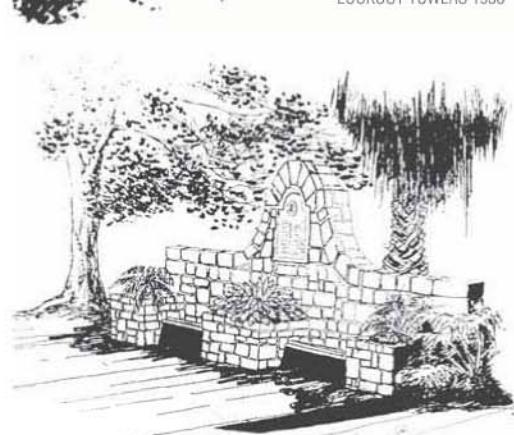


HISTORICAL 'RUS IN URBE' STEPS [1895]

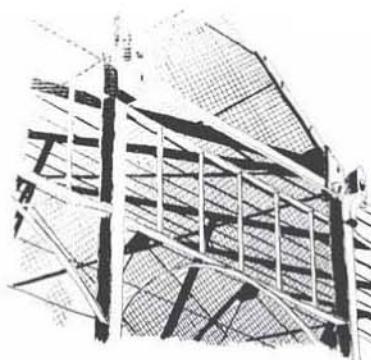
LOOKOUT TOWERS 1938



MUSEUM



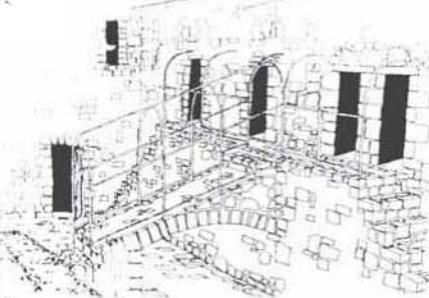
Dr GUNNING STONE BENCH



VULTURE AVIARY [1912]



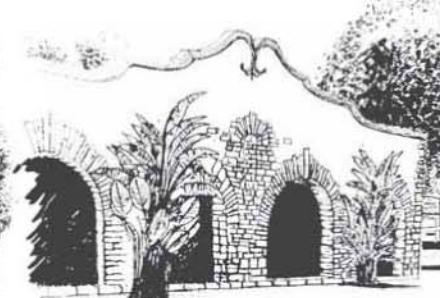
SAMMY MARKS FOUNTAIN DONATED 1910



BEAR HOUSE 1911



LION CAGE 1902



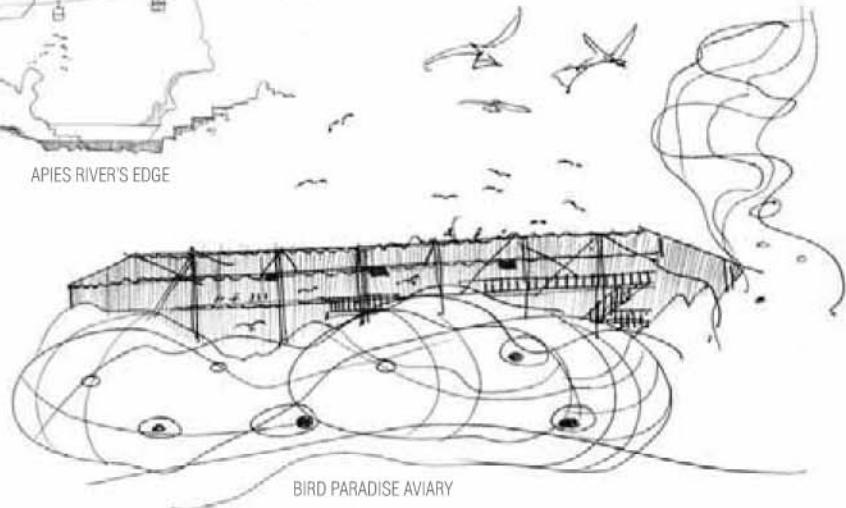
BEAR HOUSE 1911



ELEPHANT HOUSE



APIES RIVER'S EDGE



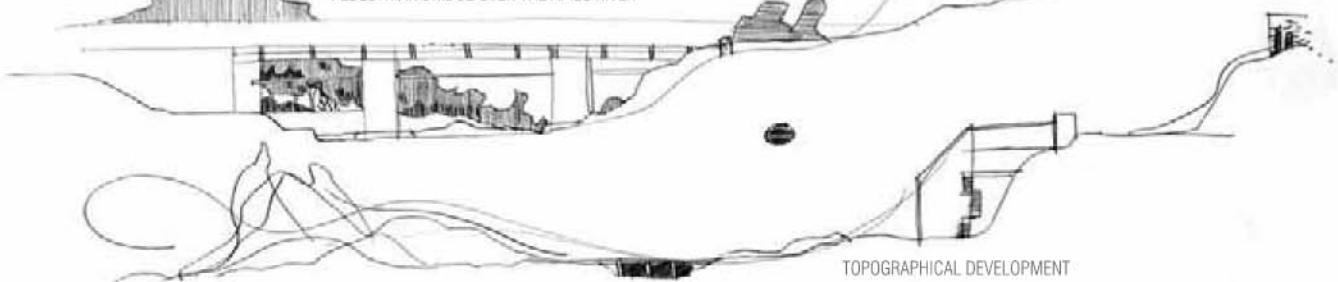
BIRD PARADISE AVIARY



STONE LOOKOUT TOWERS AND CABLE CAR LINES

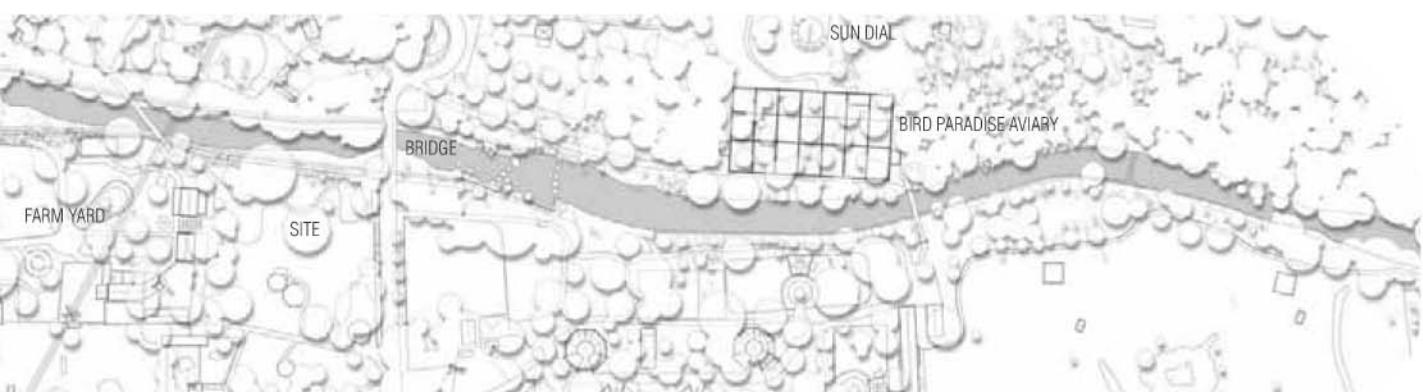
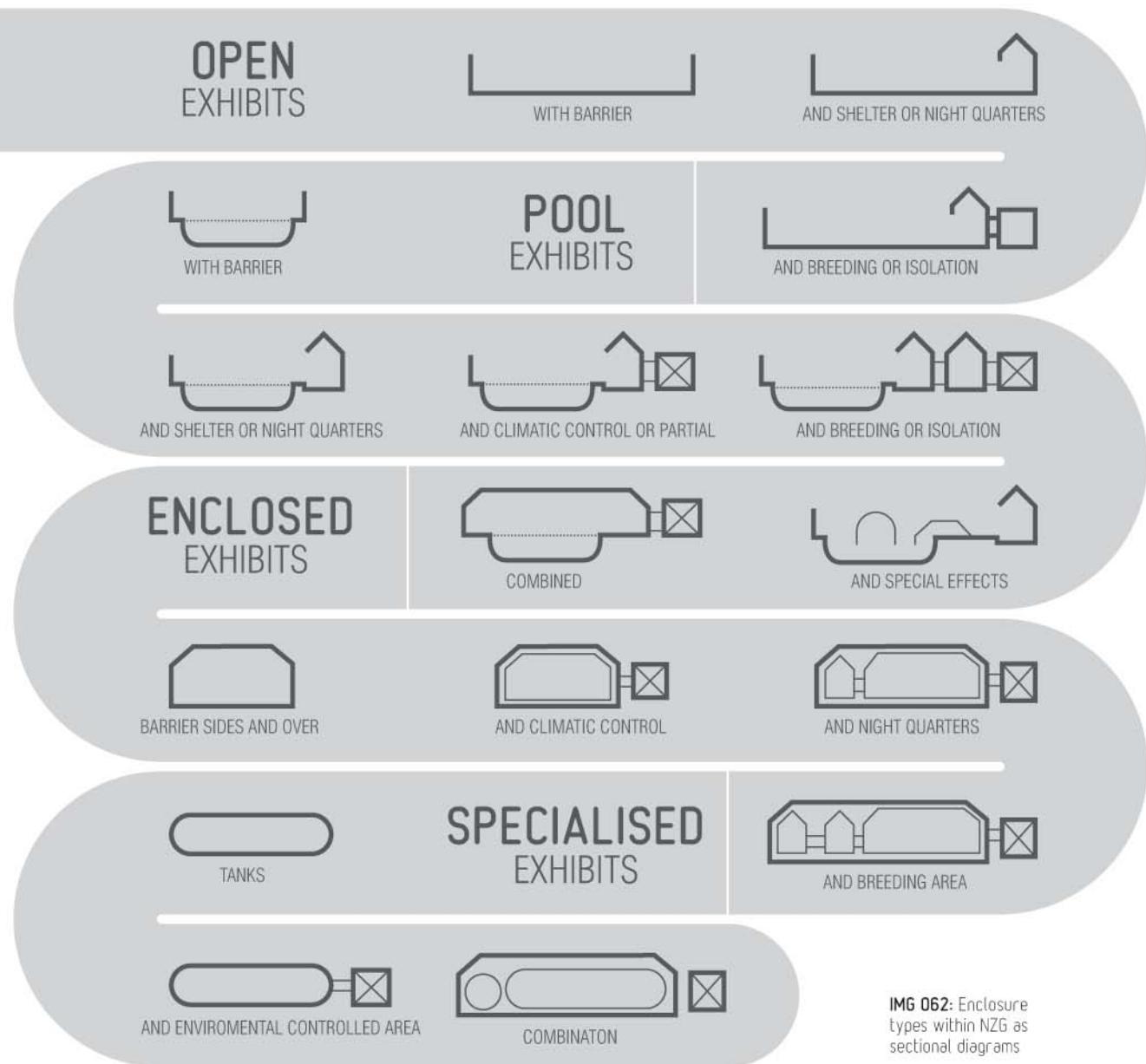


PEDESTRIAN BRIDGE OVER THE APIES RIVER



TOPOGRAPHICAL DEVELOPMENT

IMG 061: Study of the topography of NZG, creating a feel for the landscape



IMG 063: Section of NZG site plan with full length of Apies river within the site and indication of the density of existing trees along the river



4.4 VISITOR EXPERIENCE

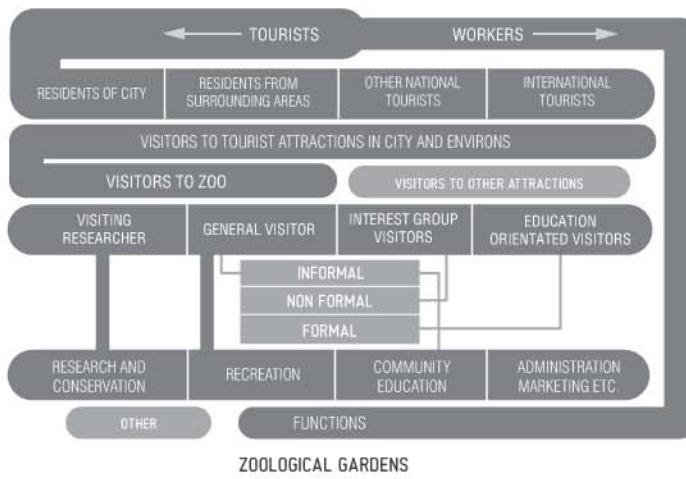
The zoo visitor has a tendency to spend a relatively short time at any one exhibit and is constantly urged onward by anticipating more novel experiences. Through consideration of the approach to an exhibit, and the sequence of preceding experiences the design is able to build a high level of anticipation. Visitors rely on all senses for opportunities to identify themselves with the animal, hence the need for participatory or 'hands on' exhibits. This need for active comparative identification can be exploited in conveying conservation and cultural messages.

The design approach requires innovative ways for the visitor to interact with the animal and its environment. Eye-level contact with the animal on its own turf develops a sense of respect and understanding for the animal and its

habitat. The provision of facilities for zoo keepers as part of the visitor centre should add further meaning to the experience.

The level of the visitor's interaction with the environment influences the creation of the mental image and exhibit design employs a variety of techniques to enhance this image. The setting, mood, and introduction to an exhibit can be orientated toward affecting the emotions of the viewers. *The viewers must be encouraged to experience the zoo beyond the mere level of reacting to physical sensations (e.g. loud noise, abrupt movement, odours). They must be enticed to interact at a perceptual level, where strong mental images are formed through the processing and organization of all the sensations that they experience. The goal is thus to produce an intellectual reaction that can reinforce and contribute to the visitor's total learning experience (Dry & Joubert, 1991).*

P E O P L E



4.5 ANIMAL HABITAT GUIDELINES

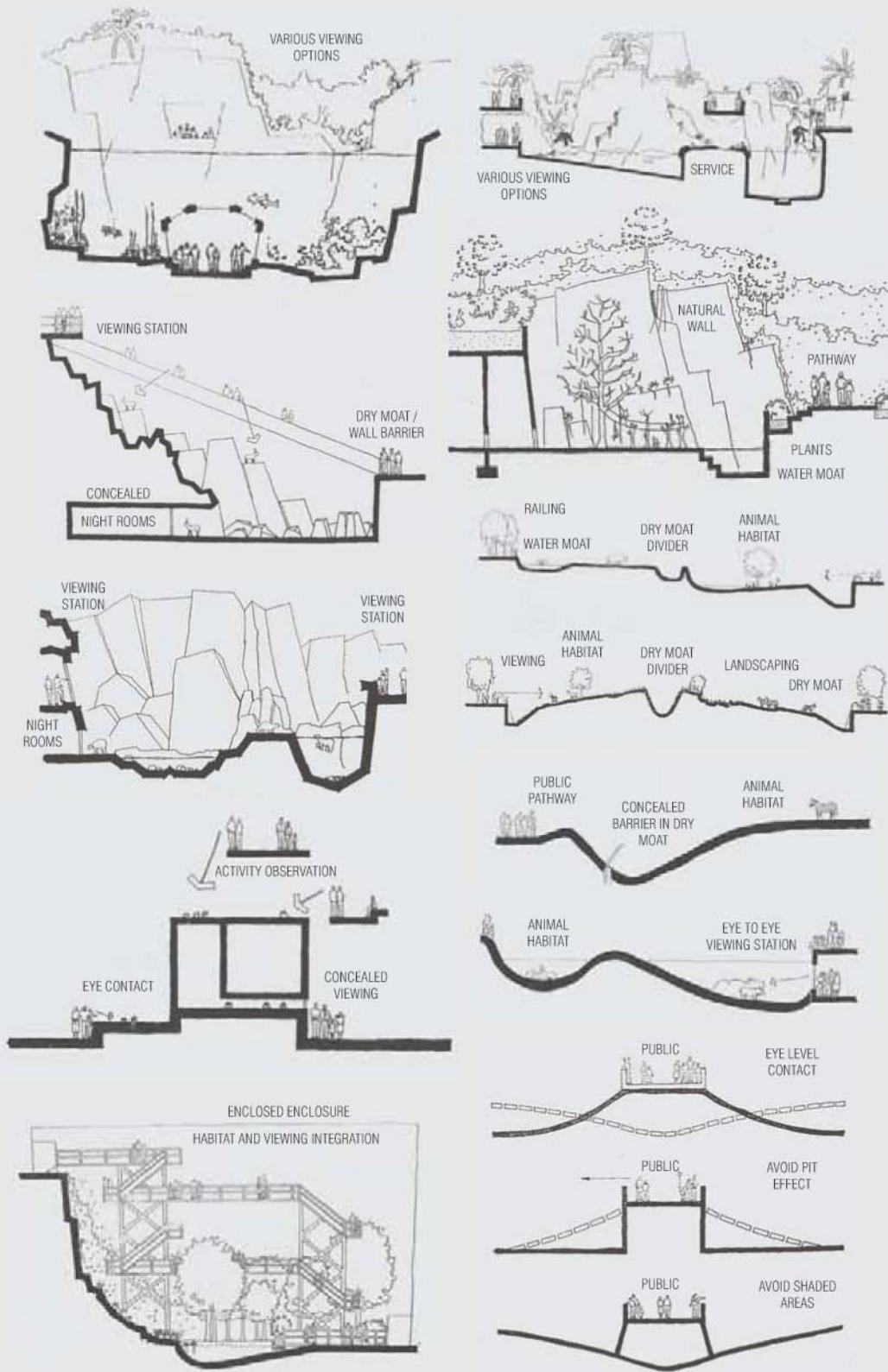
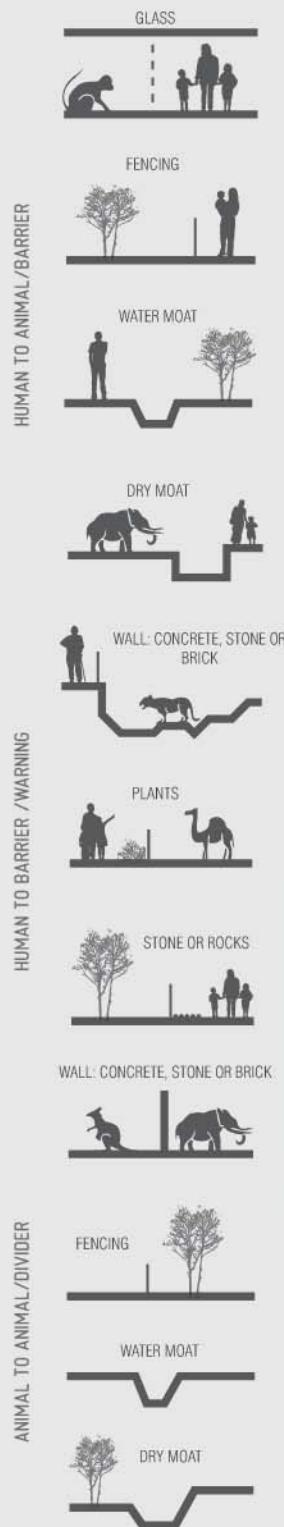
Zoo exhibit design is in a development phase that includes thematic display, replication of the animal's natural habitat, mixed species exhibits, ecological themes, and behavioural engineering. A non-argument exists regarding the type of preferred exhibit (naturalistic or abstract). Whether the environment within the exhibit is artificial or not doesn't seem to make a difference to animal behaviour, but visitors' reactions vary substantially.

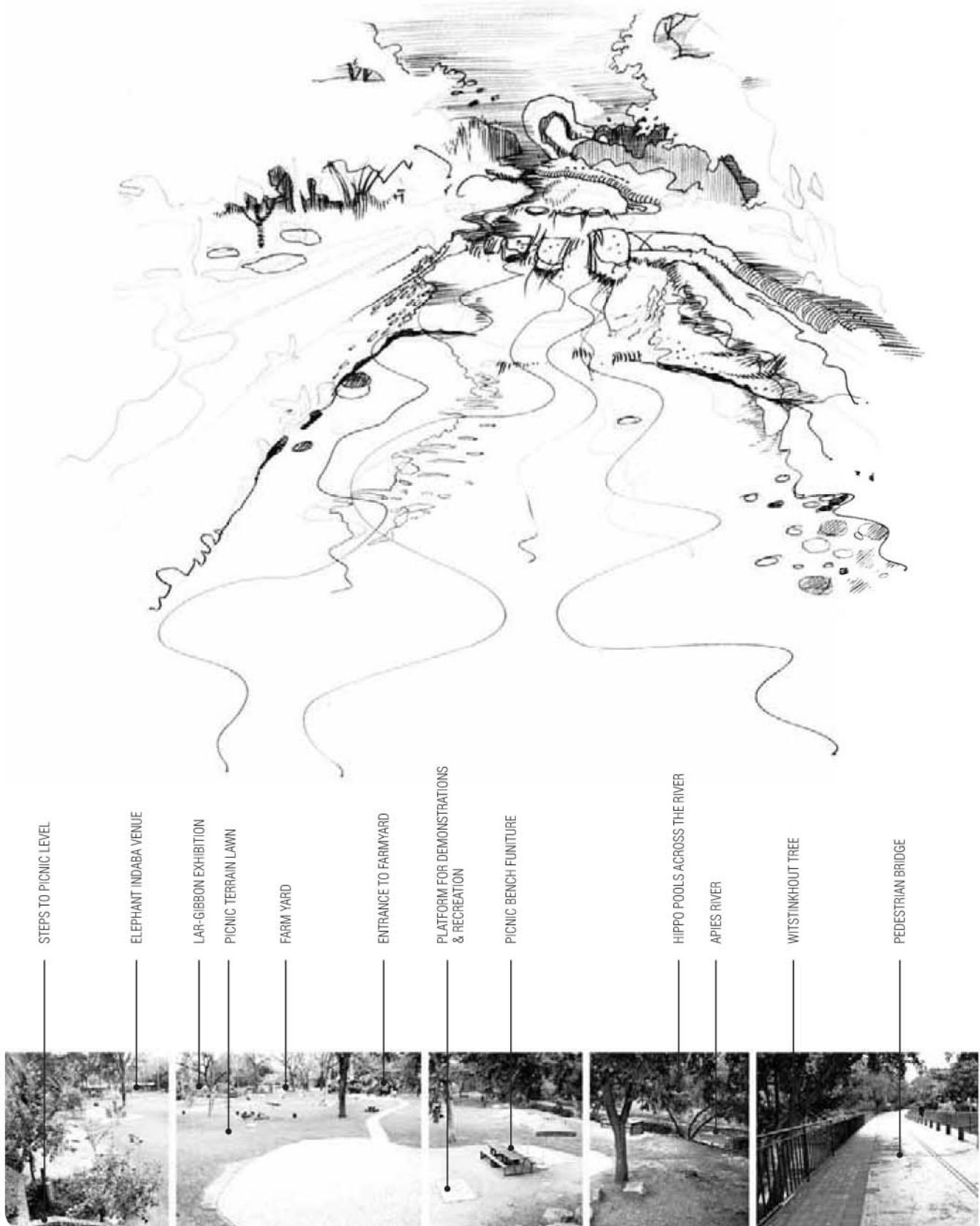
Replication of the environment, which can often be less expensive to build and maintain than traditional exhibits, is not always possible or desirable. Fortunately, alternative design approaches are constantly being investigated. Continual experimentation with exhibit techniques is a necessary activity for keepers and through inventive architectural intervention a framework could be created to accommodate such efforts.



IMG 064: above: Visitor interface of NZG

IMG 065: right: Boundary conditions and barriers in NZG
opposite: Barrier and viewing platform compositions within zoos





IMG 066: Distorted panoramic image of site on existing picnic terrain next to the Apies river

IMG 067: top: Upstream view of the Apies river

4.6 PROGRAMME

The 1991 Master plan indicated the need for a new sophisticated educational facility to replace the Frank Brand Education Centre; and recommended that such a facility ideally hold an auditorium including smaller workshop and demonstration spaces. The South African Agency for Science and Technology Advancement (SAASTA) is assisting the planning and development of a Life Science Centre in NZG. Through SAASTA's support there are new plans to establish such a centre in the historic Museum building which will need to be fully restored according to heritage requirements. (IMG 060) SAASTA's envisions that the Centre will serve as a focal point for the science education, awareness and outreach programmes of the NZG and provide a unique science experience for visitors, also involving the inhabitants of the zoo (SAASTA, 2011).

However, the ZOO situation invites an innovative way of combining the physical and virtual world (simulation) producing a rounded and enhanced learning environment as program incorporating all aspects of NZG's mission statement into a single visitors centre or structures.

Younger learners need to be engaged in learning that is relevant to their context; this includes active learning as well as inspirational material. If architecture is to produce effective environments for play and education they must be in tune with the contemporary culture of childhood (allegedly technological). The medium of film (simulation) could make science attractive and accessible,

inspiring and motivational. Visual, Auditory and active learning are all aspects that border on and can exploit ZOO as simulated environment; teaching the fiction within ZOO along with the fact of the situation.

By juxtaposing the real experience with the inspirational medium of film within one visitors centre the building will honestly communicate the possibility that authenticity is a negotiated rather than a fixed attribute. It is important to note the possibility of communicating the layering of enclosure and escapism within such a centre. Even when visitors do not read any signs they will probably unconsciously make the right connection between an animal and its habitat, just from what they experience (Fiby, 2008). Storylines in films, literature or themed attractions create a context or rational for the overall visitor experience and a guide for the sequencing or choreography of the component experiences (Coe, 2011). The addition of a domed theatre and climbing tower or view tower as new enclosure typologies for both man and animal should motivate zoo visits and increase the level of satisfaction.

The proposed Visitors Centre could house an auditorium; exhibition, installation and workshop space; a climbing structure as part of a small primate exhibit, and research and analysis space for the primate's keepers or handlers. The incorporation of the keeper's facilities should aid in guarding against the zoo becoming a living

museum, by conveying the real workings of the zoo.

The programmes will be of a multi-functional or spatially robust nature to accommodate the overlapping of programs. The author still believes that programming belongs to the observation and subsequently the cognitive projection of the beholder. It is assumed that visitors continuously programme structures as they read new meanings into the narratives created through the environment and the metaphors of abstracted form.

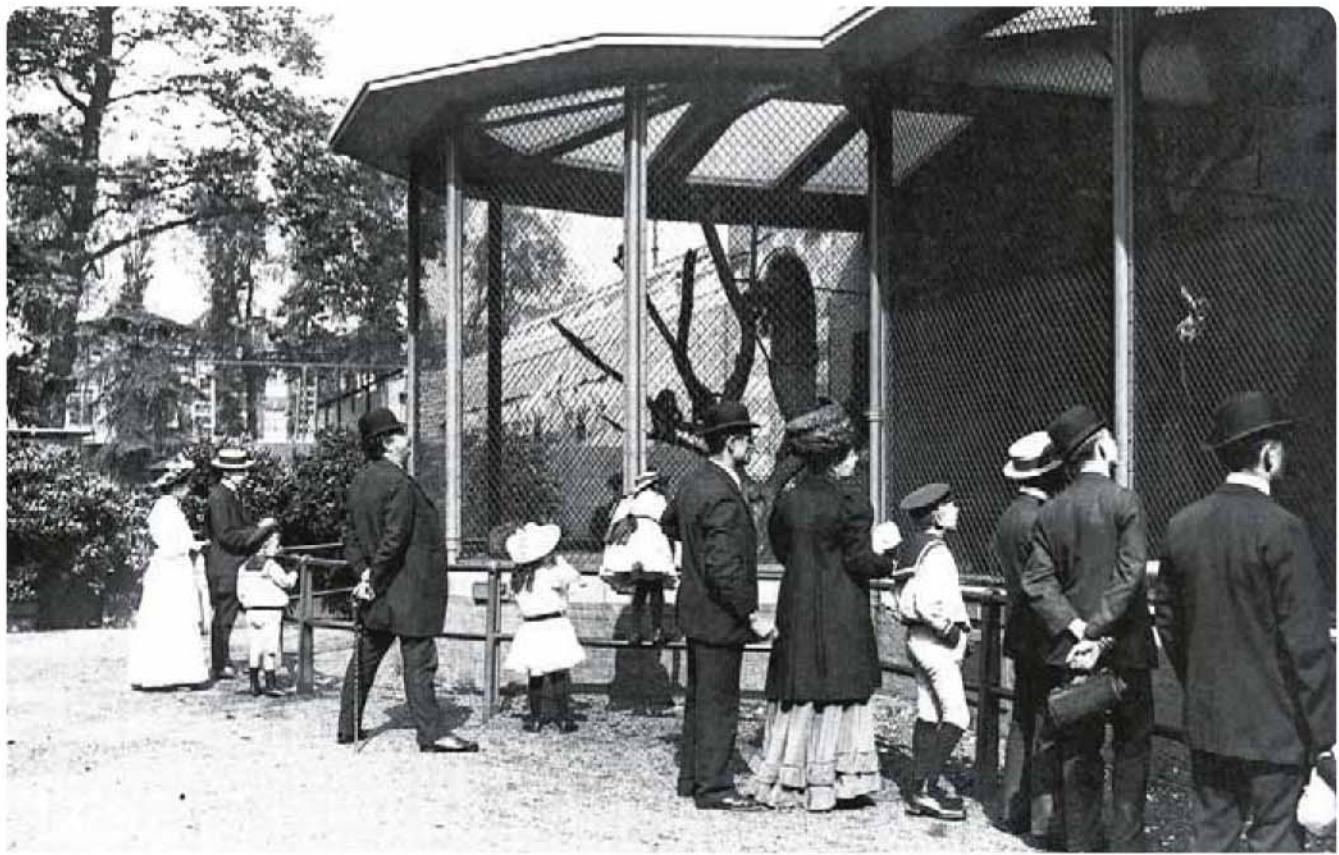
4.7 DELIMITATIONS

4.7.1 Although the proposal briefly reflects on the outcomes of Volume 1 and Volume 3 (Master plan extensions) of The Master Plan for NZG by Dry & Joubert (1991) and Dry Mokoena & Partners (1997) respectively; the design development will not be based solely within the guidelines set in these documents.

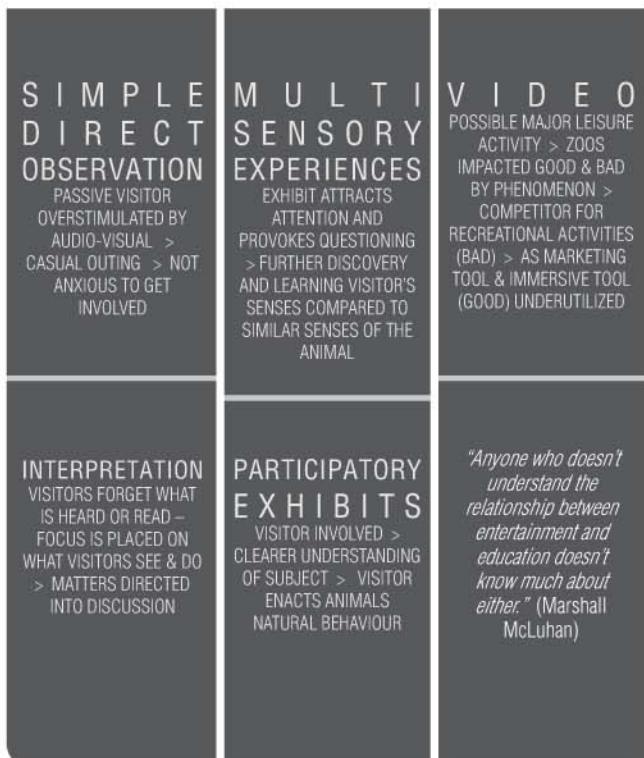
4.7.2 The technical specification in developing a healthy environment for animal species is beyond the scope of this dissertation and in practise requires the expertise of a specialised collaborative design team. Design principles and recommendations are included to indicate an understanding of the elementary design criteria when designing for small primates.



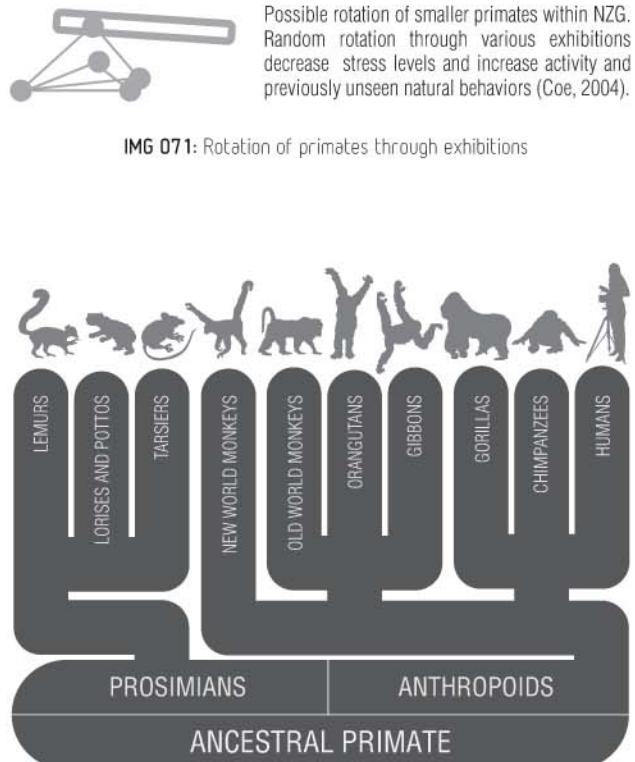
IMG 068: A ride in the cable car that escapes the surface of the site, one of the few vertically inclined instances in NZG



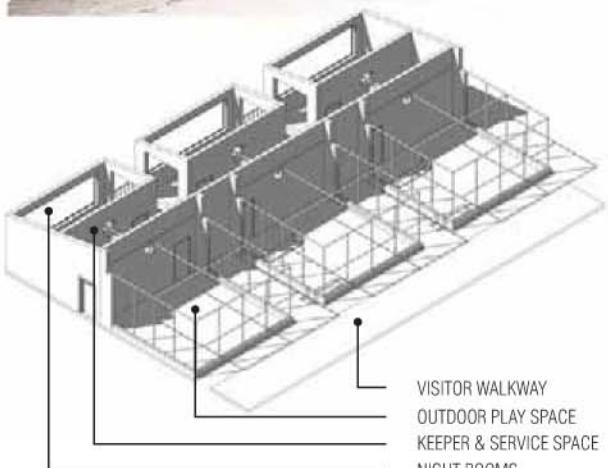
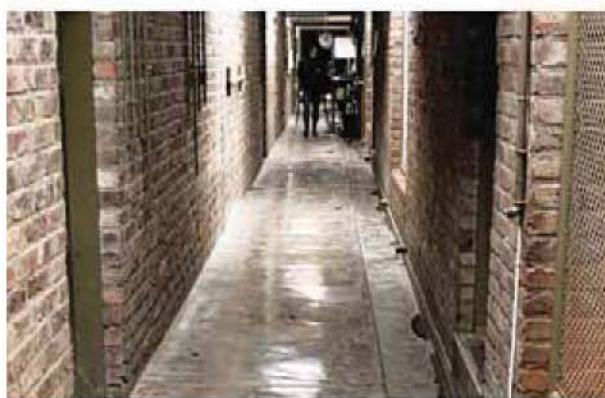
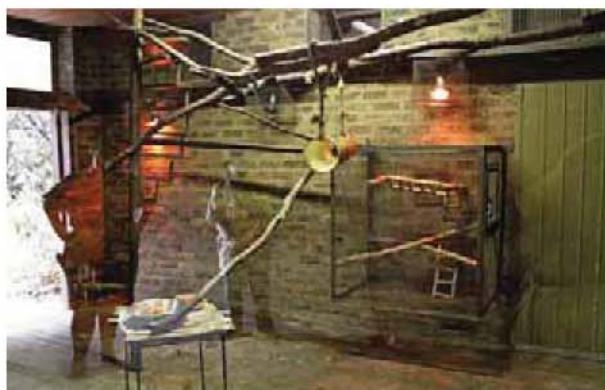
IMG 069: Visiting the monkey cages



IMG 070: Types of visitor's and interaction styles



IMG 072: Focussed section of the development of man from animal



IMG 073: Study of existing primate enclosures and service spaces



5. CONCEPT DEVELOPMENT

The design development chapter is a ‘curated’ collection of intuitive sketches, models, and photographs. Various analogies and themes are further explored in a graphic manner. The happening brings forms and concepts together in stimulating and unpredictable combinations. It immerses in an experience of shifting yet interlinked viewpoints, and multiple climaxes. The intuitive aspects relate to such an extent that if traced by the visitor the experience should seem ‘curated,’ inviting exploration of new themes.

Curation complicates, amplifies, and enlivens our encounter with each object while encouraging us to seek out the ways they fit together as pieces in a larger theoretical puzzle. *The structure and form should provoke us not to simply consume but to question the experience on offer* (Rugoff, 2006: 44-45).

Angus Taylor’s (South African sculptor) studio as well as his most recent collaborative exhibition (in collaboration with Rina Stutzer) *Dislodge*, was visited to inform the sculptural notions of the project. Taylor is known for his deconstruction of postmodern concerns. *Dislodge refers to a purposeful shifting from the safe haven of comfort to the uncomfortable head space where revitalisation can occur* (Artslink, 2011).



IMG 074: opposite: Calabash bought at informal crafts market at NZG, and weaver's nest from Austin Roberts Park

IMG 075: above: The handled calabash



THEN & NOW: THE SEARCH FOR A SCULPTED ARCHITECTURE

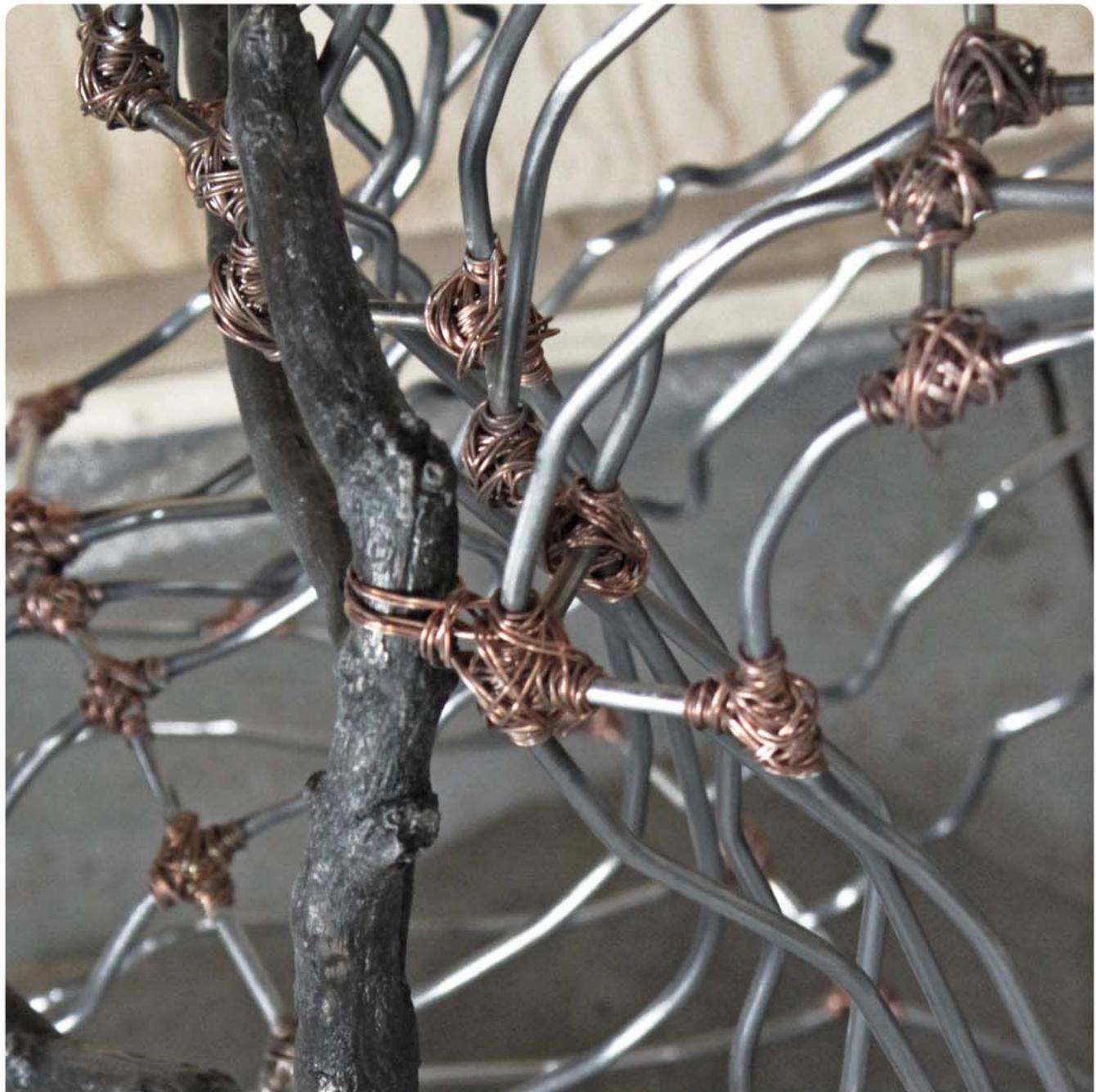
IMG 077: The discovery of fire, after *Fra Giocondo*IMG 076: The building of the primitive hut after *Vitruvius Teutsch*



IMG 079: A sentimental scene: at work around a fire, Angus Taylor's studio, Silverton



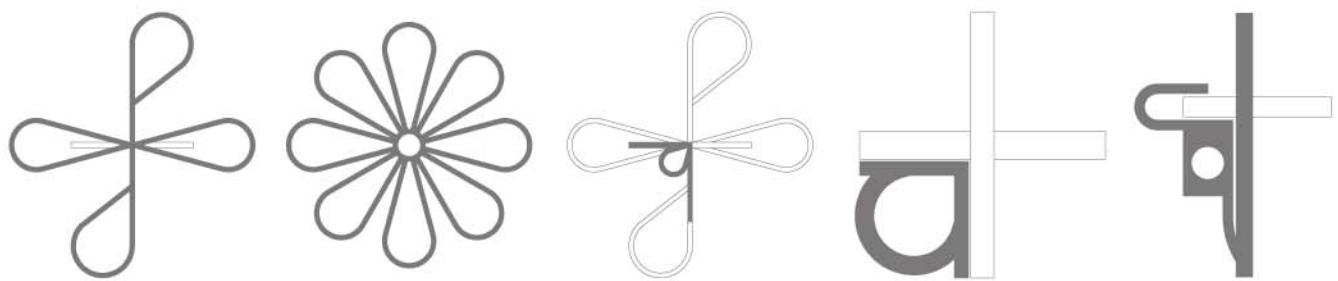
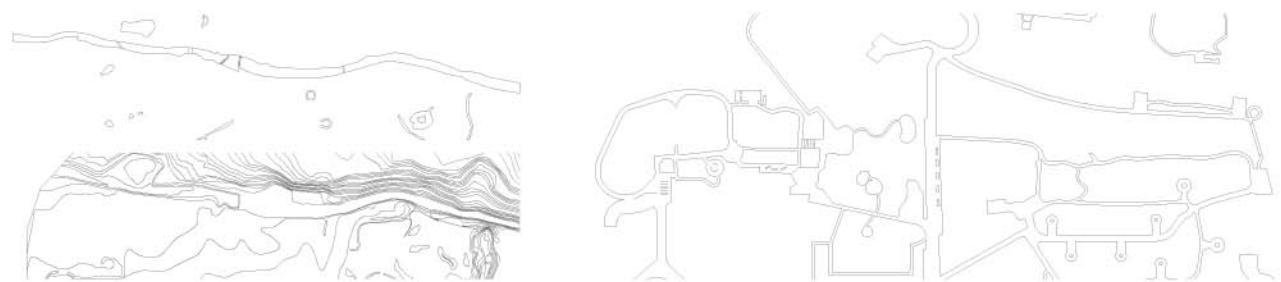
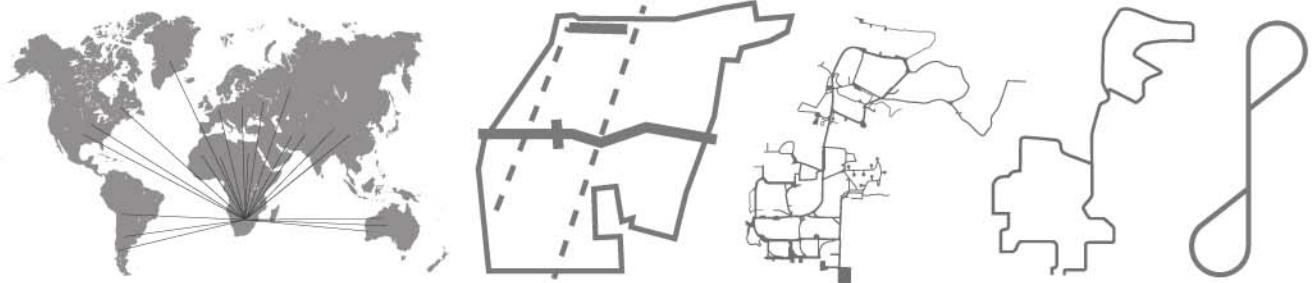
IMG 078: A sentimental scene: breaking the sculpture free: at Angus Taylor's studio in silverton



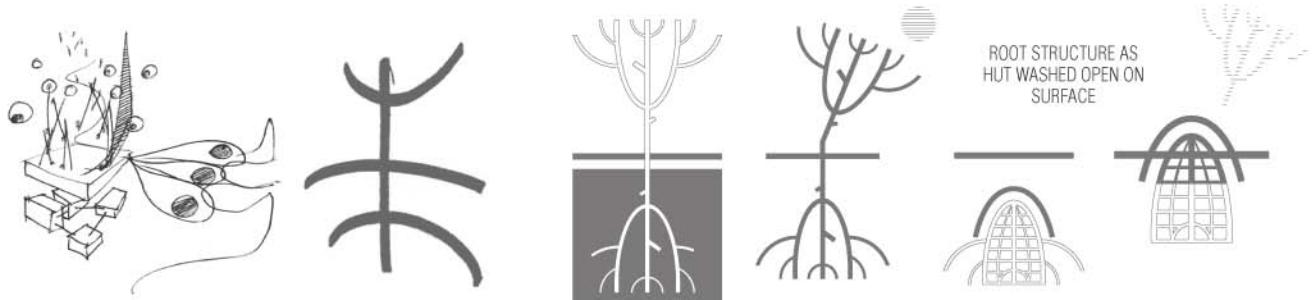


IMG 080: The first building after Viollet-le-Duc, a comparison made to the a snake's nest, together with it's builders and inhabitants described as reptile eaters

IMG 081: opposite: Handwork by Angus Taylor's studio featuring the realistic representation of a twig (nest) and the earth sculpting mix including grass as hatchwork or fine linework on the sculpture



VERTICAL DEVELOPMENT
TO CREATE A MORE
DYNAMIC SPATIAL
EXPERIENCE



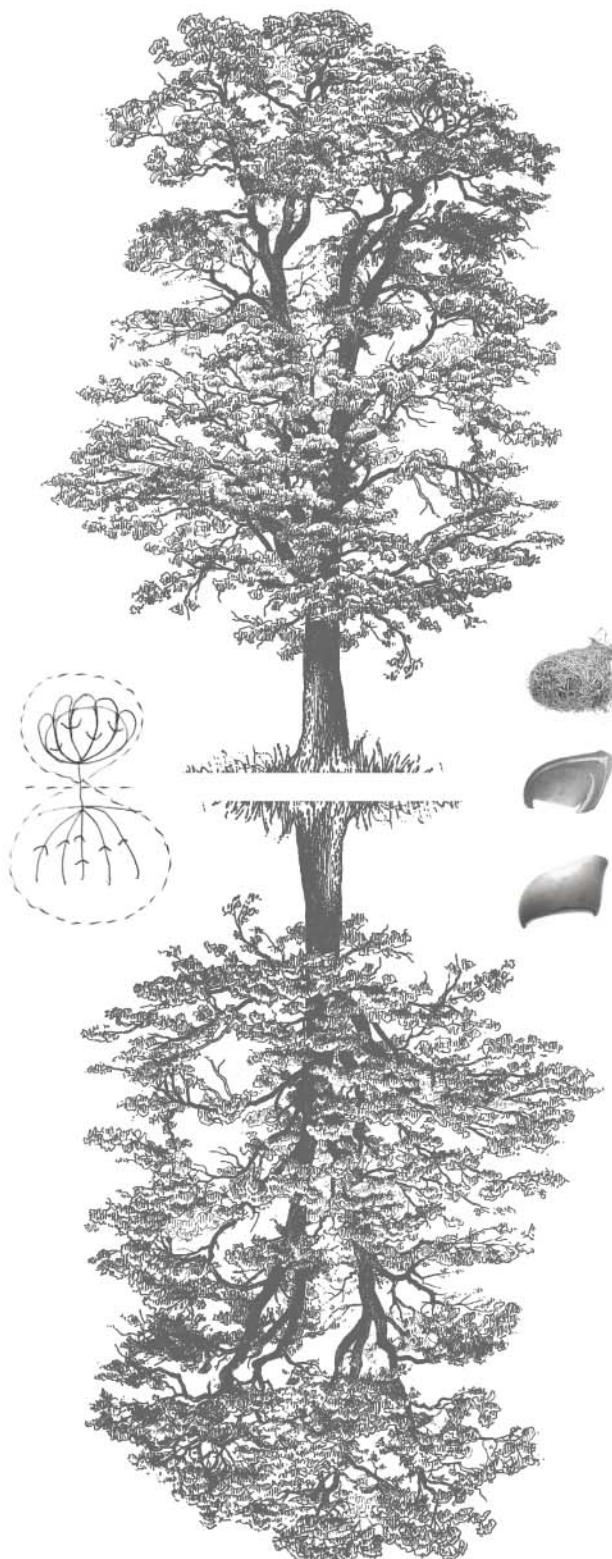
ROOT STRUCTURE AS
HUT WASHED OPEN ON
SURFACE

DIAGRAMMATIC DEVELOPMENT OF PATHWAYS ON A PLAN VIEW IN RELATIONSHIP TO THEORIES AND NZG SITE

DIAGRAMMATIC DEVELOPMENT OF THE SECTION AS A HIERARCHICAL SYSTEM THAT REPRESENTS THE LAYERING OF ANIMAL STRUCTURES AND STRATIGRAPHY; THIS FORMS THE BASIS FOR THE LAYERING OF TECTONICS

IMG 082: spread:
Development of concepts on plan and section through diagrams indicating the layering of metaphor and the hierarchical system of natural structures

THE TREE AS HOME TO MAN AND ANIMAL



The Tree of Life is a metaphor that exists in the mythologies of many cultures who often see it as a source of life and an emblem of symbiosis (The Imagineers, 2007).

NEST - WEAVING



CALABASH



WOMB - EARLY SPACIALITY



POSSIBLE COMPOSITION

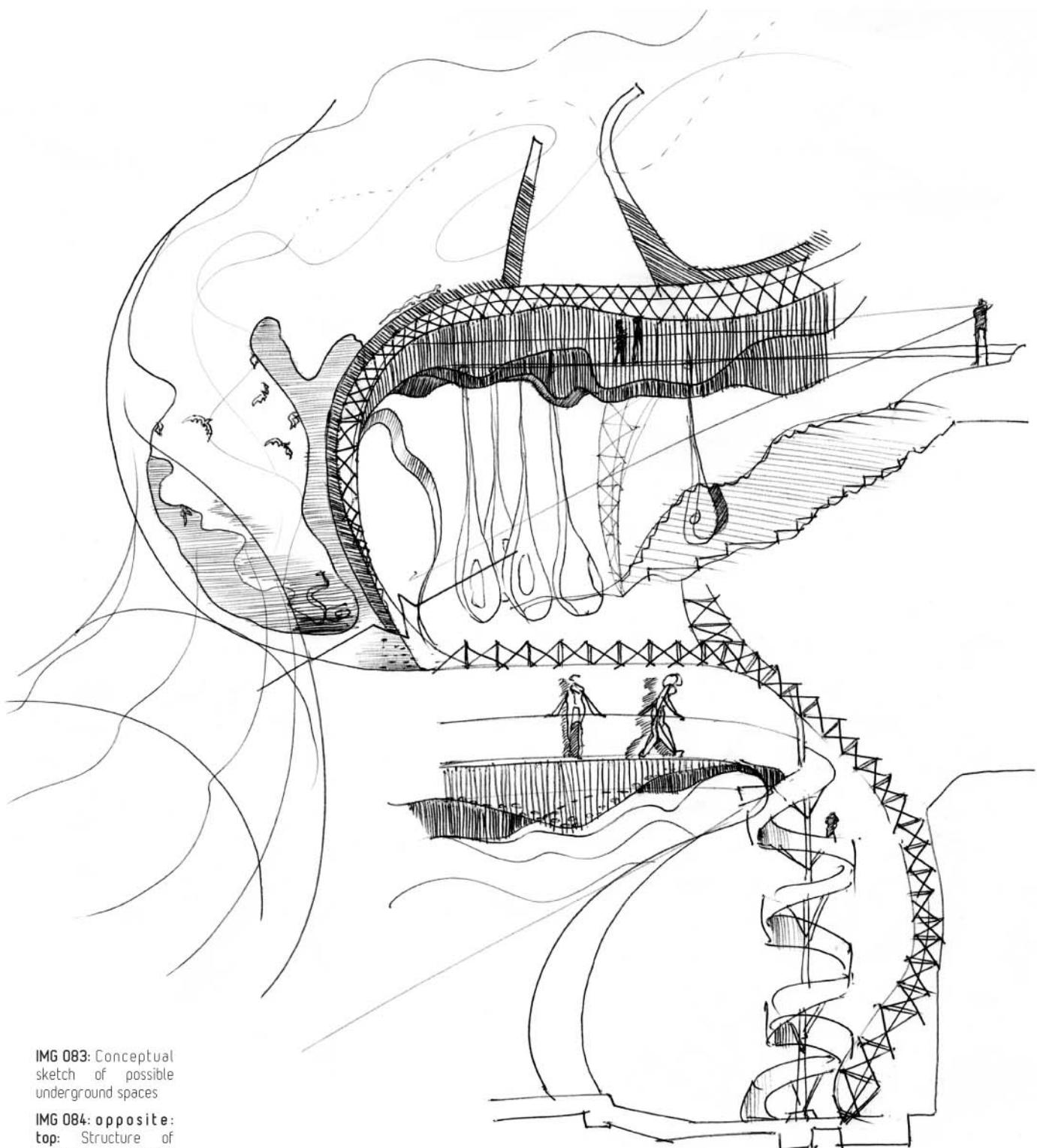


CAVE - BURROWING



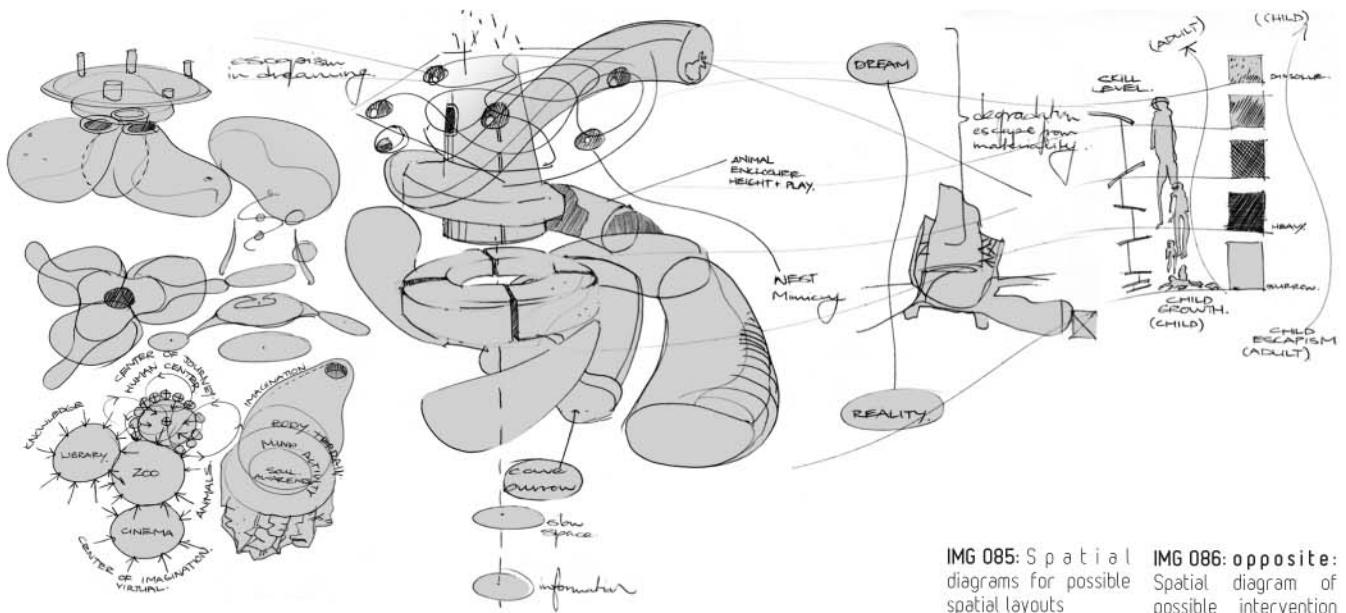
The composition of complex forms was based on the balance of ornamentation and the narrative effect thereof on the viewer. A multiple layered metaphor system forms the design vocabulary of form. Abstraction becomes the binding factor between the various conceptual forms. The reading of the form is made open for interpretation or exploration of the analogies within the form. The theory is guided by infants playful interpretations of form and the intuitive or naïve approach to their utilisation of form, permitting that the form does not read or dictate a too literal interpretation.





IMG 083: Conceptual sketch of possible underground spaces

IMG 084: opposite:
top: Structure of the cable car system reaching through the tree canopy
bottom: Surrounding buildings and essential structures

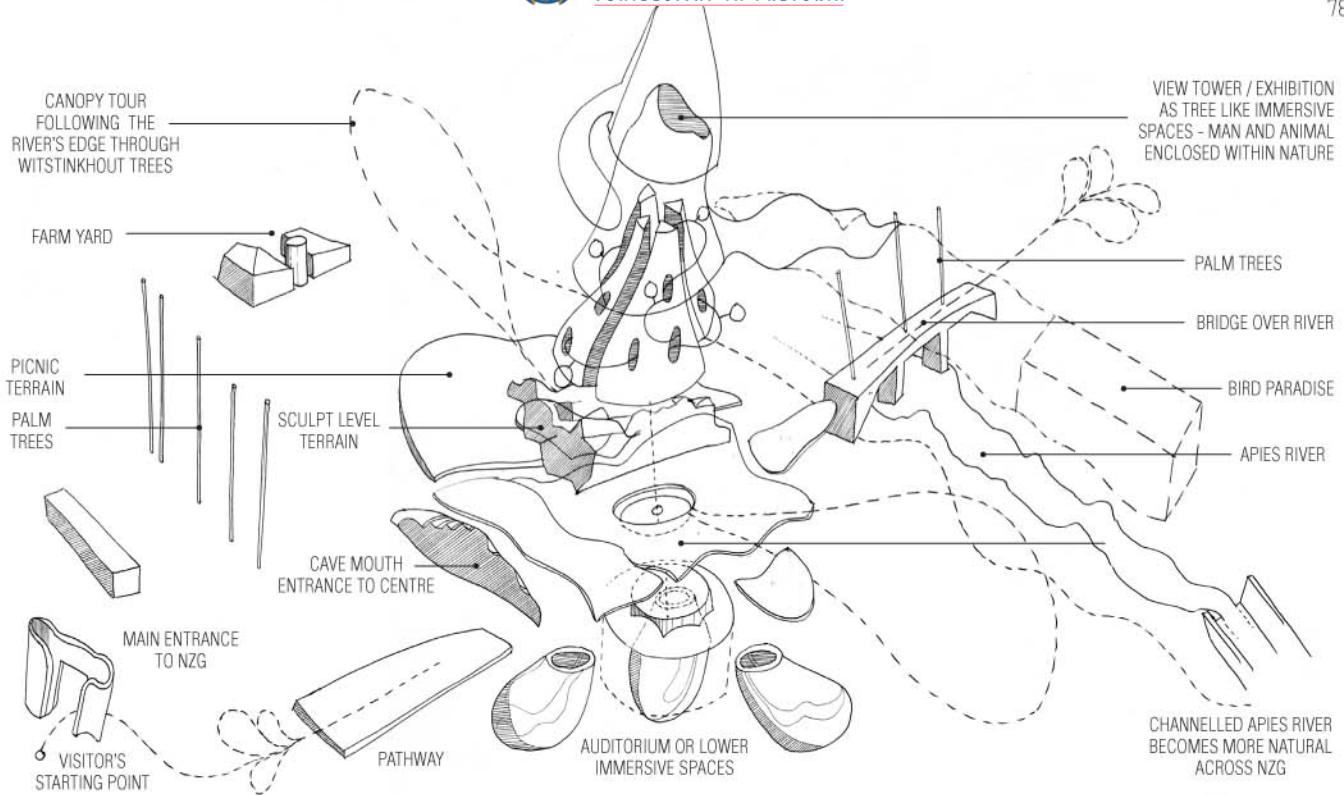


IMG 085: Spatial diagrams for possible spatial layouts

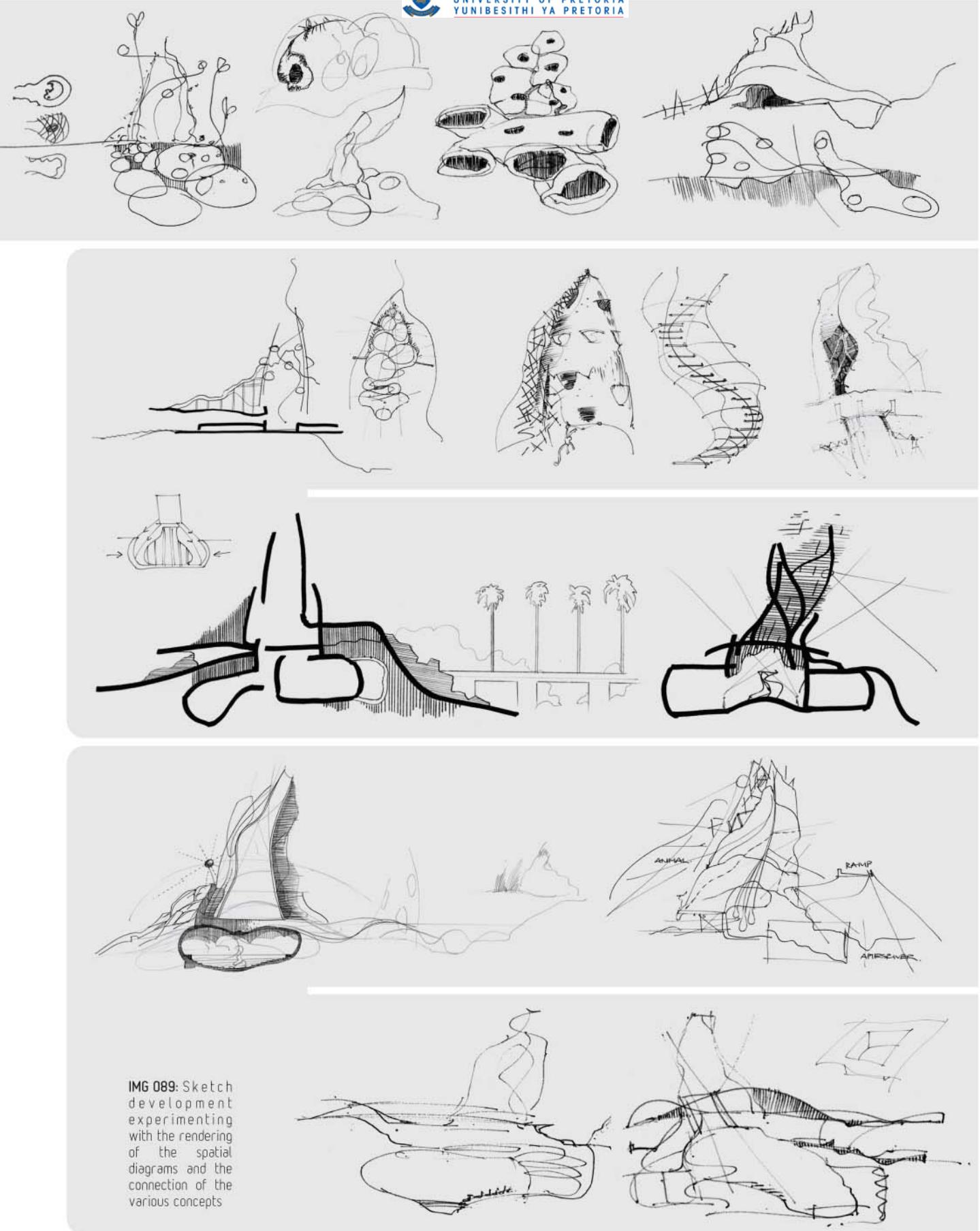
IMG 086: opposite: Spatial diagram of possible intervention on site

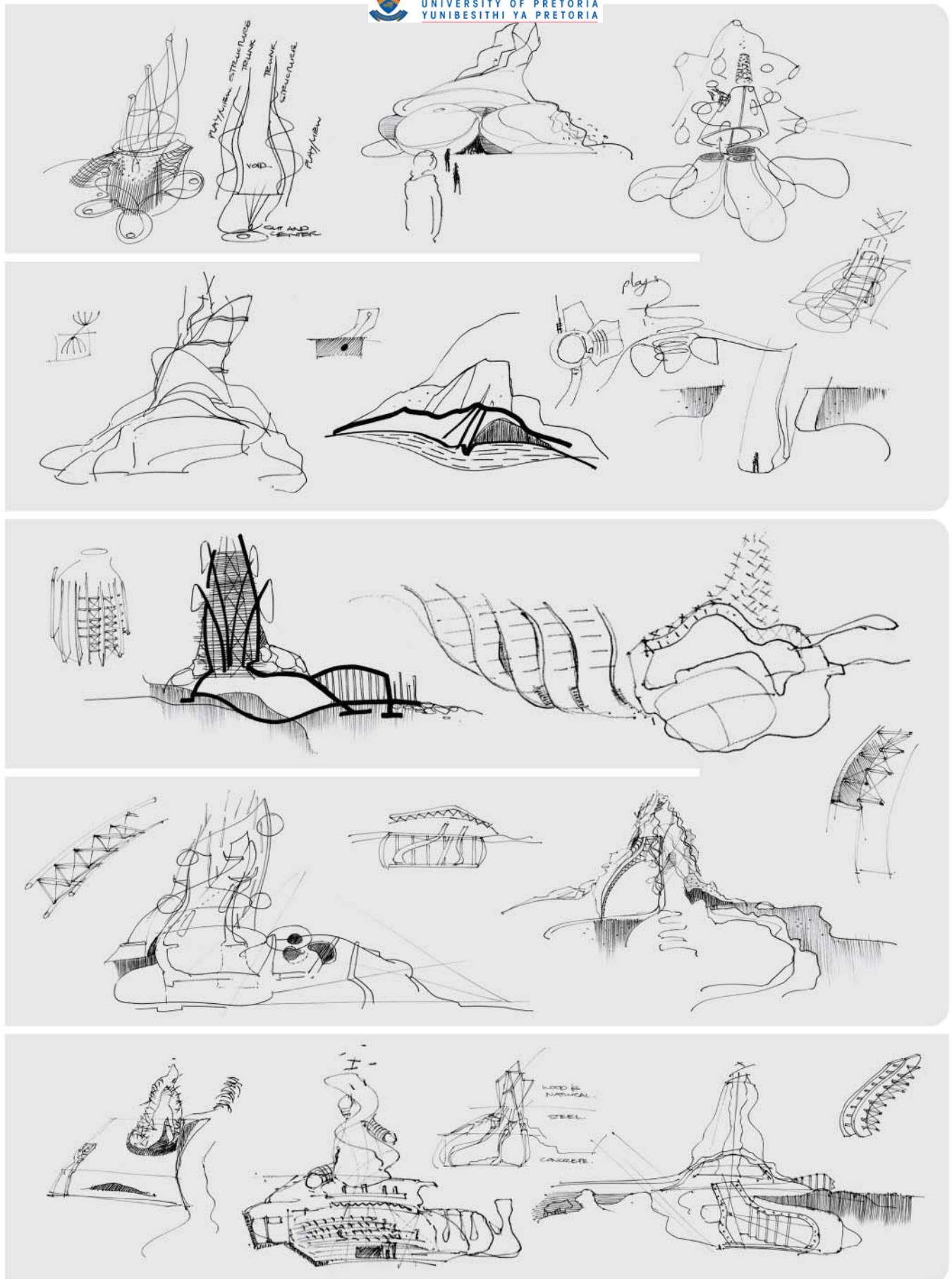


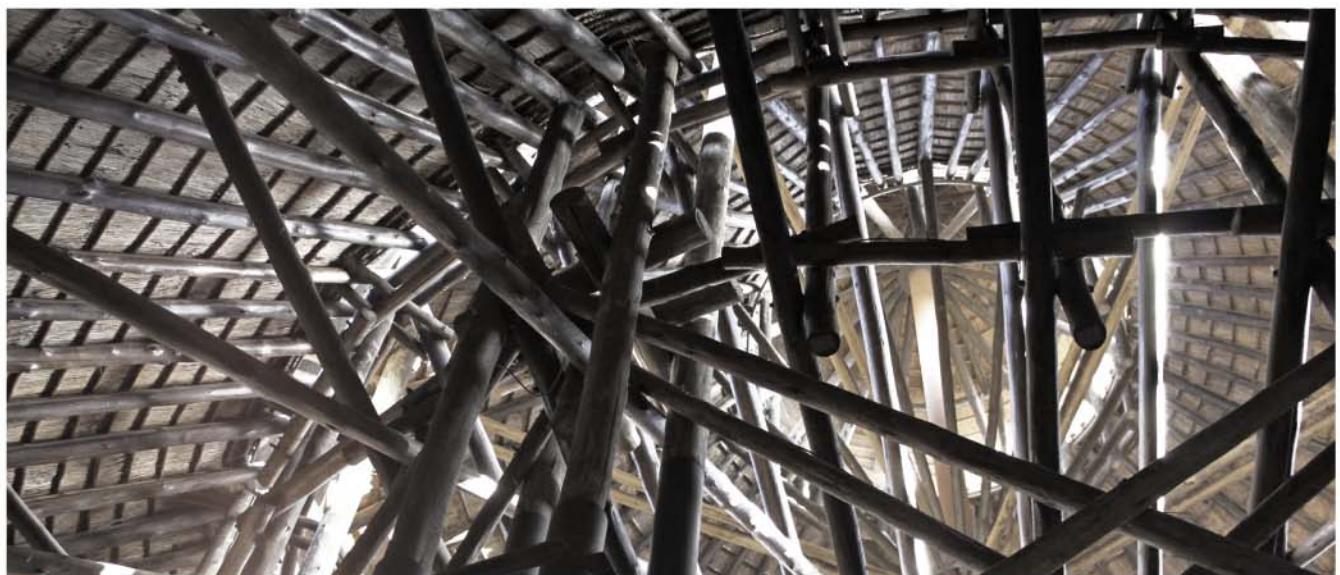
IMG 087: opposite: bottom: Fibreglass moulds at Angus Taylor's studio. Silverton

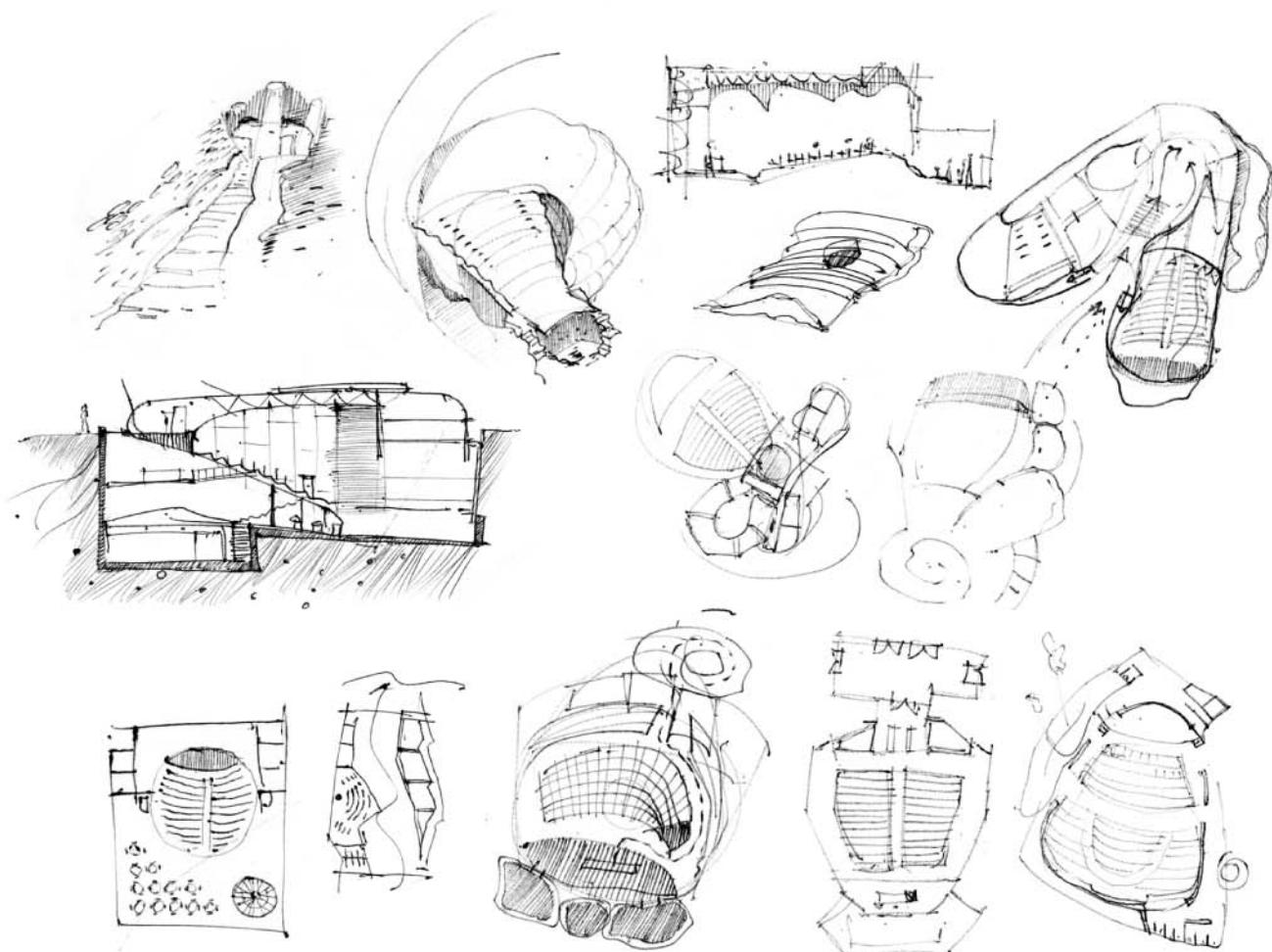


IMG 088: Wild grass spotted at Maropeng, Cradle of Humankind









IMG 090: above:
Sketch development of possible auditorium layouts

IMG 091: right:
Material contrast between expanding foam and calabash used for the building of conceptual physical model exploring the underground: Moulded and sculpted

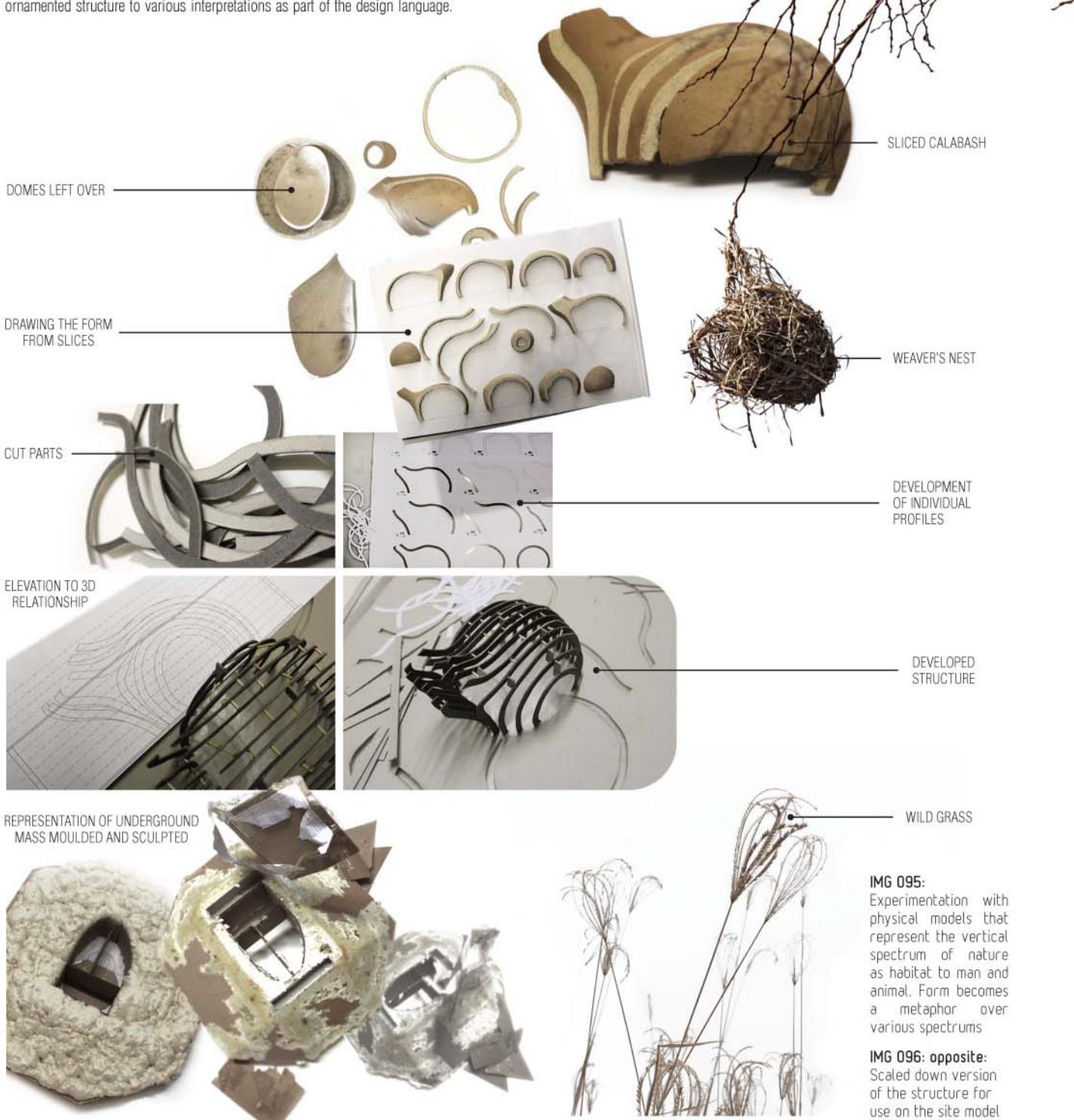
IMG 092: opposite:
top: Calabashes from craft market at NZG's entrance

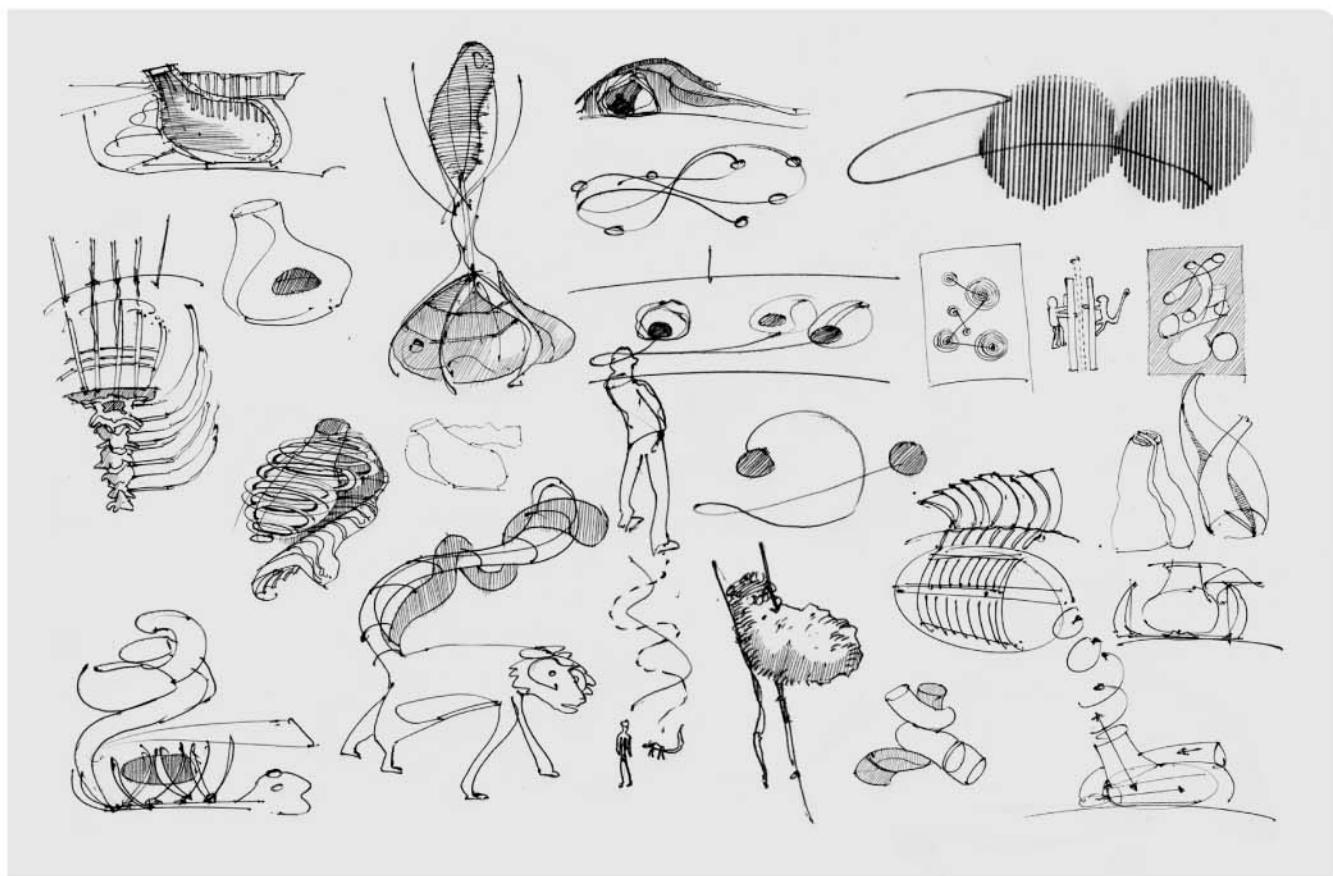
IMG 093: opposite:
centre: Safari Nursery main building's roof structure

IMG 094: opposite:
bottom: Safari Nursery small primate exhibition



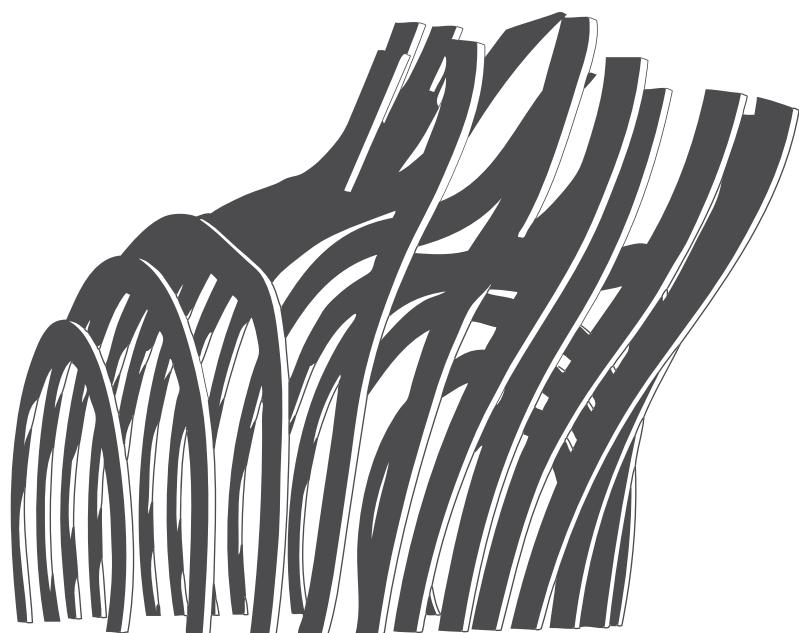
Our perception of the beauty of animals arises through a rational appreciation of the structure of their parts and the functions of their organs (Steadman, 1979: 10). Although it stands to reason that objects looks like what it is, and vice versa, it is what it looks like; forms for identical or closely related functions will be geometrically similar, giving rise to the appearance of repeated instances of artifact 'types' (Steadman, 1979: 59-60). However these similarities could reach into a spectrum of greater unity, where function is overshadowed by the metaphor thereof – a language of form, beyond the dictates of function. The use of this multiple metaphor system provides abstracted layered meaning and opens the ornamented structure to various interpretations as part of the design language.





IMG 097: Conceptual sketches developing further analogies





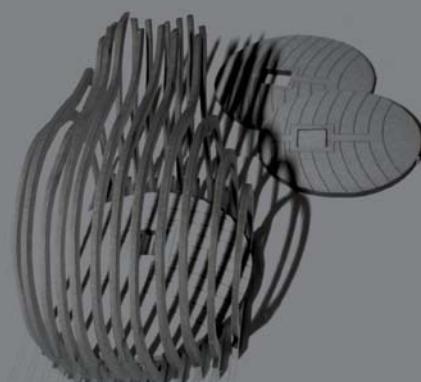
6. DESIGN --- DEVELOPMENT

The design development phase layers architectural body over the intuitive analogies and moulded form creation illustrated and discussed in the previous chapter. The same building is redesigned and reinterpreted throughout the process leading to a mythical, theoretical and site orientated structure. All phases are included in the dissertation to thoroughly communicate the processes involved in the making of this building.

The design authority becomes a dual imaginative venture (Jilk, 2005: 31-42); between the naive conceptual version of the designer (narrator) and the constrained rational designer who translates the multiple overlapping fantasies

into a complex layered reality; the intuitive development is reinterpreted and reworked.

On a mythical level, the user is still seen as the avatar of Child and Animal refer to the Prologue for the mythological Anima – seen by the Author as the joint innocence or spirit of Child and Animal). Children are hypothetically the closest parallel beings to anima; unrationaised, unburdened by memory and visual intoxication. Children intuitively project imaginative meanings over objects creating personal or phenomenal landscapes.



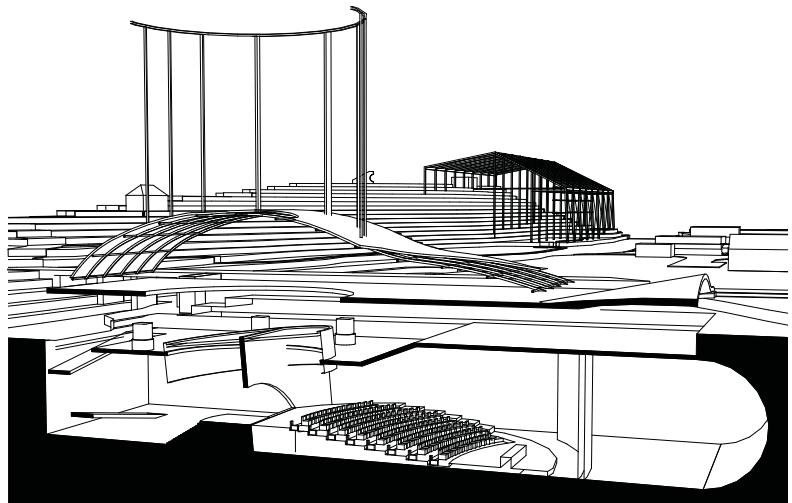
IMG 098: opposite: Framework abstracted from the calabash above: Model of framework for site model



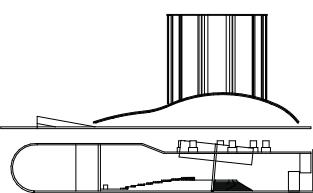
IMG 099: A selection of initial model work exploring spatial possibilities during the interpretation of the conceptual work.



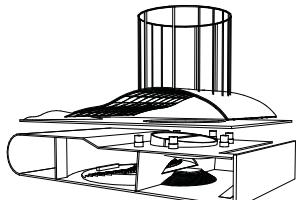
SITE PLAN INDICATING THE RELATIONSHIP BETWEEN THE BUILDING AND SITE



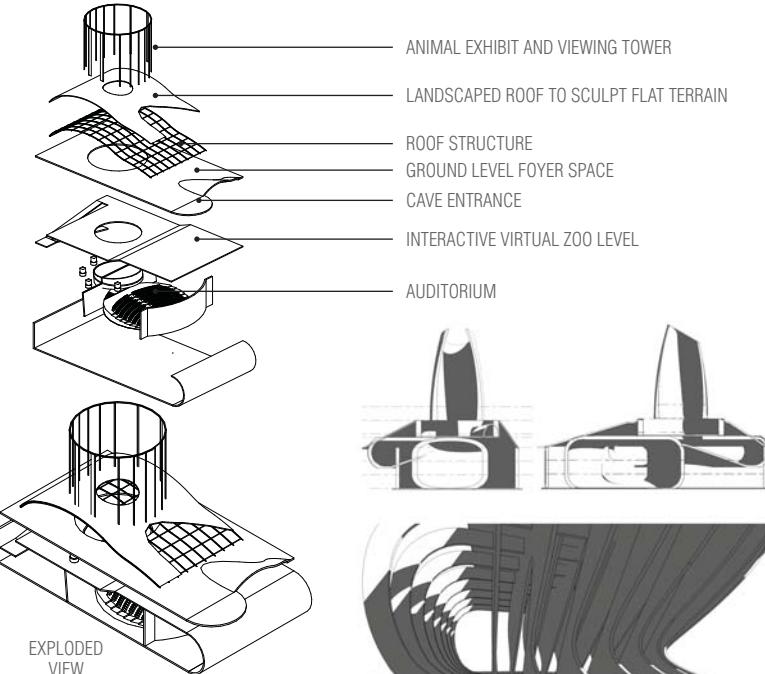
PERSPECTIVE SECTION EXPLORING A POSSIBLE VERTICAL HIERARCHY



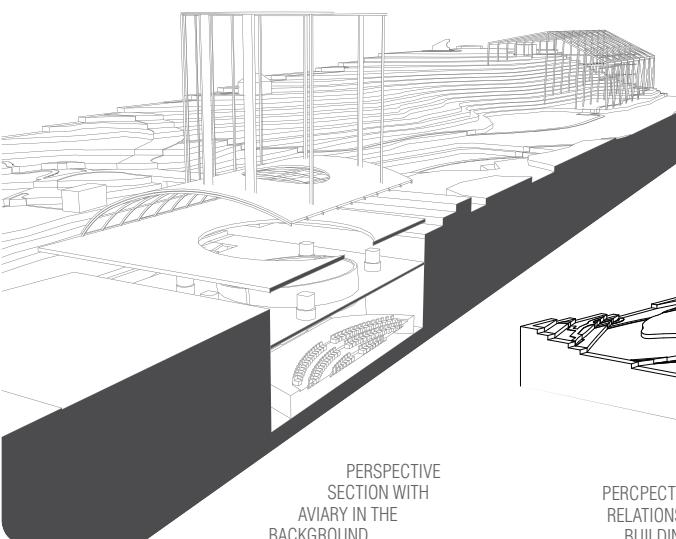
SECTION



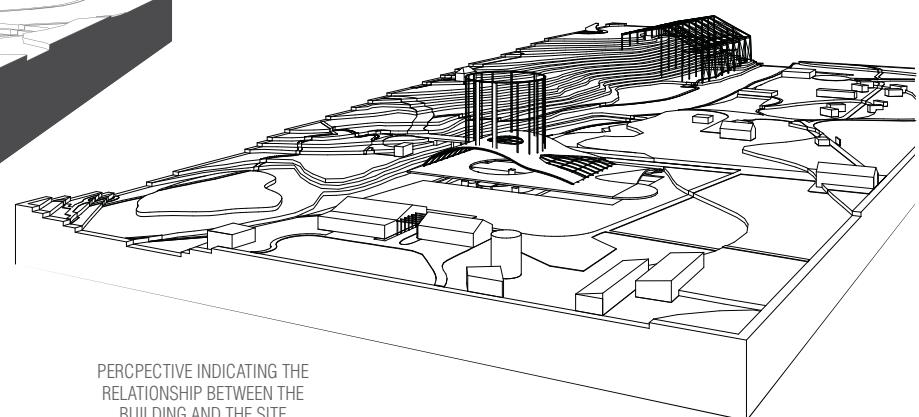
PERSPECTIVE



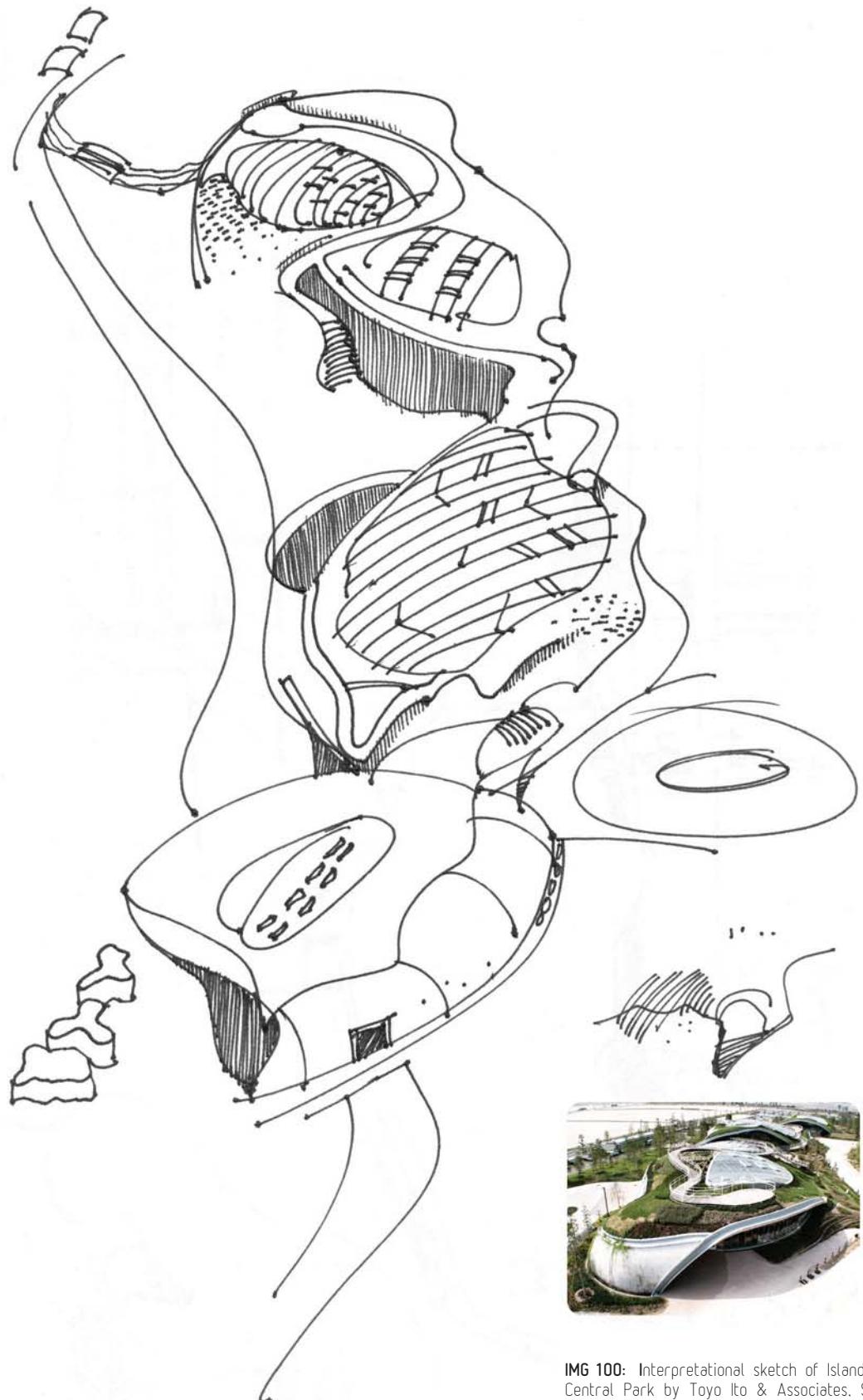
MODELS OF FURTHER EXPLORATION OF THE SPACES WITH A LITERAL INTERPRETATION OF THE CONCEPTUAL SKETCH WORK



PERSPECTIVE SECTION WITH AVIARY IN THE BACKGROUND

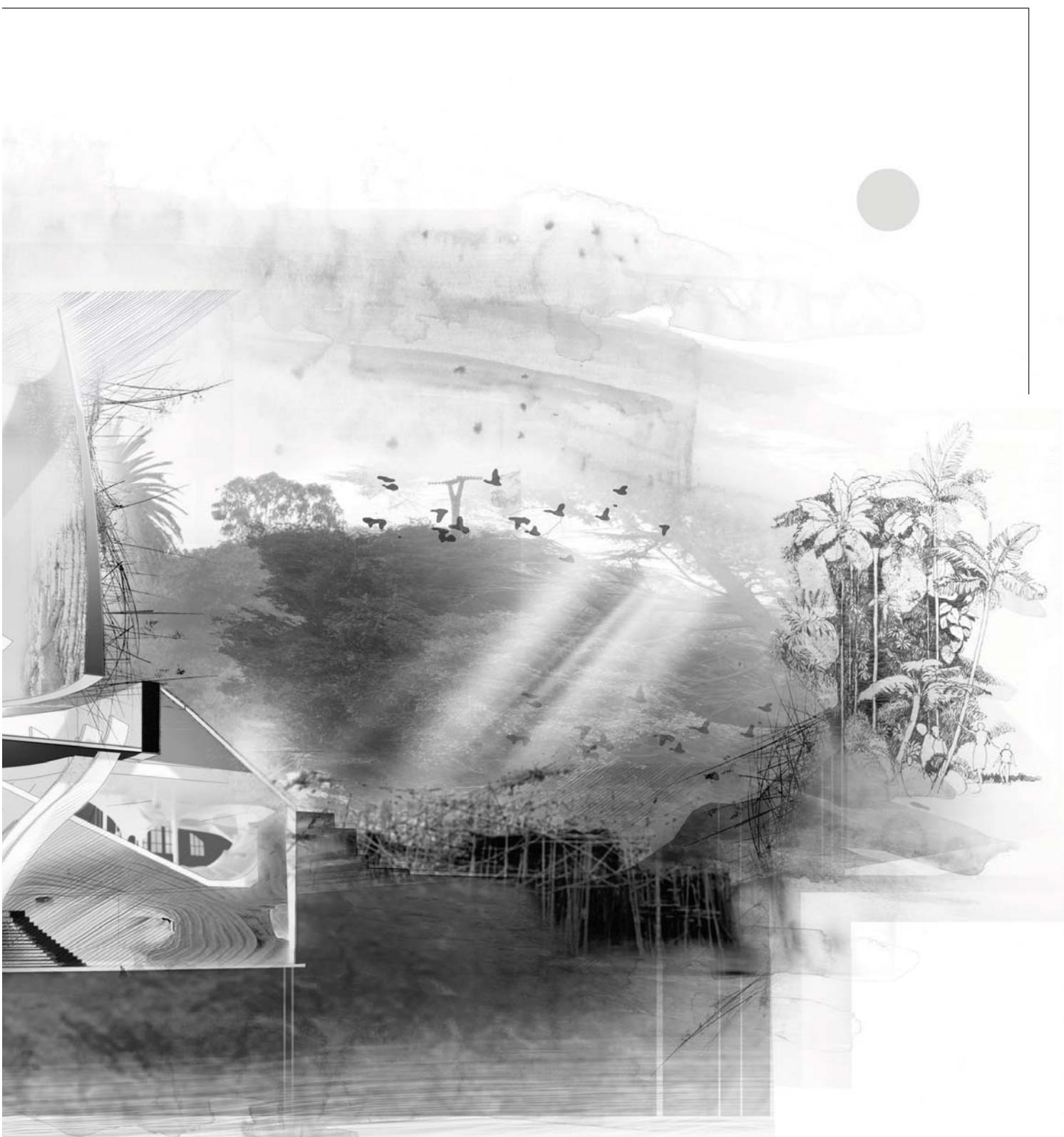


PERSPECTIVE INDICATING THE RELATIONSHIP BETWEEN THE BUILDING AND THE SITE



IMG 100: Interpretational sketch of Island City Central Park by Toyo Ito & Associates. South Japan, completed 2005



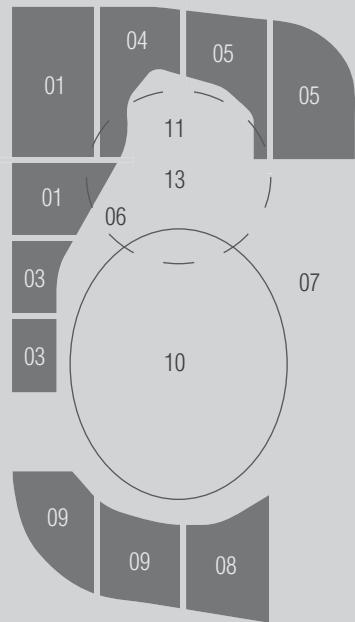


IMG 101: Conceptual sectional view of the building from the east.
June 2011

Then, over time, we see a structure rise up, and as it takes shape, each part stands clearly revealed in relationship to the others and to the invisible law of gravity. When the building is finished, it must continue this act of revelation, demonstrating of what it is made, how it is made and the new forms it makes out of those constituent parts. It must undermine our glancing summation of everything around us into base reality and repeatedly challenge our attempts to comprehend our world in such a totalizing manner. (Betsky, 2000: 19)

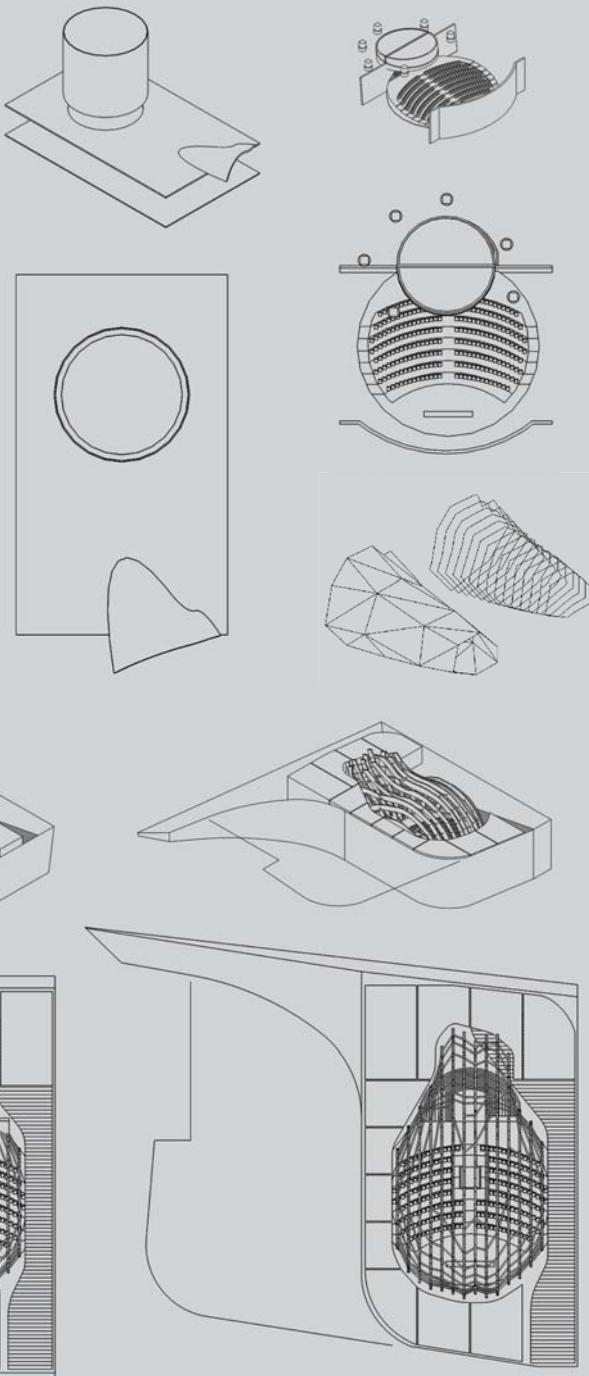


INITIAL LAYOUT

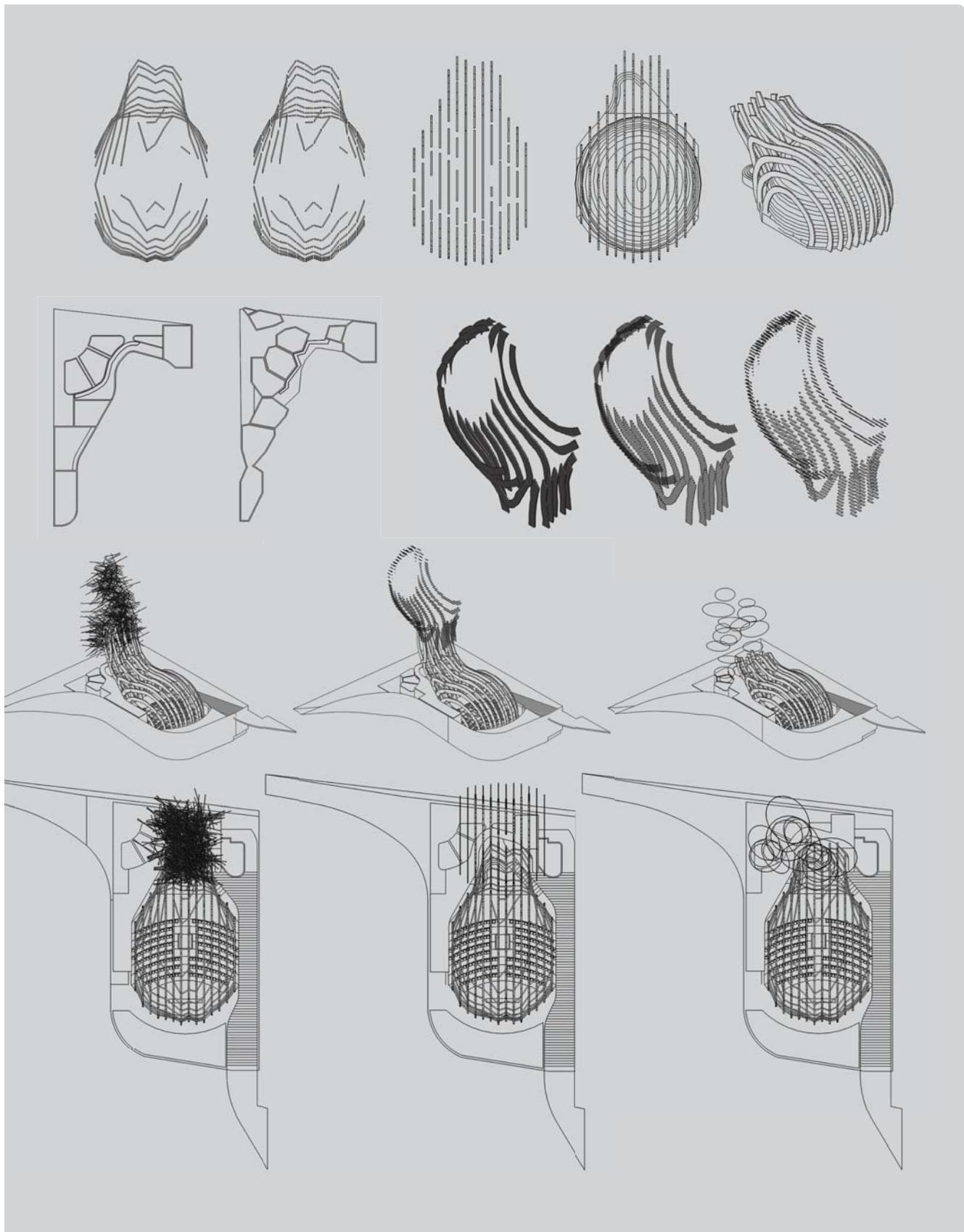


01 NIGHT ROOMS
02 RESEARCH ROOM
03 VIDEO ANALYSIS
04 STORE AND HYGIENE
05 CLINICAL UNIT
06 REFRESHMENTS
07 ABLUTIONS
08 STORE
09 BACKSTAGE
10 AUDITORIUM
11 EXHIBITIONS
12 ANIMAL EXHIBITION & VIEWING TOWER

SPATIAL DEVELOPMENT



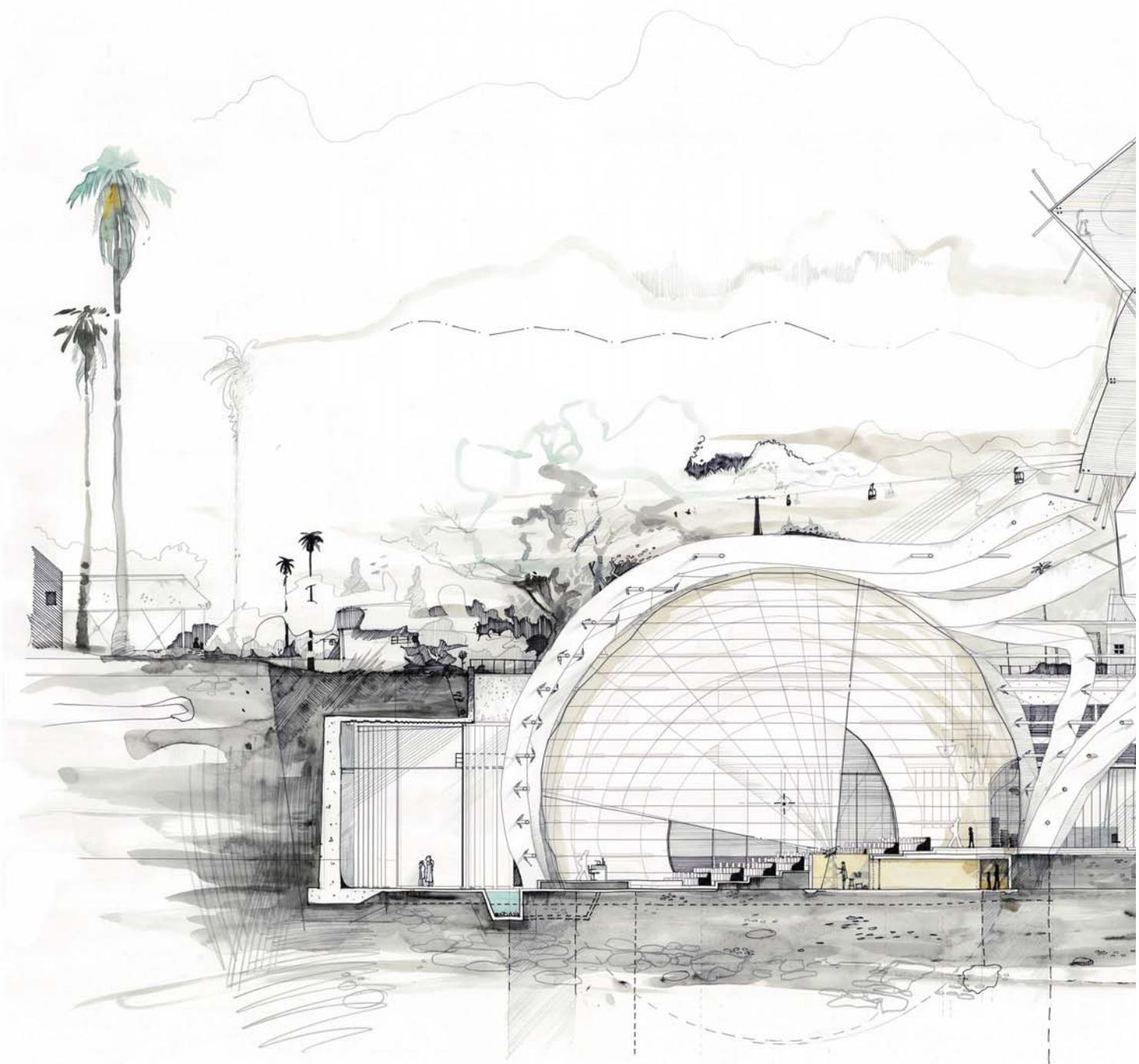
IMG 102: Establishing the primary programmatic components of the building. June 2011

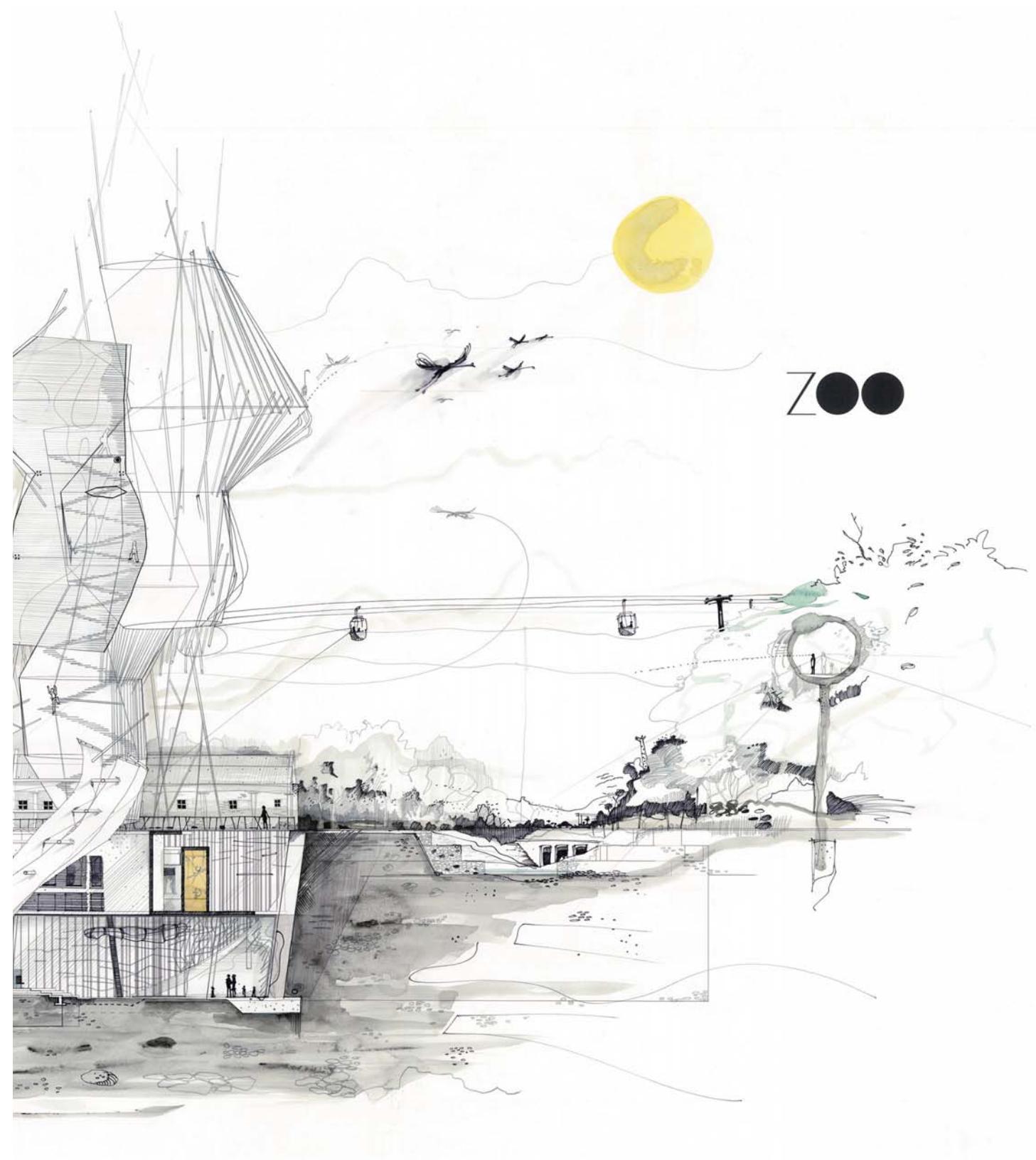




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93





IMG 103: Conceptual
sectional view of the
building from the east.
July 2011



The Maropeng Visitor Centre

Architects: GAPP Architects and MMA (Mphethi Morejеле Architects).

Client: 'a Afrika Leisure' (Pty) Ltd: Opening of facilities: December 2005

The Maropeng Visitor Centre is an award winning exhibition, focusing on the development of humans and our ancestors over the past few million years' (IMG 106), and forms part of the greater Cradle of Humankind site⁶. Maropeng is finally fulfilling its destiny as a foremost, undeniably important World Heritage Site. GAPP, in association with MMA, commenced the development of the site in 2000, shortly after its declaration as a World Heritage Site in December 1999 (GAPP, 2011).

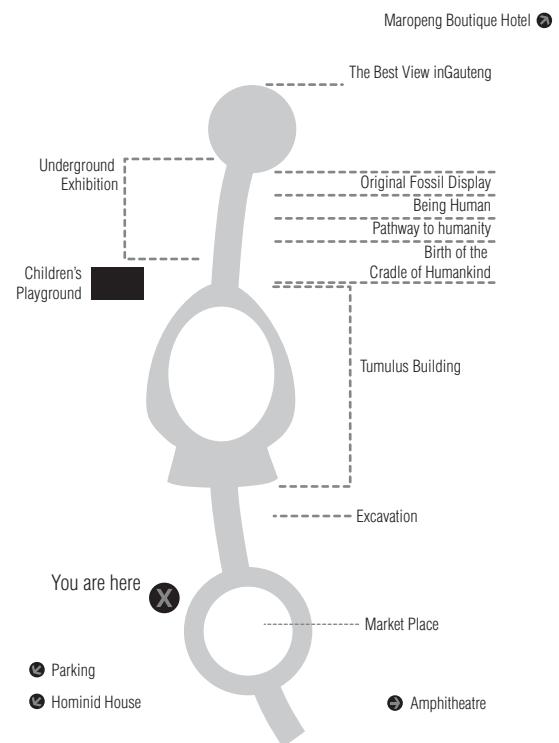
The precedent was chosen on the basis of the designed or themed experience, which addressed the same issues of representing a themed concept through appropriate architectural intervention (IMG 022).

Maropeng means 'returning to the place of origin' in Setswana, the meaning and spirit of The Cradle of Humankind is derived from the Sterkfontein caves and the new interpretation is reflected in the Maropeng development that is focused around the Tumulus and Museum Cave.

The educational exhibition is laid out in the building called the Tumulus, a tall grass covered earthen mound representative of early hominid burial mounds (IMG 108). The Tumulus Building is also referred to as an enormous buried fossil, with concrete 'bones' sticking out the top and serves as the gateway to the interactive museum experience (Maropeng, 2011).

The journey through the exhibition is themed around a journey of discovery from the beginnings of the world, through the history of humankind, right into the future. From the Tumulus, visitors descend into a 'cave' where they take a boat ride on a subterranean lake. Visitors are then treated to a 'journey through time', beginning with the fossil finds of our earliest ancestors, ending in a small, natural amphitheatre with a spectacular view down the central valley, fringed by layers of mountains (GAPP, 2011). At the end of the boat ride visitors enter the interactive exhibition space which is self guided and introduces visitors to the concepts of evolution, extinction and genetics.

The building itself embodies the link between past and future; the front of the building representing a burial mound is transformed into a glass, hi-tech and futuristic facade to the back of the building or exhibition exit (IMG 105). Parts of the development is hidden between the hills on the site; this aspect forms part of the Maropeng experience by encouraging the visitor to discover more, to dig deeper as a metaphor for the archaeological and palaeoanthropological work so strongly related to the Cradle (Maropeng, 2011).

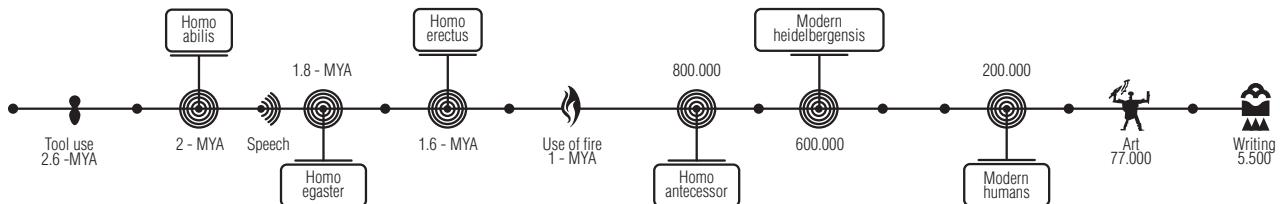


IMG 104: Map of the Maropeng facilities to orientate visitors

IMG 106: opposite: Diagram adapted from the Maropeng exhibition



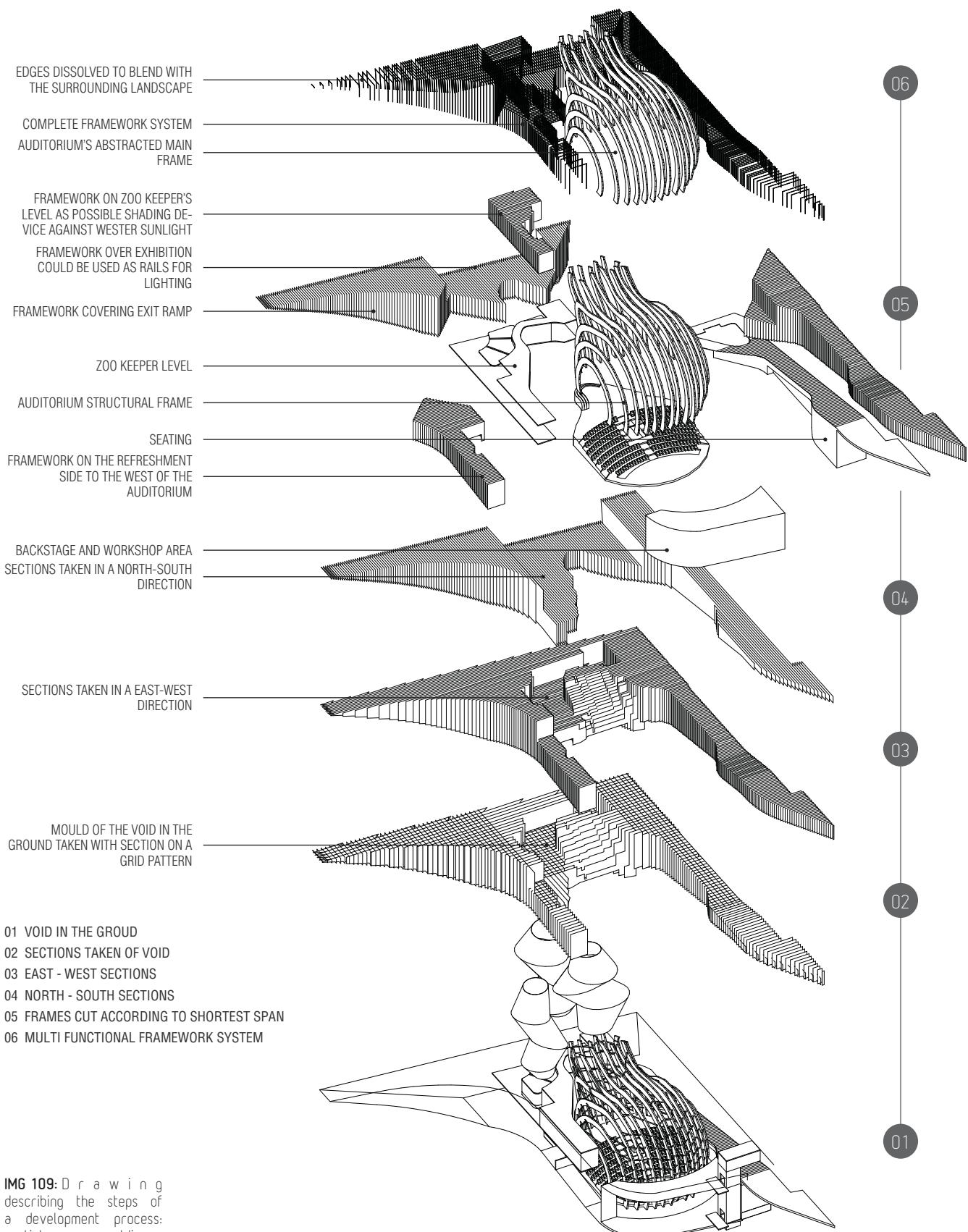
IMG 105: left to right: Approach to the Tumulus building (burial mound). Natural amphitheatre with futuristic facade in the background. Material selection



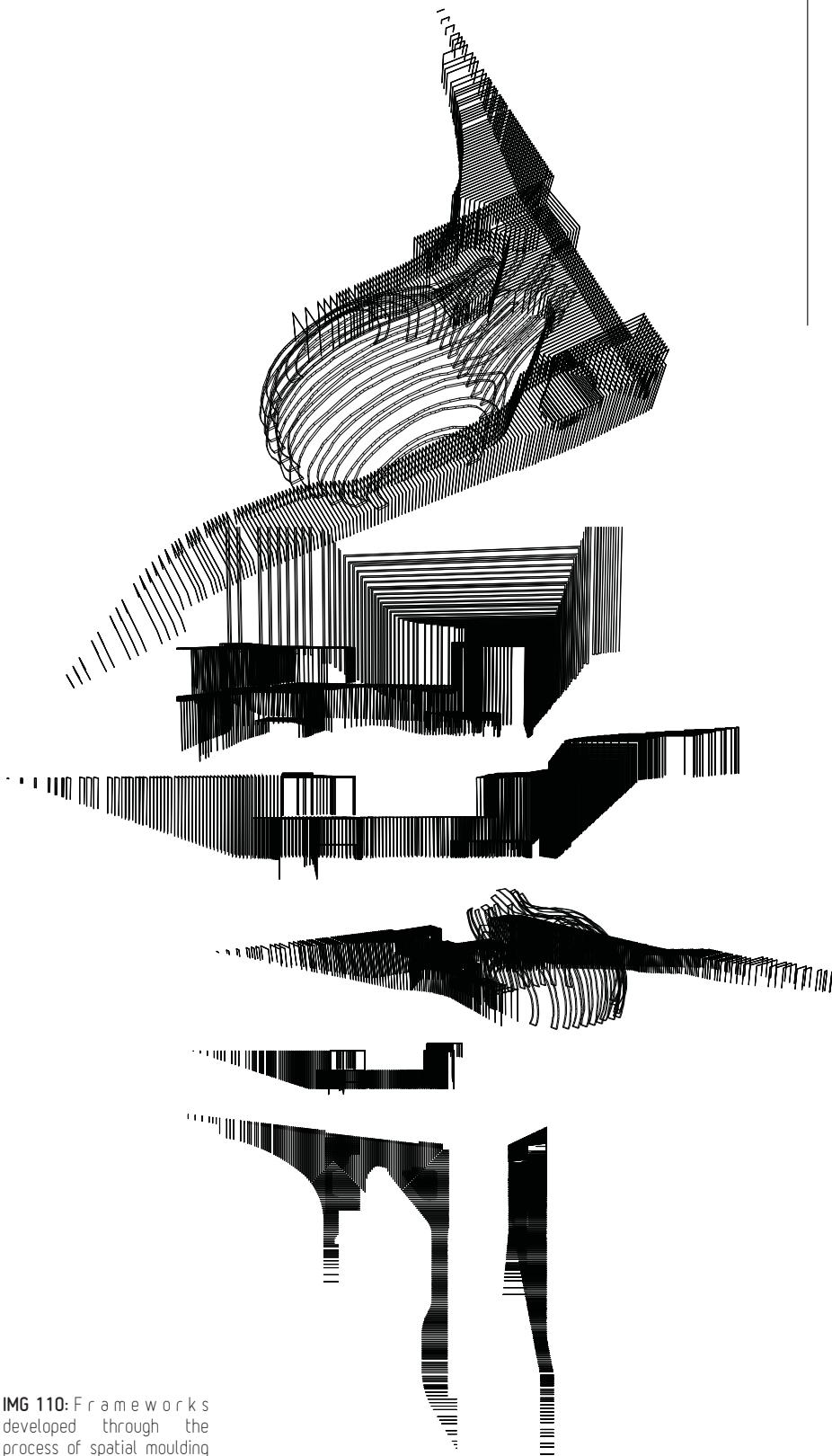
IMG 108: The natural Tumulus building (burial mound) covered with grass



IMG 107: Artificial lighting on frames and lighting effects within the hidden immersive experiences : main exhibition space



IMG 109: Drawing describing the steps of a development process: spatial or cave moulding

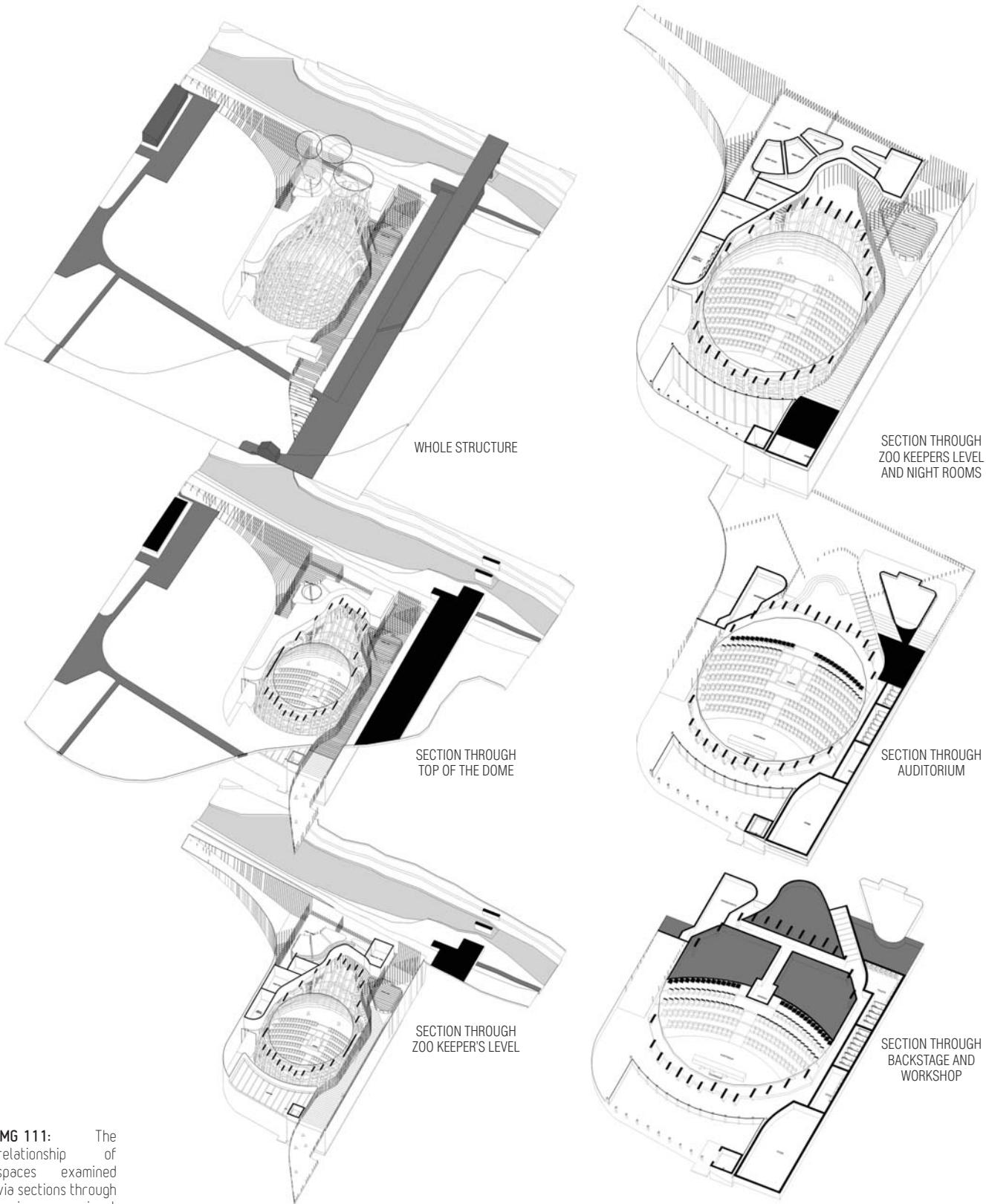


IMG 110: Frameworks developed through the process of spatial moulding in relation to the outlines of the main structural dome

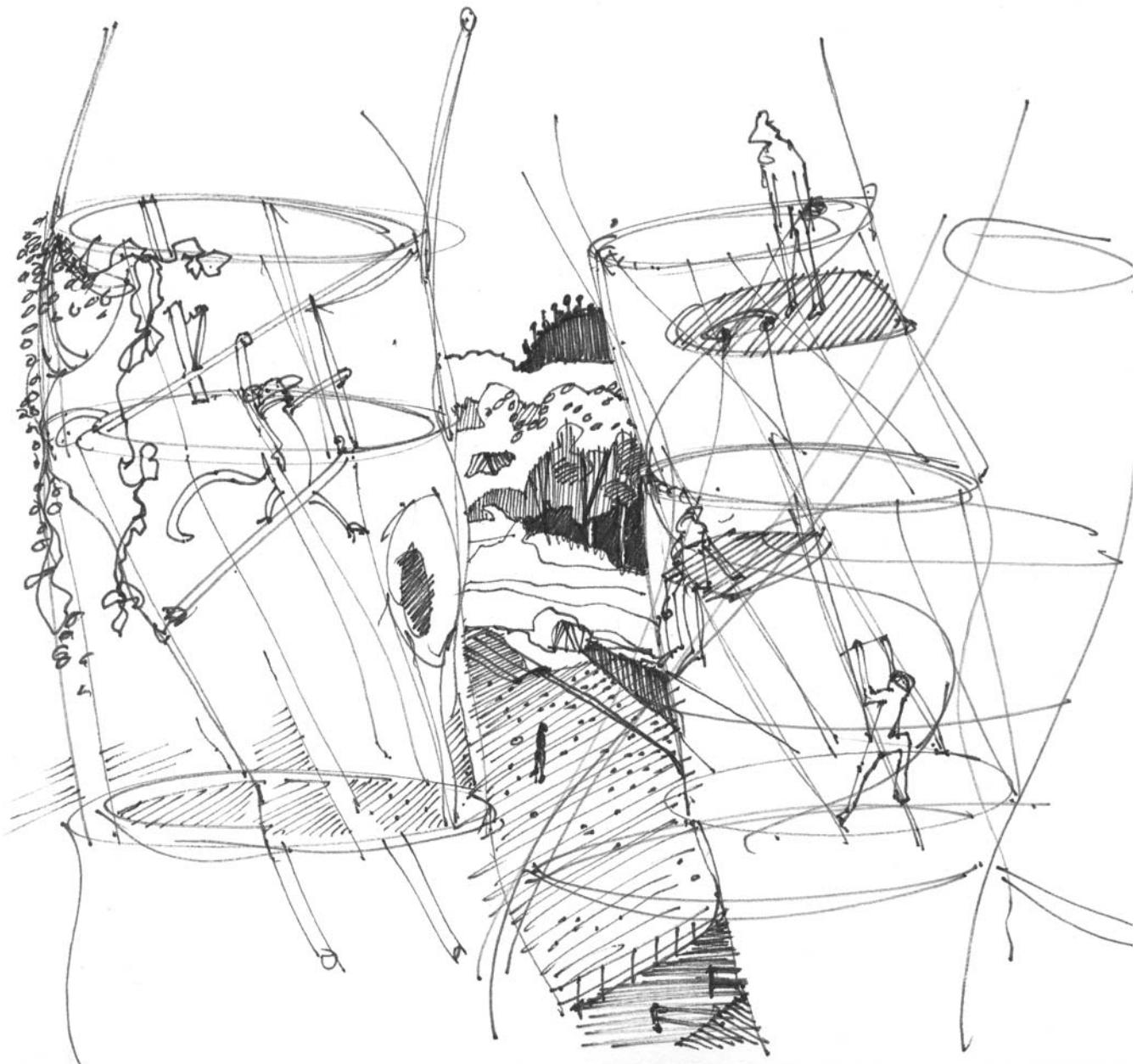
The framework system developed from a spatial moulding exercise IMG 109). During the exercise the exterior spaces were divided into sections along the north-south (main pathway in line with the bridge) and east west (Apies River) axis. The initial objective was to make the excavated or burrowed space a visible entity, in other words to mould the space and interpret it into object. The resulting geometry created such a strong language that it was developed into the steel framework or portal frame structure. As the visitor enters the structure the perspective creates the effect of an enclosed passage or tunnel; however as the visitor progress through the structure the sides gradually open up.

With the addition of crawler plants the frameworks can provide shaded entrance and exit pathways during the summer months; a platform is also created for the picnic terrain to flow over the barrier walls of the building creating the illusion of the structure rising through the surface like growing roots. The dried out plant material can be weaved into the structure during the winter months creating a crafted entrance experience; thus the plants will seasonally establish new relationships with the architectural structure. The natural elements will be allowed to overwhelm the architecture blurring the boundary between structure and landscape (The Imagineers, 2007). The natural growth will further assist with creating a high contrast between the gardens and the immersive virtual environment in the interior of the domed theatre.

In addition the structure will be used as lighting rails for the exhibition spaces (IMG 107), and it provides a basic organizational element to assist with the installation of exhibits.



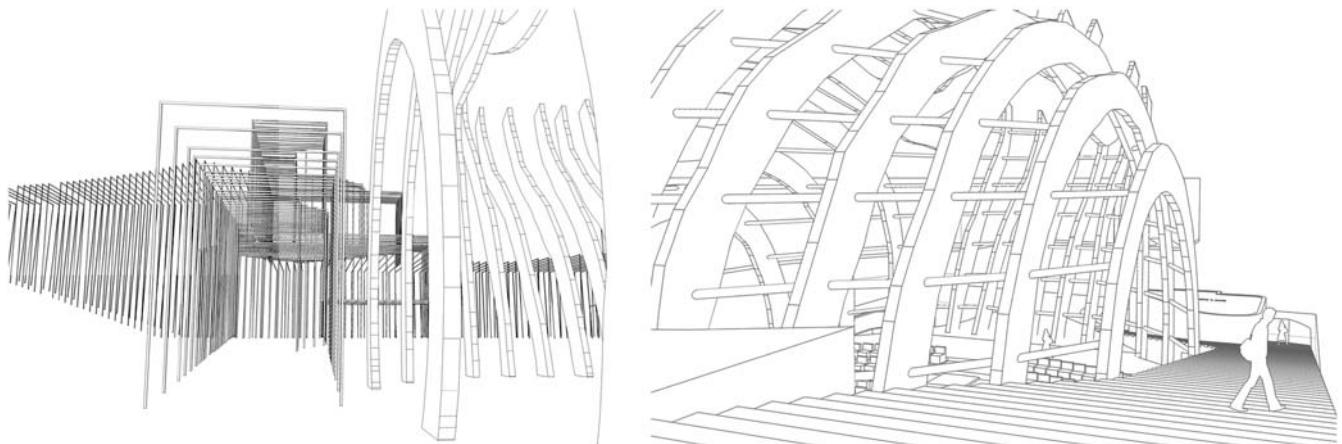
IMG 111: The relationship of spaces examined via sections through various prominent levels from ground level downwards



IMG 112: Sketch of the exhibition towers for Animal and a viewing or climbing tower for Man

The exhibits in the form of viewing or climbing towers allow the primates to move vertically creating a more favoured environment for primates (Mallapur, 2005). Animals will move from the indoor facilities (night rooms) to the outdoor exhibit tower as the keepers permit⁸. Viewing towers allow the visitors to mimic primate climbing behaviour and interact with the animals on their natural level. Behavioural enrichment features should include sway poles and artificial branches; natural plant material can serve as plant based enrichment.

Plant based enrichment can provide environmental enrichment for the primates. According to Frediani (2009: 29-52) The focus of enrichment to date has been on tactile, olfactory and visual methods of sensory stimulation. Additional sensory modalities which could be stimulated through plant enrichment include auditory and equilibrium (orientation in space and time). Animals (and their keepers) can gain a lot from enlightened plant use through exploring physical and psychological stimulation and maintaining systematic records that are shared to enable study and replication elsewhere.



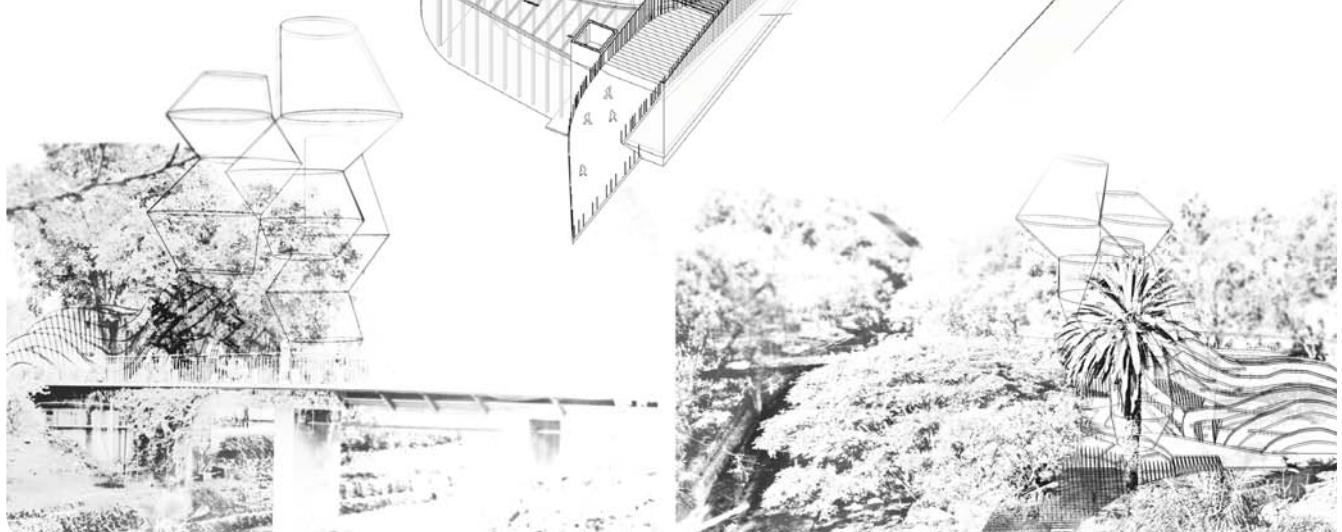
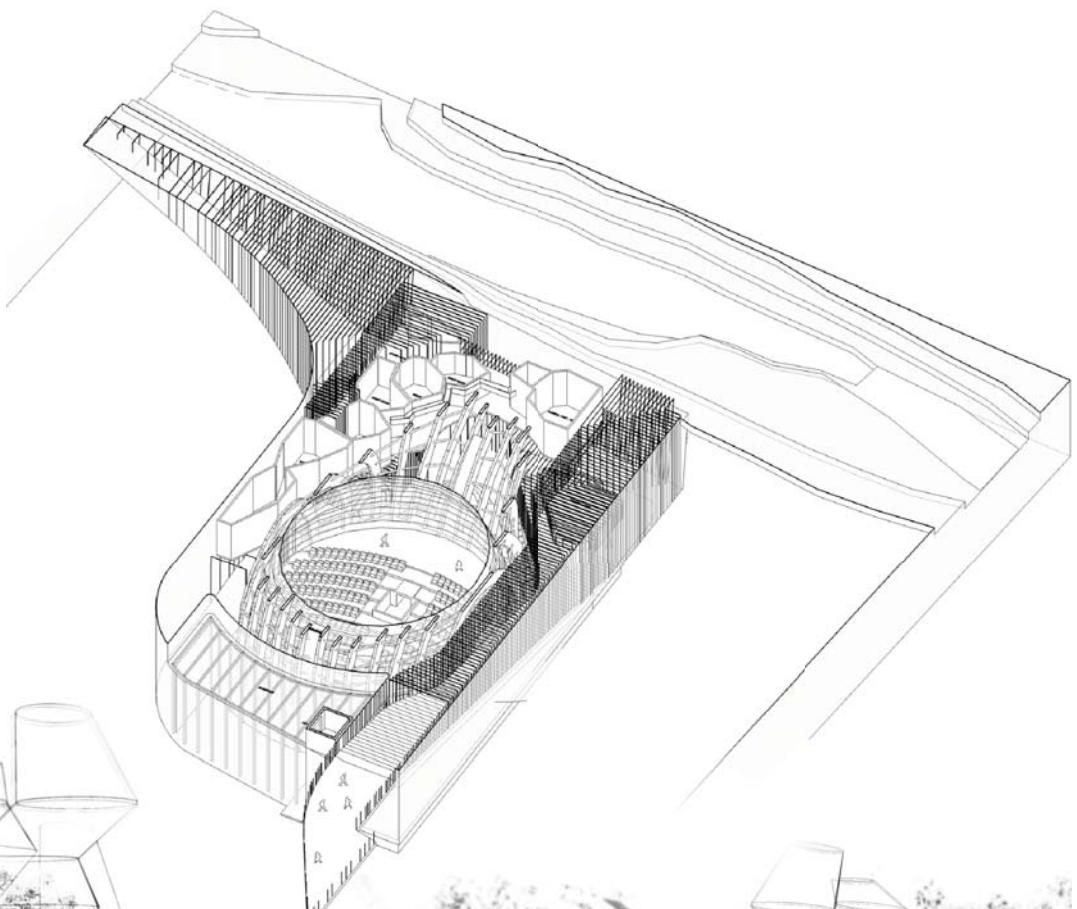
IMG 113: above left:
View through the
framework system

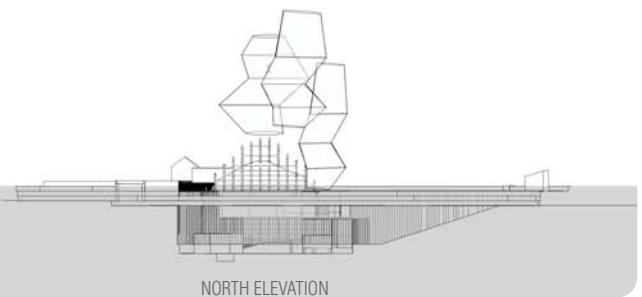
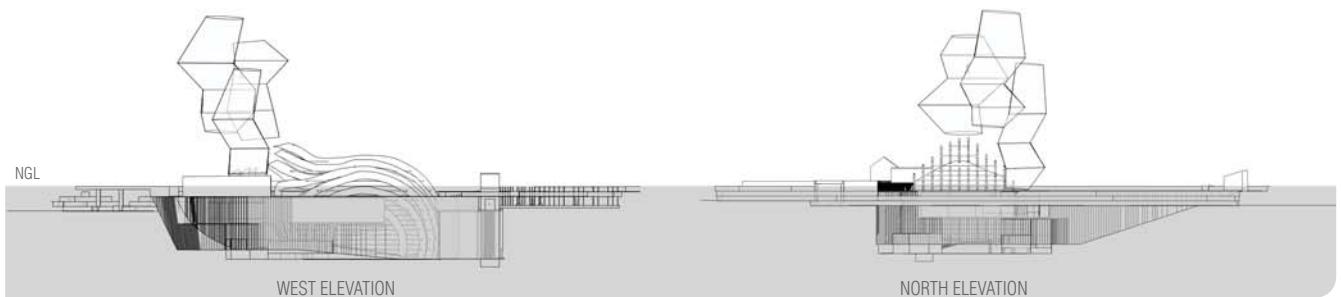
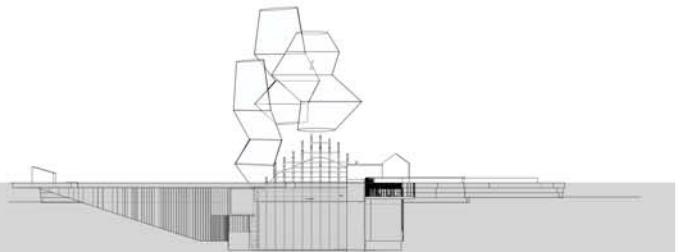
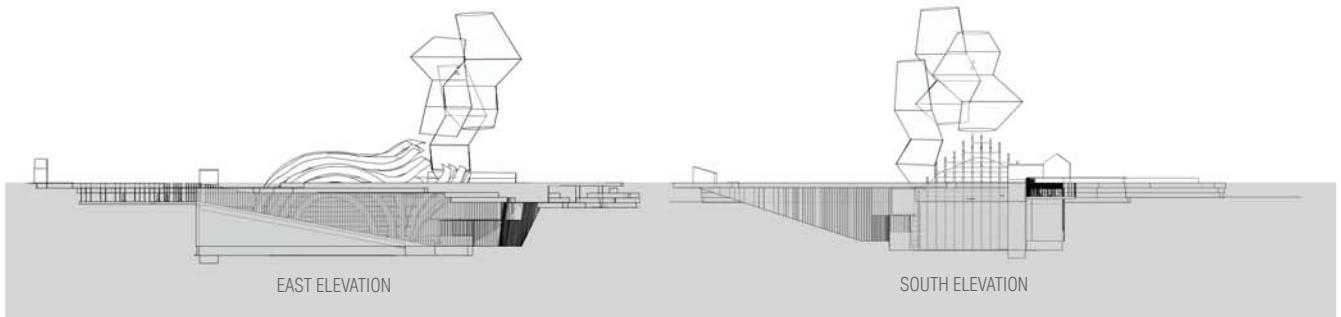
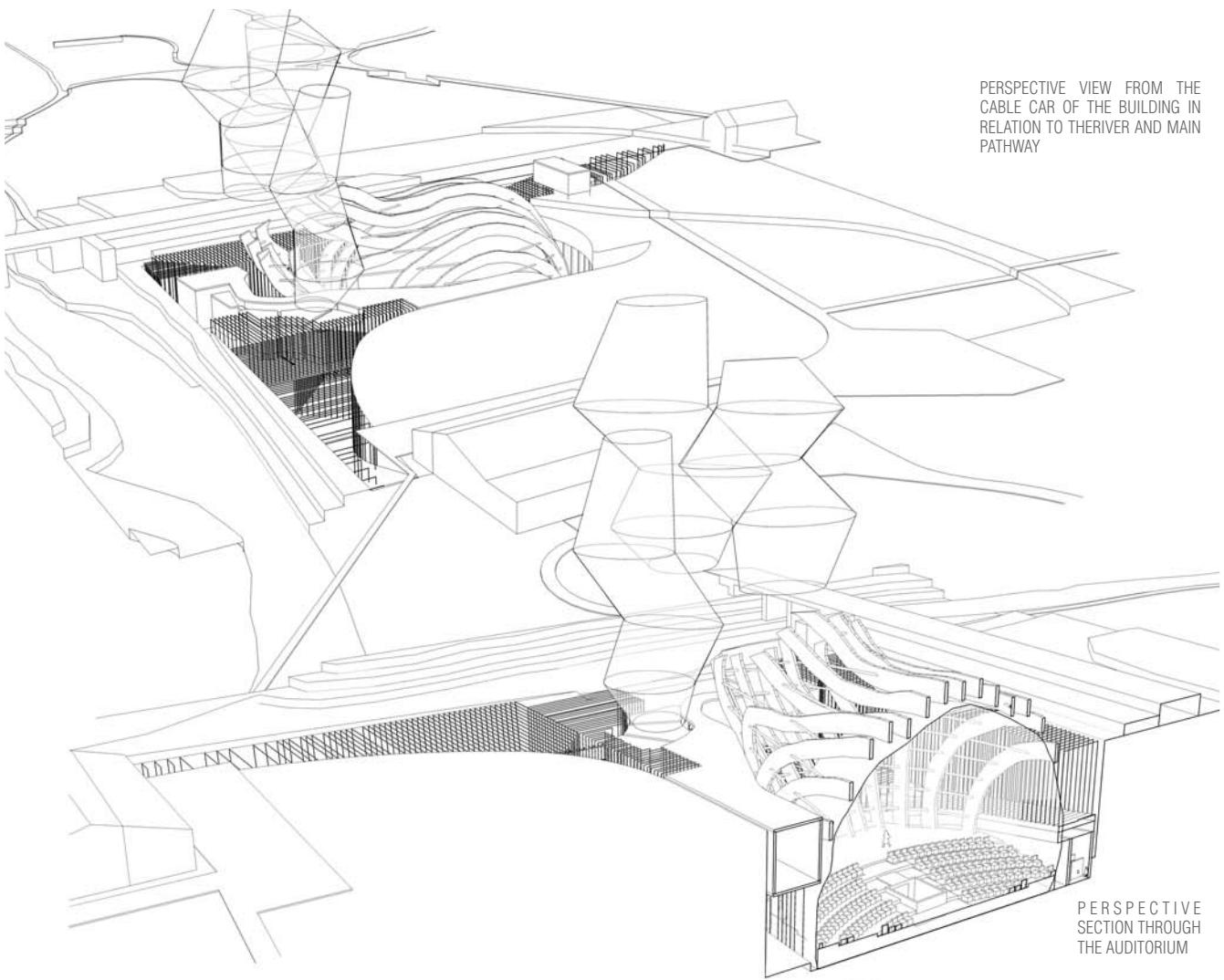
IMG 114: above right:
The view on entering
the building

IMG 115: right :
Section taken on
ground level indicating
the reinterpreted
version of the zoo
keeper's level

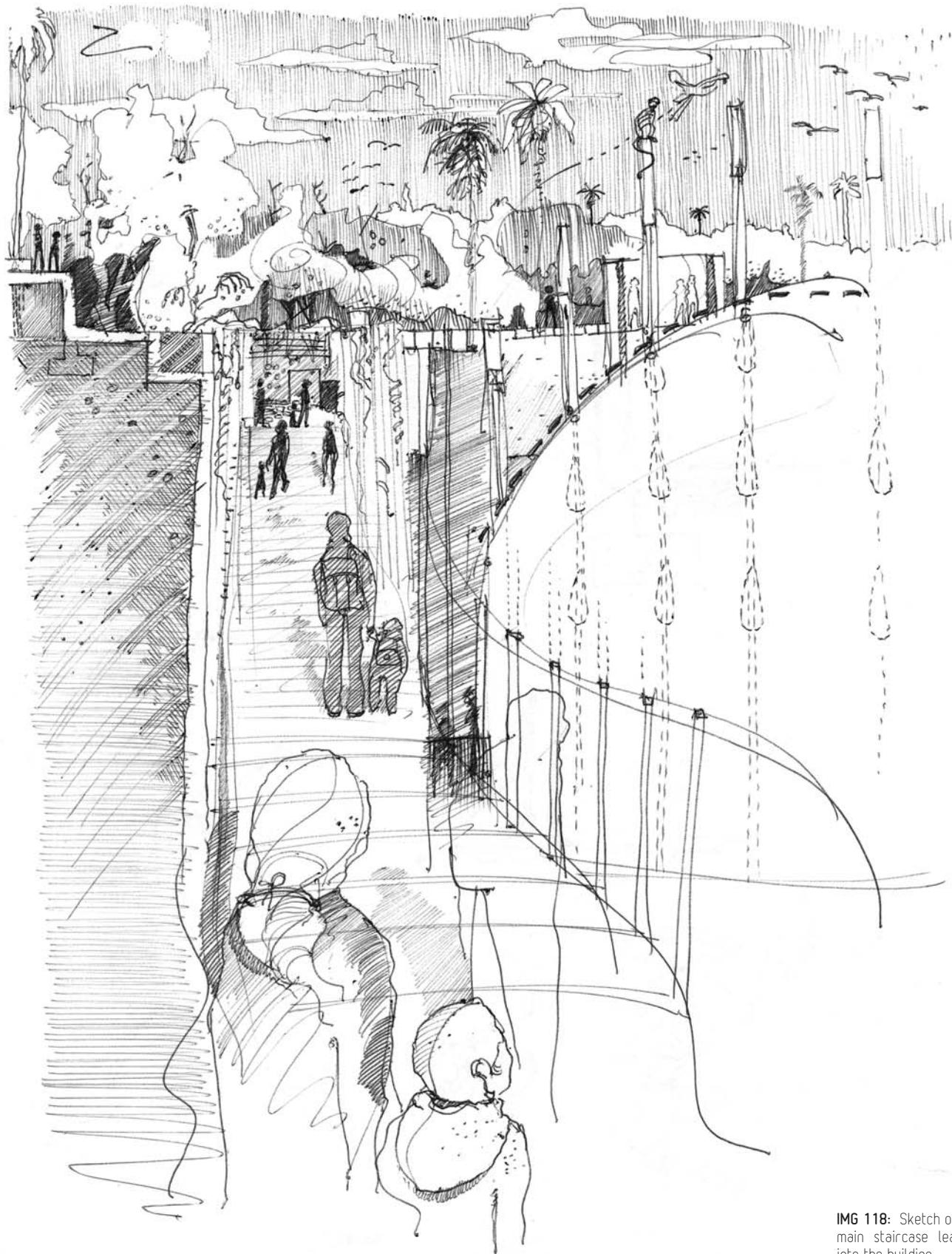
IMG 116: below :
Building set within the
landscape as viewed
from the river and the
cable car system
respectively

IMG 117: opposite:
Initial perspectives
and elevations

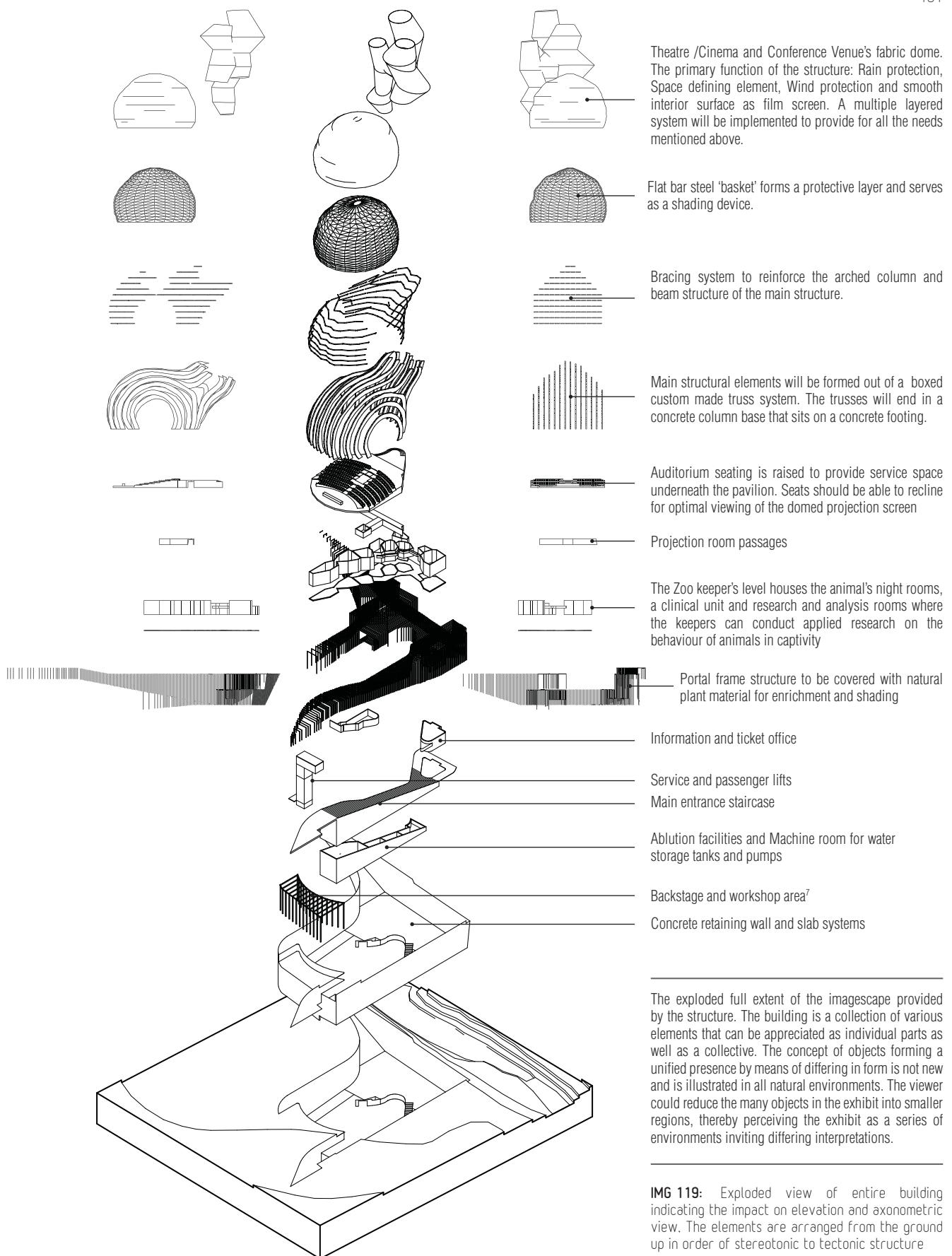


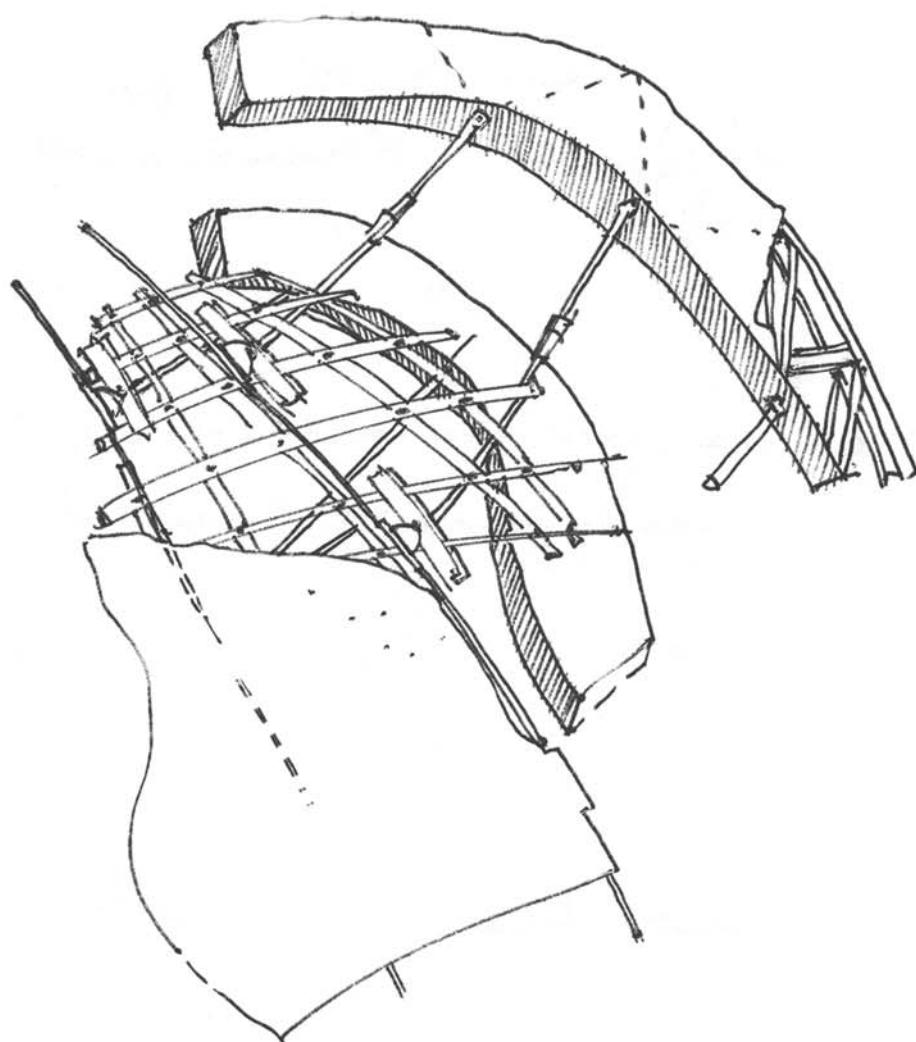


NGL



IMG 118: Sketch of the main staircase leading into the building



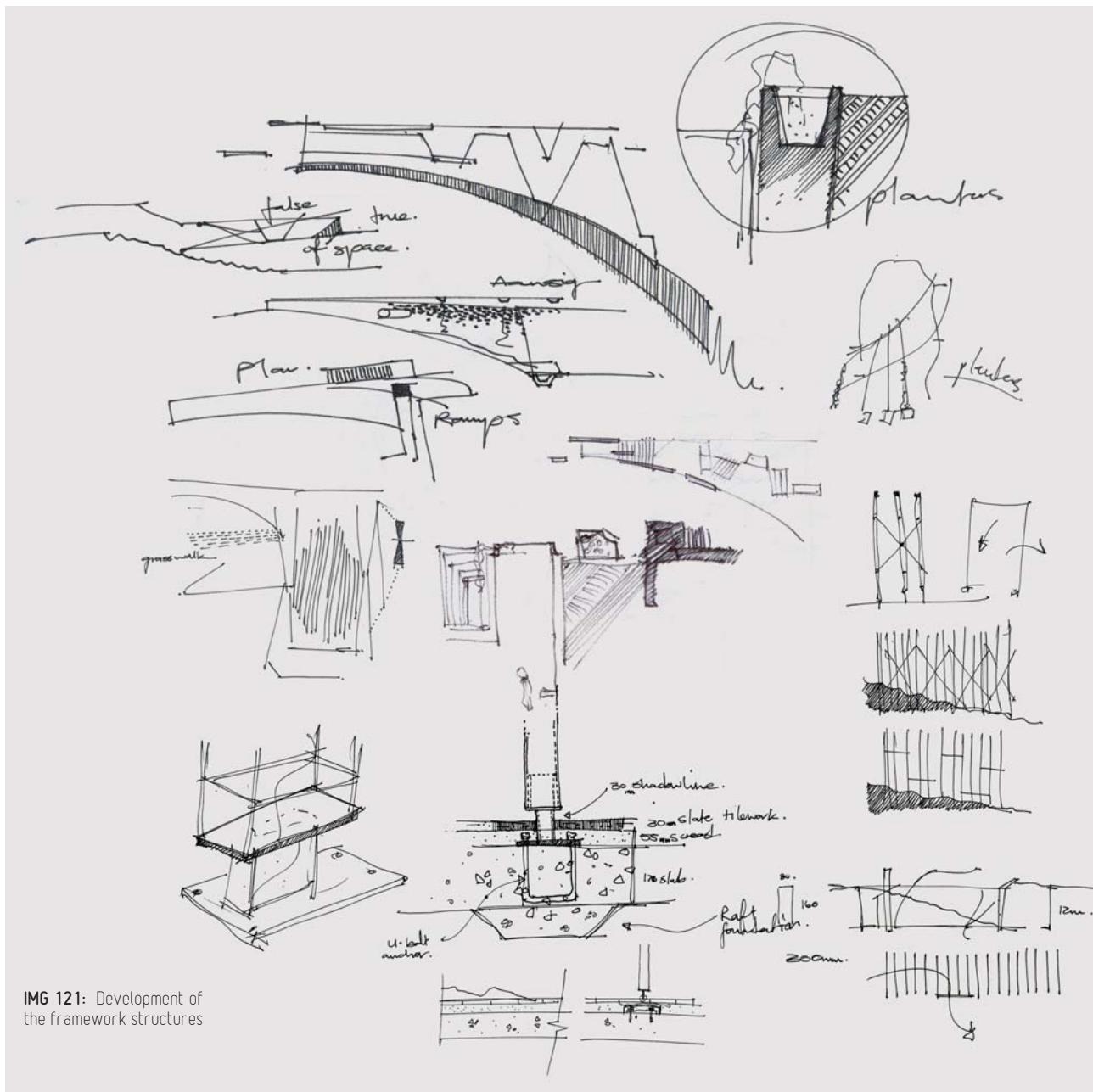


7. TECHNICAL --- DEVELOPMENT

The technical development is treated as the resonance of the theoretical viewpoints of the dissertation. The investigation should therefore, be seen as the near final synthesis of method or the becoming of a structure and not the rationalised drive to a product.

Basic product selection is made to communicate an understanding of various custom designed solutions that would follow.

IMG 120: opposite: Sketch of the structural layering of the domed theatre



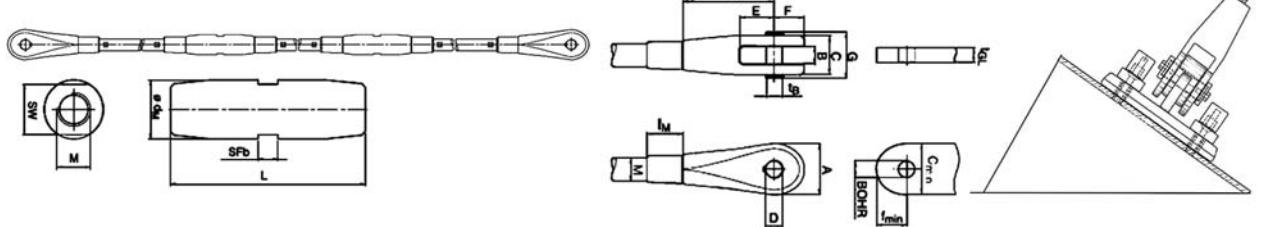
IMG 121: Development of the framework structures

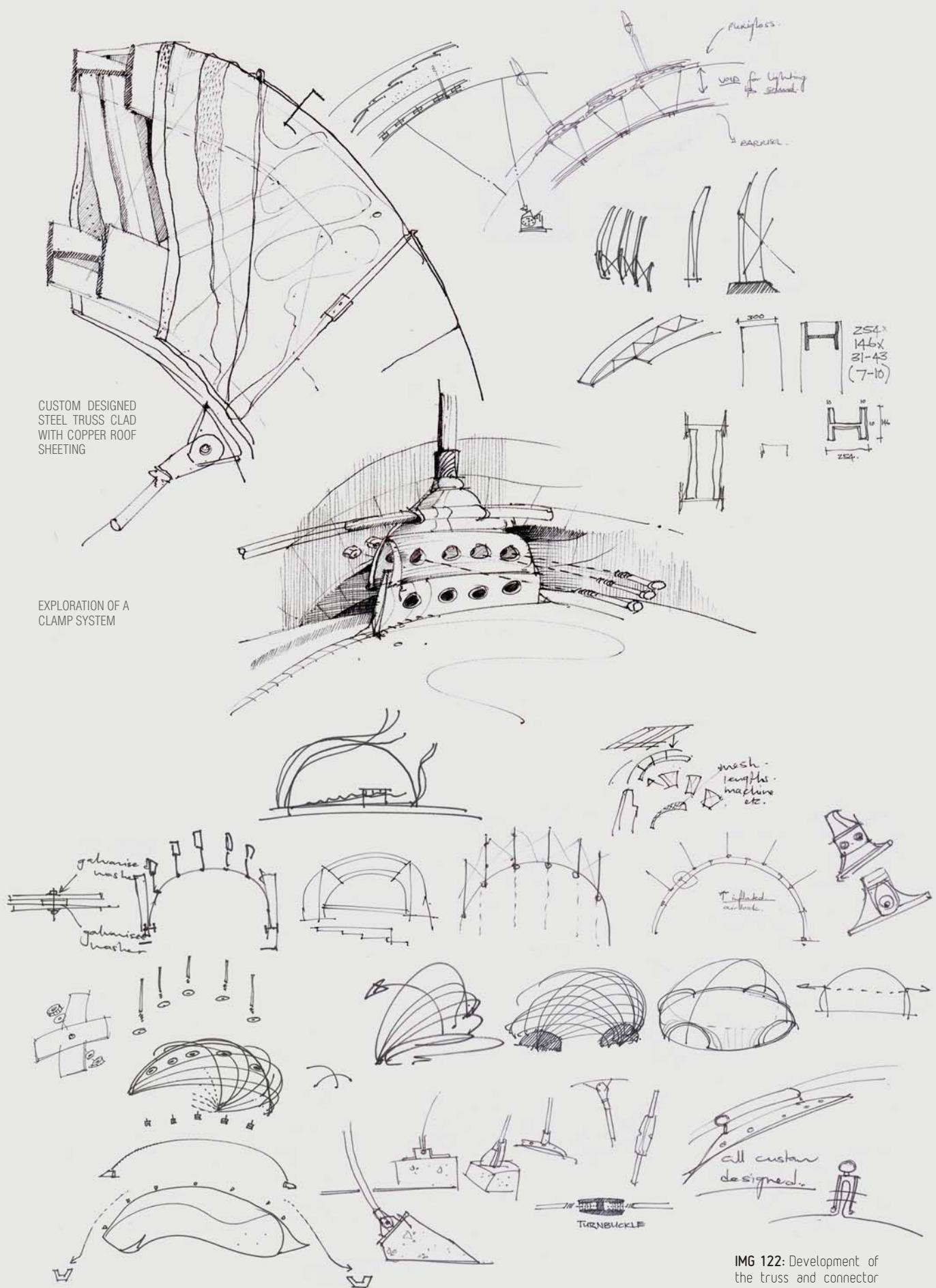
ROD SYSTEM

Pfeifer specialises in and developed a comprehensive range of products that offers an aesthetic and economic solution for any type of application and load range. Pfeifer's Rod Systems and connector types serve as an example of various application or custom design possibilities.

PFEIFER

www.pfeifer.de





IMG 122: Development of the truss and connector systems

RETAINING WALL

The site has sedimentary clay soil with little water movement. According to SW Jacobsz (2011) the type of sedimentary clay found on the site is not very active as it is discarded onto the grounds by the Apies River. Jacobsz (2011) proposed a Gunnite (Spray Concrete) retaining wall system as excavation on the back of the walls will not be necessary. This system will include ground nails on a 1,5m to anchor the retaining wall. The use of Micro piles could be necessary to stabilise the ground during excavations. Excavation typically takes place on 2m intervals and when the excavation surpasses 6m into the ground a 1.5 metre interval is used from thereon. The concrete layer is applied to a typical thickness of 300mm and is reinforced with a double galvanised mesh layer. A Structural concrete footing is dug out with the last excavation phase. Any moisture build-up against the retaining wall will be drained via a grid of wick drain socks that leads the water through weep holes (approximately 120mmx

30mm) into the open gutter system on the interior of the structure that flows into a water collection tank. A 300 cubic metre tank with a height of 7,5m will be provided and sensors will automatically switch the pumps on to pump water to the ground level. This will ensure that the tank will be able to accommodate heavy rains or unforeseen circumstances. The tank will exert 75kpa of pressure on the floor slab, and Jacobsz is certain that the slab will be cast on solid ground conditions at the depth of the machine room level.

The option remains to use the Gunnite Concrete layer as permanent shuttering and to cast a thin layer of concrete on it for an off shutter finish. All the excavated soil can be used to sculpt mounds for animal display areas. Jacobsz emphasised the fact that a full Geotechnical report will be needed to finalise the design of the retaining wall system.

AIR CONDITIONING SYSTEM

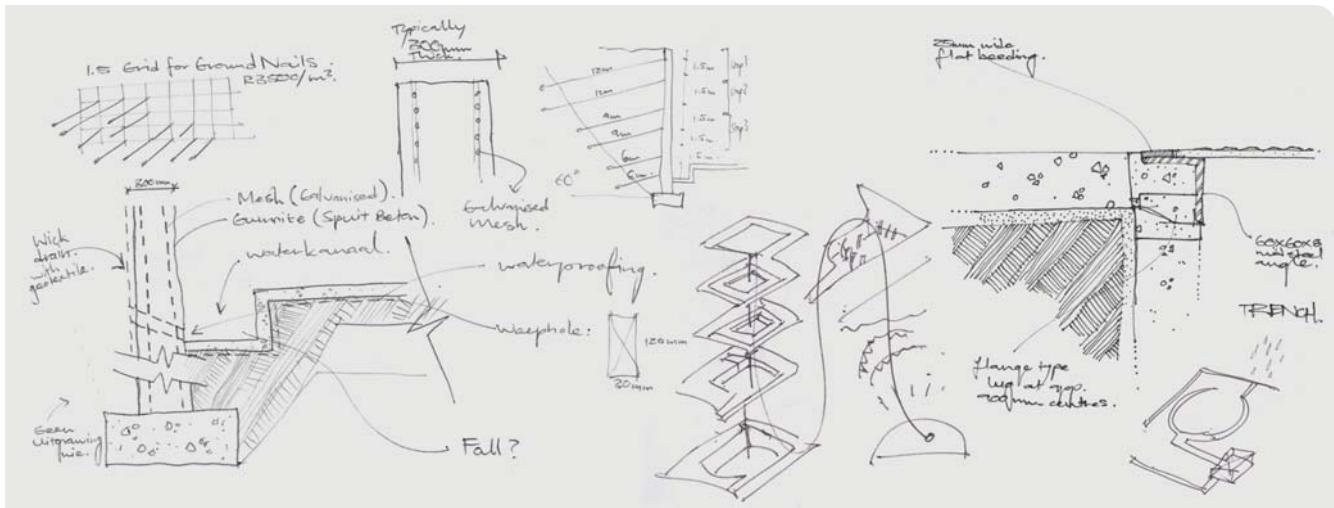
The Climate in this type of environment must preferably be controlled by means of an energy efficient Air-conditioning system to ensure the occupants comfort levels for this type of application. According to Arie Hoogenboezem (2011) typical design parameters for this type of membrane structure are 22-23°C. Due to the high volume the stratification effect will cause hot air to rise. The conditioned air will be supplied via outlets under the seating to ensure the climate the occupants experience is comfortable. The micro climate of the environment at high level is not really important as this space will never be occupied.

To ensure the dome is fully inflated Hoogenboezem (2011) suggested that a over pressure design is included in the HVAC system which monitors the indoor pressure as opposed to adjacent environments. To enable this, static pressure sensors will be utilised to control a fresh air supply fan system. This air is introduced from



IMG 123: The proposed retaining wall system used at the Gautrain development. 2011 (Images Courtesy of S.W. Jacobsz)

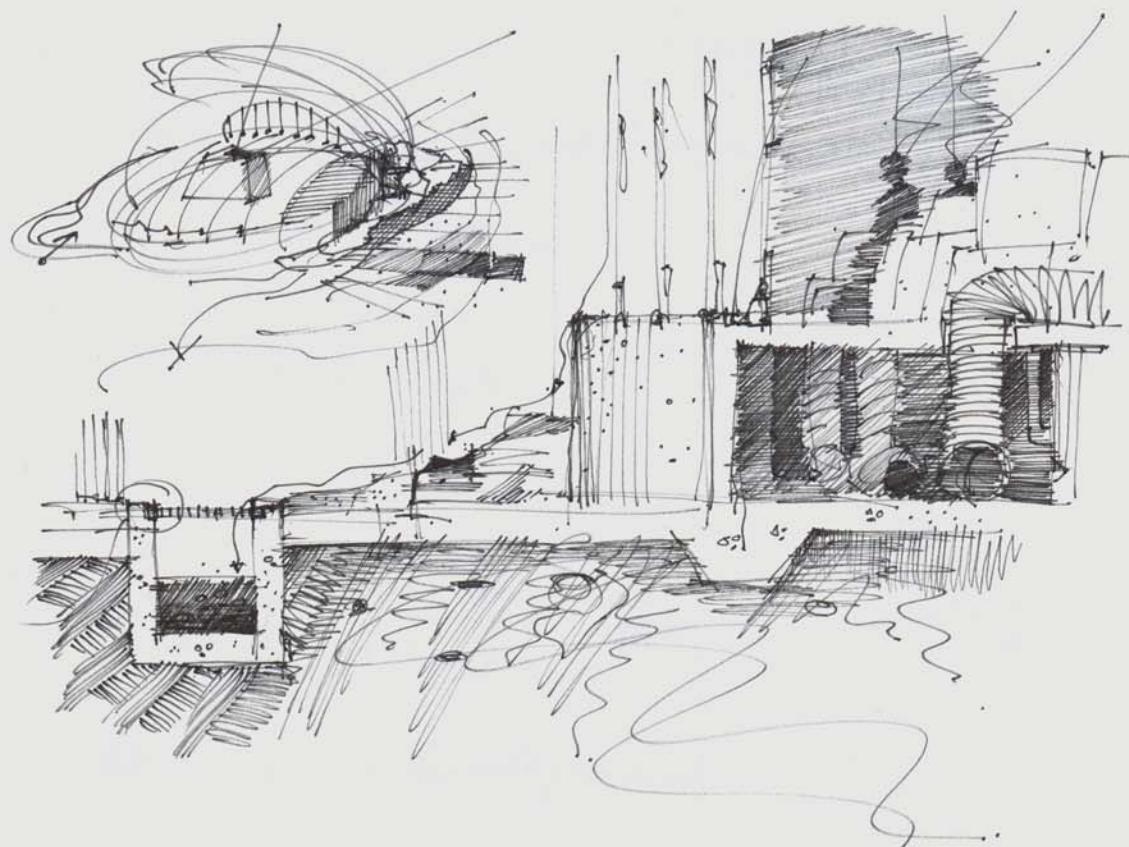
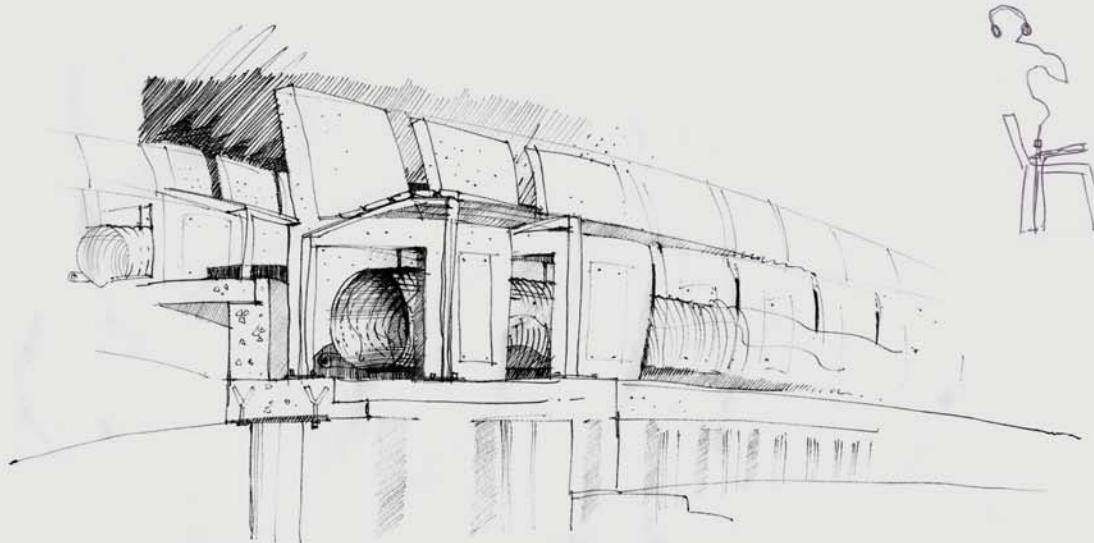
IMG 124: opposite: Study of material use and the handling of water that invites play at Māropeng



IMG 125: Sketches of factors regarding the retaining wall system

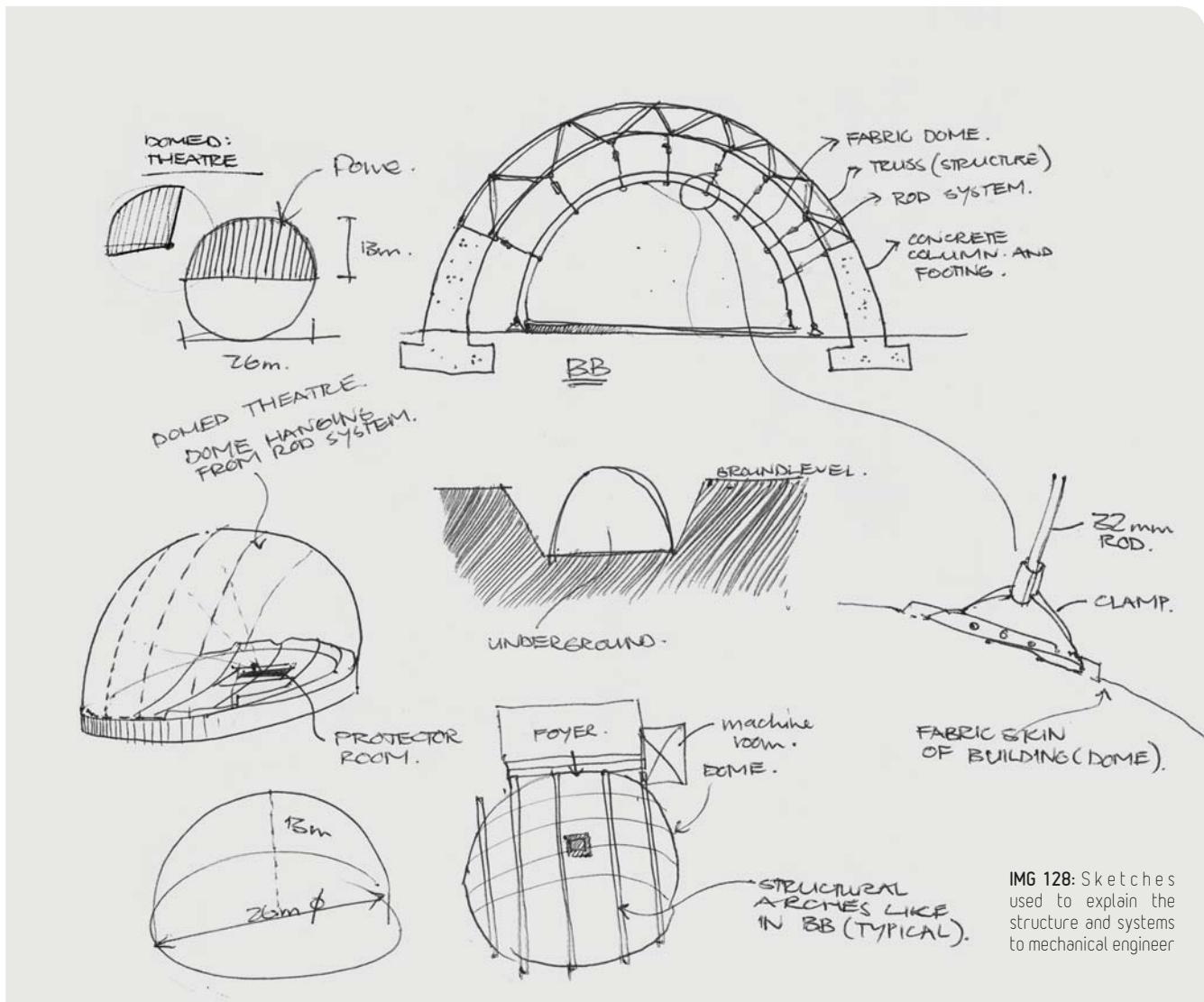


ZOO
111



IMG 126: Technical development sketches

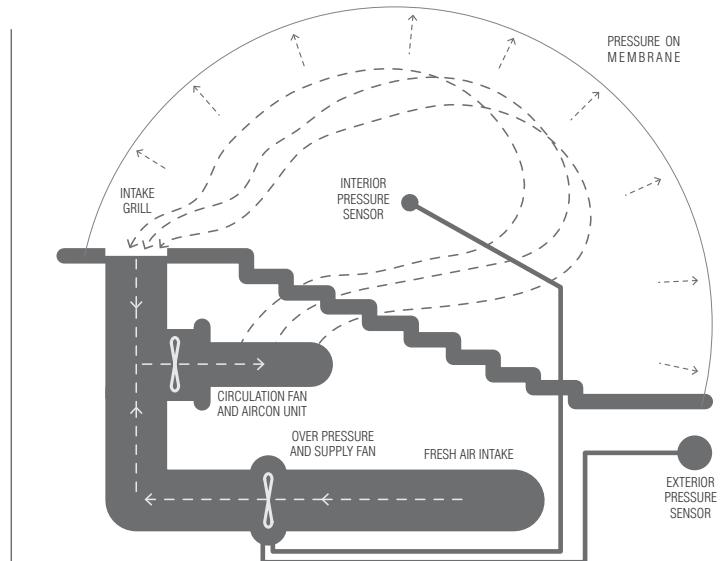
IMG 127: opposite: Elementary diagram explaining the basics of the airflow and over pressure system used to fill the dome out



IMG 128: Sketches used to explain the structure and systems to mechanical engineer

a clean source (outdoors) to maintain the required over pressure. Airlock type entrance doors must be utilised as well as properly sealed construction methods to prevent air from escaping too easily from the interior of the building.

The estimated size of the machine room during the initial spatial planning proves sufficient for this application as a room of approximately 5 x 5 x 2,5high would be required (Hoogenboezem, 2011). Along with this an outdoors area to place heat rejection equipment of approximately same area would be advisable. This can be some distance away out of the eye; approximately 40m can be accommodated or even more if required. The size of a fresh air duct to introduce the required fresh air and over pressure would be approximately 700 x700 mm big and will reticulate from the plant underneath the seating to a clean source outdoors. The ducting distributing the air underneath the seats will be in the form of a network starting big from the source (1m x 1m) and become smaller as this is branched off. Approximately all the air supplied underneath the seats must be returned again to the plant room for recirculation thus a return air plenum with grilles somewhere in the back floor of size 5m² (in any shape or multiples of sizes) will work well. An important note to make is that in this application noise outbreak from HVAC equipment is very undesirable thus proper sound attenuating measures needs to be implemented (Hoogenboezem, 2011).



AIR LOCK PRODUCTS



A



B



C

A: Rotating door system

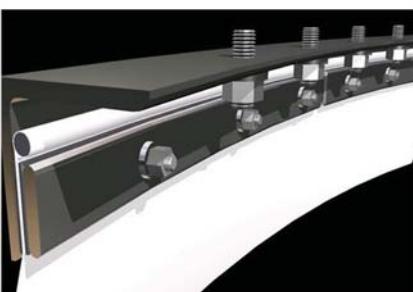
B: Rotating door system

C: RUND™ cylindrical air curtain system

D: Clamping systems by Birdair to serve as precedent for the design of the custom clamping systems for the proposed visitor centre



D



RADOMES

Typical radome pressurization systems contain either 2, 3 or 4 blowers, an air intake plenum, motor starters and an automatic radome control panel - all mounted on an integral skid. Multiple blowers provide redundancy that guards against failures from the loss of a single unit. Centrifugal, non-overloading, backward-inclined blade blowers provide constant pressure over a wide range of airflow conditions without the need for complicated controls. Radomes also use a PTFE membrane (Teflon®) coating is thermally fused to high-strength woven fiberglass under temperatures exceeding 600°F. There are no adhesives used in either the manufacture of the membrane or

the assembly of the envelope itself. The result is a chemically inert structure having inherently stable characteristics (including hydrophobicity) with a maintenance-free envelope which never requires painting, re-coating or caulking over the 20 year design life. Accidental damage to the radome envelope may be repaired in place by heat-welding a piece of the same material over the damaged area. The dome shaped radome envelopes are constructed from gore shaped panels, each heat sealed with the next to form an air and watertight lap seam.



Lowering membrane into place



Clamping membrane to the base



Pressurisation system

MEMBRANE

Birdair's new Tensotherm™ product, is made with Saint-Gobain's SHEERFILL® II Architectural Membrane and a special grade of FABRASORB® Acoustical Membrane. SHEERFILL can help lower air conditioning requirements in buildings, reducing peak cooling demand by 10 to 15 percent.

A: PTFE Fiberglass Outer Layer: PTFE, or polytetrafluoroethylene, is a Teflon®-coated woven fiberglass membrane that is extremely durable and weather resistant. Lightweight and translucent, PTFE fiberglass is completely immune to UV radiation.

B: Lumira™ aerogel, created by Cabot Corporation, is the world's most effective thermal insulation. It is also the world's lightest solid material. Lumira™ aerogel is unlike any

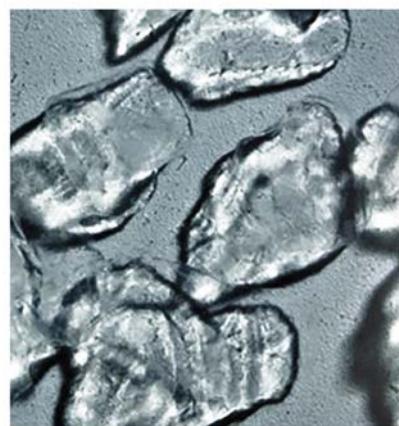
other thermal insulating material because its insulating capability never deteriorates. In fact, under compression, where most insulations lose insulating abilities, its insulating value actually increases. Lumira™ aerogel is also responsible for providing Tensotherm with its excellent acoustic attenuation capability. And, being a hydrophobic material, Lumira™ aerogel cannot hold or be affected by moisture. The net result is an insulation which has similar efficacy as the PTFE fiberglass membranes that sandwich it.

C: Inner Layer: Tensotherm's PTFE fiberglass interior liner can provide a continuous vapor barrier or effective acoustical barrier depending on climate conditions and mechanical requirements.

D: On the inner layer the last layer, film screen is applied. A significant problem in dome theatres is cross reflection and consequent loss of contrast. Low gain screens (less reflective) and a overall matt interior surface treatment ensure best results.



A



B



C

COPPER CLADDING

The standard roofing copper roles are fabricated in 300 or 600mm widths. The seam is typically made up of a 100mm strip of material; seams can either be shiplap or standing. The underside of the custom truss will be shiplap for a smooth finish but on the sides - to emphasize the radial structure - standing seams will be used to interplay with the reflection of light and shadow lines. The seam stands 25 or 38mm high depending on the number of times the material is folded over and serves as small gutter systems which guides water around skylights or other window openings.

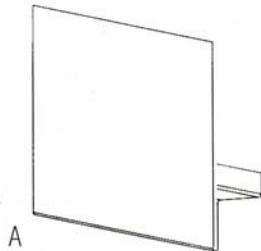
Copper mesh can also be used on the underside of the truss to allow water to seep through and the structure to breathe. A flashing can be used to grip the seam of the mesh. The plates will be cut to the exact sizes on the drawings and then folded onto the structure. The seams can be folded flat or remain standing on the edges of the structure.

Pine shutter board 18-20mm thick is fixed to the steel sub structure, Monier slip sheets are laid onto the shutter boards and thereafter a spacer membrane layer follows. The Delta Trella spacer membrane serves as insulation and creates an 8mm void between the copper cladding layer and the structure. For vertical applications the spacer membrane is not required. Copper or stainless steel brackets can be used to fix the copper cladding.

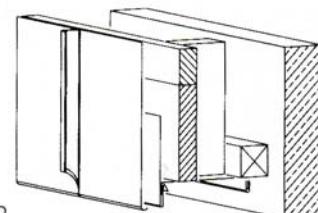
According to Frans du Toit (2011) from Cupric Tectonics the copper cladding sheets used for the Freedom Park project was up to 40m in length. Measurements taken on site indicated that the sheets would expand by 12mm – du Toit indicated that it would be possible to clad the whole top surface of the truss system with a single rolled sheet.



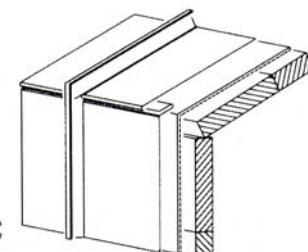
- A: Base starter strip for use in wall cladding
- B: Ventilated base of curtain wall
- C: Visually continuous seam on roof edge
- D: Mono-pitch roof ridge with flashing and ventilation



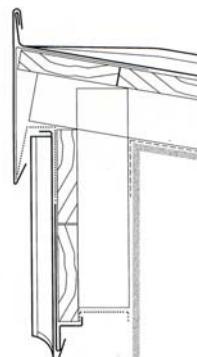
A

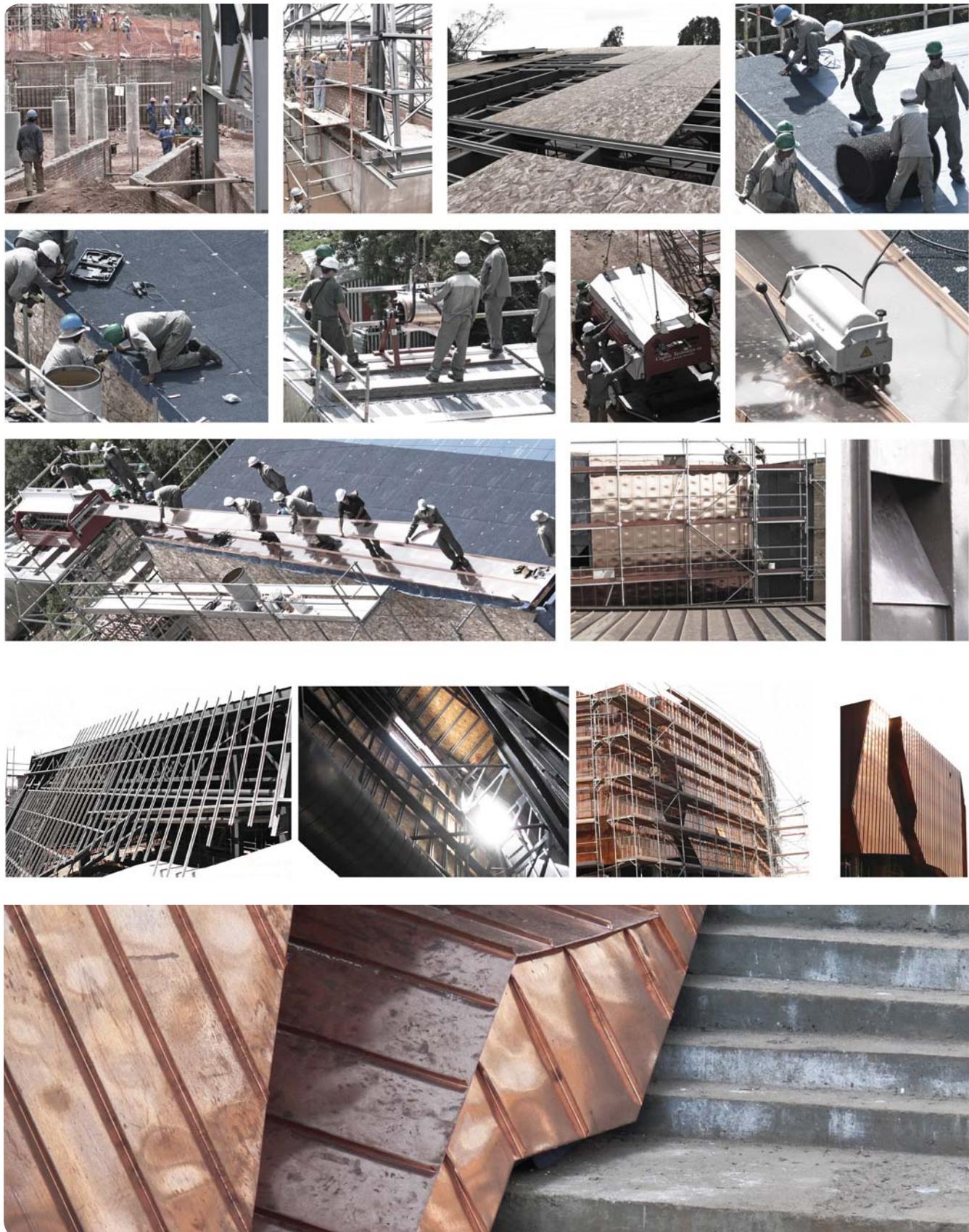


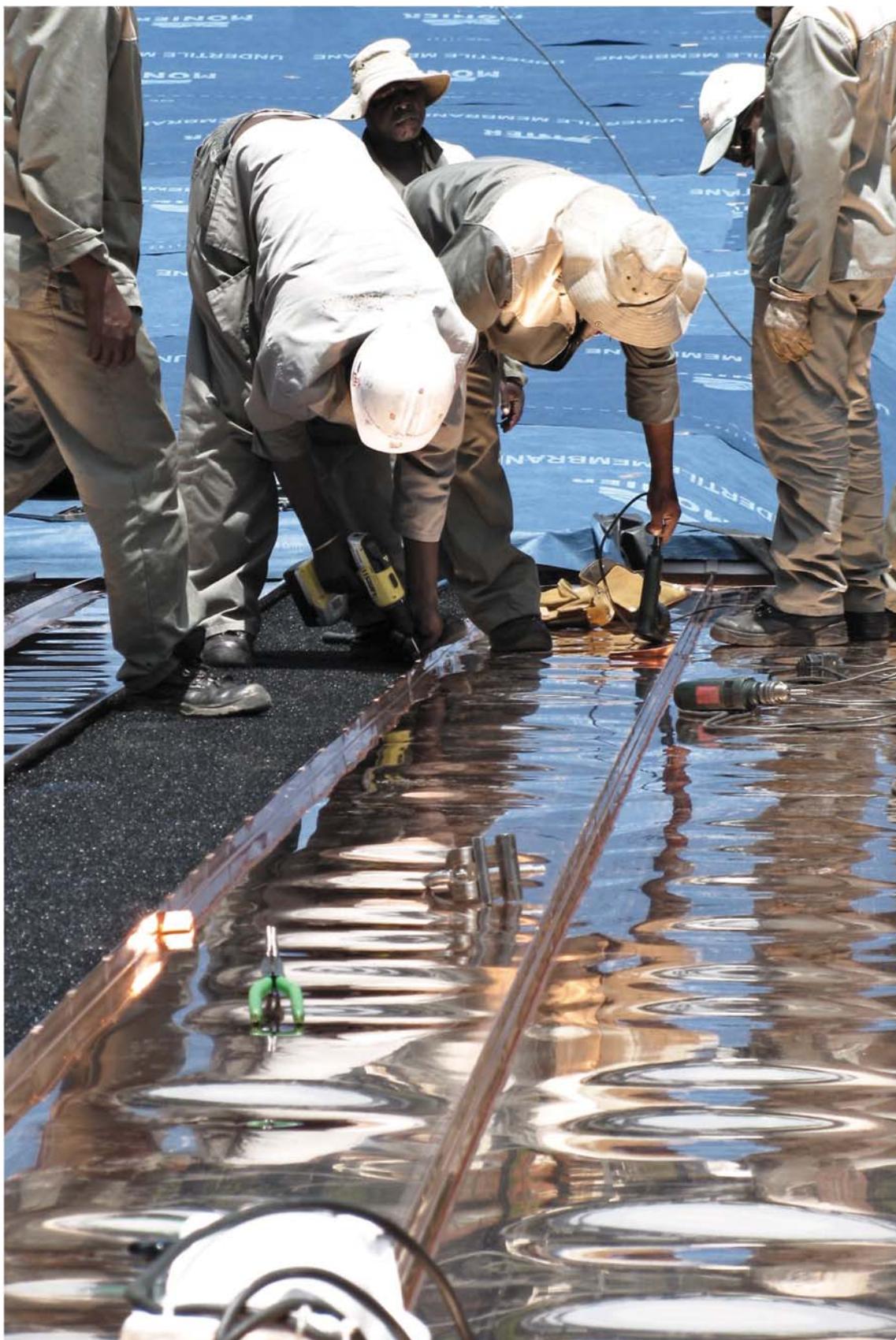
B



C

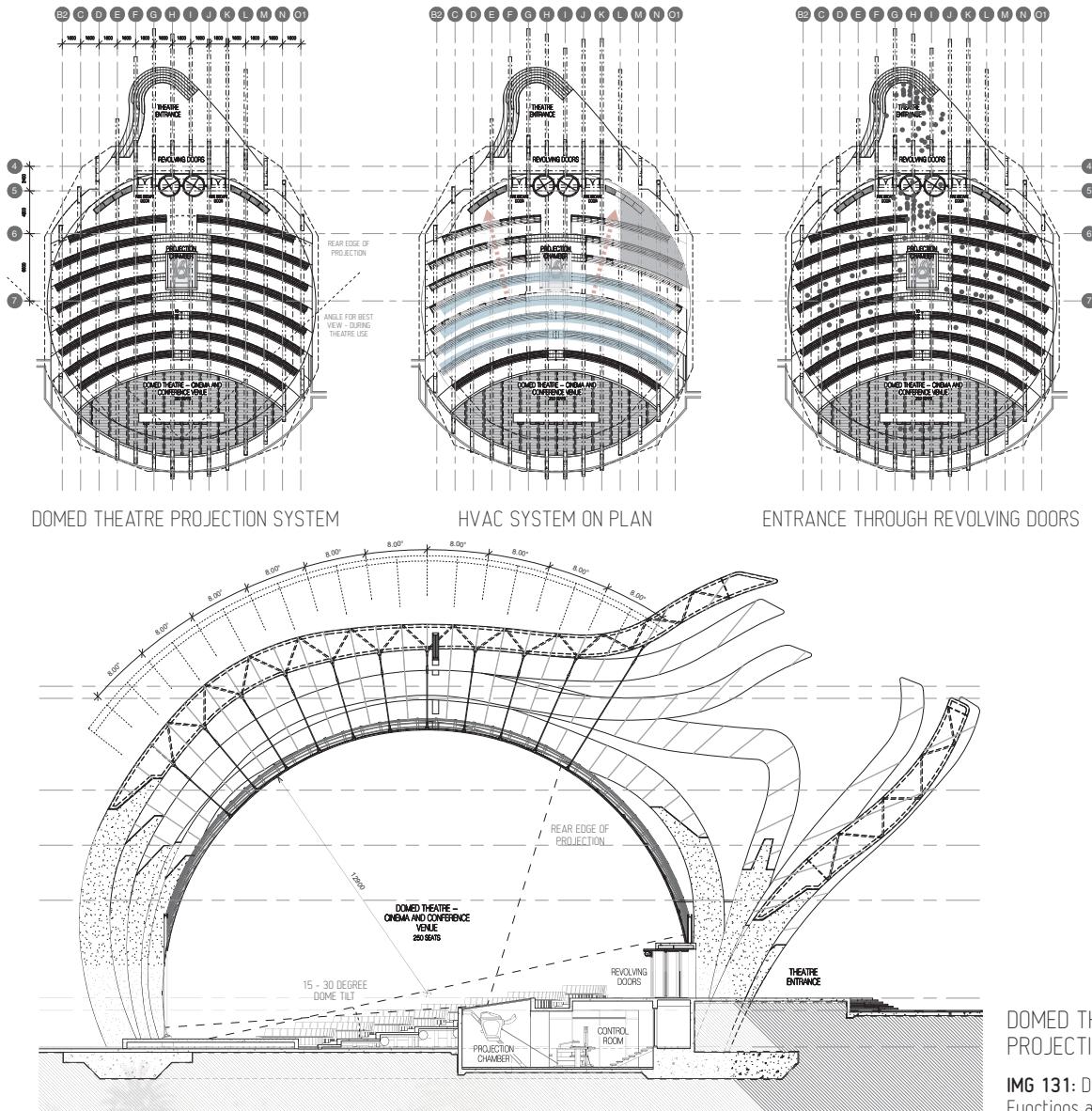






IMG 129: opposite:
Photo journal of building phases at Freedom Park focussing on the copper cladding work (Photos courtesy of Frans du Toit, Cupric Techtonics)

IMG 130: Cladding the roof surface at freedom park (Photos courtesy of Frans du Toit, Cupric Techtonics)



DOMED THEATRE PROJECTION SYSTEM

IMG 131: Domed Theatre Functions and access

DOMED THEATRE PROJECTION SYSTEM

The OMNIMAX Theatre System which presents motion pictures on a dome screen (typically using about 80% of a hemisphere) was developed to provide a "Space Theatre" which is characterized by a tilted dome in the range of 25-30° uses a fish-eye lens with a beam angle slightly in excess of 180°. The image occupies a lateral field of view averaging 180°, and a vertical field of view averaging 125°.

The system's ideal is to involve and immerse the viewer within the motion picture. The edges of the picture is beyond the recognition field of view. The sense of reality is achieved by reducing or eliminating the various "clues" which remind the audience that they are watching a picture.

OMNIMAX Theatres range from 94 to 380 seated theatres. The front seats

require that the audience lean back at rather steep angles in reclining seats, the angle thus varies from the front to the back of the theatre.

Another significant problem in dome theatres is cross reflection and consequent loss of contrast. Low gain screens (less reflective) and a overall matt interior surface treatment ensure best results.

For a booth with an operator the temperature should run no more than 22°C-25°C. The Control or Projector room houses various electronic units that are a collection of heat sources. A typical projection booth with an operator will be painted flat black to minimize the amount of reflected light that might spill out into the audience seating area through the booth windows.



IMG 132: Projection on the dome: immersion

POLYURETHANE FLOOR

Stockmeier Urethanes Manufactures AlsatanR SW, a non porous athletic track sandwich design. The covering has a high resistance against scratches. The cover consists of a flexible elastomeric base layer of black rubber granules and polyurethane binder and is then sealed with a two-component polyurethane system and a final coating with a two-component polyurethane and coloured granules broadcasted on top. This system was formulated for athletic tracks and multi use game areas and offers specially adjusted formulations and thicknesses for a variety of uses. The

product is highly wear resistant, secure and elastic, and thus will also provide an ideal surface for the theatre. The covering has a soft feel underfoot and provides the same non reflective surface as carpeting would.



ROUGH CUT SLATE

Slate tiles will be used for most of the exterior surfaces in the NZG Visitor Centre. The natural look and texture of the product reflects the material of the excavation level and is also rooted in the history of Pretoria. According to Anton Jansen the 'watervoortjies' (aqueducts) of Pretoria was layed with slate. There is an opportunity to use this material in a more topographical nature creating a more dynamic surface as one would expect naturally. The example above indicates the possibility to communicate the intervention of man though interplaying textures.

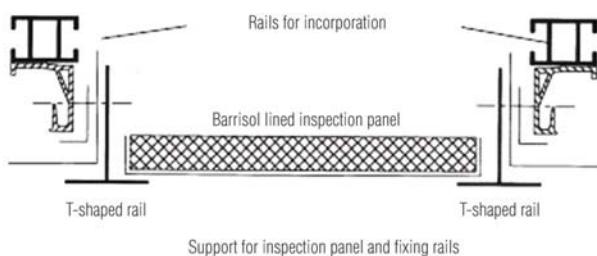
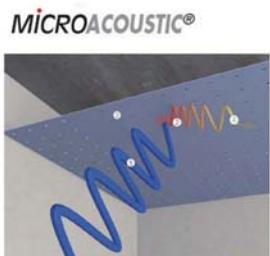


IMG 133: Slate surface texture options

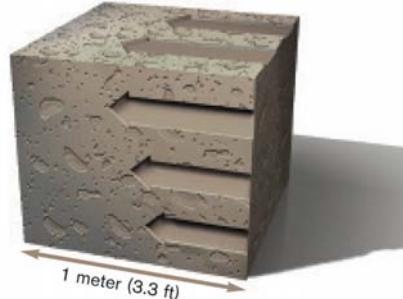
POSSIBLE CONCRETE ADD MIX

Penetron cementitious capillary waterproofing products are formulations consisting of common cement, quartz sand (of special grade) and multiple activating chemicals that provide the most effective permanent concrete waterproofing.

BARRISOL



PENETRON



STRETCH CEILING

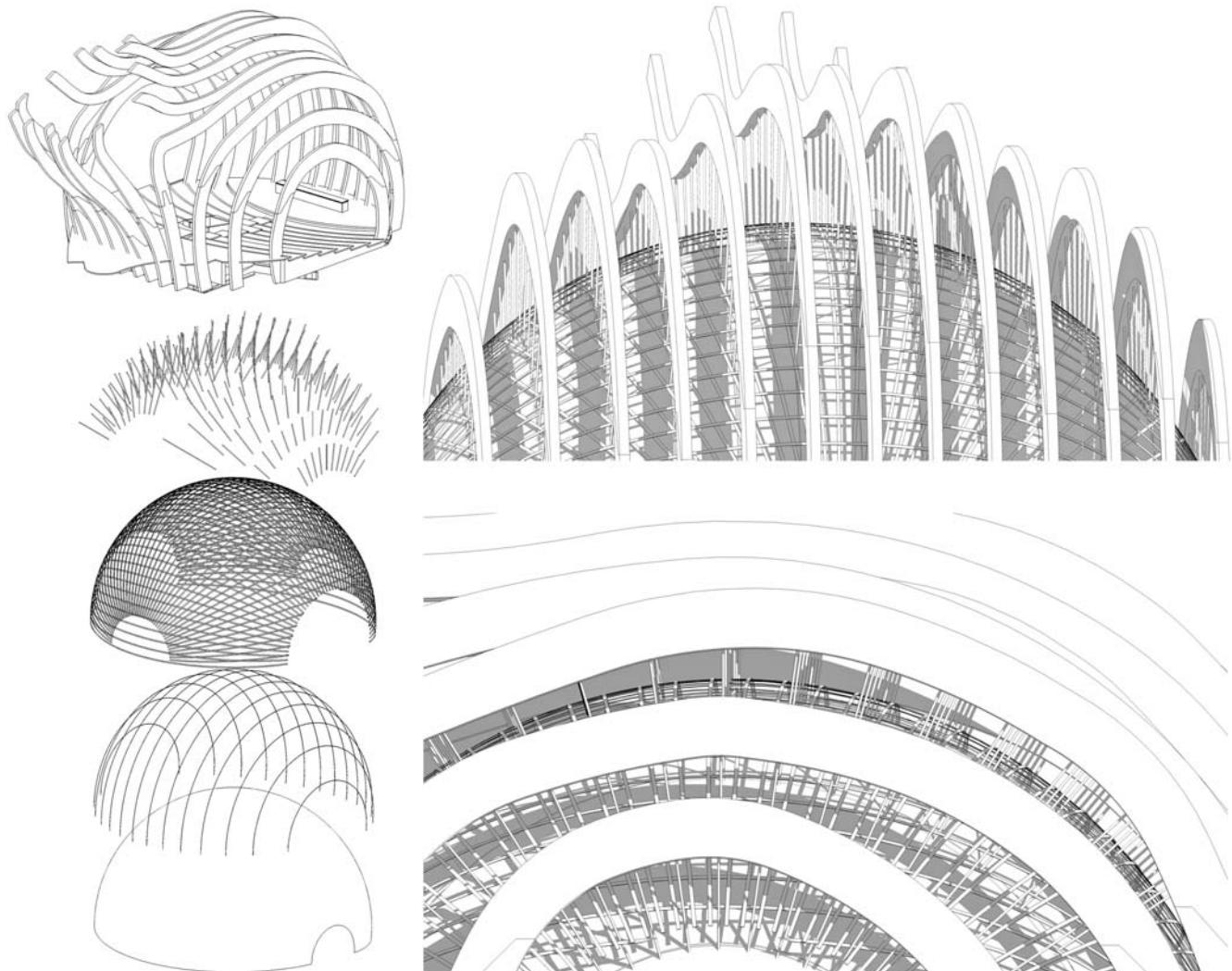
Barrisol's is a stretch ceiling product which is non-toxic and meets current international standards on fire classifications. Safety devices and Sprinklers can easily be incorporated into the system. Barrisol is waterproof and does not develop moulds or fungi, it is thus insensitive to damp.

The air lock, similar to double glazing, forms an insulating buffer and prevents condensation formation on the fabric. Soundproofing and acoustic qualities of the product create a softer atmosphere due to the air lock in the plenum. The fabric is composed of retentive molecules and is able to return to the initial shape and tension after distortion. The width of the sheet without weld can vary from 150 cm to 256 cm.

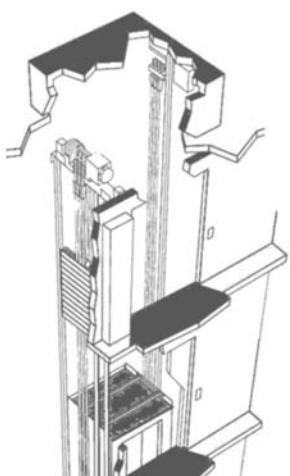
LIFTS

Machine roomless elevator systems employ a smaller sheave than conventional geared and gearless elevators. The reduced sheave size, together with a redesigned motor, allows the machine to be mounted within the hoistway itself—eliminating the need for a bulky machine room on the roof. The GeN2 Comfort system enables architects greater freedom of design and builders benefit from a more controlled installation process with minimum building interface.

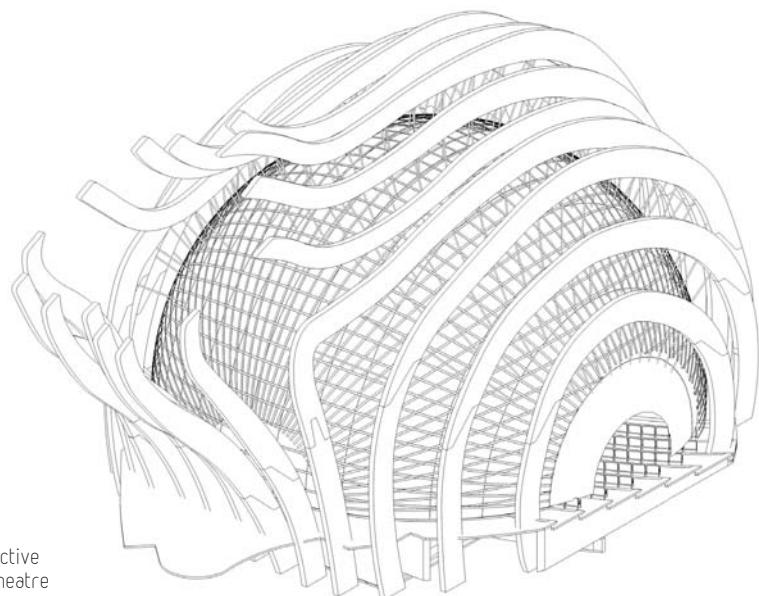
PERSPECTIVE VIEWS OF THE STRUCTURE

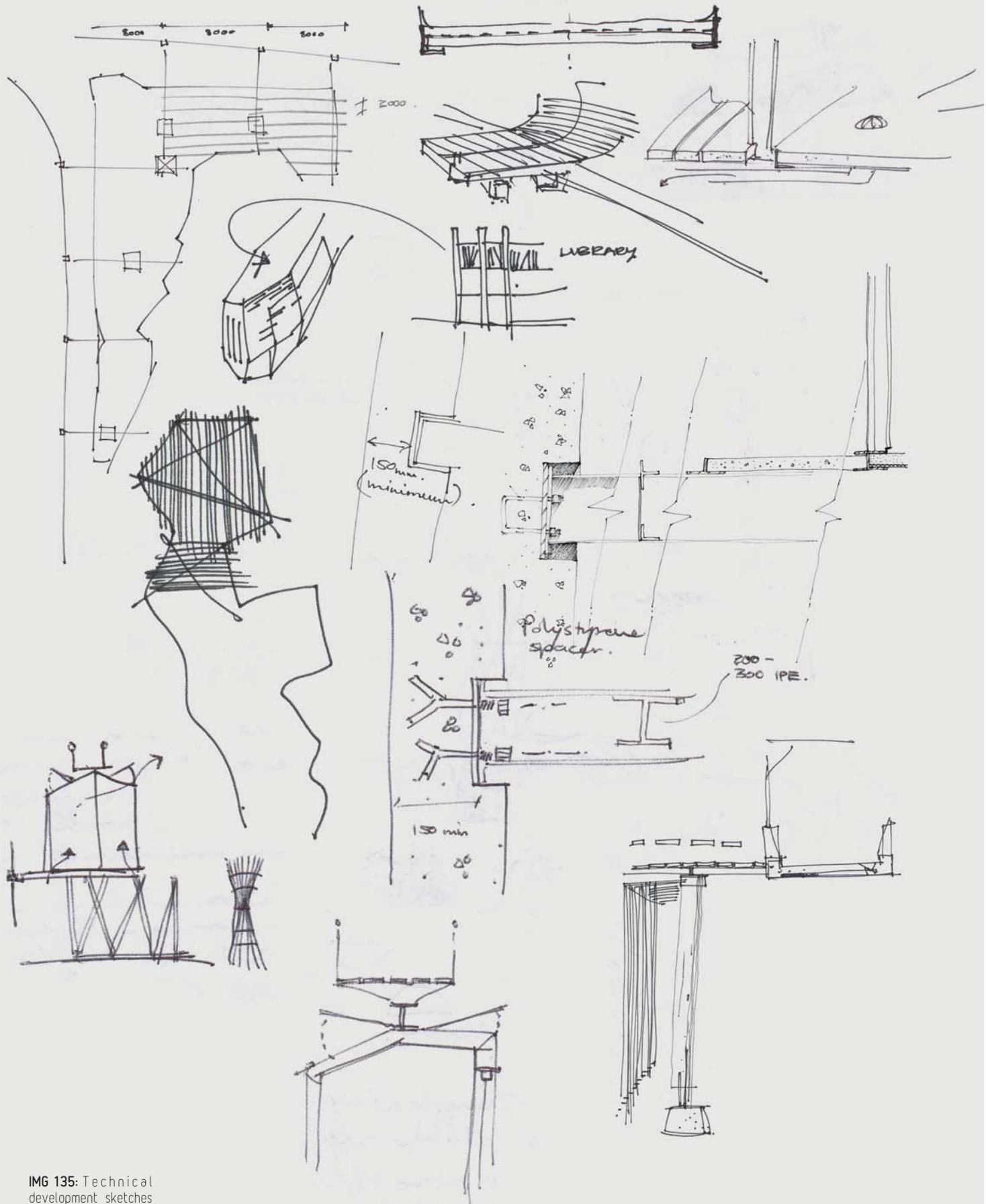


OTIS GEN2™ Comfort
www.otis.com

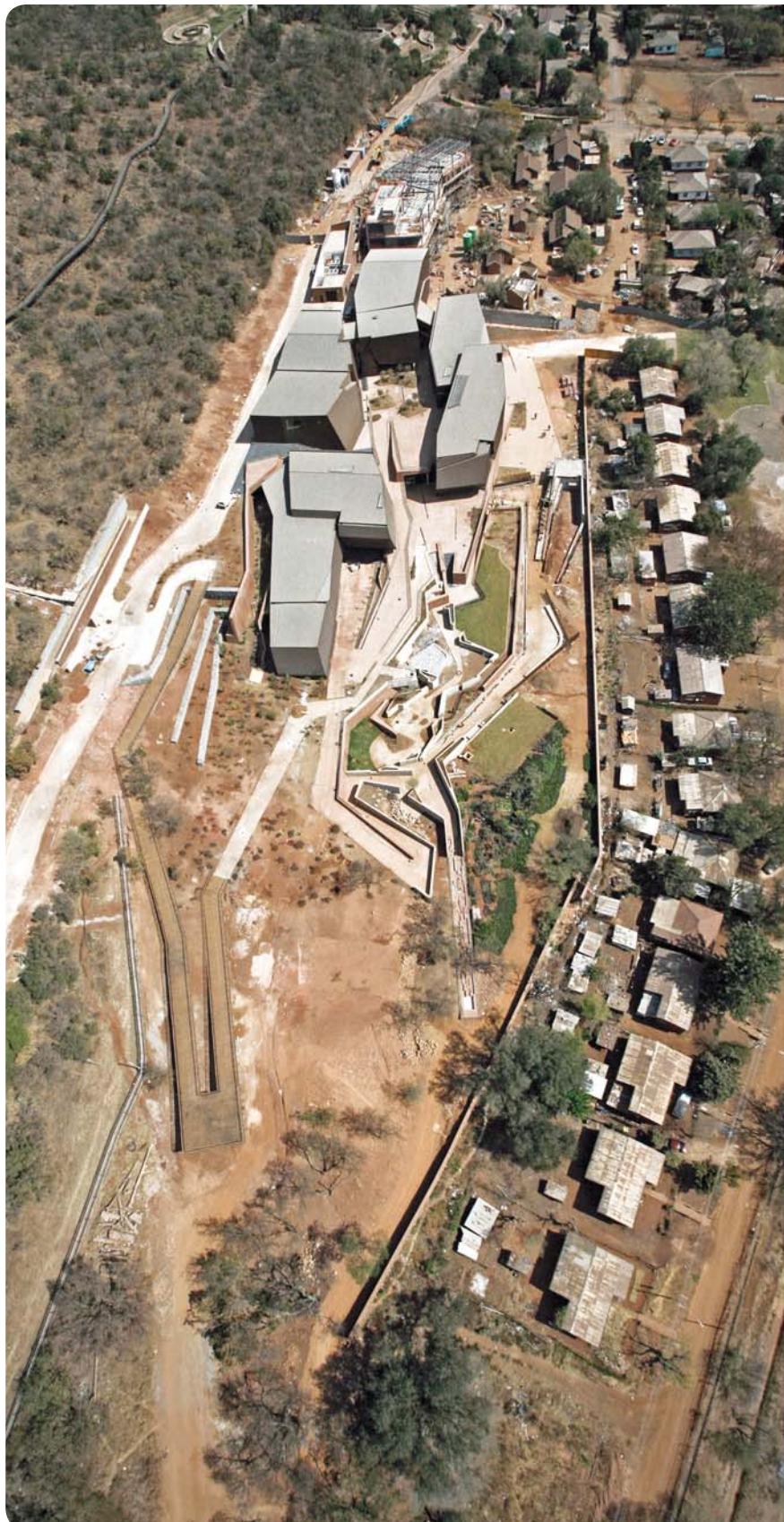


IMG 134: Perspective view of domed theatre



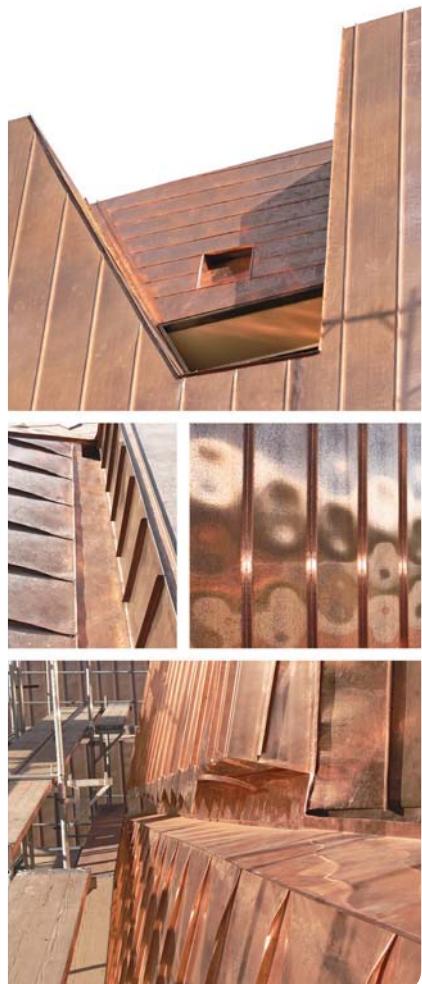


IMG 135: Technical development sketches on the zoo keeper's level



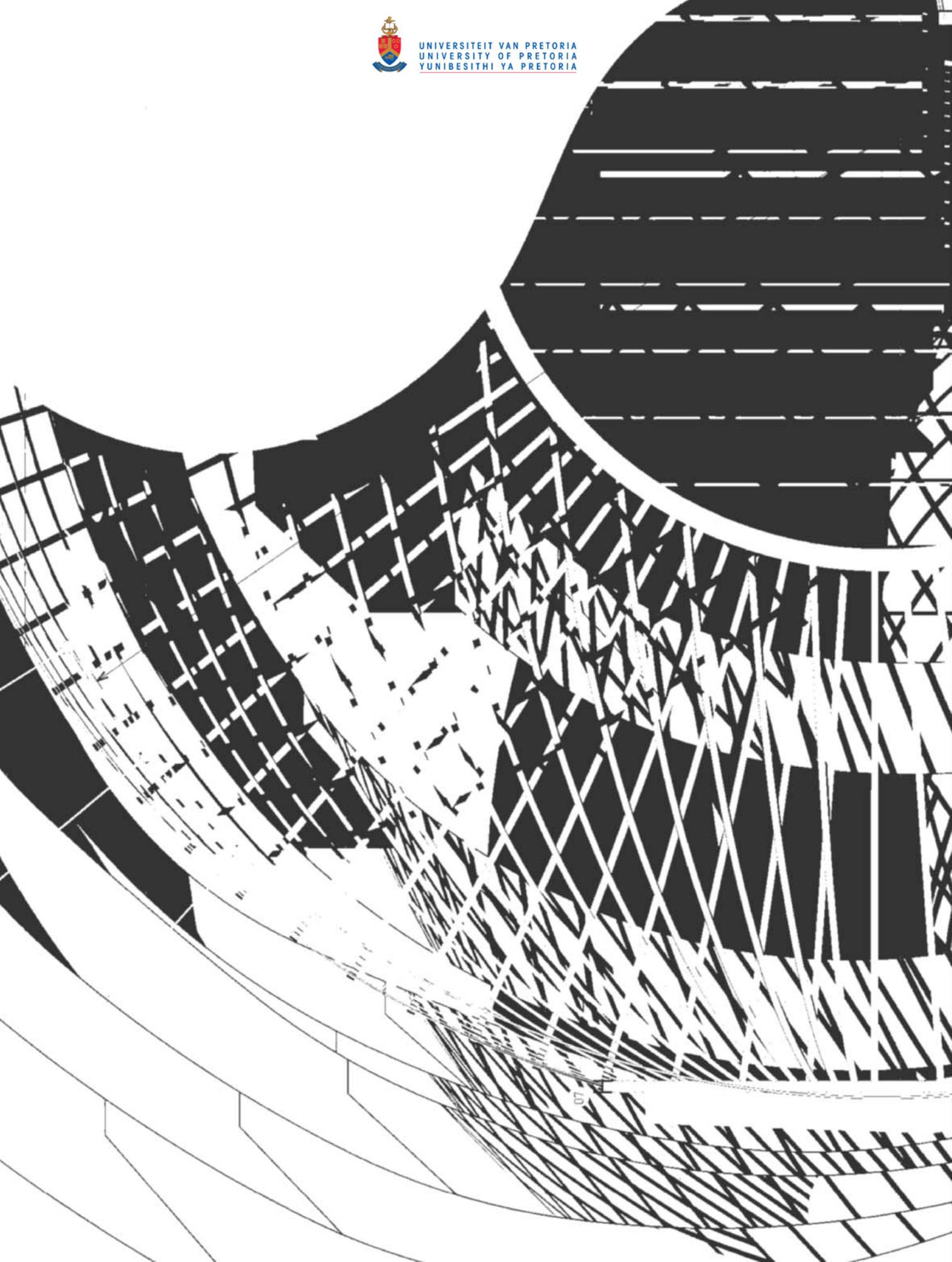
IMG 136: left: Aerial view of the Freedom Park development (courtesy of Frans du Toit, Cupric Techtonics)

IMG 137: below: Copper cladding details on Freedom Park building



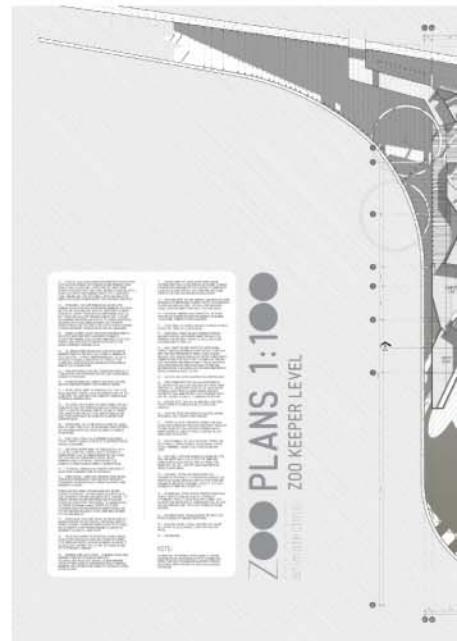
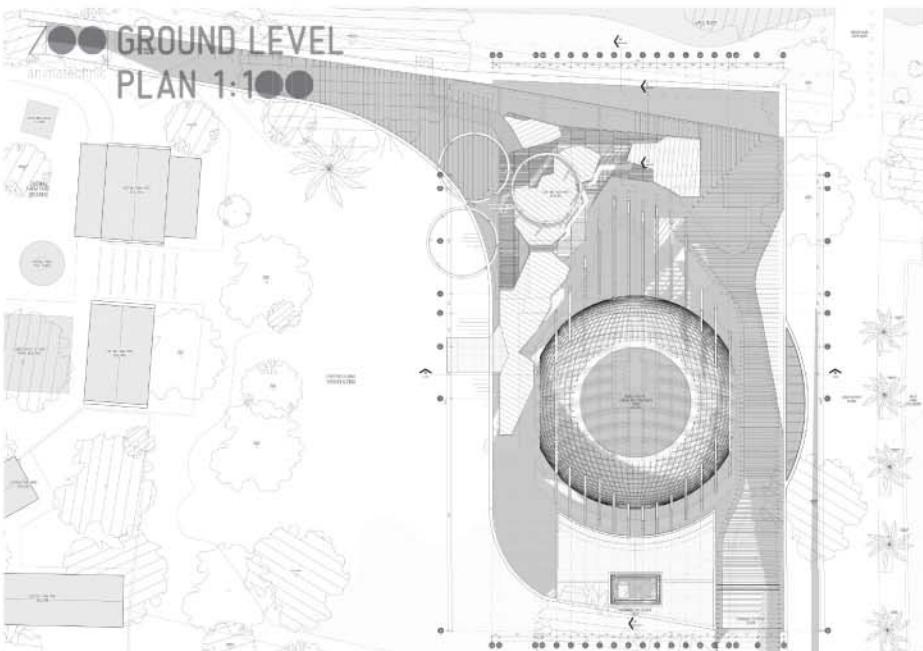


UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA



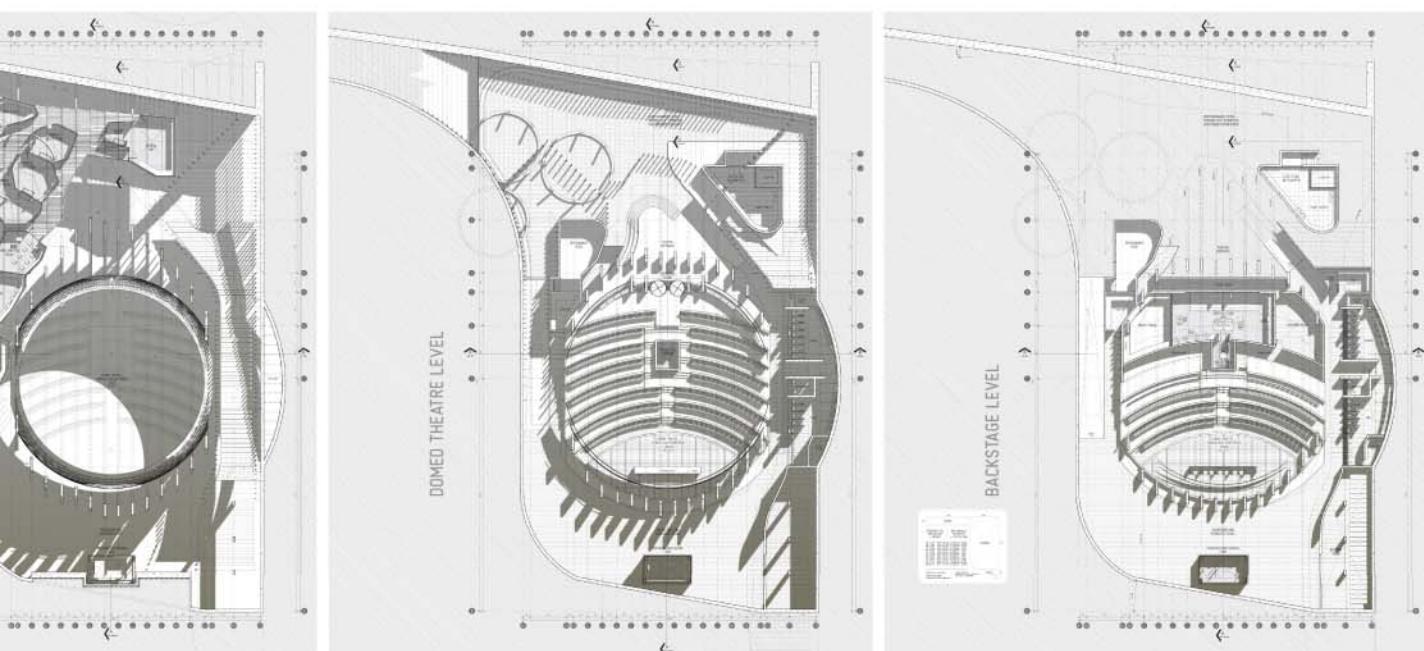
8. DRAWINGS

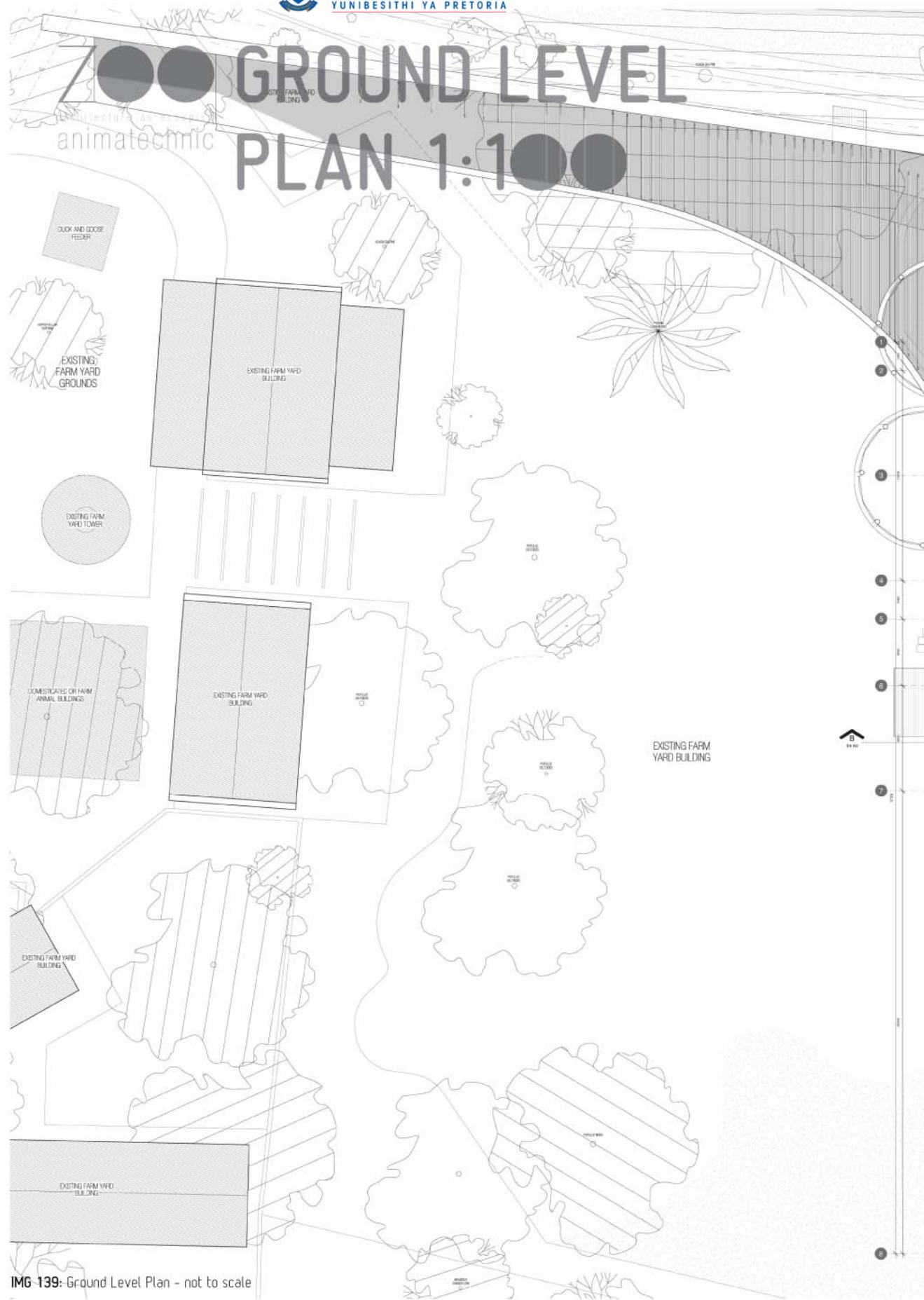




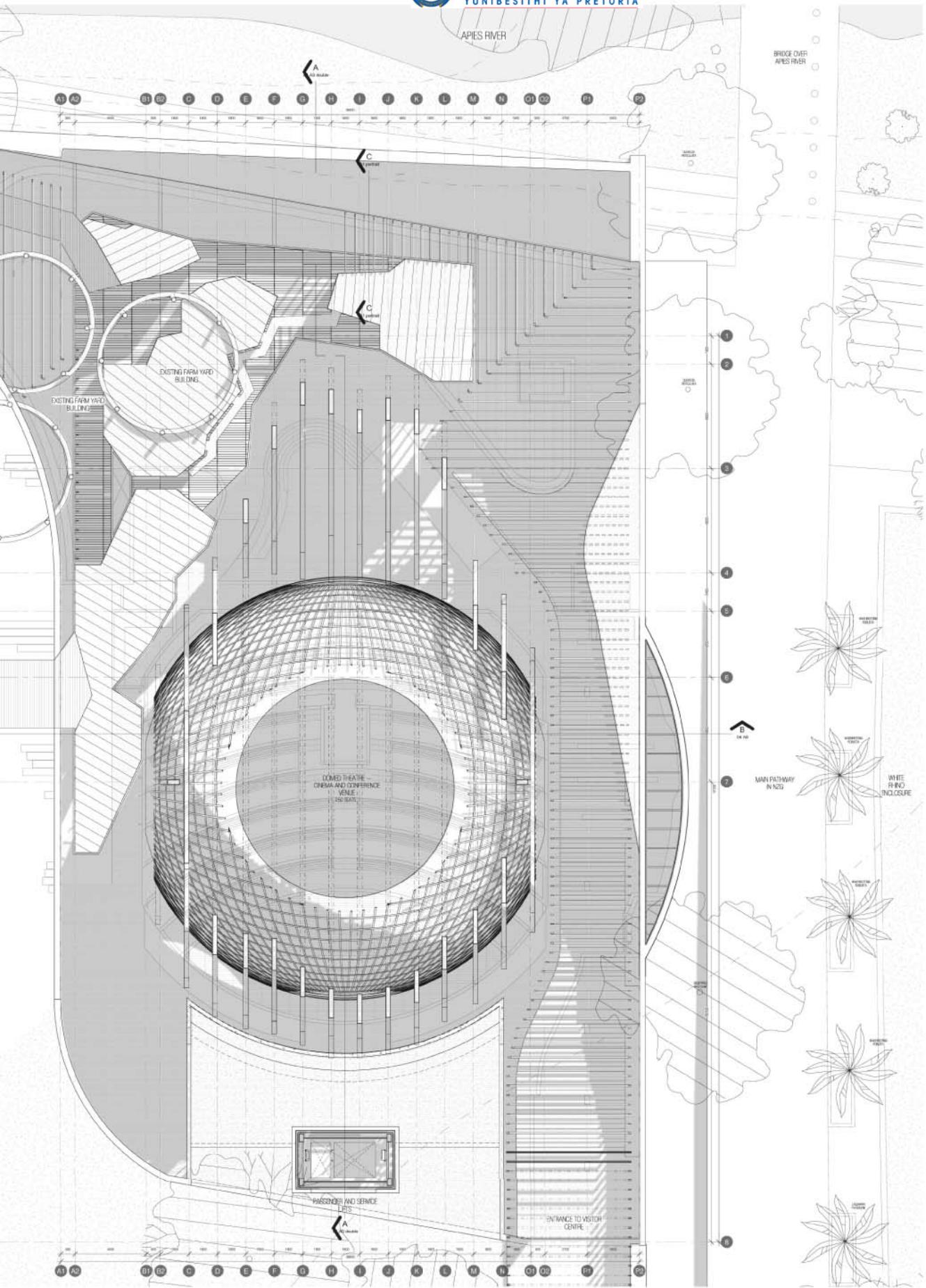


IMG 138: top: Site plan showing the buildings placement within NZG bottom: Plans not to scale





IMG 139: Ground Level Plan - not to scale





ACCOMMODATION SCHEDULE

MAIN PUBLIC AREAS:

Domed theatre / Conference venue

Ticket office / Information centre

Exhibition and Installation space

Educational workshop space / Animal demonstration area

Ablutions and Family facilities

ZOO KEEPER LEVEL:

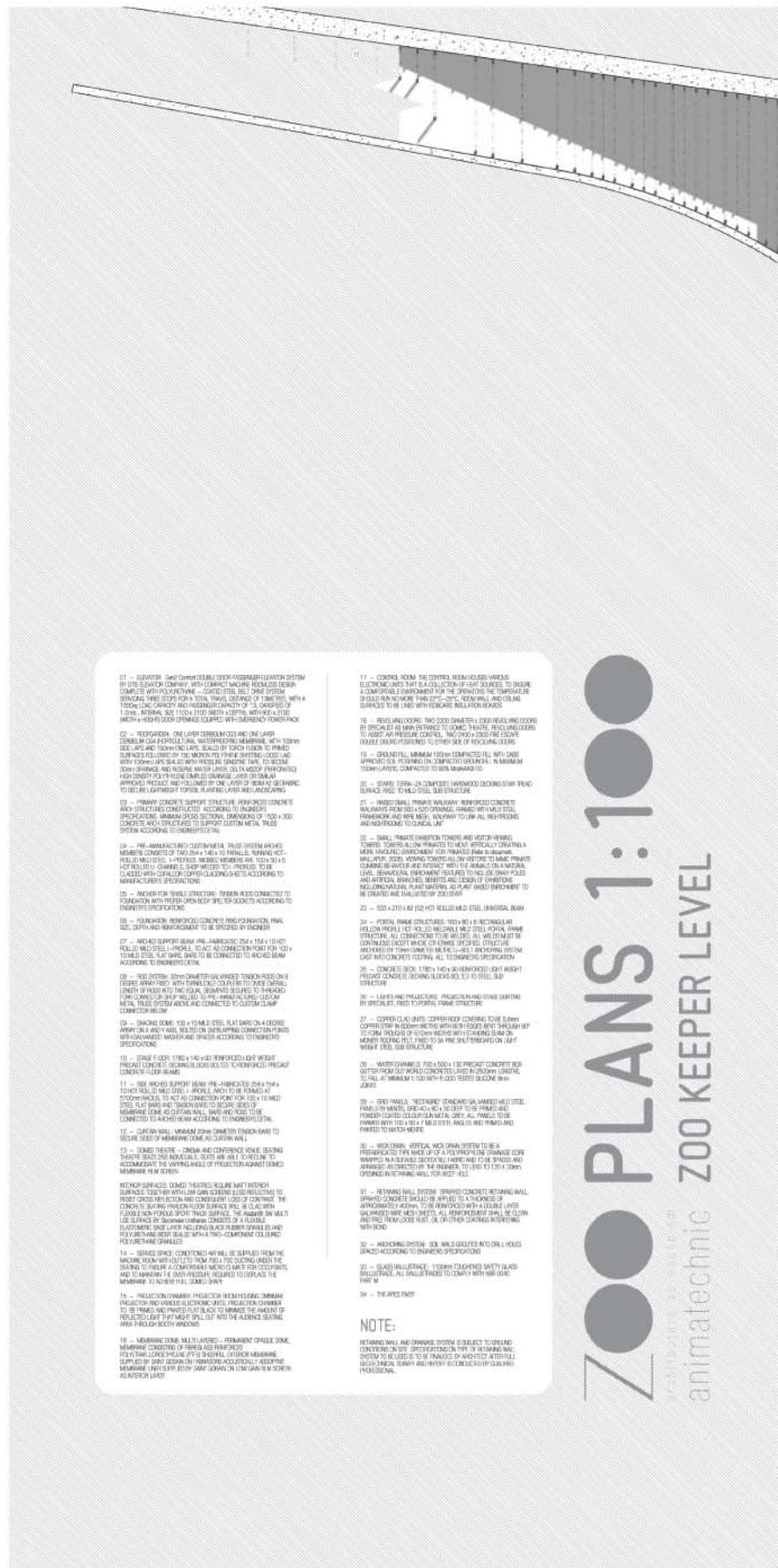
Climbing/ Viewing Structure

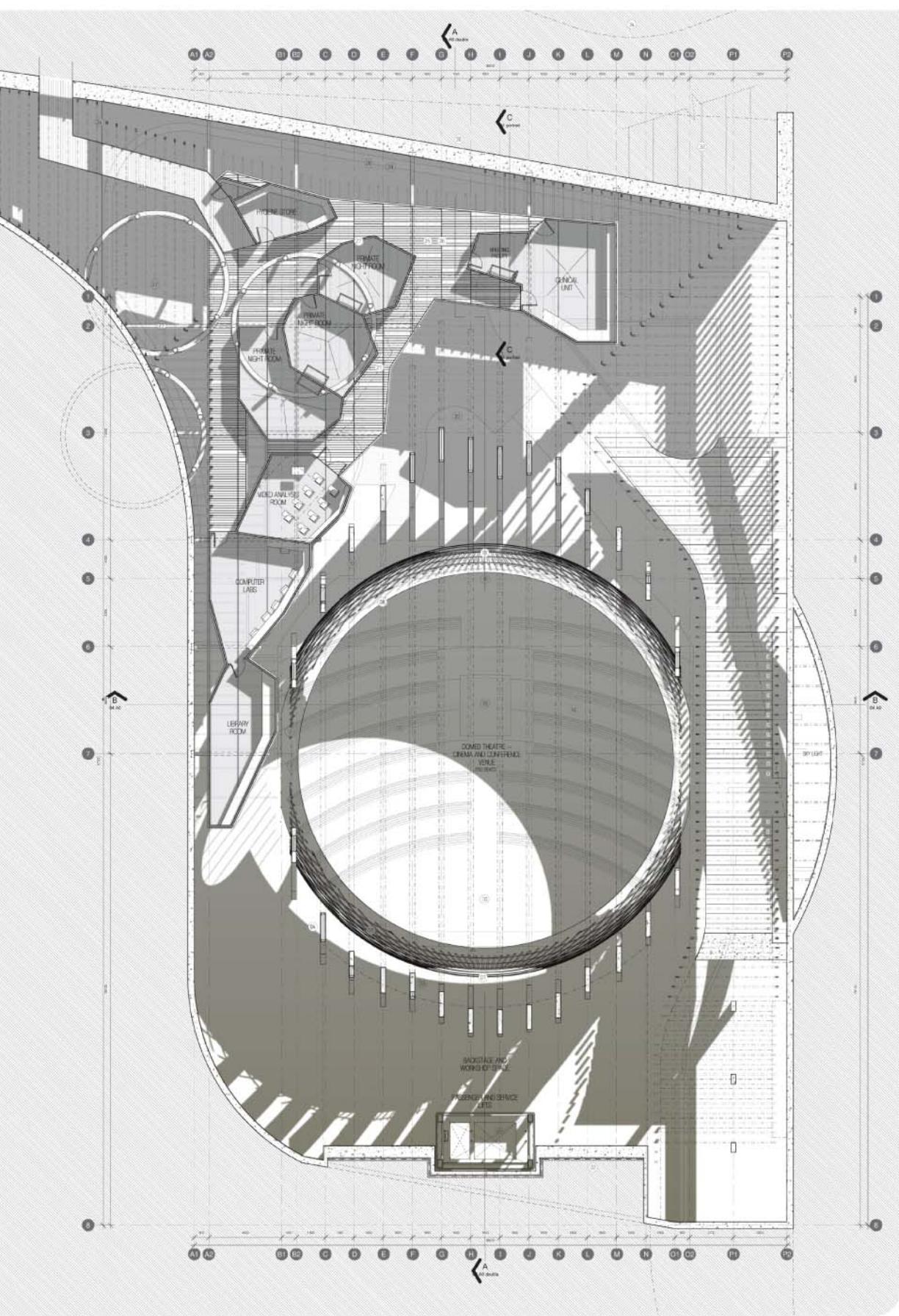
Small primate enclosures

Clinic

Library / Computer Labs

Video analysis room



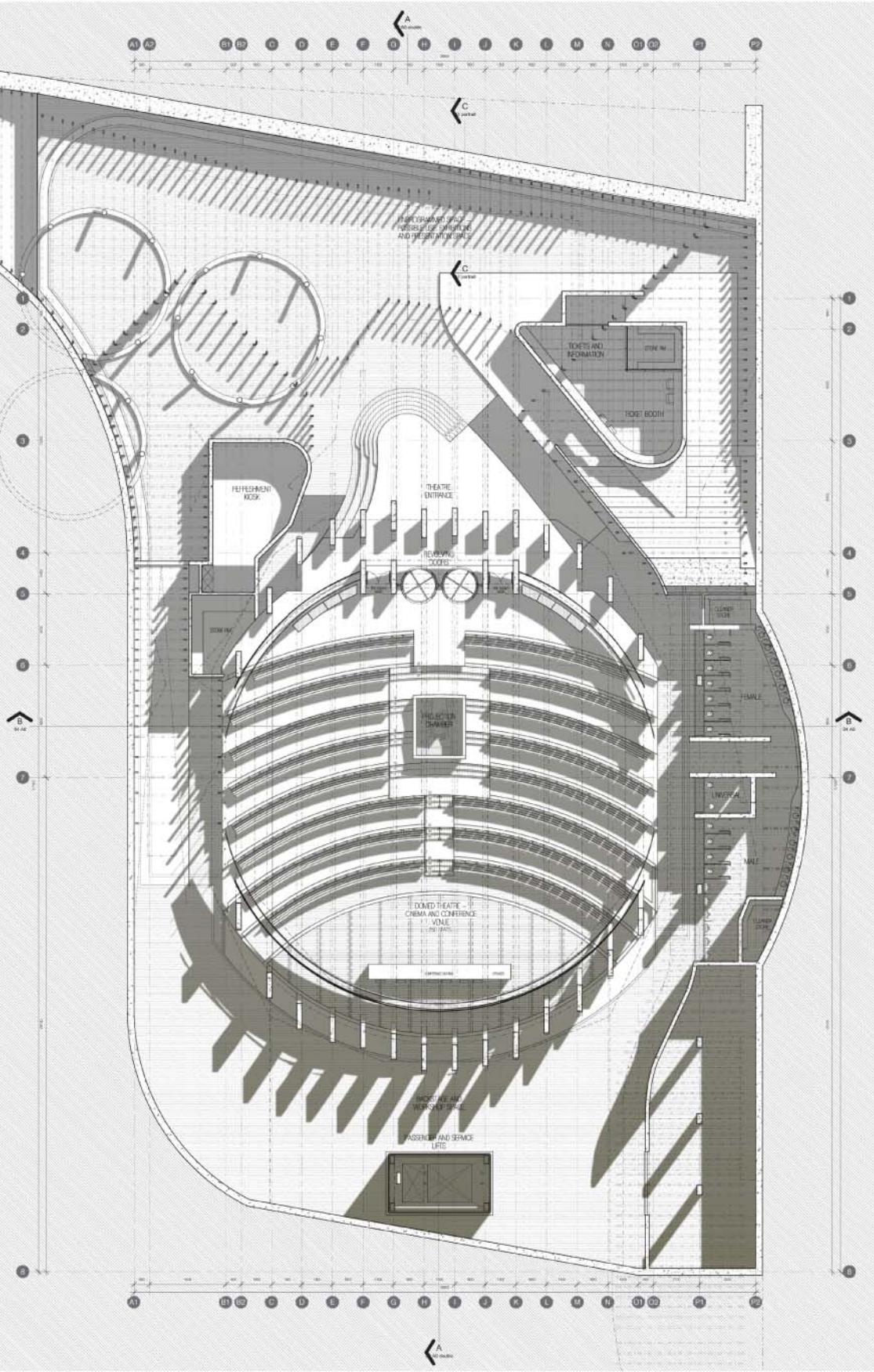


IMG 140: Zoo Keeper Level Plan - image not to scale

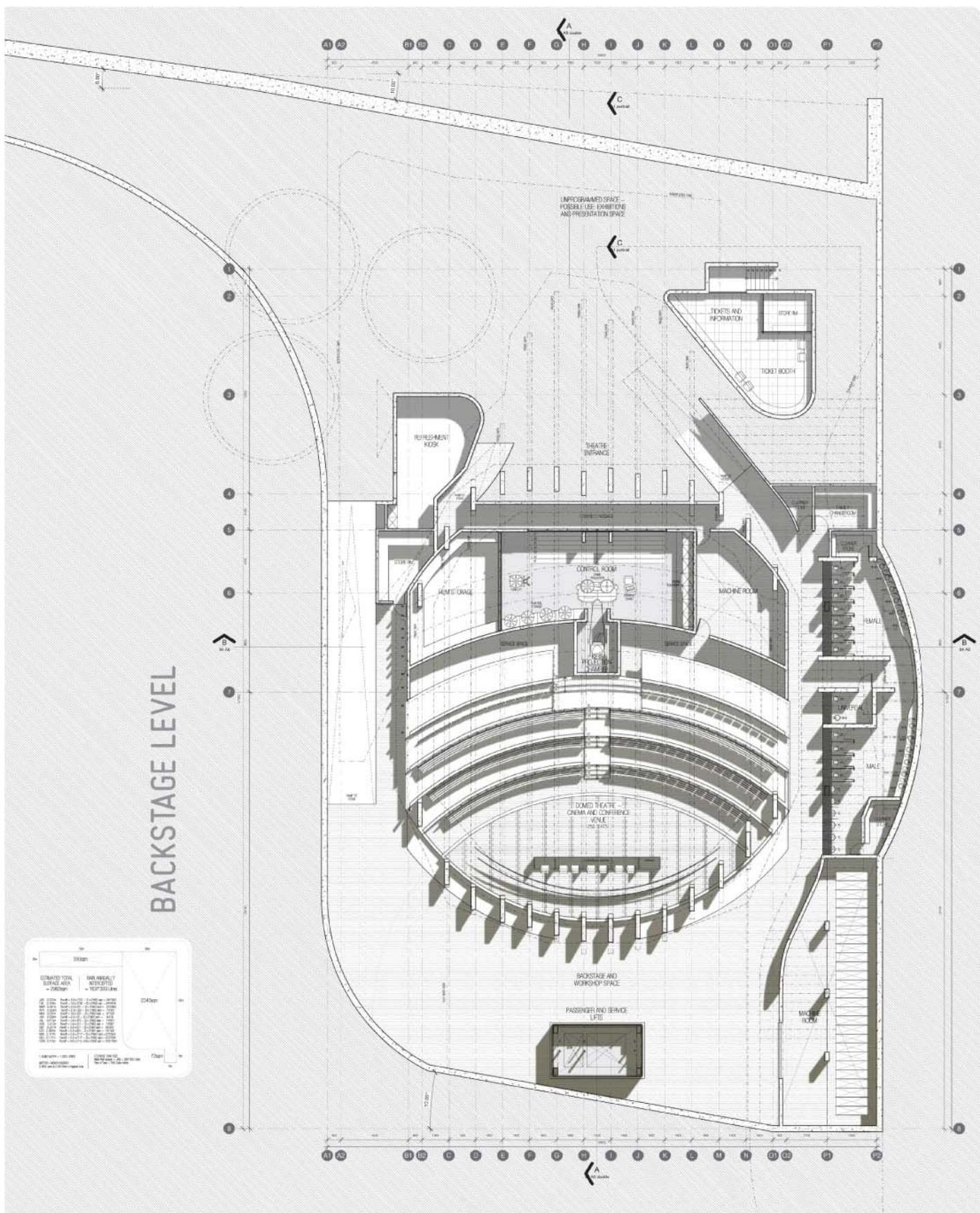
IMG 141: Opposite spread: Domed Theatre and Backstage Level Plans - image not to scale



DOMED THEATRE LEVEL



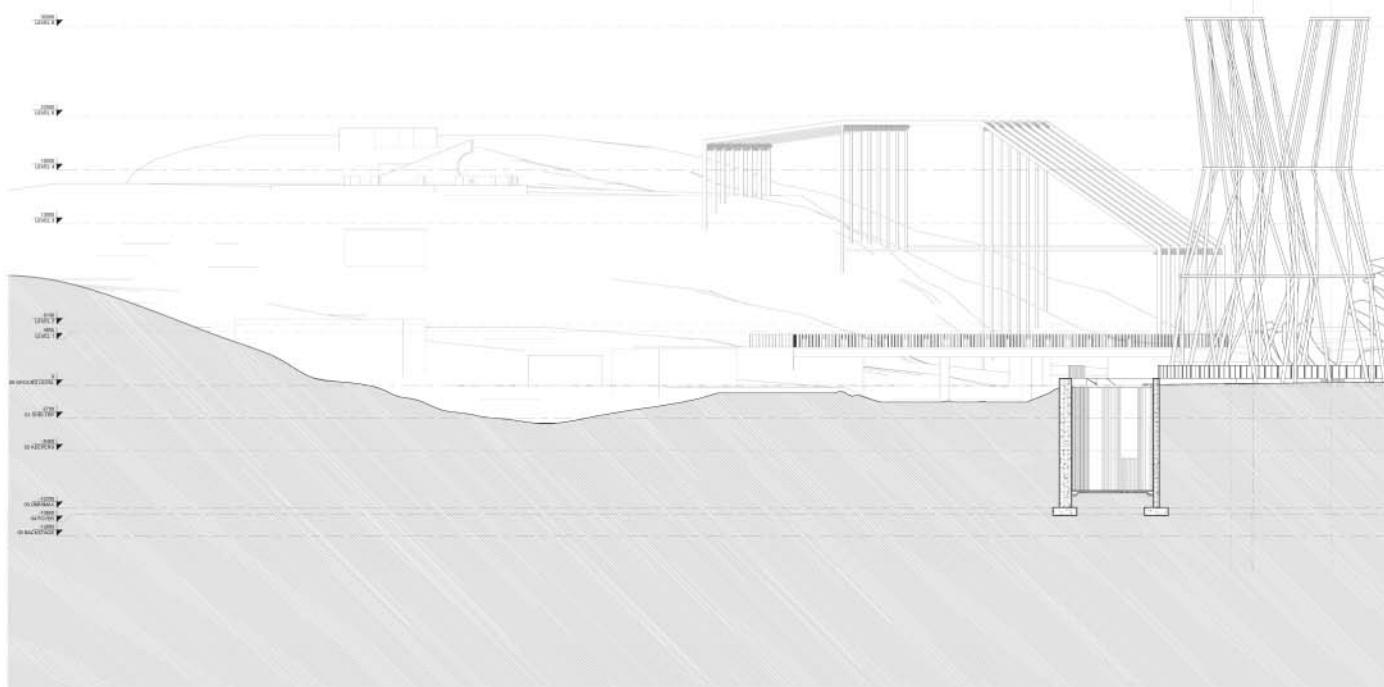
BACKSTAGE LEVEL



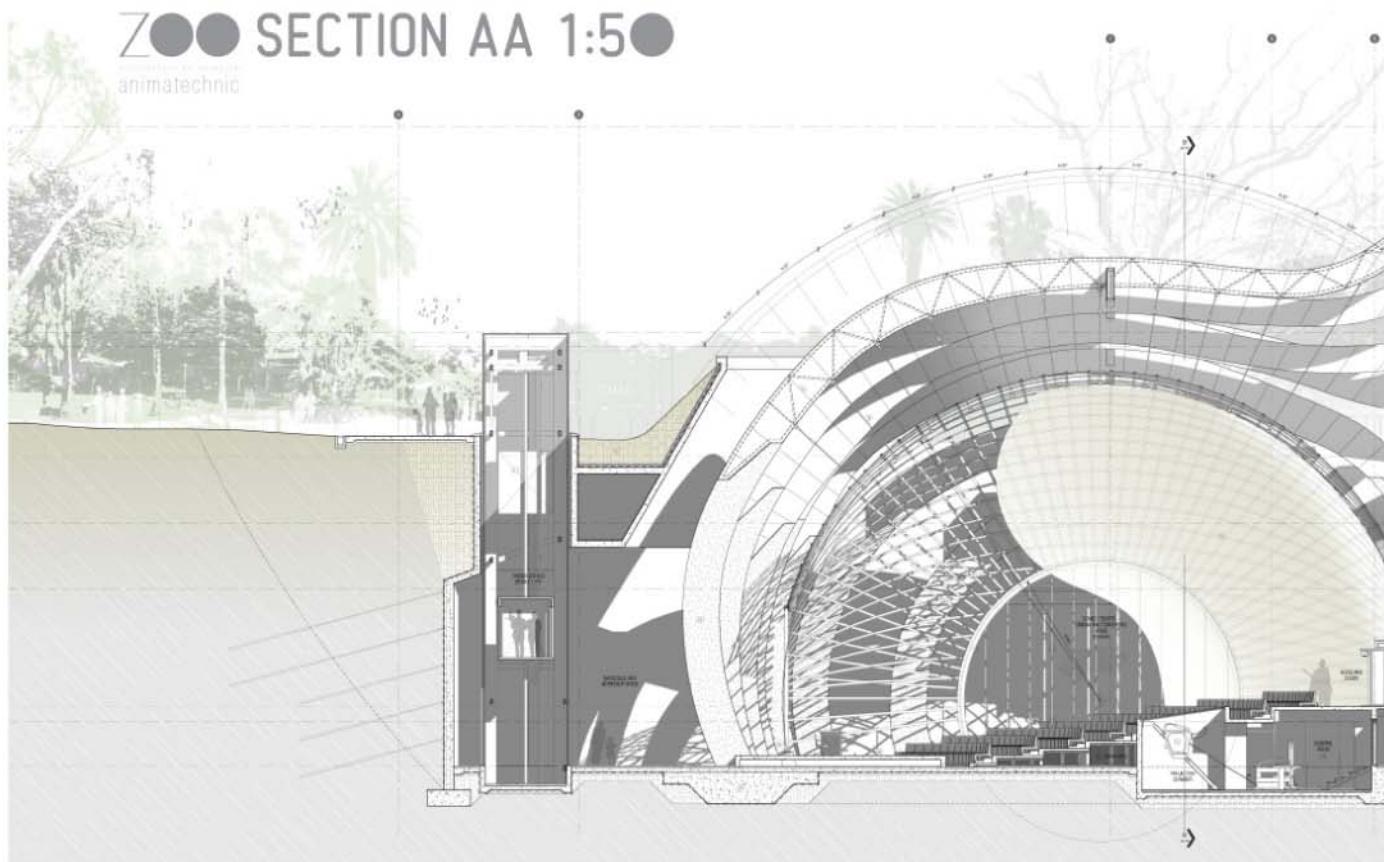


ZOO ELEVATION WEST 1:100

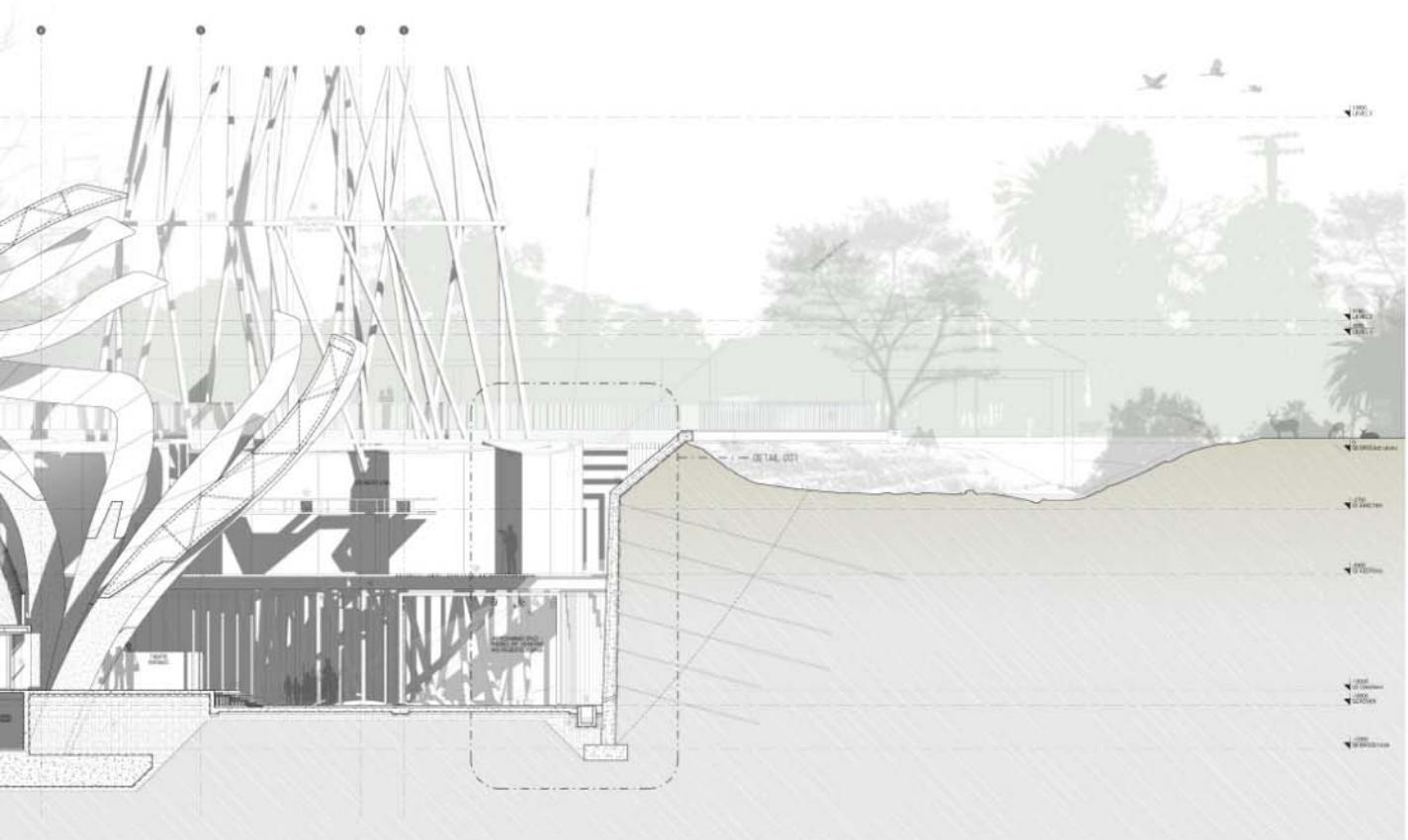
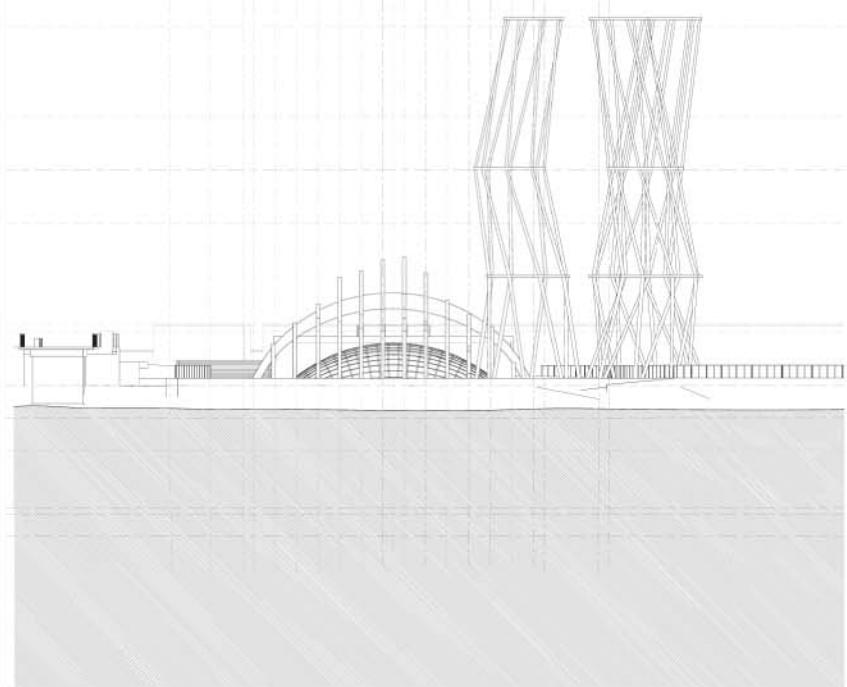
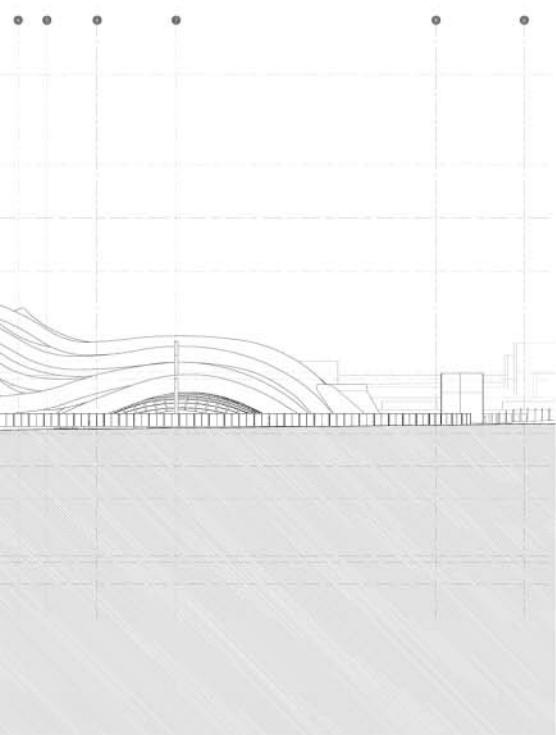
 ZOO
Kunstverein für die
animatotechnik



ZOO SECTION AA 1:50

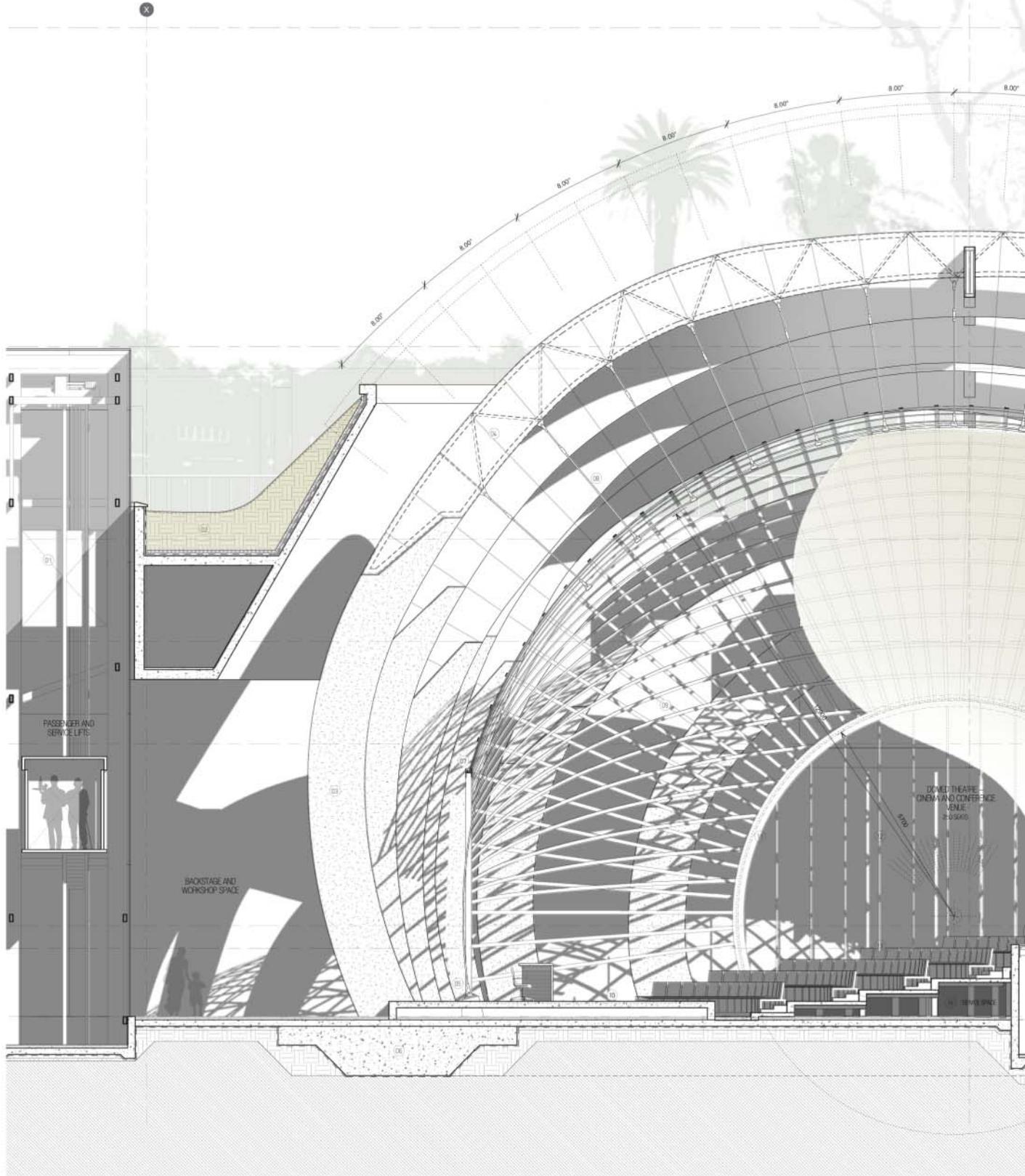


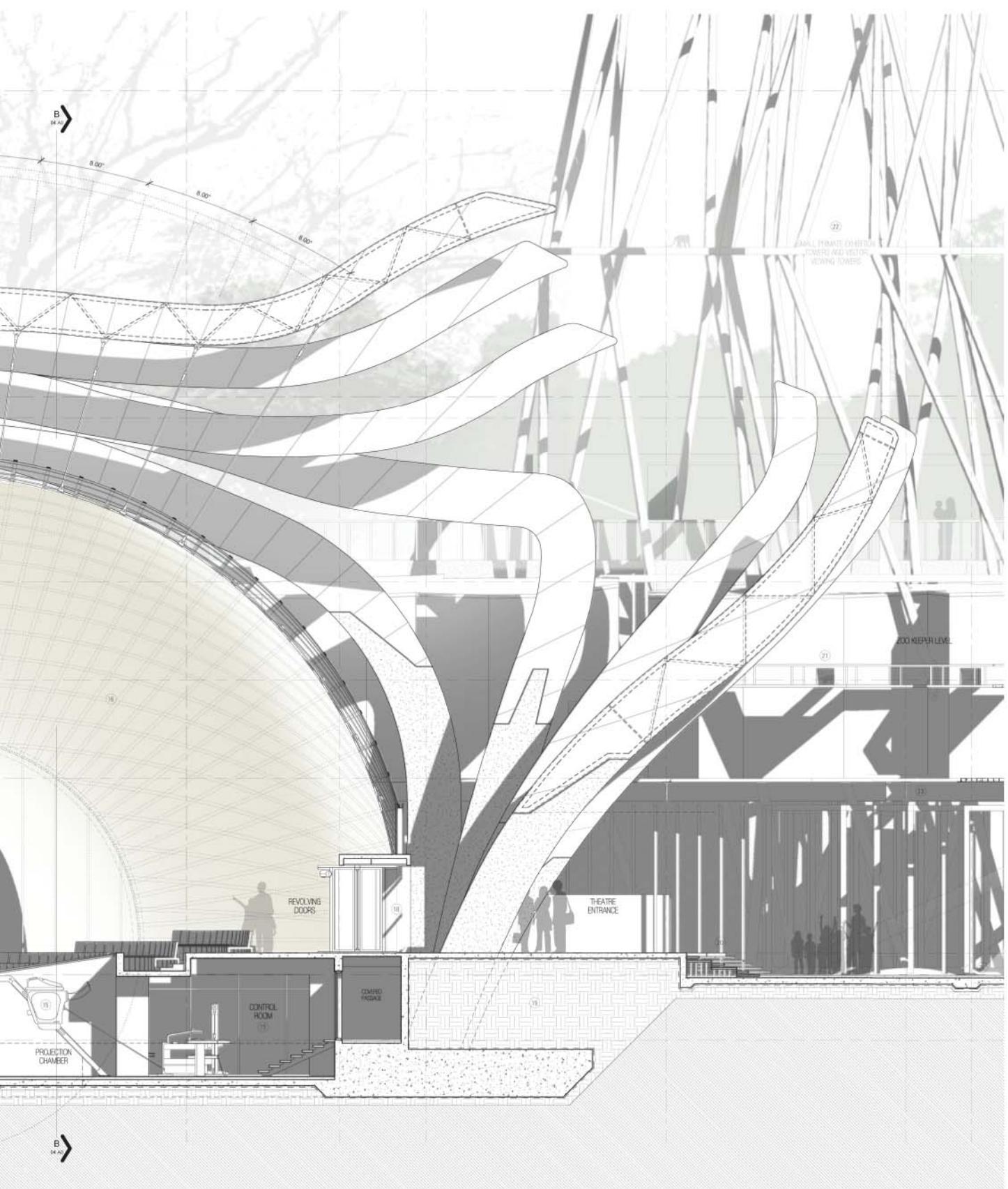
1. **DATA** - THE INFORMATION THAT IS STORED IN A COMPUTER SYSTEM.
2. **DATA PROCESSING** - THE ACT OF TAKING DATA AND MANIPULATING IT TO
CREATE INFORMATION.
3. **DATA SECURITY** - THE PRACTICE OF PROTECTING DATA FROM UNAUTHORIZED
ACCESS, USE, OR DISCLOSURE.
4. **DATA SUBJECT** - THE INDIVIDUAL WHO OWNES THE DATA.
5. **DATA SUBJECT ACCESS REQUEST** - A REQUEST MADE BY A DATA SUBJECT
TO ACCESSTHEIR OWN DATA.
6. **DATA SUBJECT CONTROL** - THE RIGHT OF A DATA SUBJECT TO CONTROL
HOW THEIR DATA IS USED.
7. **DATA SUBJECT CONSENT** - THE AGREEMENT OF A DATA SUBJECT TO
THE PROCESSING OF THEIR DATA.
8. **DATA SUBJECT INFORMATION** - THE INFORMATION THAT IS PROVIDED
BY A DATA SUBJECT TO A DATA PROCESSOR.
9. **DATA SUBJECT INFORMATION** - THE INFORMATION THAT IS PROVIDED
BY A DATA SUBJECT TO A DATA PROCESSOR.
10. **DATA SUBJECT INFORMATION** - THE INFORMATION THAT IS PROVIDED
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11. **DATA SUBJECT INFORMATION** - THE INFORMATION THAT IS PROVIDED
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19. **DATA SUBJECT INFORMATION** - THE INFORMATION THAT IS PROVIDED
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20. **DATA SUBJECT INFORMATION** - THE INFORMATION THAT IS PROVIDED
BY A DATA SUBJECT TO A DATA PROCESSOR.



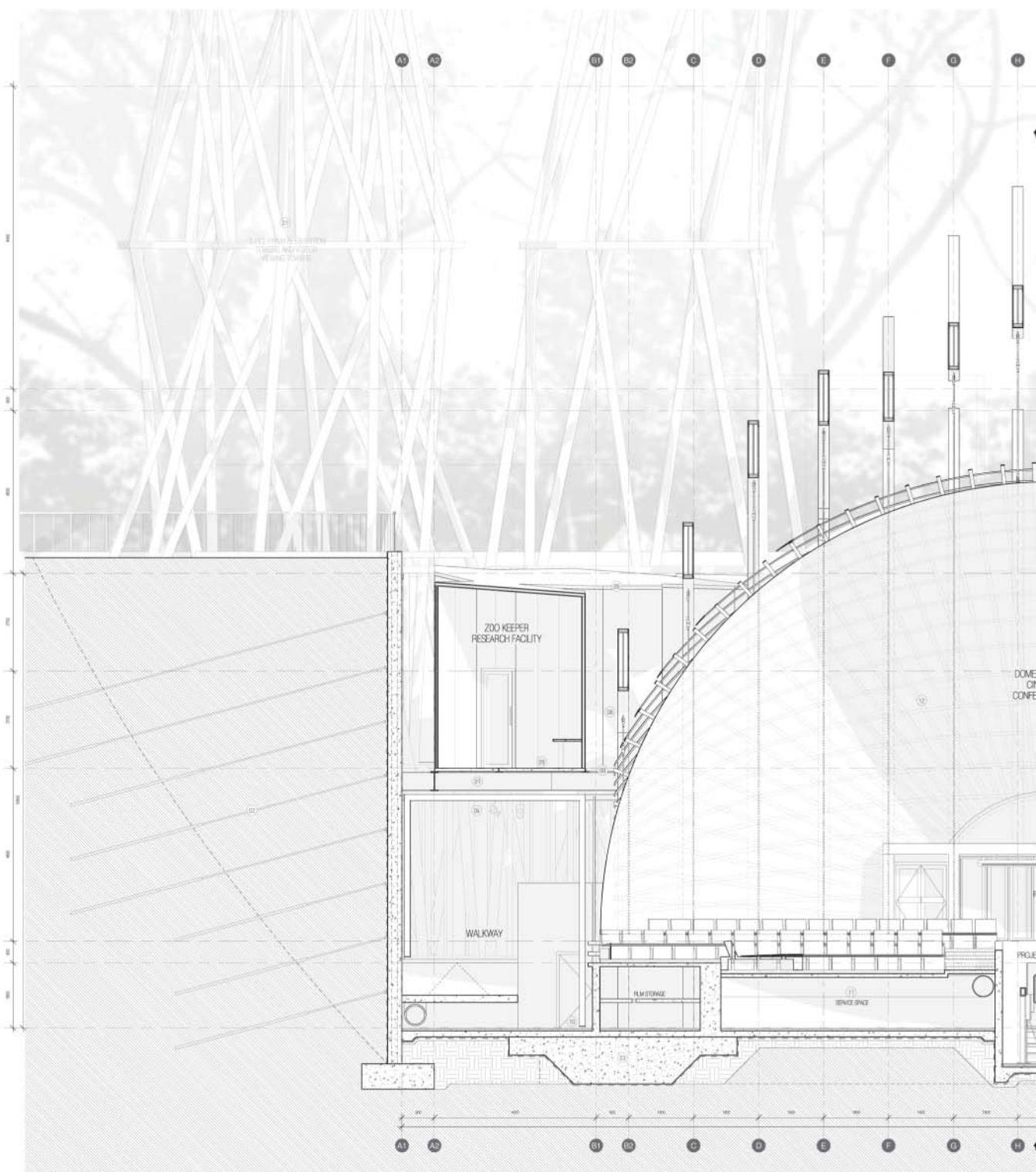
IMG 142: top: Elevations North and West – image not to scale. bottom: Section AA – image not to scale

IMG 143: Larger view of Section AA - image not to scale





IMG 144: Section BB - image not to scale



Q1 - SMALL PRIVATE EXHIBITION TOWERS AND VISITOR VIEWING TOWERS ALLOW PRIMATES TO MOVE VERTICALLY CREATING A MORE FAVOURABLE ENVIRONMENT FOR PRIMATES (Refer to document MAJAPUR, 2009). VIEWING TOWERS ALLOW VISITORS TO MINIMISE PRIVATE CLIMBING.

BEHAVIORAL ENRICHMENT FEATURES TO INCLUDE SWAY POLES AND ARTIFICIAL BRANCHES; GENETS AND DESIGN OF EXHIBITIONS INCLUDING NATURAL PLANT MATERIAL. AS PLANT BASED ENRICHMENT TO BE CREATED AND FOR USE IN 2001 STAFF.

CE - ANCHORING SYSTEM: SOIL NAILS GROUTED INTO DRILL HOLES SPACED ACCORDING TO ENGINEER'S SPECIFICATIONS

04 - LIGHTS AND PROJECTORS: PROJECTION AND STAGE
LIGHTING BY SPECIALIST, FIXED TO PORTAL FRAME STRUCTURE

COPPER STRIP IN 500mm WIDTHS WITH BOTH EDGES BENT THROUGH 90° TO FORM TROUGHS OF 540mm WIDTHS WITH STANDING SEAM ON INNER ROLLING FELT, FRIED TO SAME SHUTTERBOARD ON LIGHT WEIGHT STEEL SUB-STRUCTURE.

08 - ROD SYSTEM: 32mm DIAMETER GALVANIZED TENSION RODS ON 30 DEGREE ANGLES FIXED WITH TURNBUCKLE COUPLERS TO DIVIDE OVERALL LENGTH OF RODS INTO TWO EQUAL SEGMENTS SECURED TO THE THREAD FOR CONNECTOR SHOT WELDED TO PRE-MANUFACTURED CUSTOM METAL TRUSS SYSTEM ABOVE AND CONNECTED TO CUSTOM CLAMP

08 - CONCRETE DECK- 1250 x 140 x 90 REINFORCED LIGHT WEIGHT PRECAST CONCRETE DECKING BLOCKS BOLTED TO STEEL SUB STRUCTURE

DB - 60mm EPOXY SCREED FLOORS OF SMALL PRIMATE
NIGHTSHROUDS TO MINIMUM 1:100 FALL TO FULL BORES, CAST ON
SHUTTERPLY PERMANENT PINE SHUTTERBOARD LAYERED
PERPENDICULAR ON PRECAST CONCRETE DECKING FRIED TO STEEL
SUSPENSION.

10 - PORTAL FRAME STRUCTURES: 160 x 160 x 6 RECTANGULAR HOLLOW PROFILE, HOT ROLLED WELDABLE MILD STEEL, PORTAL FRAME STRUCTURE, ALL CONNECTIONS TO BE WELDED, ALL WELDS MUST BE

11 - SERVICE SPACE: CONDITIONED AIR WILL BE SUPPLIED FROM THE MACHINE ROOM WITH OUTLETS FROM 700 x 700 DUCTING UNDER THE SEATING TO ENSURE A COMFORTABLE MICRO CLIMATE FOR OCCUPANTS, AND TO MAINTAIN THE OVER PRESSURE REQUIRED TO

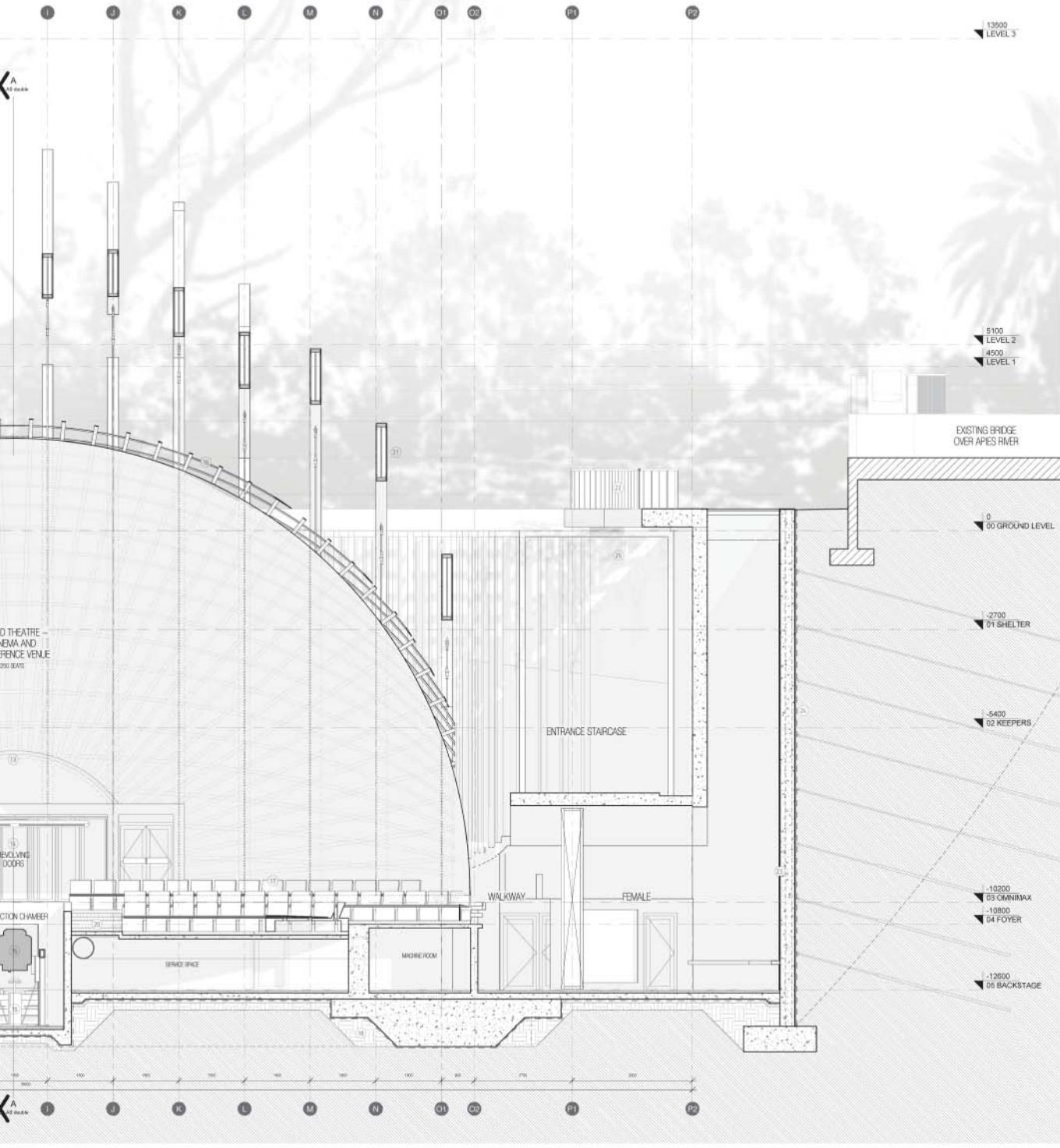
T2 - MEMBRANE DOME: MULTI LAYERED - PERMANENT CRAGUE
DOME, MEMBRANE CONSISTING OF FIBREGLASS REINFORCED
POLYETHYLENE (PROFLEX) AND SUSPENDED SYSTEM

11. - ACOUSTIC ABSORPTION SCREEN, APPROXIMATELY 24' X 15' X 10' UCF
POLYURETHANE FOAM IN PVC SHELL, EXCLUDING
MEMBRANE SUPPLIED BY SAINT GOBAIN OR FABRASOR
ACOUSTICALLY ABSORBTIVE MEMBRANE LINER SUPPLIED BY SAINT
GOBAIN OR LOW DENSITY FILM SCREEN AS INTERIOR LAYER



ZOO SECTION BB 1:50

animatechnic
animatechnic



02000 DOME THEATRE - 2000 RECYCLING
PROJECT ROOM HAVING COMMON
CHAMBERS, PROJECTION CHAMBER
LAT BLACK TO MINIMIZE THE ANGLE OF
REFLECTION FROM THE SCREENS, SEATS ARE RECLINING
TO ACCOMMODATE THE VARYING ANGLE OF PROJECTION AND DOMED
MOVIE SCREEN.

17 - DOME THEATRE - CINEMA AND CONFERENCE VENUE: SEATING
THEATRE IS IN A DOME SHAPE. SEATS ARE RECLINING
TO ACCOMMODATE THE VARYING ANGLE OF PROJECTION AND DOMED
MOVIE SCREEN.

INTERIOR SURFACES, COATED THICKNESS REQUIRE INTERIOR
THEATRE SURFACE FINISHES. THESE ARE RECOATED WITH
AIR PRESSURE CONTROL, TWO (2) X 2000
EXTENDED TO EACH SIDE OF RECLINING
MEMBRANE FILM SCREEN.

18 - GROUND FLOOR: MINIMUM 100mm COMPACTED FILL WITH GRS
TOPPING, 100mm CONCRETE SLAB, 100mm GROUT, 100mm
INSULATION, 100mm LAYER, 100mm CONCRETE TO GRS MANHOLE.

ELECTRONIC UNITS THAT BY A COLLECTION OF HEAT SOURCES, TO
ENSURE A COMFORTABLE ENVIRONMENT FOR THE UPHOLSTERY. THE
ELECTRONIC UNITS SHOULD RUN NO MORE THAN 100MM FROM
WALL, AND GRS AND SURFACES TO BE UNDERSIDE INSULATED
ACCORDING TO MANUFACTURERS SPECIFICATIONS.

19 - CONTROL ROOM: THE CONTROL ROOM HOUSES VARIOUS
ELECTRONIC UNITS THAT BY A COLLECTION OF HEAT SOURCES, TO
ENSURE A COMFORTABLE ENVIRONMENT FOR THE UPHOLSTERY. THE
ELECTRONIC UNITS SHOULD RUN NO MORE THAN 100MM FROM
WALL, AND GRS AND SURFACES TO BE UNDERSIDE INSULATED
ACCORDING TO MANUFACTURERS SPECIFICATIONS.

20 - PRE-MANUFACTURED CUSTOM METAL TRUSS SYSTEM ARCHED
RETAINING WALL, 100mm CONCRETE RETAINING
WALL, 100mm CONCRETE MOLDED TO A THICKNESS OF
APPROXIMATELY 400mm, TO BE REMOVED WITH A DOUBLE LAYER
GROUT, 100mm CONCRETE SLAB, 100mm GROUT, 100mm
INSULATION, 100mm LAYER, 100mm CONCRETE TO GRS.

21 - STAIR TREAD: 2A COMPOSITE HARDWOOD DECKING STAIR TREAD
SURFACE, PAINTED TO MATCH STEEL RAIL STRUCTURE.

22 - RETAINING WALL SYSTEM: PRECAST CONCRETE RETAINING
WALL, 100mm CONCRETE MOLDED TO A THICKNESS OF
APPROXIMATELY 400mm, TO BE REMOVED WITH A DOUBLE LAYER
GROUT, 100mm CONCRETE SLAB, 100mm GROUT, 100mm
INSULATION, 100mm LAYER, 100mm CONCRETE TO GRS.

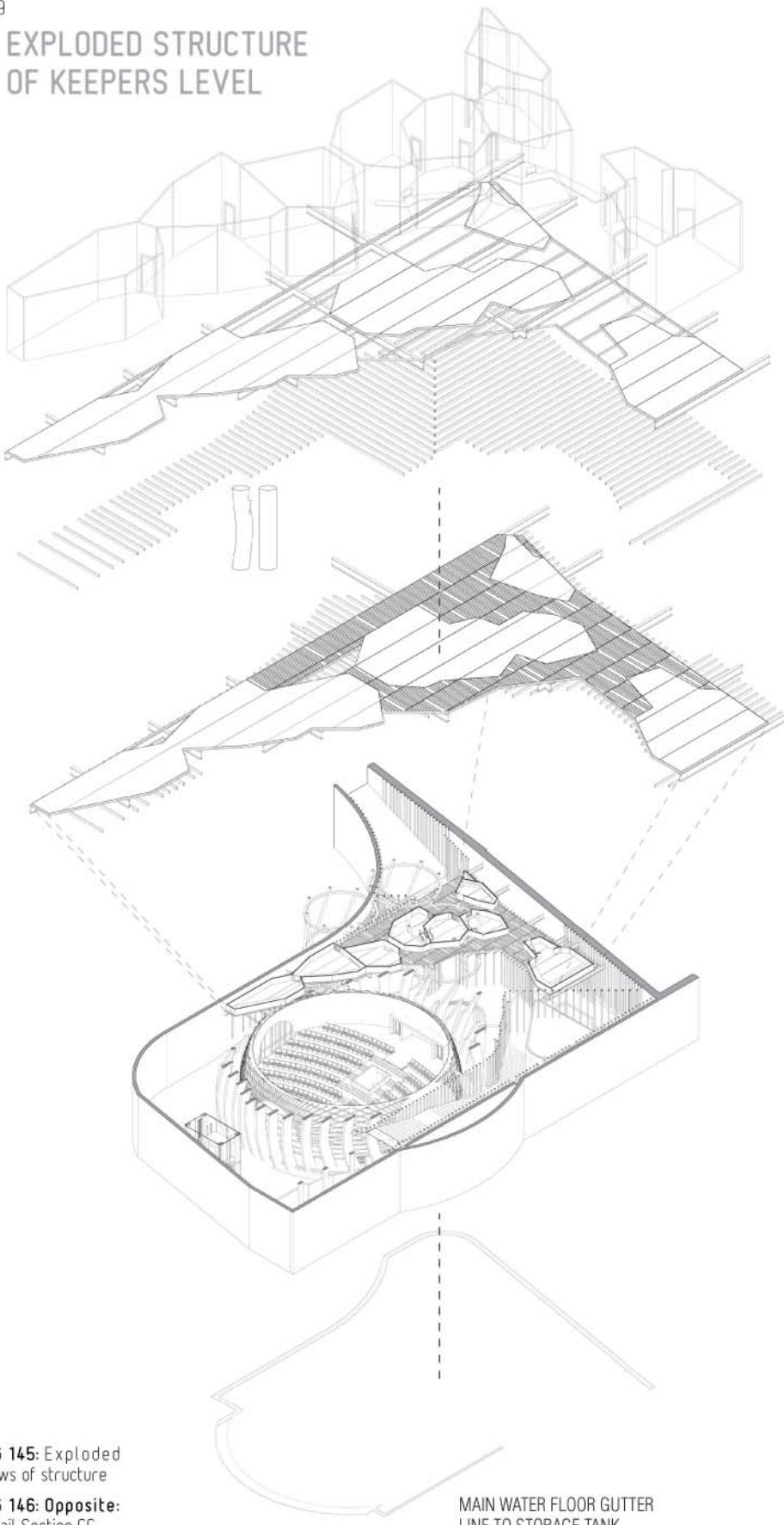
24 - WLDRAIN: VERTICAL WLDRAIN SYSTEM TO BE A
PROOF TESTED, 100mm DIA, 100mm DIA, 100mm DIA, 100mm DIA,
MANUFACTURED IN A STAINLESS STEEL, TO BE SPACED AND ARRANGED AS
DIRECTED BY THE ENGINEER.

25 - SELF CLINCH OR NAIL AND GLUE: OVERLAY FOR, RESTRAIN
AND SECURE GLASS SURFACES, TO BE PLACED AT THE END OF SHELF IN
PLANTER BEDS AT MINIMUM 300MM LENGTH AND 0.5MM WIDTH.

NOTE:
RETAINING WALL AND CHAMFER SYSTEMS SUBJECT TO GROUND CONDITIONS
UNLESS OTHERWISE STATED. THE RETAINING WALLS ARE TO BE
DESIGNED BY ARCHITECT AND FULL GEOPHYSICAL SURVEY AND
REPORT IS CONDUCTED BY QUALIFIED PROFESSIONAL.

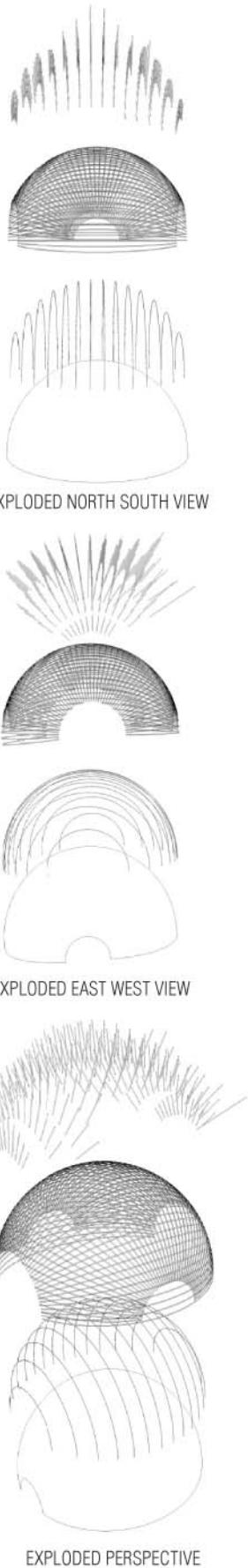


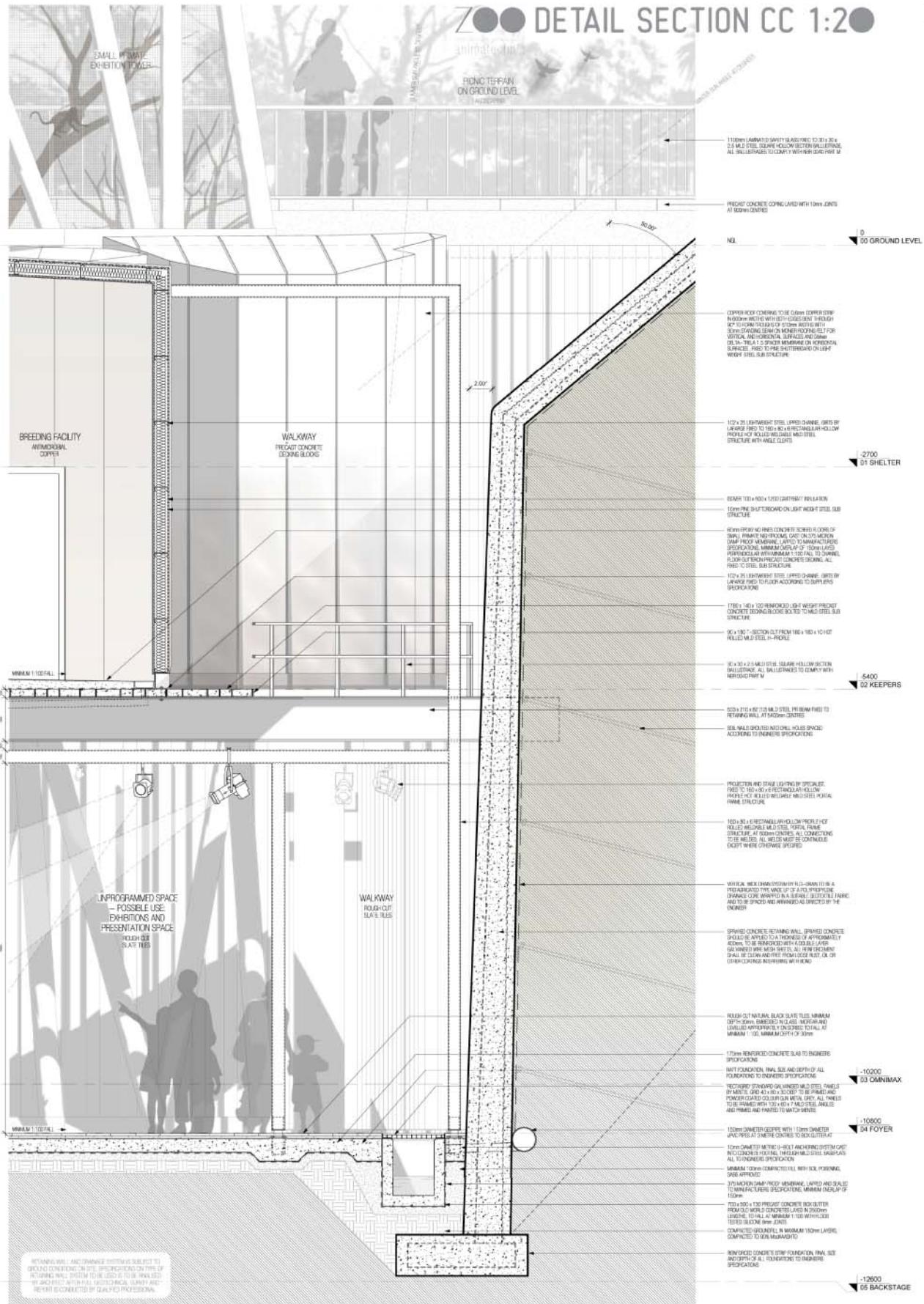
EXPLODED STRUCTURE OF KEEPERS LEVEL



IMG 145: Exploded views of structure

IMG 146: Opposite:
Detail Section CC







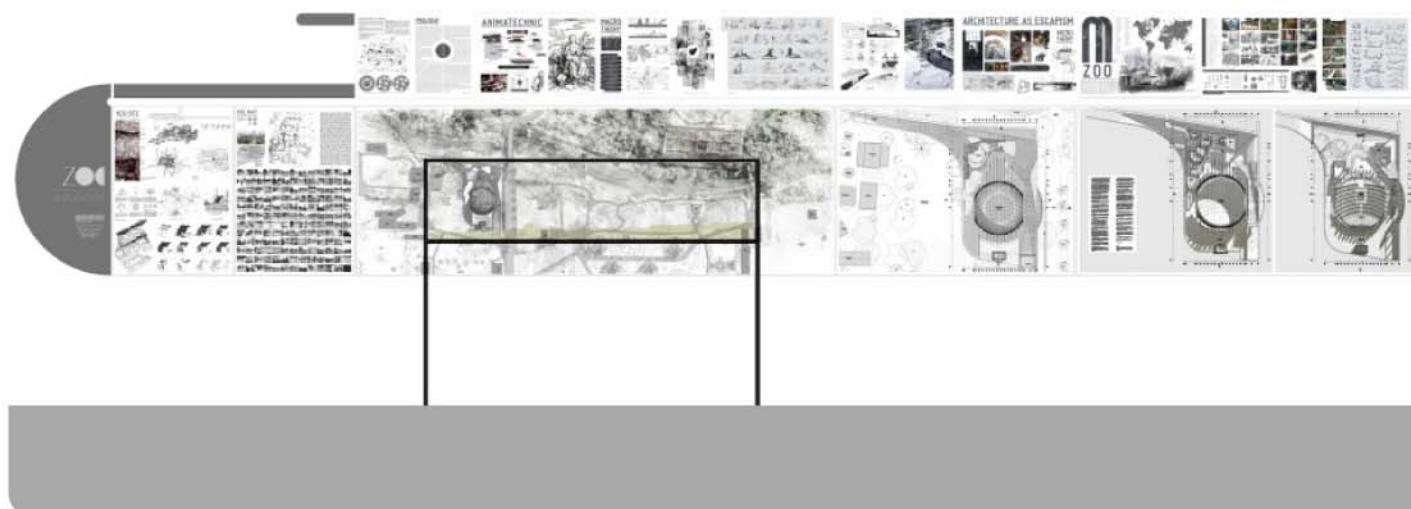
*"People want architecture
to respect some constant
characteristics which
have become part of our
collective consciousness."*
(Lawson, 1994; 78)

The dissertation did not aspire to merely provide a product but rather to interpret and give form to the discourse themed around the recurring message of escapism and enclosure, and the metaphors or analogies surrounding these concepts on various theoretical scales.

The product gradually manifested through the process and intuitive methodology. It evolved across a range of forms from the metaphysical to the tactile and the opportunities and difficulties of the approach became evident. The product could still be viewed as the synthesis of a work in becoming. The design process has no boundaries: it is never complete.

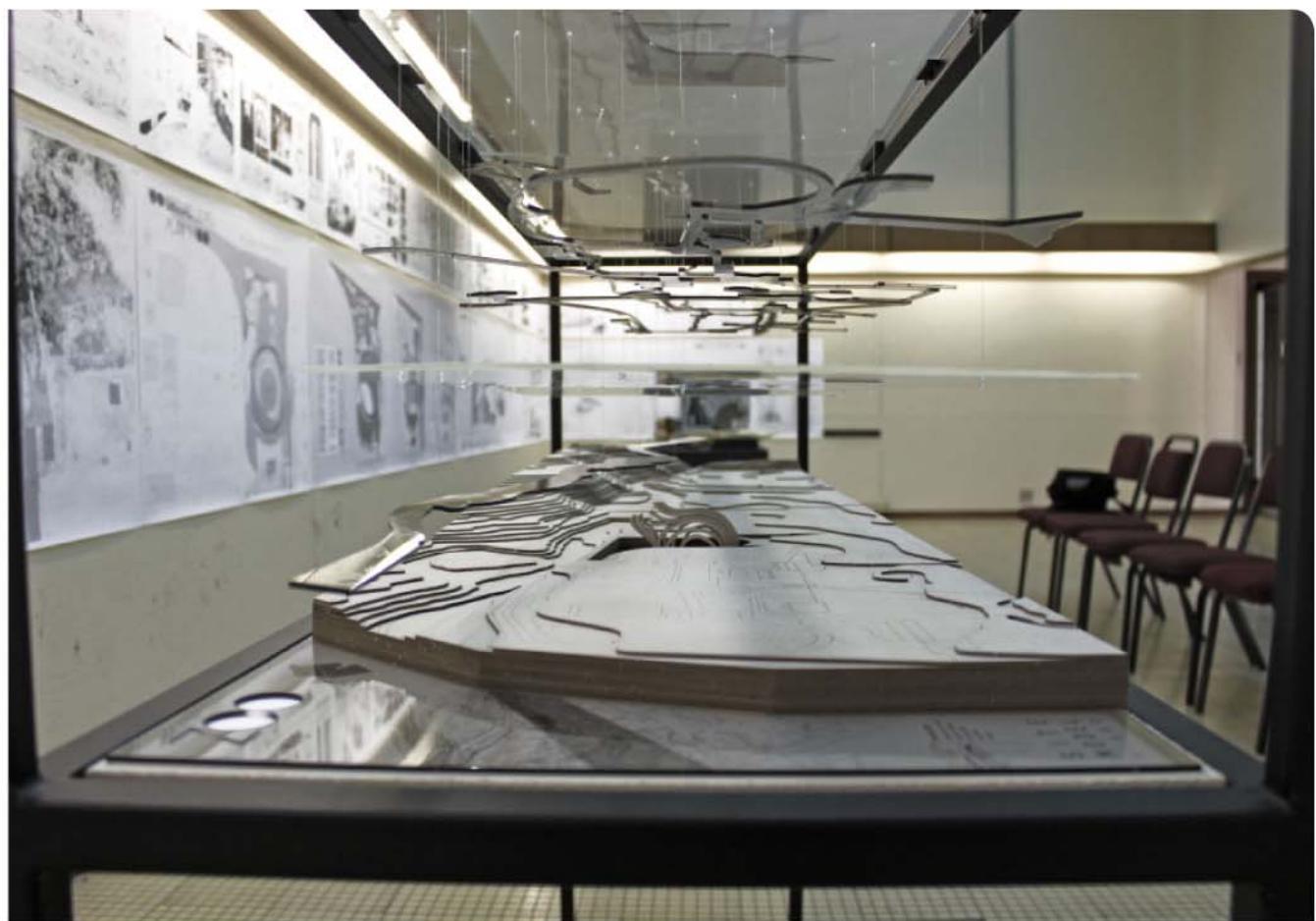
The exercises prove that it is possible to use an intuitive design approach in forming a project - however one can only learn or improve on the design instinct if one is cognitively engaged with the process through constant reflection.

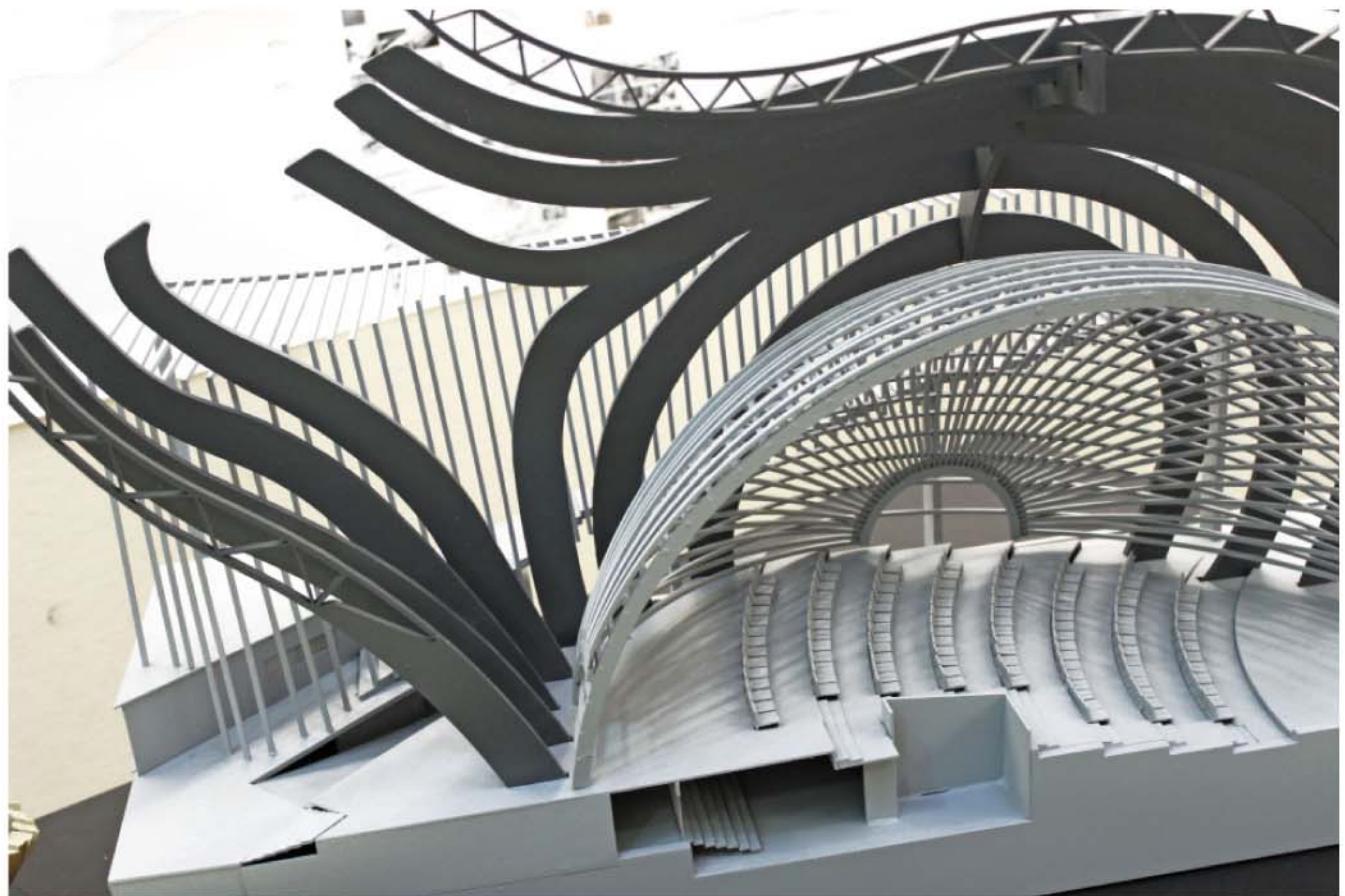
PRESERVATION & MODELS

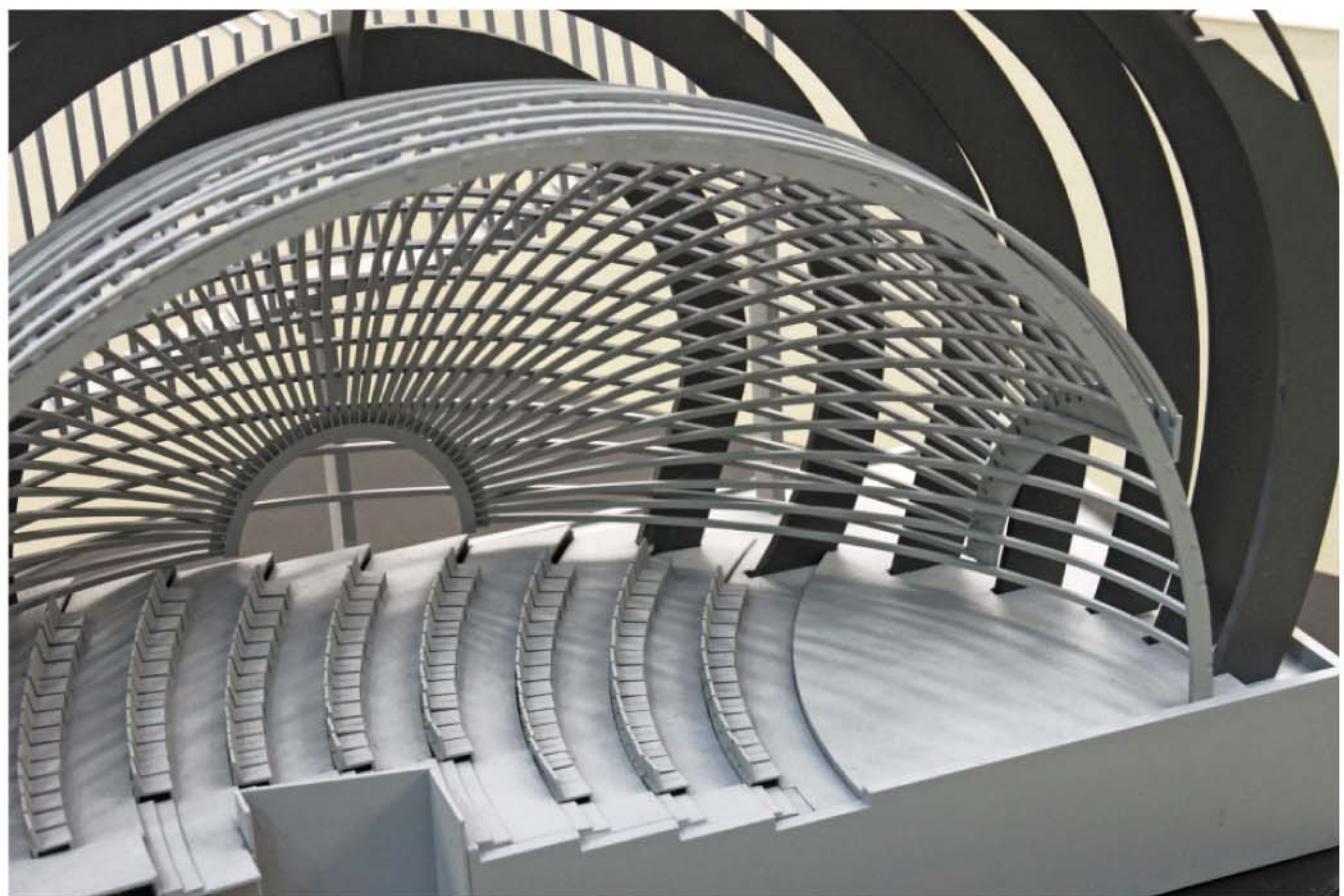












APPENDIX

NOTES &

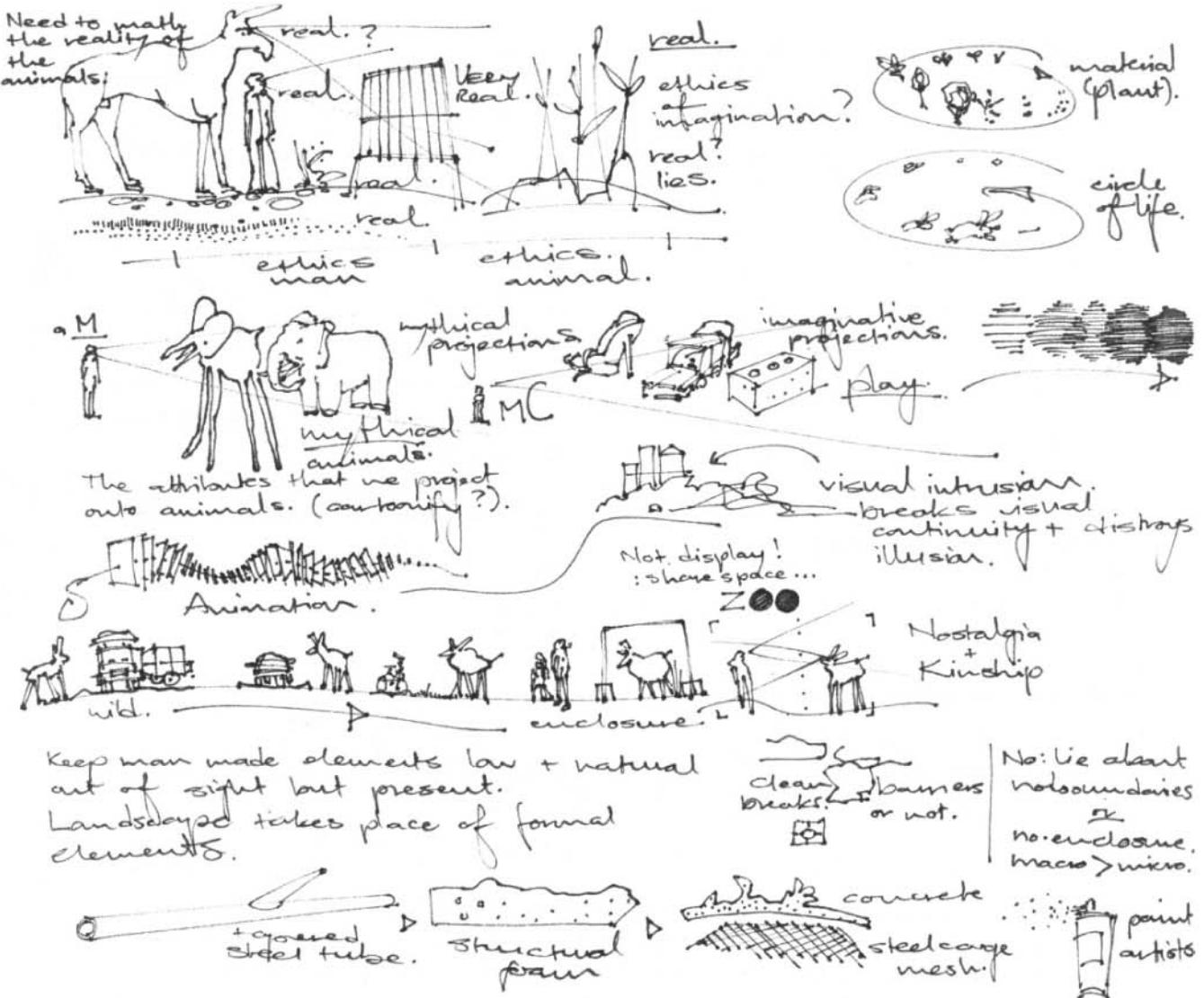
REFERENCES

APPENDIX

The appendix includes a selection of pages from the authors notebook as well as images and historical plans of NZG that was scanned from the archive room at NZG. The appendix will hopefully inform further discussion and aid future projects within NZG.

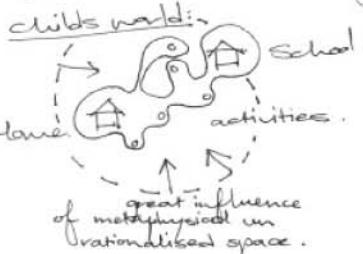
The historical plans are supported with additional plans and images from J.M. Oberholster's *Die Geskiedenis van die Nasionale Dieretuin van Suid-Afrika*, which could be directly translated as 'The History of the National Zoological Gardens of South Africa' (Oberholster, 1992) to complete the formation of the timeline. Some images are juxtaposed against additional recent photographic images.

SELECTED PAGES FROM AUTHOR'S NOTEBOOK





Hunderthaeck's skins of the world: (Spatial perception):



Rationalising deduction: Anthropology myths on origin.

[TECHNIC] deduction: general assumptions to particulars through logic.

Degrading Virtualising induction:

concrete phenomena to assumptions [ANIMA]

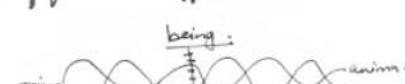
induction: ornamentation Anaesthetic Visual image.

[DPO]

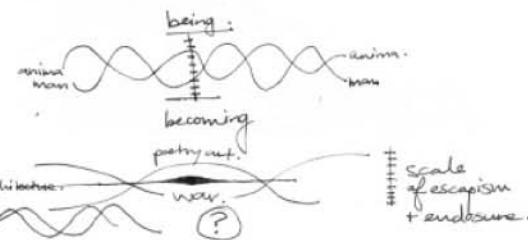
MYTH OF ETERNAL RETURN.



mimetic (needs human intervention).



(g) ↓
? ↓
? ↓
?



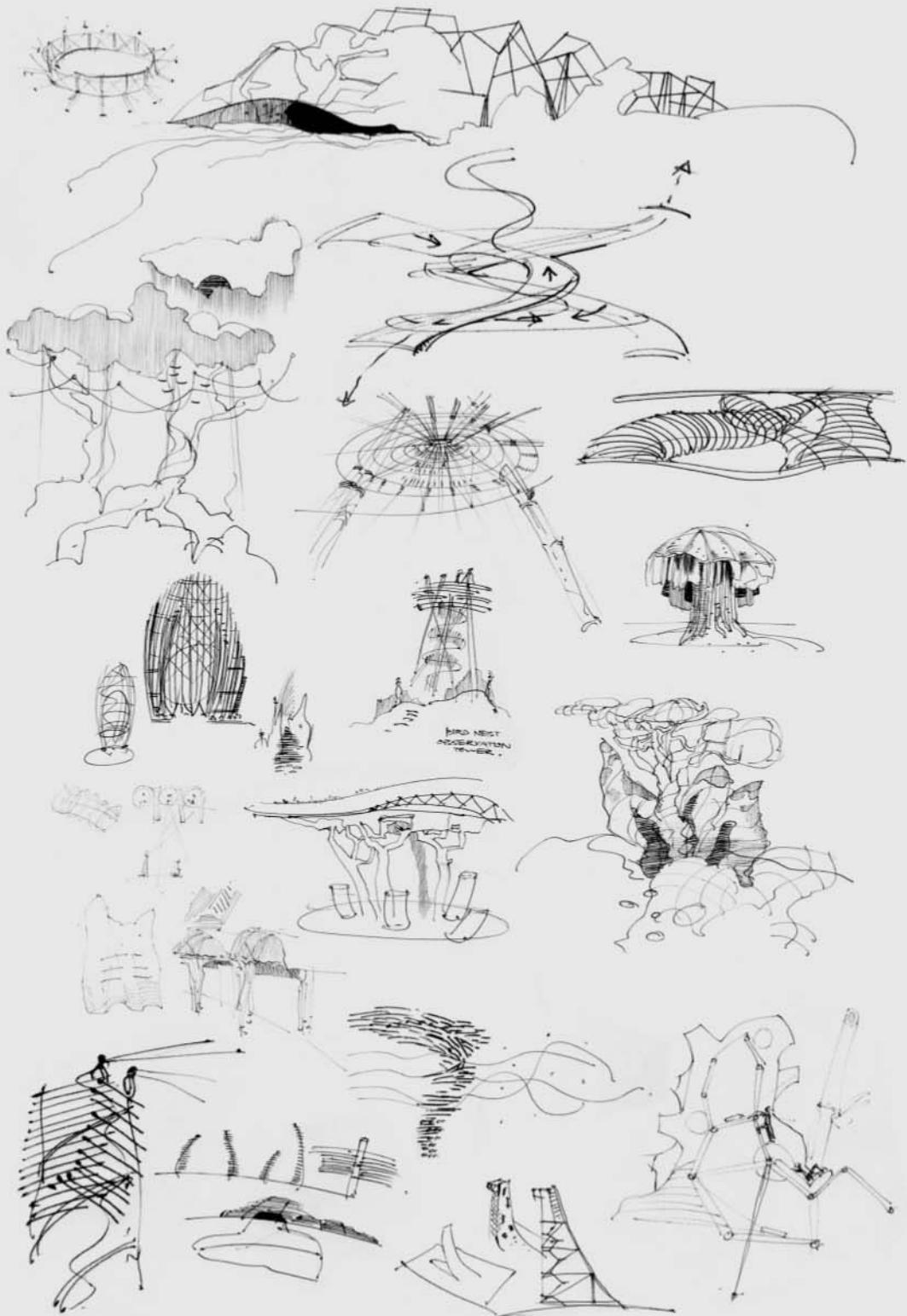
scale of escapism + endurance.

(c) archaeology of the present

Animal smells, which are distinct: acc. to diet etc.



migration patterns and green space throughout the city. (child + animals). sound communication.





ENCLOSURE: enclosure is always governed by a line. (a rational) - (a logic)
in the free, homogeneous world of the virtual technological age.

The virtual itself has enclosed man. Ritual, religion, and sacred space has died.



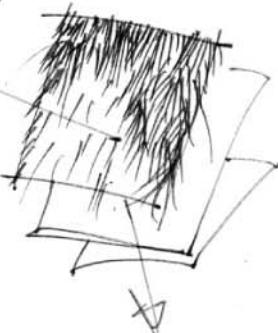
surface meaning

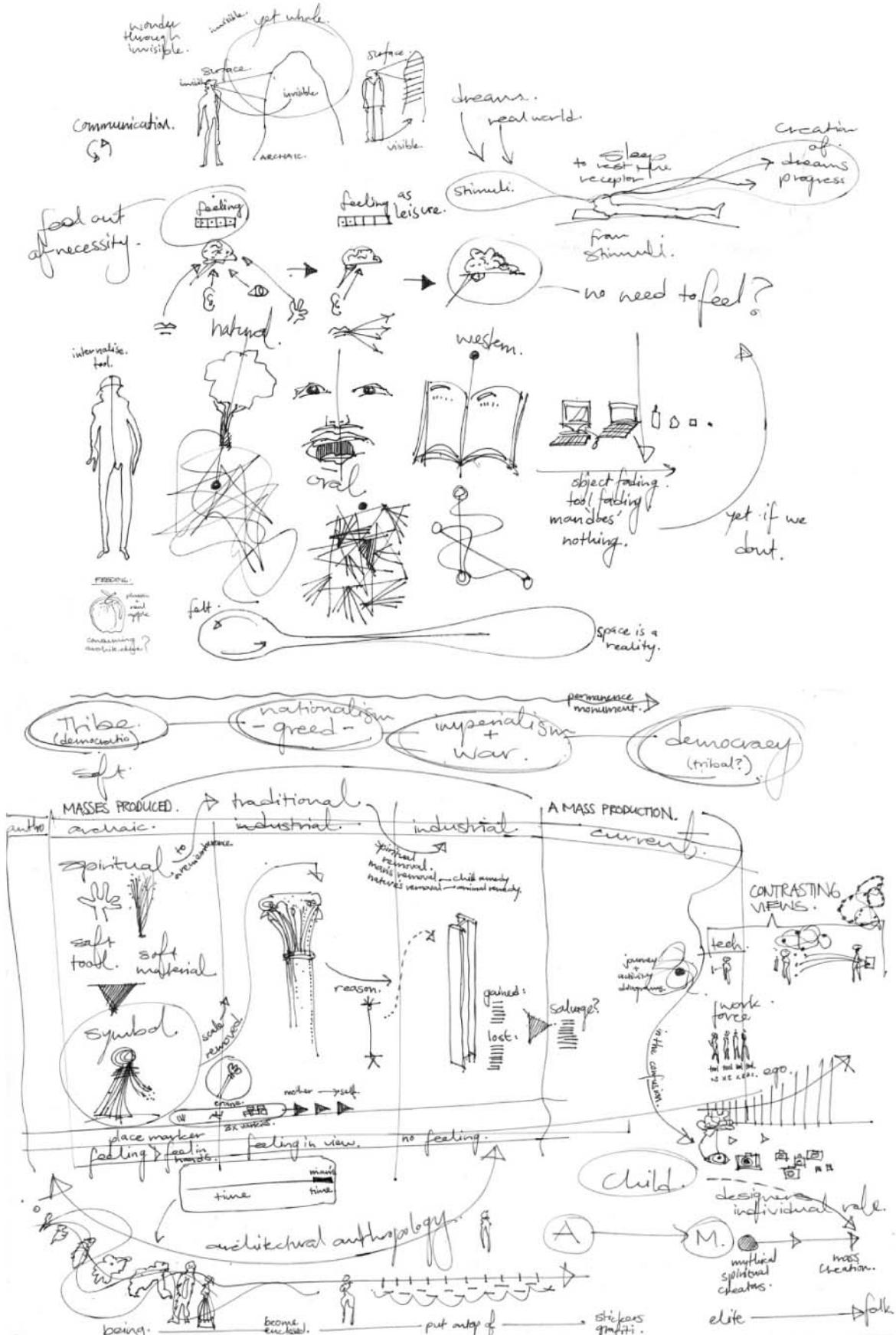
NO.
Layers of meaning with various levels of accessibility.

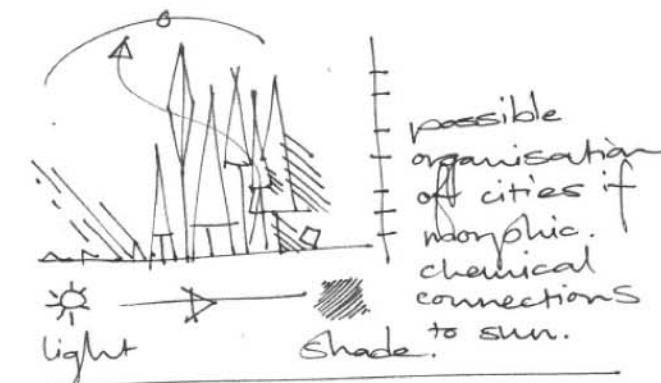
varying levels of accessibility.

plasticized.

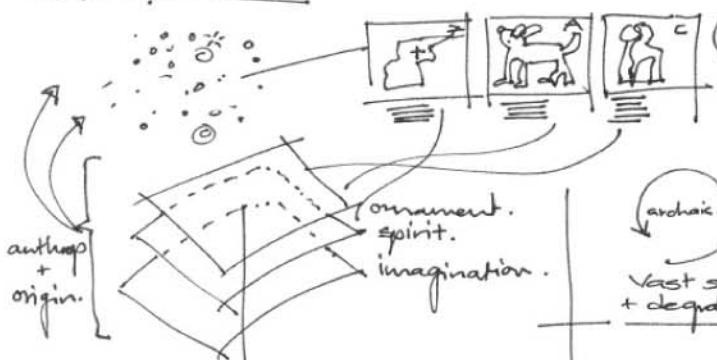
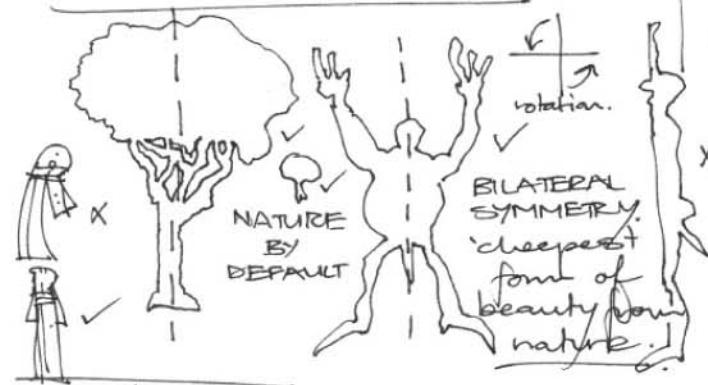
weathering, ever changing sulfate







PIONEERING SOCIETIES.



Product.

SEE RATIONAL AS METAPHORS:

DOOR is only a metaphor.

WINDOW is only a metaphor.

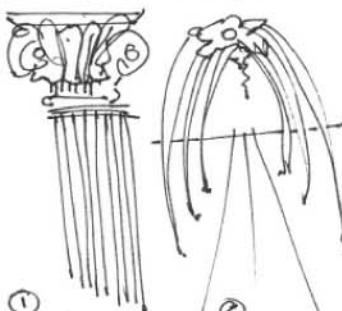


NB: Layer vision over old masterplan
diagr. fade into sketch.

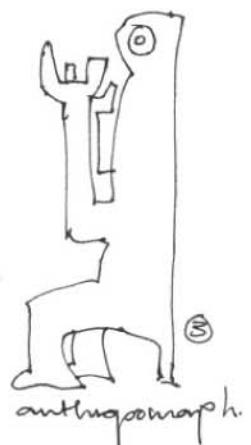
video → movement diagram.

ORNAMENTATION:

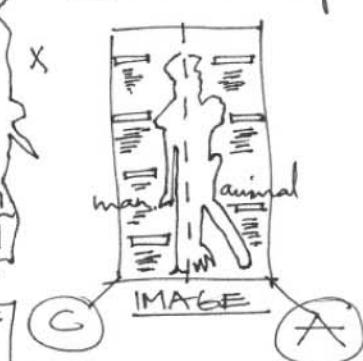
1. man in nature
2. man in animal
3. man in man



① classic ② saemaph.



③ anthropomorph.



sounds etc.
(percept
ion of
Space.).

archi.
animal → man

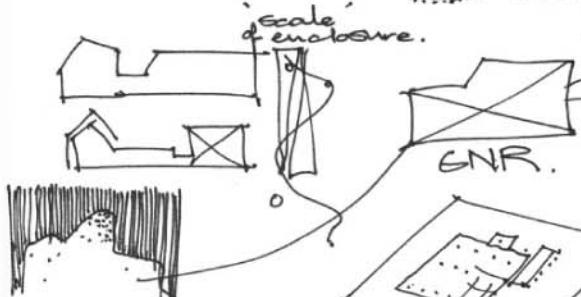
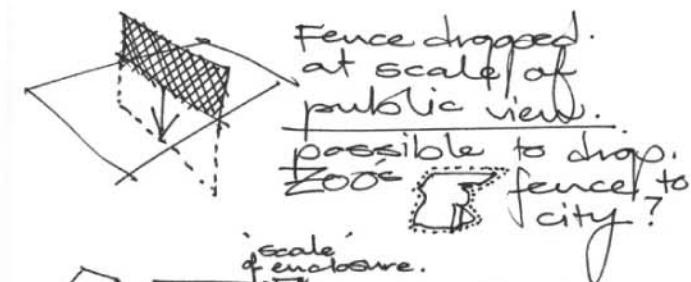
archaic
vast space + degradation. > clues for modern man.

[child: top layer
of archaeology
as clue.]

'SPOORSNY'

— Natural signages as opposed to image
if child can't read he gets lost?

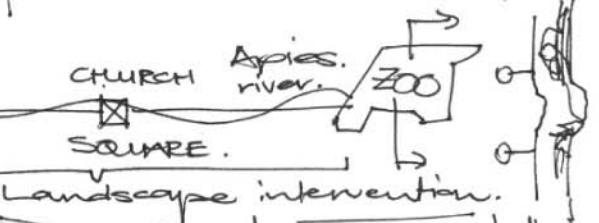




Back
Spar.
Noodzyl
SKETCH PLAN BUILD
+ other books... revisit.

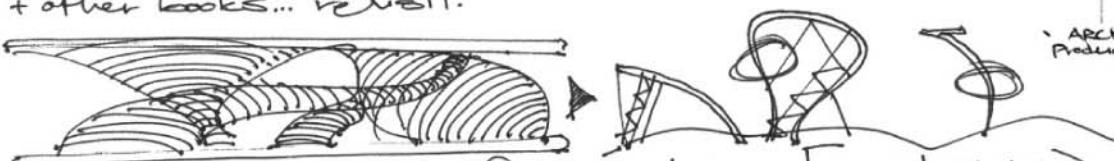
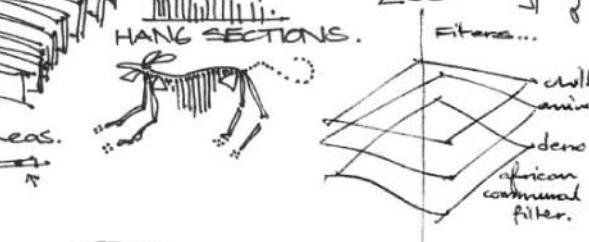
ANTI PLAN
convey feeling along with scale + meas.

Tuesday 26th. April 1st FEED BACK.
6.2 = Final Final doc.
for marks. (CPD)



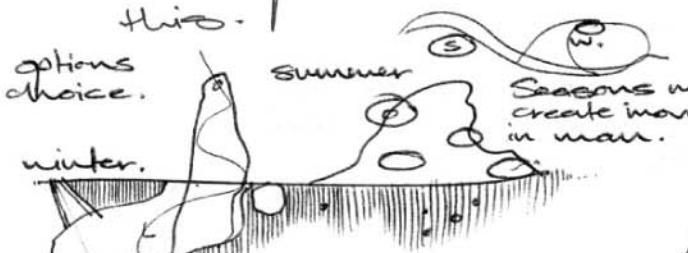
[CREATE IMAGE]

ZOO Fitnes...

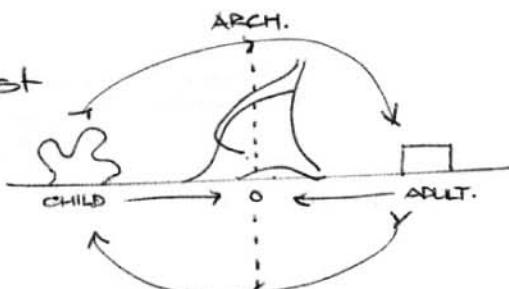


Draw enclosures from within. [enclosure play sculpture.]

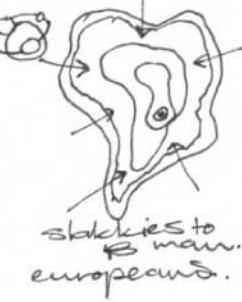
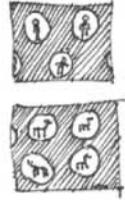
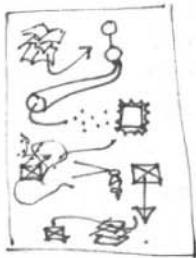
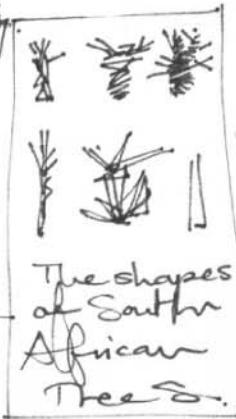
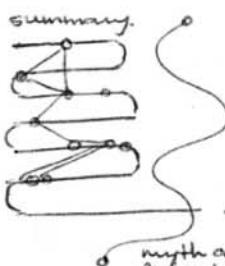
INTRO: Add: response to criticism on Arch: Fragmented knowledge, social etc. although it's not "our" study field it gives architecture not just leverage but ~~such~~ discipline resulted from this.



write a circular summary.
cycle + time.
Return of myth.

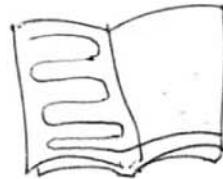


FORM THROUGH LIFE, LIFE FORMING
FORMAL PREJUDICE.
Architecture of the uncensored mind.

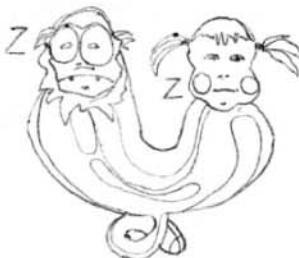
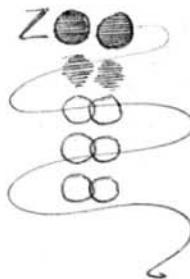
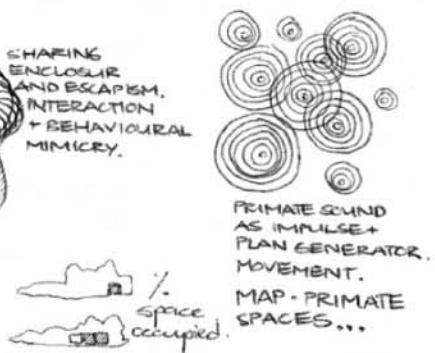
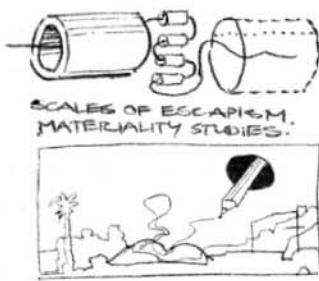
**ZOO**

structure.

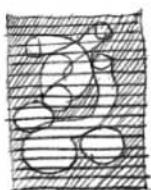
Layout for the Book / Document
Easy flow and structure.
chapters + Figures.



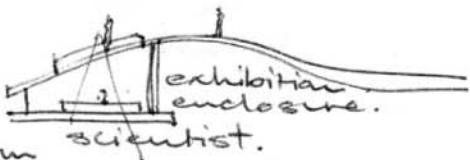
01. LAYOUT AND MAIN DIAGRAM AS SUMMARY. / 02. THEORY DIAGRAMS 001 + 002. / 03. SITE DIAGRAMS IN RED PIX.
04. FIX CHAPTERS 01-02 / 05. ■■■■■ artistes summary.



MERGE AS MODEL
FOR PRESENTATION/
EXHIBITION,
ENCLOSURE +
ESCAPISM.

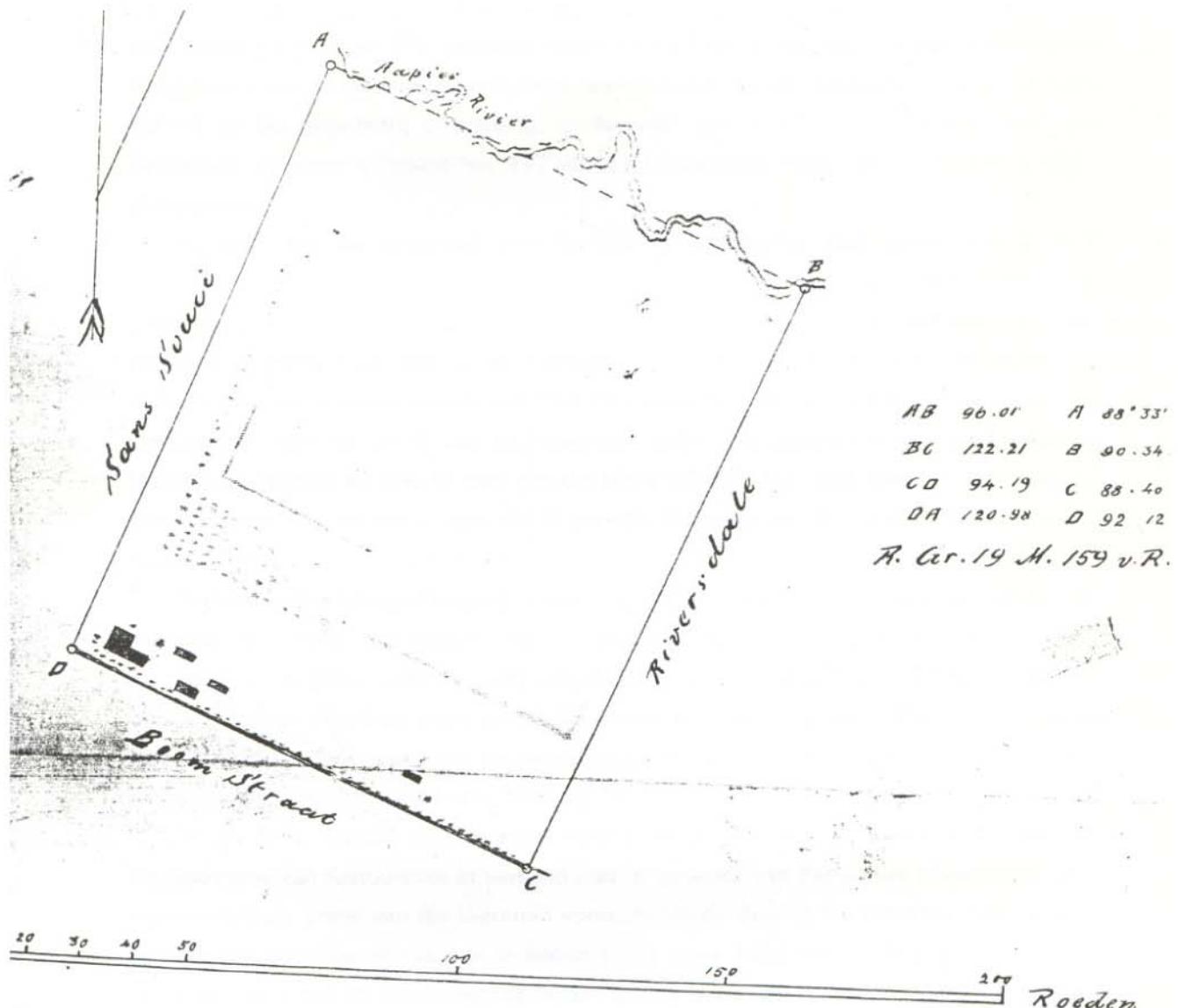


Positive is
Negative as
escapism
of form.





HISTORICAL PLANS



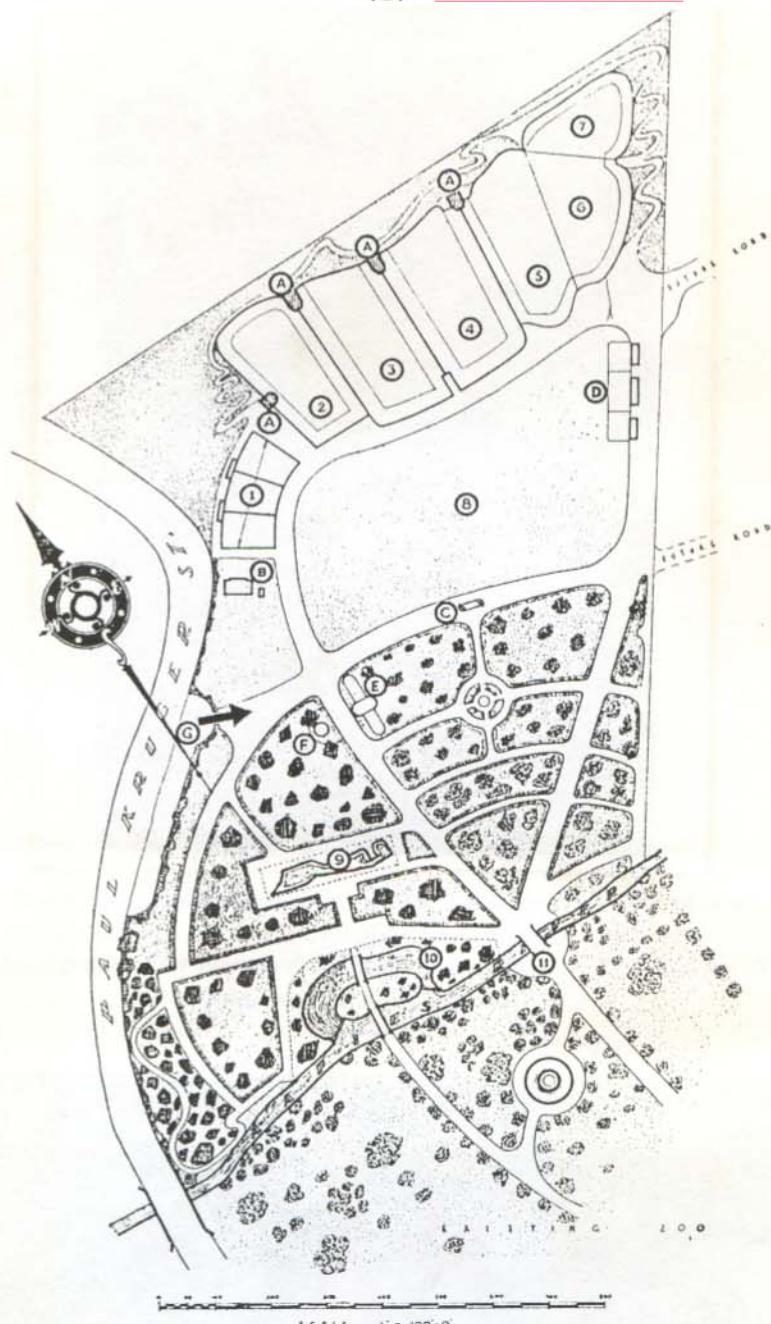
*Rus in Urbe
distr. Pretoria*

19 Morg. 258 vierk. Roeden.

gem. door

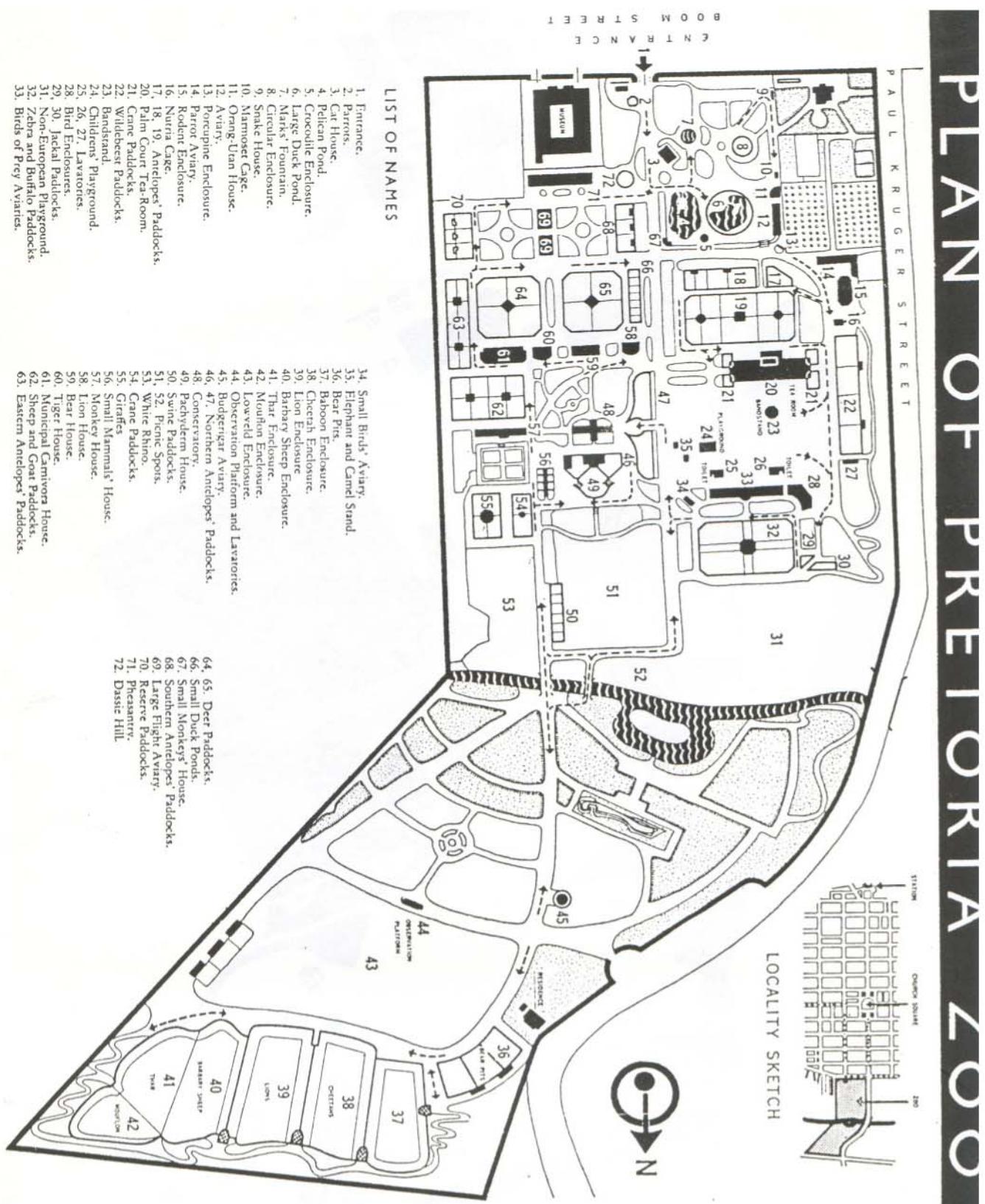
W^m A.B. Anderson.

IMG 147: The site survey of the piece of land on which NZG was established. 'Rus in Urbe' (Oberholster, 1992)

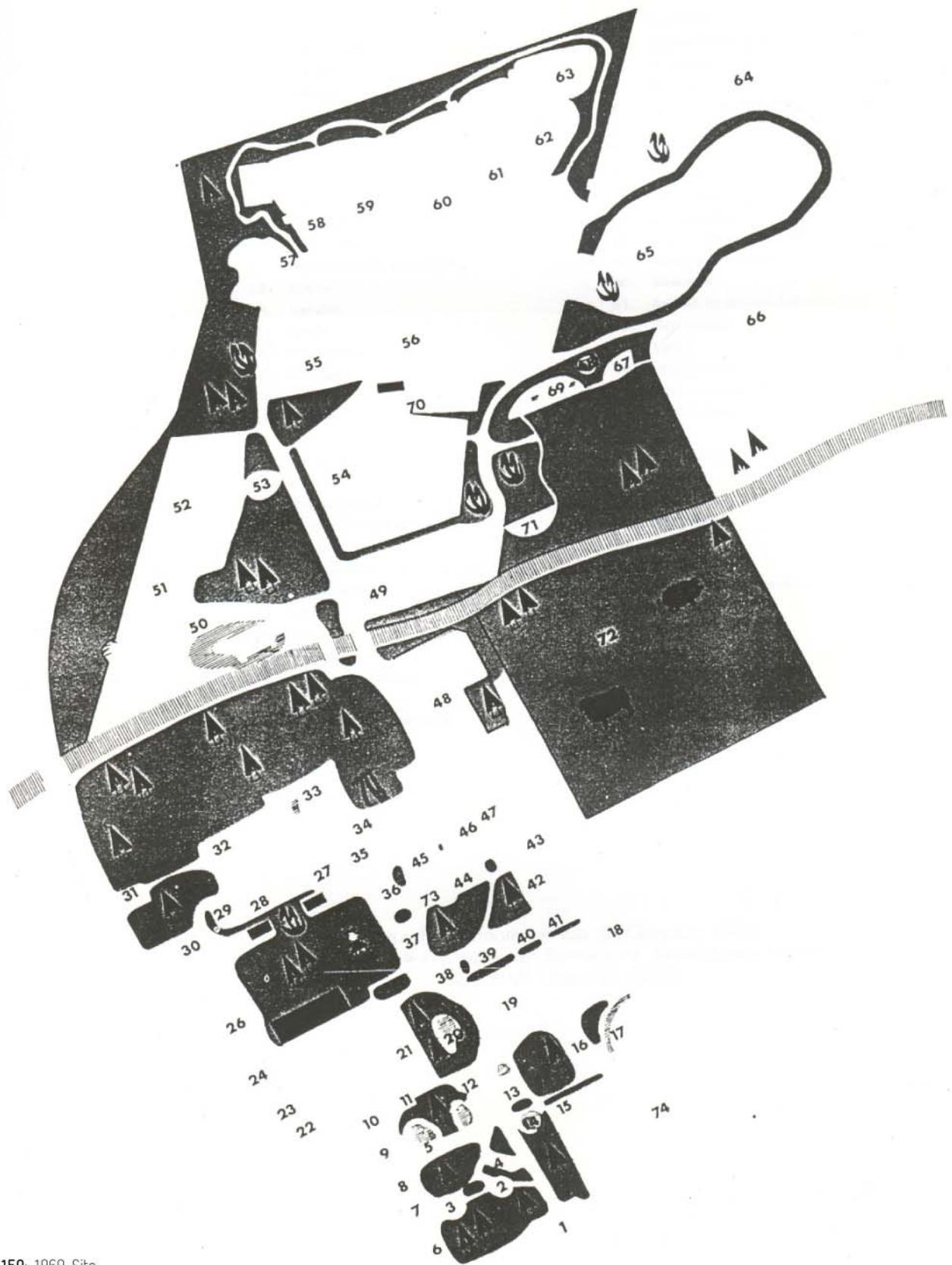


- | | |
|--------------------------------------|-------------------------------------|
| 1. Beerhokke | A Uitkykторings |
| 2. Bobbejane | B Opsigterswoning |
| 3. Tiers | C Toilette |
| 4. Leeus | D Anteloophuise |
| 5. Bergbokke | E Hok vir groot voëls |
| 6. Reebokke | F Hok vir klein voëls |
| 7. Klipspringers | G Addisionele ingang en parkeerplek |
| 8. Antelope (ens.) -kamp | |
| 9. Toekomstige krokodilkamp | |
| 10. Toekomstige watervoëlkkamp | |
| 11. Toekomstige brug oor Apiesrivier | |

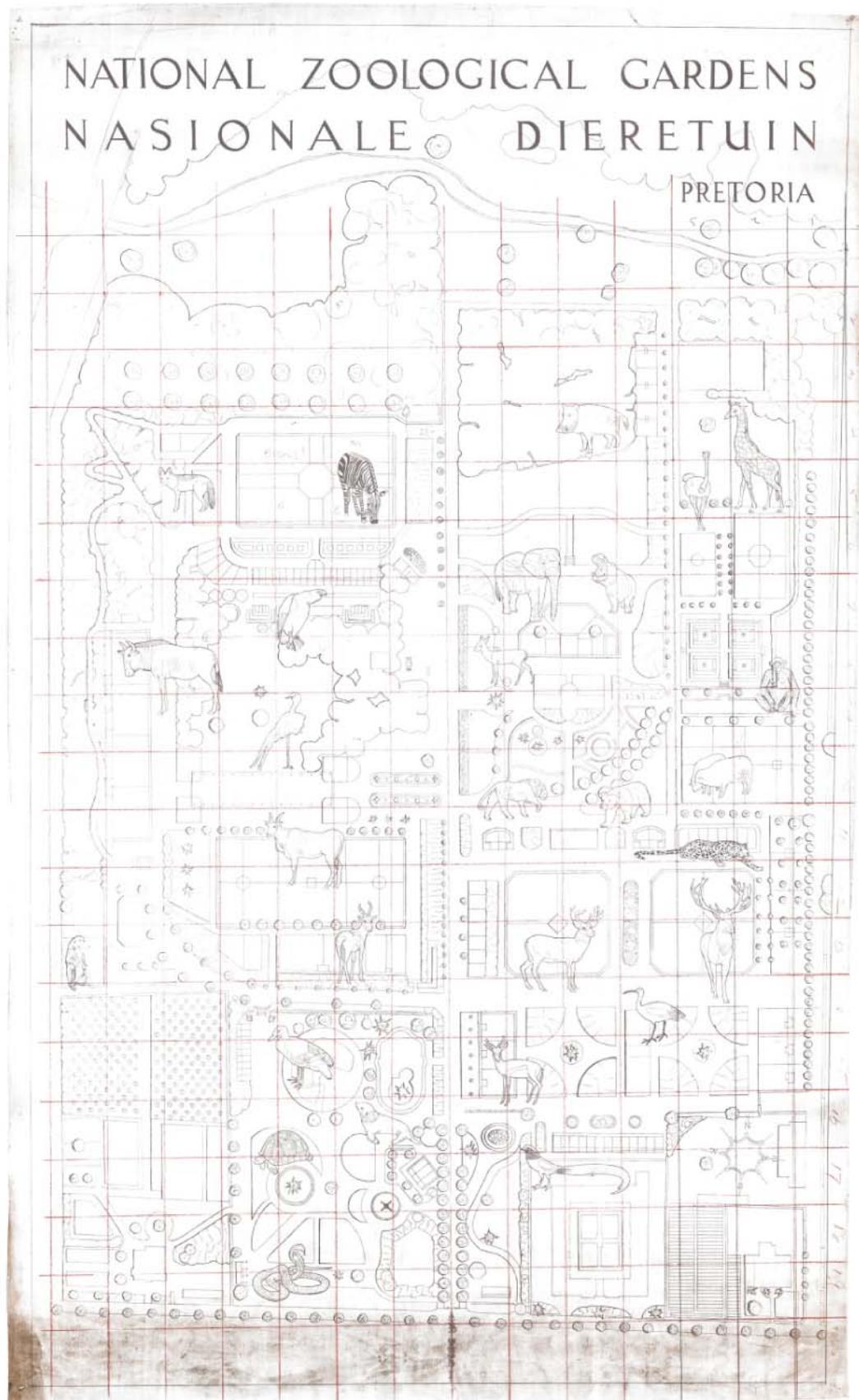
IMG 148: 1939 Site plan of the NZG extensions to the North (Oberholster, 1992)



IMG 149: 1954 Site plan of the NZG (Oberholster, 1992)



IMG 150: 1969 Site plan of the NZG (Oberholster, 1992)

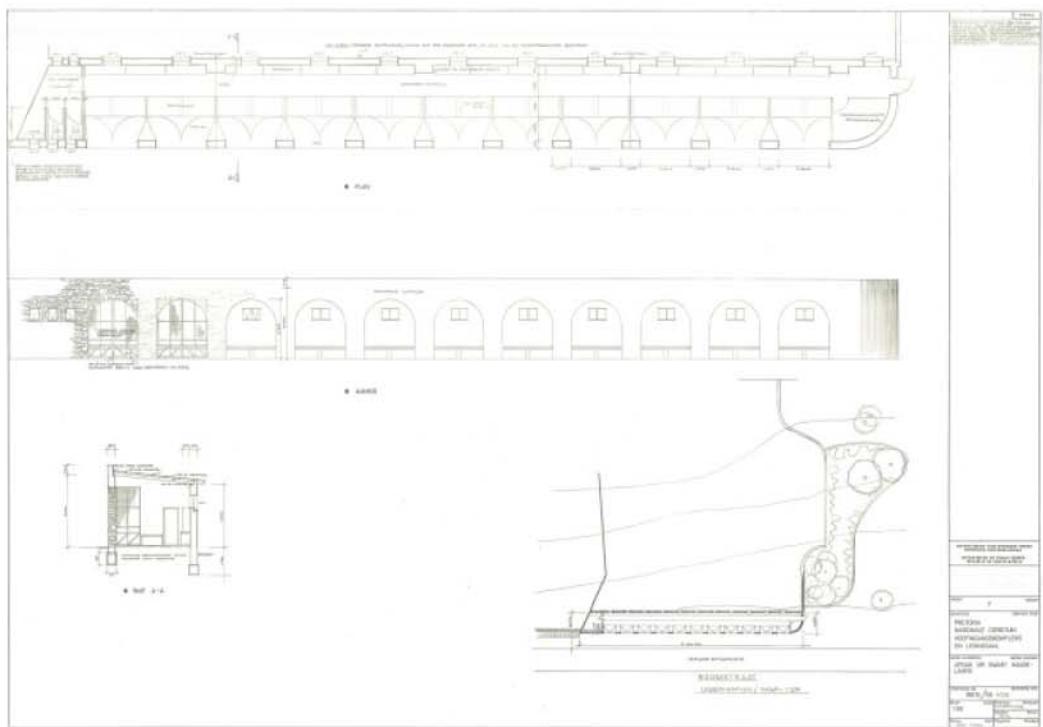


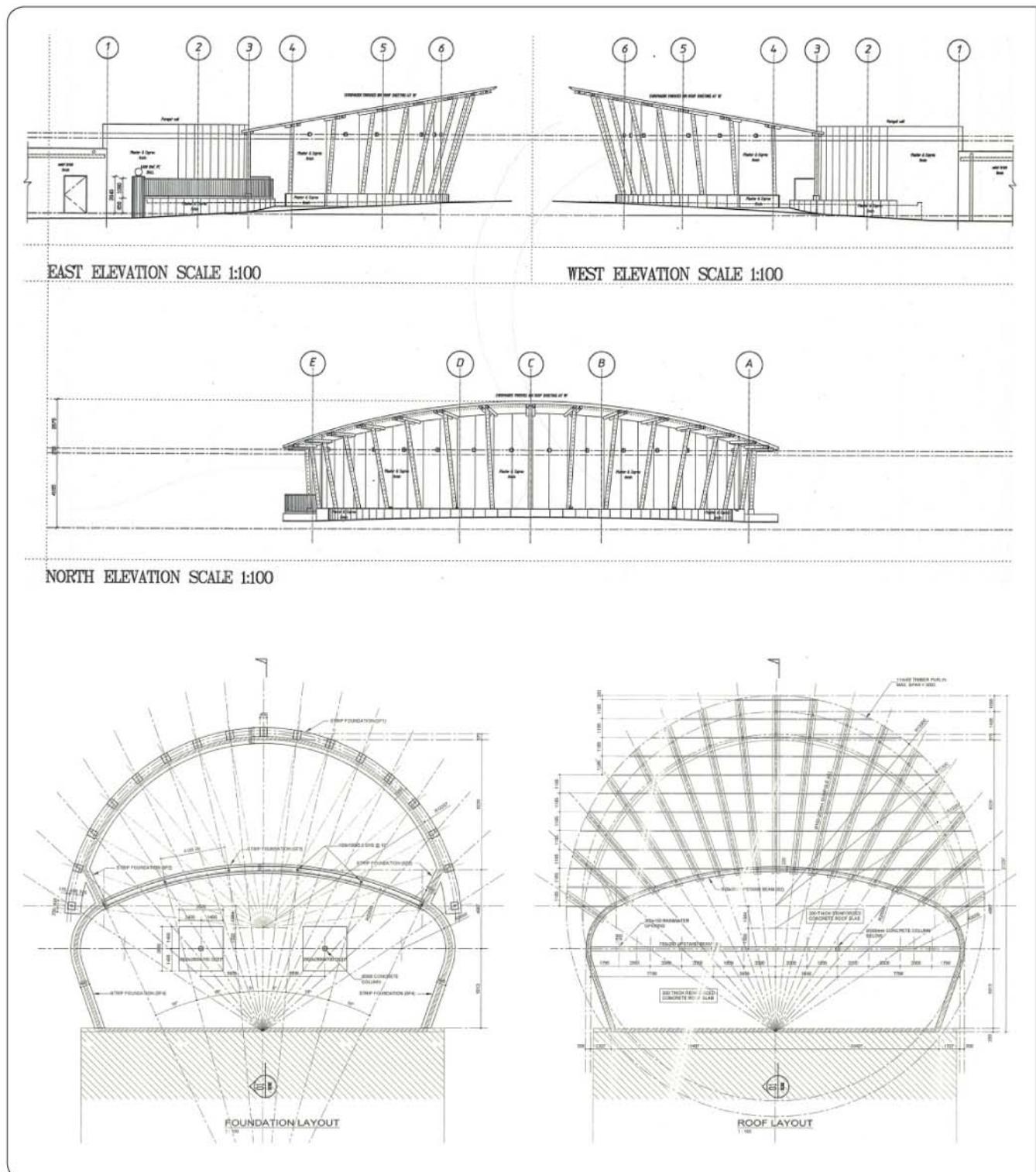
IMG 151: Site plan
of the NZG from
NZG archives



IMG 152: Site plan of the NZG from NZG archives

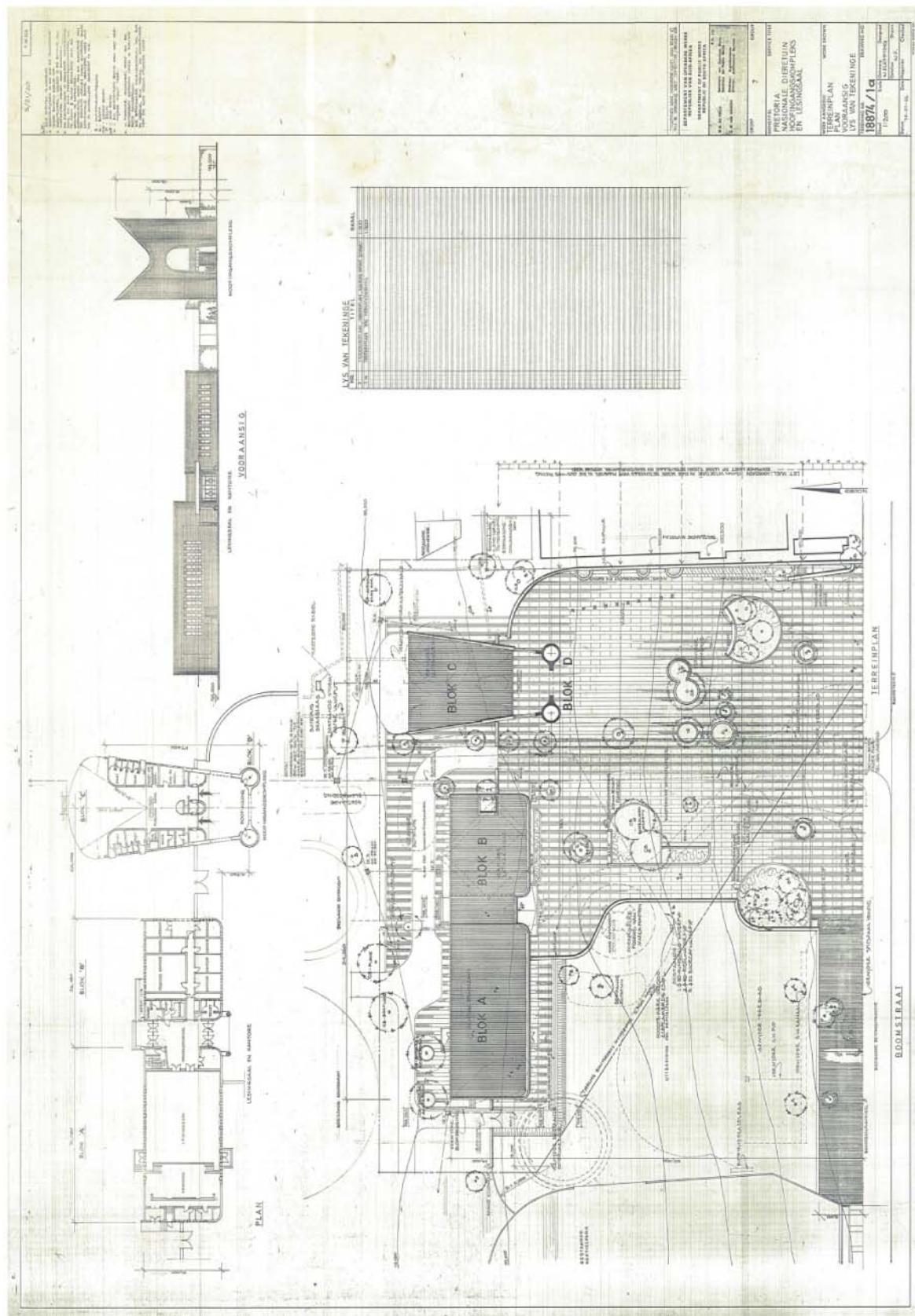
IMG 153: Drawings of the craft market on Boom Street, May 1980

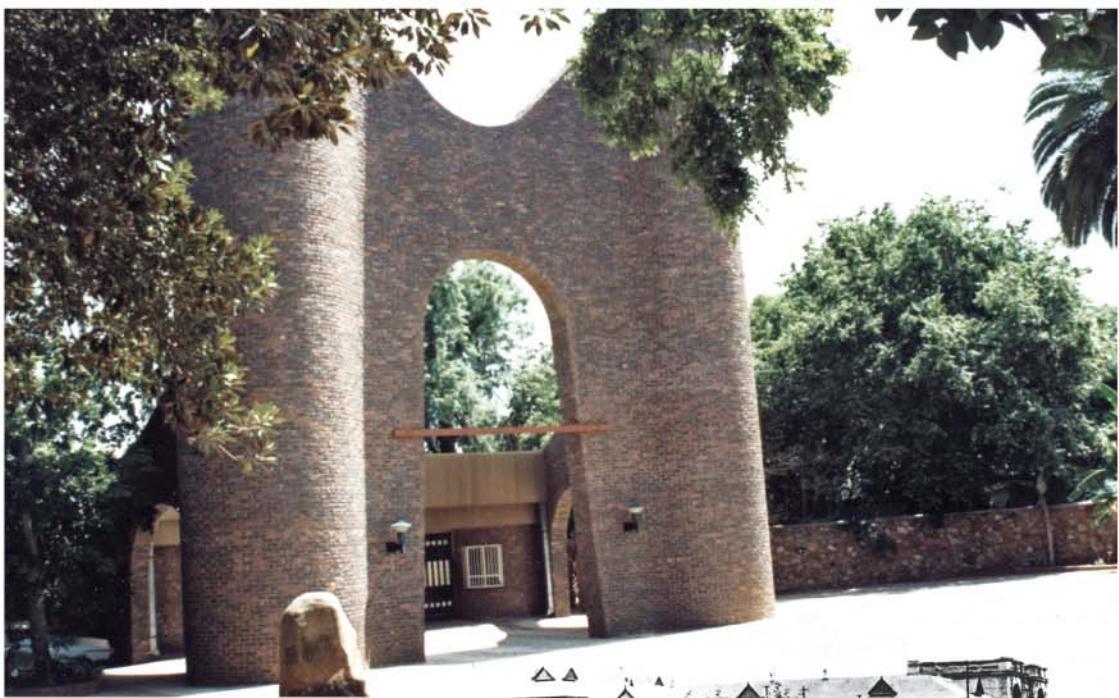
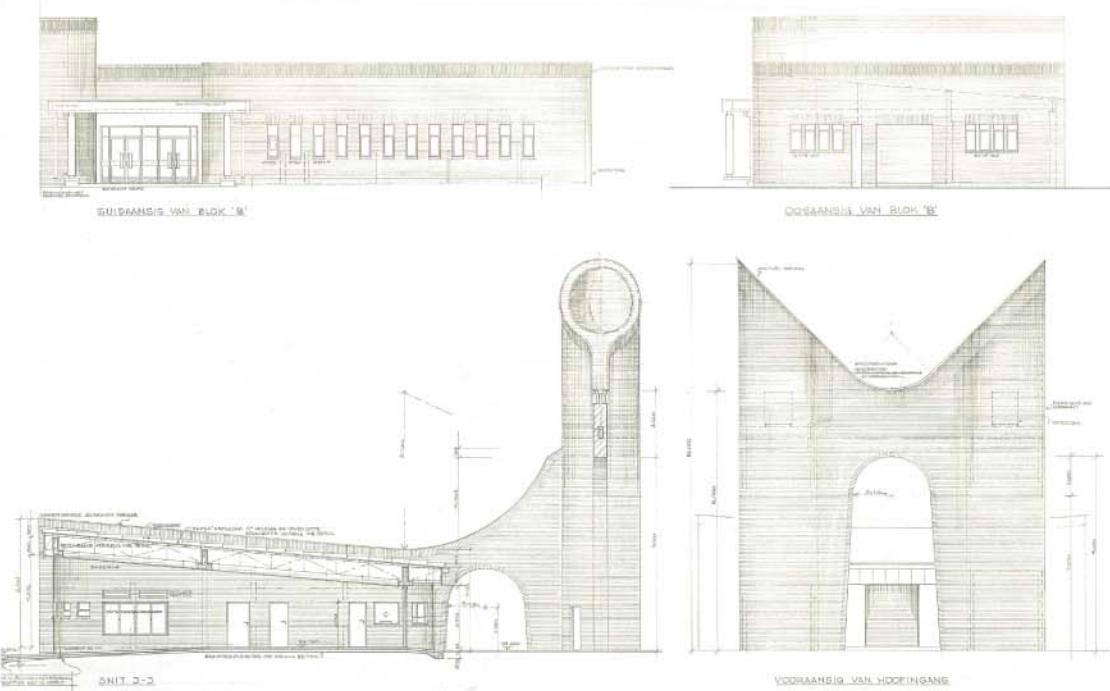




IMG 154: Elevations and structural layouts of the new Gorilla exhibition from the archives at NZG. October 2003

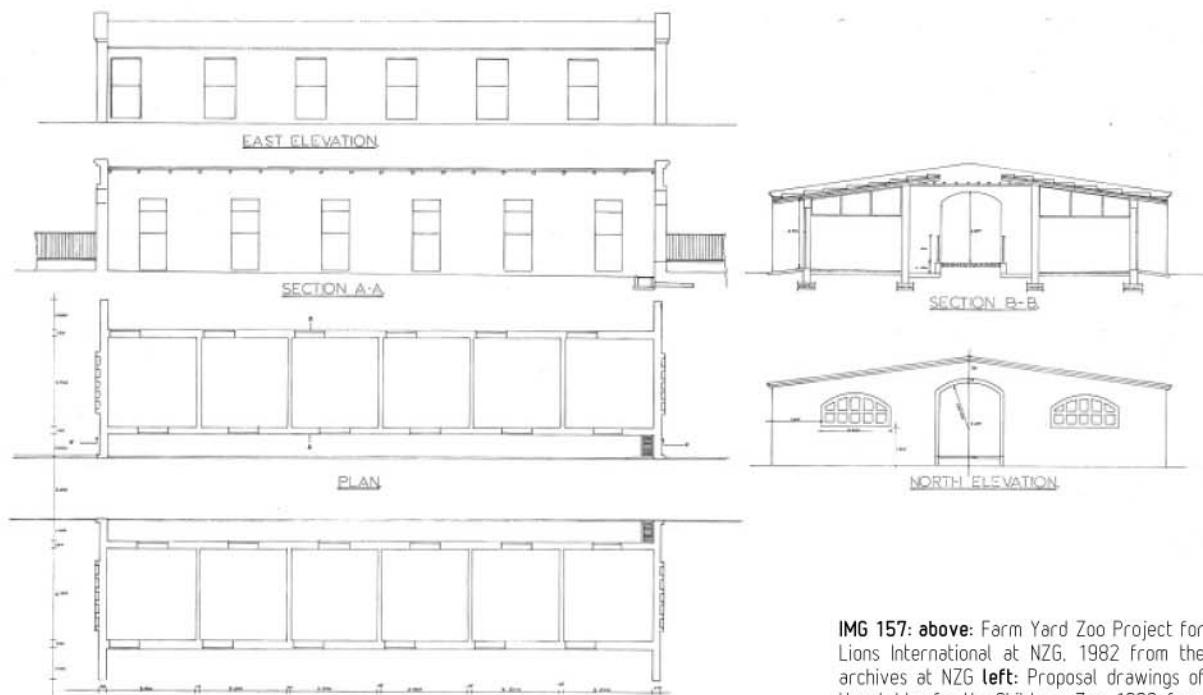
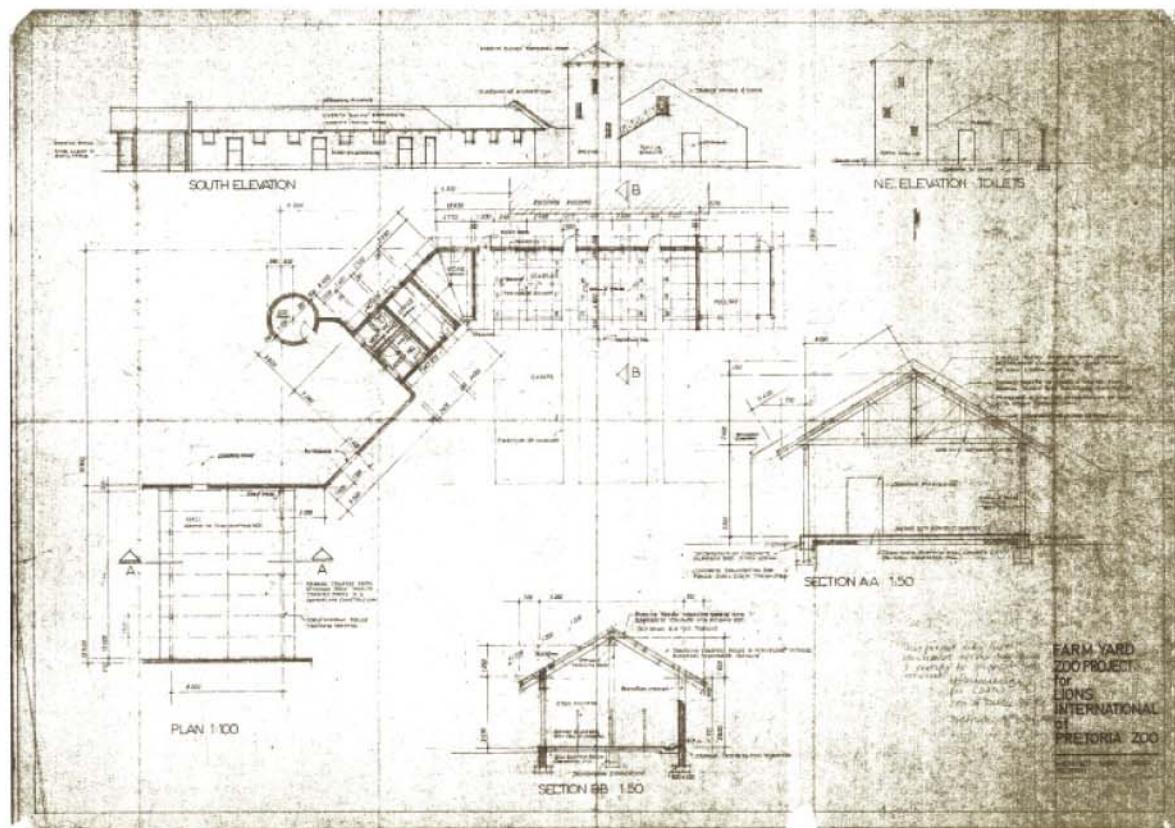
IMG 155: opposite:
Drawings of the Main
entrance and Lecture
Hall at NZG. July 1979





IMG 156: top: Elevations of the Main entrance at NZG from the archives **centre:** New entrance to NZG in that opened in 1980 (Adapted by Author from Oberholster, 1992) **bottom:** Main entrance to NZG in 1904 (Adapted by Author from Oberholster, 1992)





IMG 157: above: Farm Yard Zoo Project for Lions International at NZG, 1982 from the archives at NZG **left:** Proposal drawings of the stables for the Childrens Zoo, 1982, from the archives at NZG



IMG 158: View of the Koala Centre from the cable car system at NZG, 25 May 2011



IMG 159: Interior of the Koala Centre, 26 April 2011



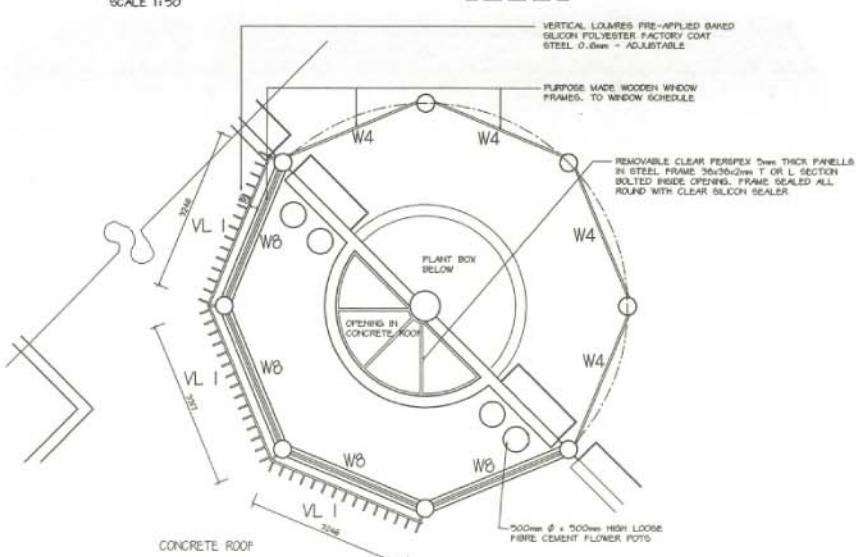
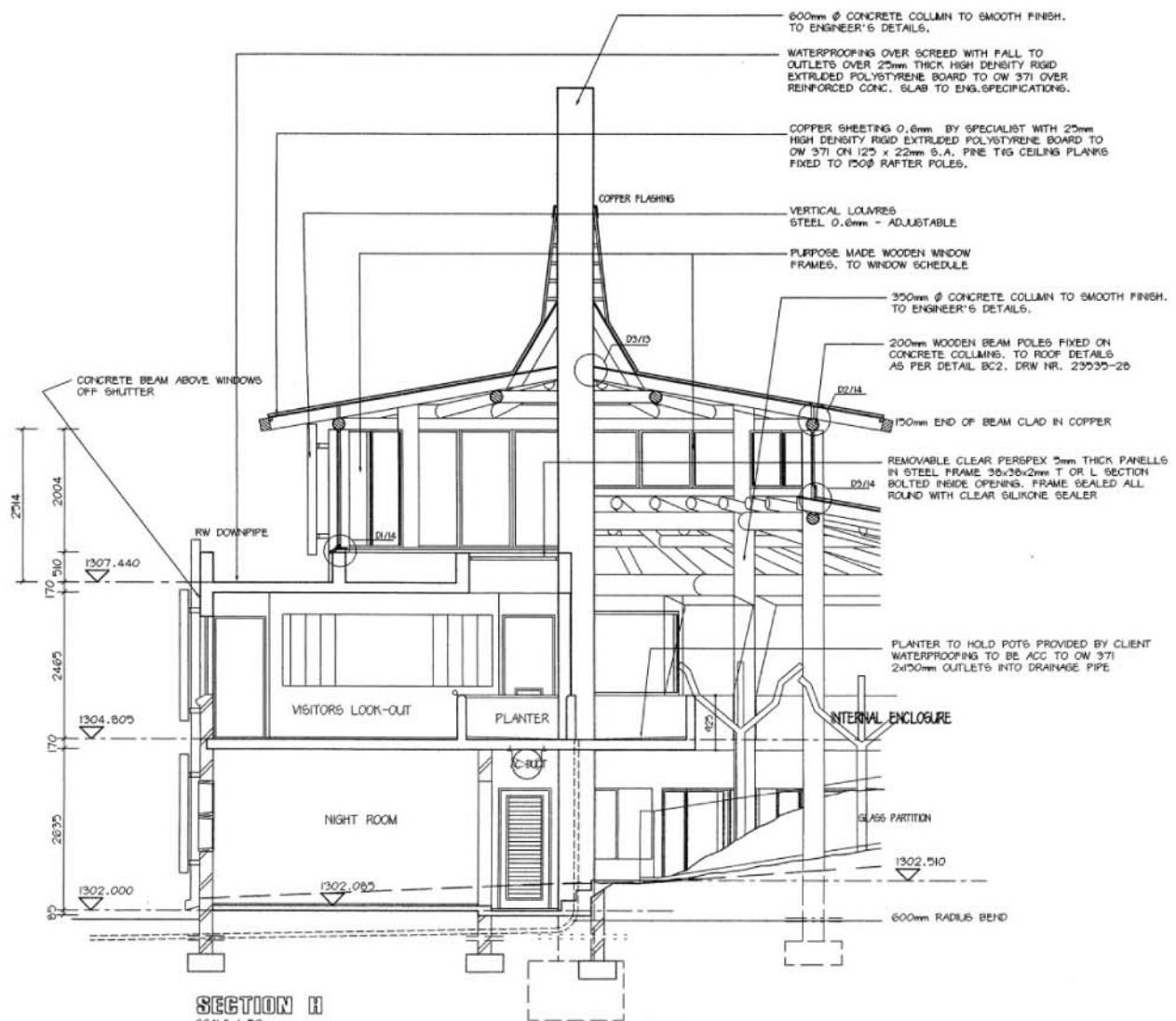
IMG 160: Interior of the Koala Centre, 26 April 2011



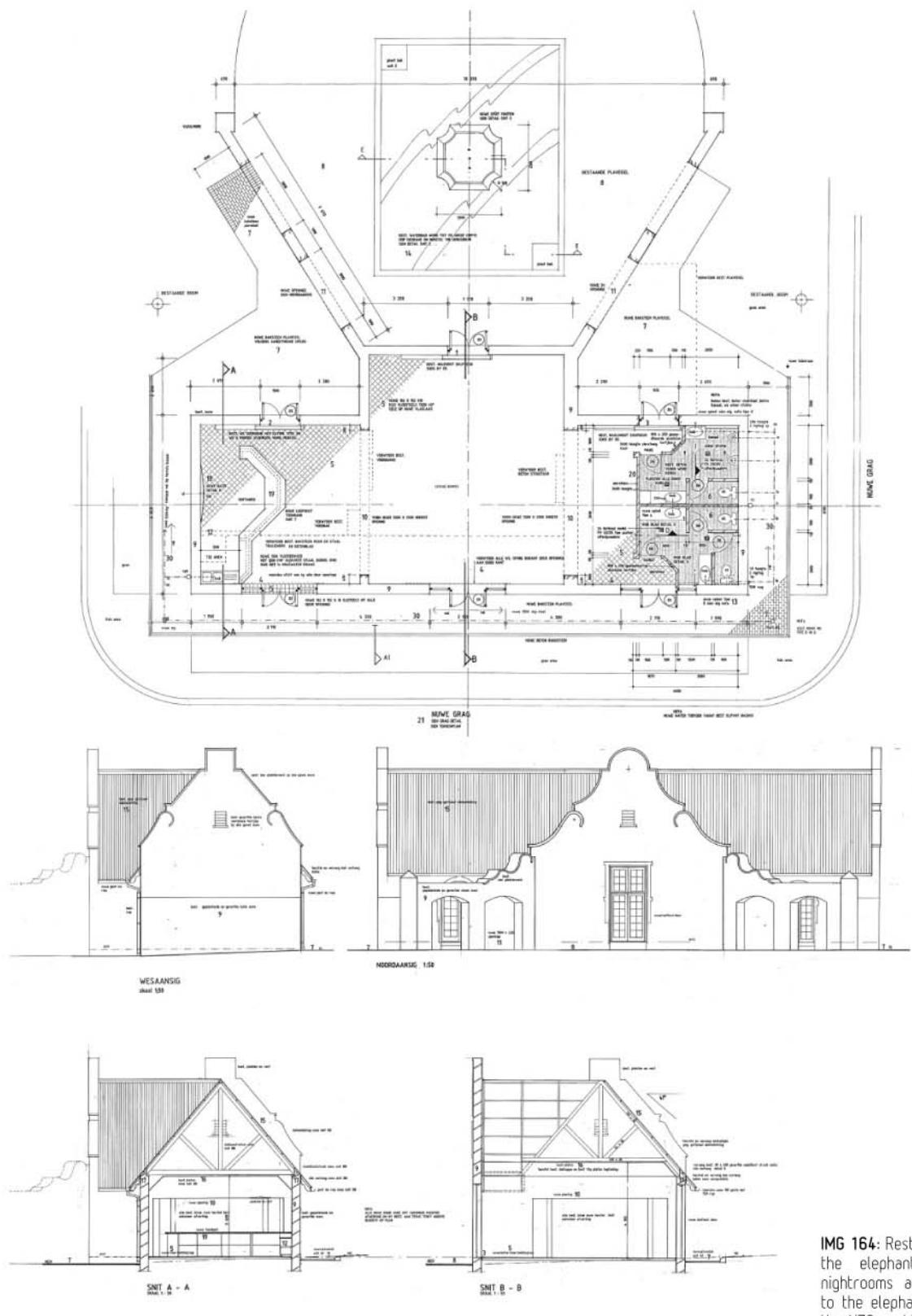
IMG 161: Mary, the famous Sammy-Marks elephant (Oberholster, 1992)



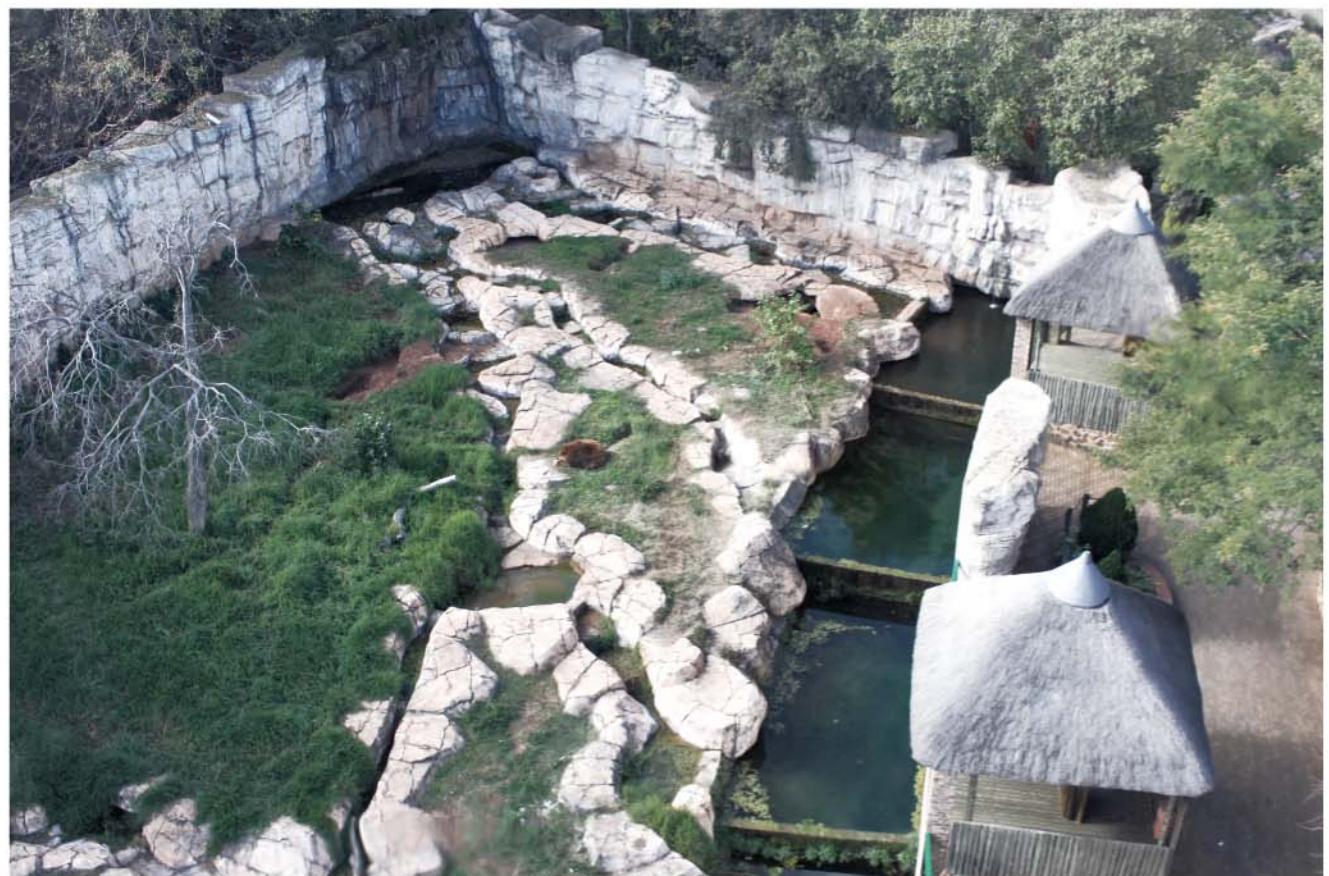
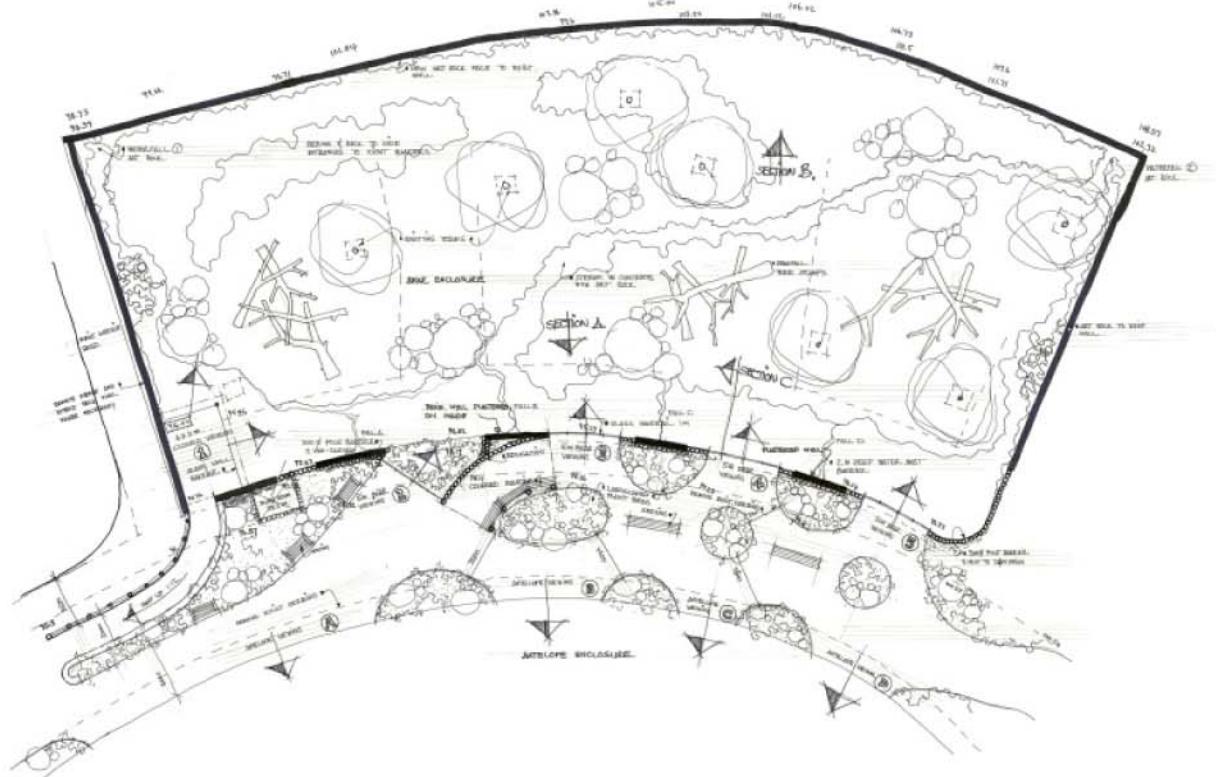
IMG 162: View of the Historical Elephant house with new additions, 2011



IMG 163: Drawings of the new Koala Enclosure at NZG from the NZG archives.. August 1997



IMG 164: Restorations to the elephant enclosure's nightrooms and extensions to the elephant camp from the NZG archives. February 1994



IMG 165: Renovation to Existing Bear Enclosure, from the NZG archives, June 1998 (Photograph by Author, 2011)



IMG 166: Dassiekoppe or *Dassiehill*: Greyscale image of the 1932 koppie built from stones that was collected during the extension of NZG to the North of the Apies River (Oberholster, 1992). Colour image of koppie, 2011

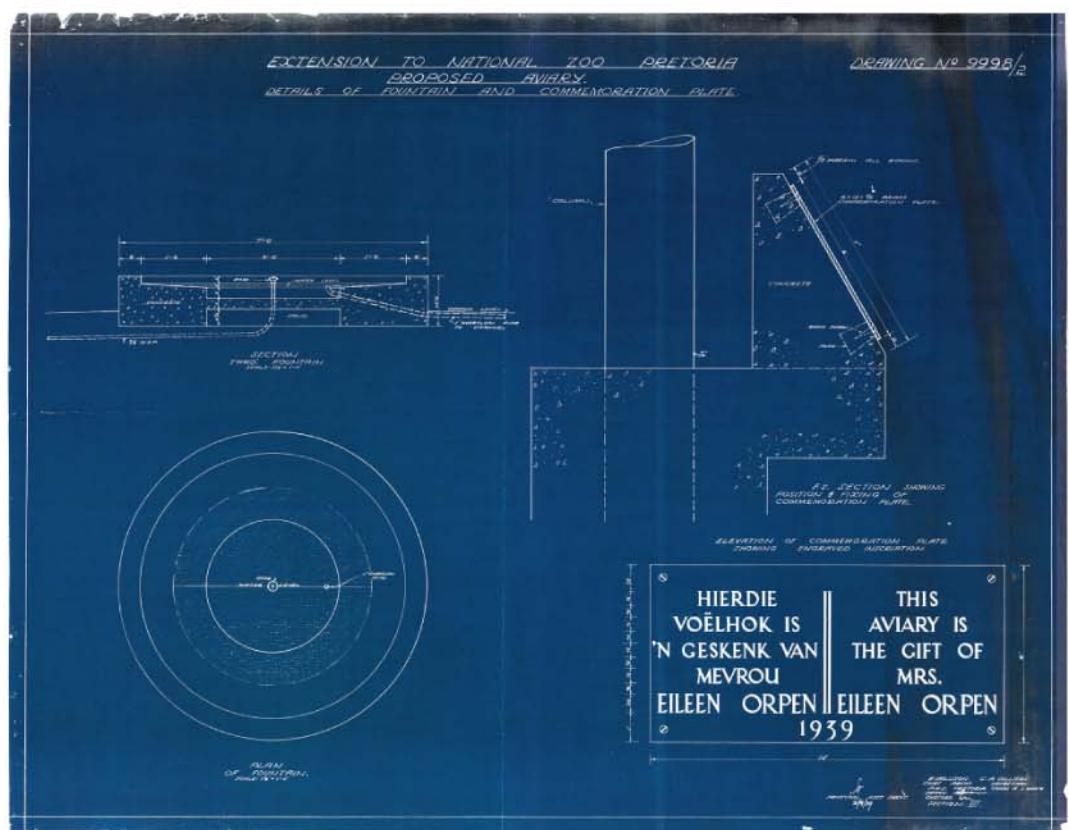
IMG 167: Bottom: The Sammy Marks Fountain after it had been moved to NZG in 1979, bird cages in the background (Oberholster, 1992). Top: Fountain, 2011



IMG 168: The circular Eileen Orpen bird cage that was erected in 1939 with funding from Eileen Orpen (Oberholster, 1992)

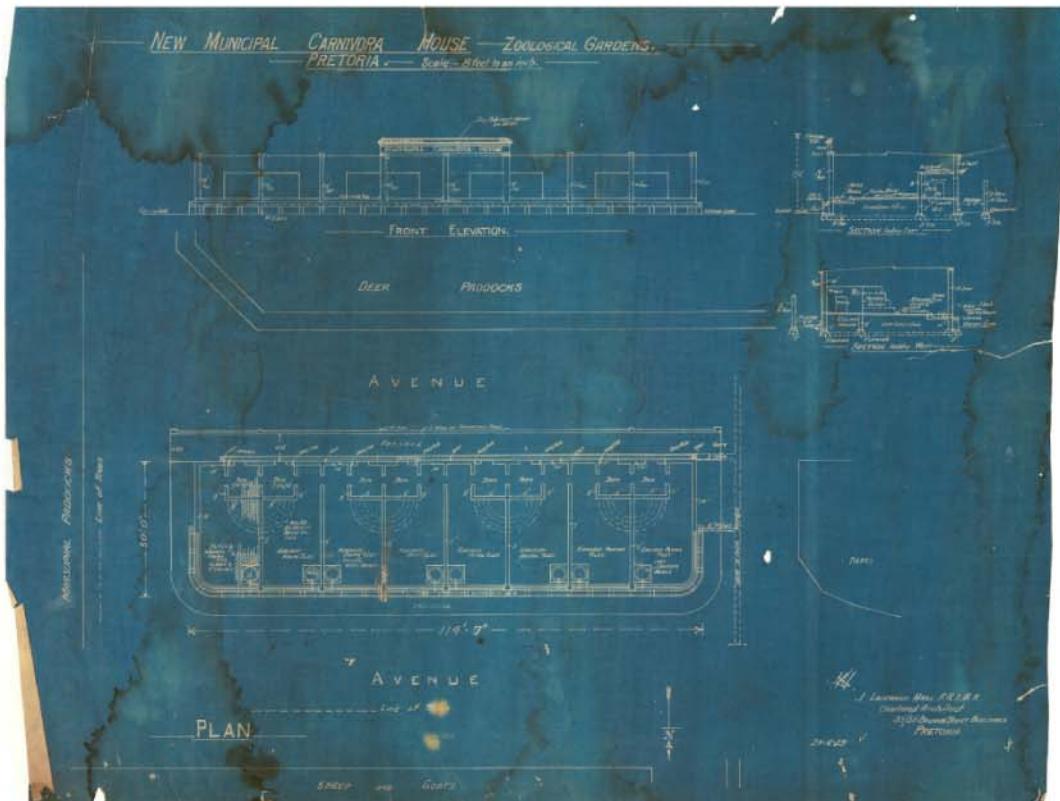


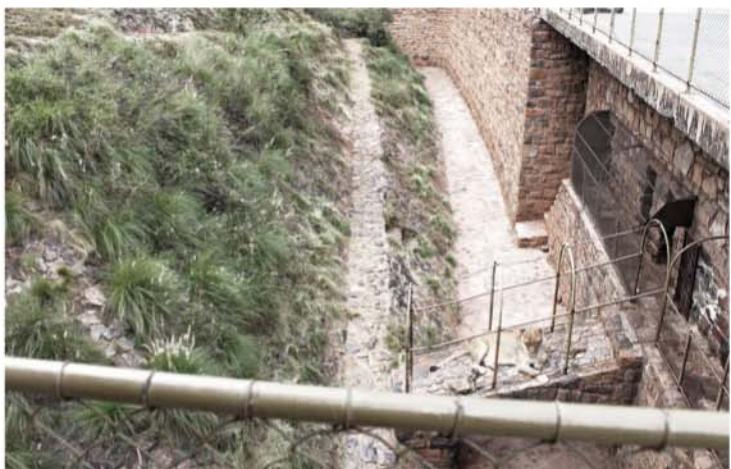
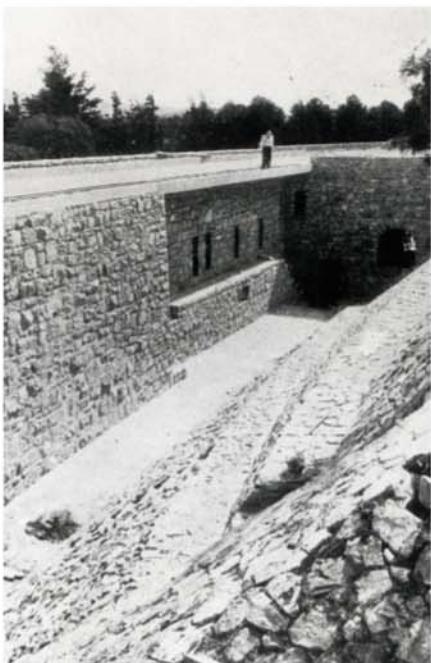
IMG 169: The Eileen Orpen bird cage, 2011



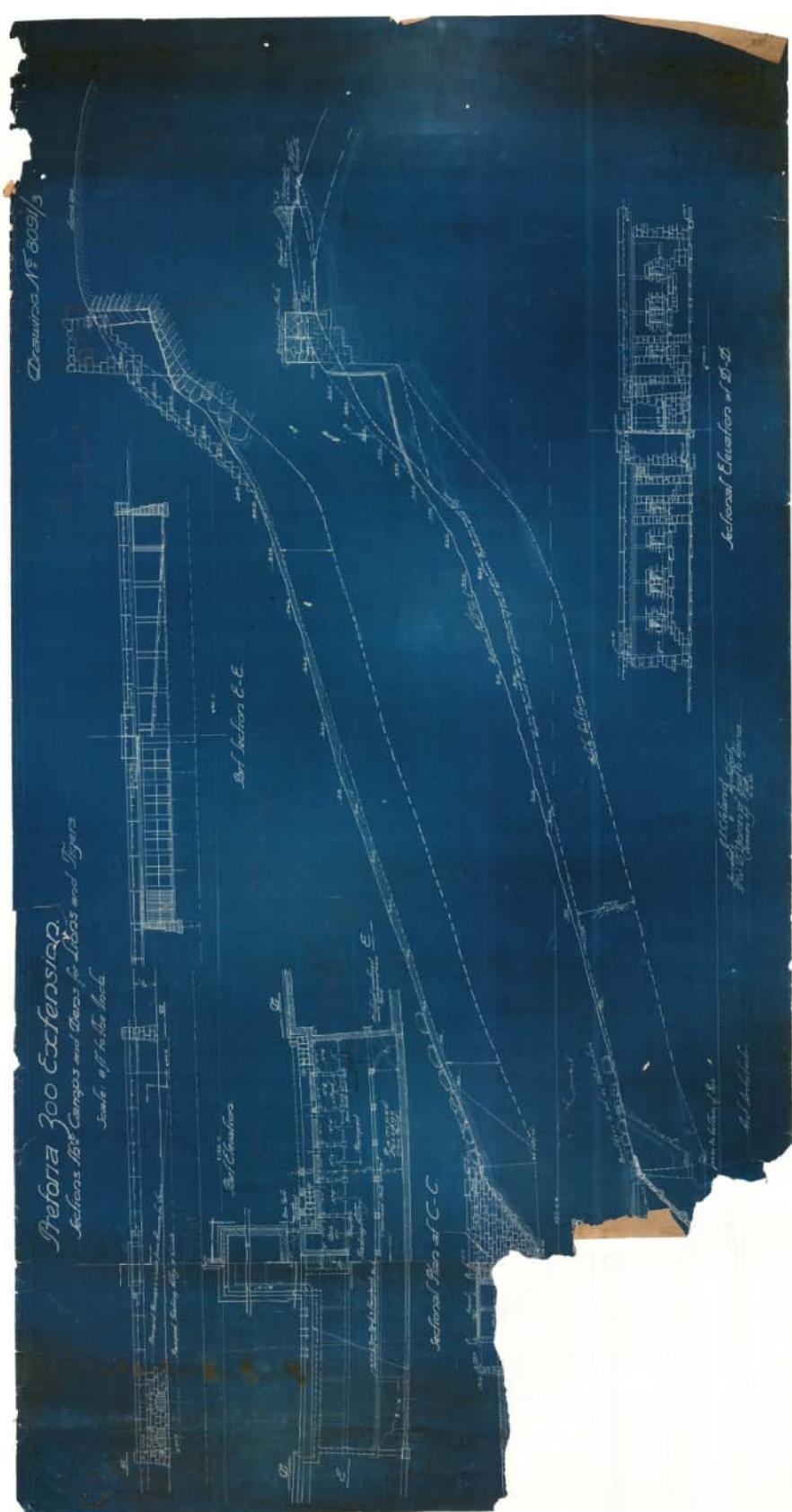
IMG 170: Blue Prints of the circular Eileen Orpen bird cage that was erected in 1939 funded by Eileen Orpen from the NZG archives. September 1939

IMG 171: Blue Prints of the Municipal Carnivora House for NZG, from the NZG archives, June 1929





IMG 172: Greyscale: One of the main roads or pathways and the view to the carnivore enclosures on the hill, March 1939 (Oberholster, 1992)
Colour images: The towers and dry moats of the lion and tiger carnivore enclosures, 2011



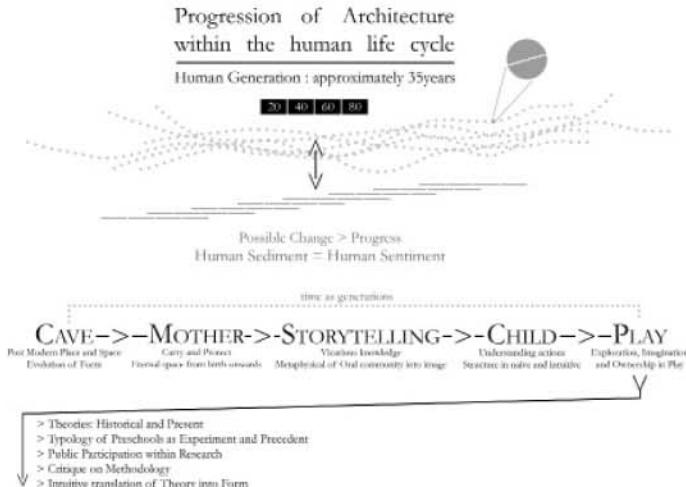
IMG 173: Blue Prints of the Lion and Tiger's camps and dens during the extension of NZG to the North, from the NZG archives



IMG 174: Brochures and Pamphlets collected from visits and attendance to NZG, PAAZAB Conference and Maropeng respectively

NOTES

1: INITIAL THEORETICAL CATALYST DIAGRAMS



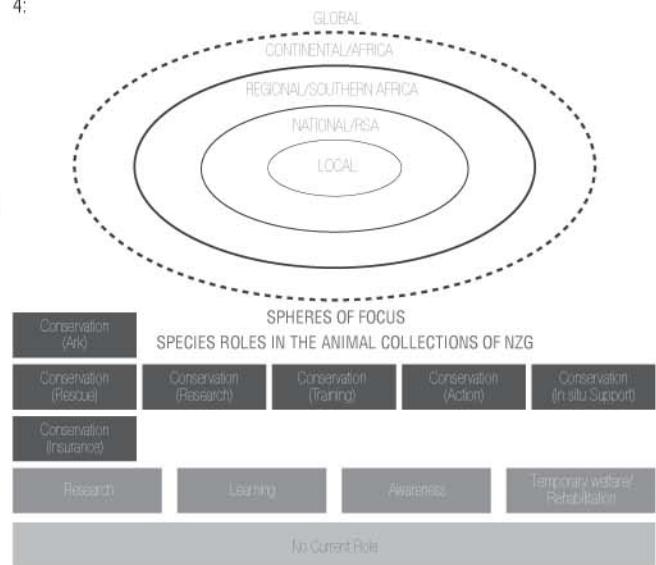
2: THE TREE OF LIFE

The 'Tree of Life' is made from sculpted plaster representing 325 morphed animals, on a structural frame of steel pipes with diminishing-diameters as branches grow smaller to the canopy. The concept for the structure came from offshore oil-drilling platforms. The sculpted surface lastly received paint treatment by the park's Character Paint department. The process took 2 years to complete, and according to Wright and the Imagineers (2003) the visible surface efforts taking up the better part of the final twelve months.

3: FURTHER READING

BARATAY, E. & HARDOUIN-FUGIER, E., 1998. *Zoo: A History of Zoological Gardens in the West*. Translated from the French *Zoos: Histoire des Jardins Zoologiques en Occident* by Oliver Welsh, 2002. London: Reaktion Books - The book is well illustrated and is strongly recommended as further reading into the histories of ZOO

4:



The Animal Collection Plan indicates the roles of taxa within NZG. The list divides the animals into a hierarchical system leading from the very important species nearing extinction, in the need of extreme conservation efforts to lesser important species, and ends off with species with no current role. The Plan further stipulates the origin of the species and aims to provide more space and research time for local species, and other African species, favouring them above other international specimens (Jordan, 2011). For further information: www.nzg.ac.za.

5: SOUTH AFRICAN AGENCY FOR SCIENCE AND TECHNOLOGY ADVANCEMENT (SAASTA)



6: CRADLE OF HUMANKIND AREA MAP

Important fossil sites in the Cradle of Humankind

1. Bolt's Farm
2. Swartkrans
3. Sterkfontein Caves
4. Minnaar's Cave
5. Cooper's Site
6. Kromdraai
7. Plover's Lake
8. Wonder Caves
9. Drimolen
10. Gladysvale
11. Haagat
12. Gondolin
13. Motsetse
14. Makapans Valley
15. Taung

7: ARCHITECTURAL WORKSHOPS

Architectural children's workshops provide an opportunity for a new vital means of dialogue between architecture and youth. The creation of 3D structures is played out and explores building skill and knowledge simultaneously. These workshops may in addition lead to inventive tectonic construction kits and the development of architectural toys. Plasticized forms of construction kits could fit in well with the vernacular construction of burrowing animals. If executed on a large scale, architectural toys (possibly contemporary *vernacular of toys*) and animal constructions could become ritualistic architectural play structures.

8: Dangerous Wild Animals (Northern Ireland) Order 2004

Guidance on the keeping of Small Primates: Tamarins, Capuchins and Squirrel Monkeys



MODERN SOCIAL SPACE

Modern society created confined pockets of space around ways of life: intimate way of life, the private, religious and the corporate. Furthermore, social life is not counted as part of the serious business of living (Ariès, 1960: 245-247). The modern way of life is the result of the divorce between elements which had formerly been united: friendship, religion, and profession. Life in the past, until the seventeenth century, was lived in public; in fact privacy scarcely ever existed (Ariès, 1960: 405-407). The family was a social collective, rather than a sentimental reality (Ariès, 1960: 368). One is tempted to conclude that sociability and the concept of the family were incompatible, and could develop only at each other's expense (Ariès, 1960: 405-407).

REFERENCES

- ALDERSEY-WILLIAMS, H., 2003. *Zoomorphic: New Animal Architecture*. London: Laurence King Publishing Ltd.
- ALEXANDER, C., ANNINOU, A., KING, I. & NEIS, H., 1987. *A New Theory of Urban Design*. London: Oxford University Press.
- ALLENBY, C., 2011. Personal interview regarding trends in the development of zoo facilities. Commercial Services and Business Development Manager. 1 April 2011. Office, NZG.
- ARIÈS, P., 1960. *Centuries of Childhood: A Social History of Family Life*. Translated from the French *L'Enfant et la vie familiale sous l'ancien régime* by R.Baldick, 1962. New York: Random House.
- ARTSLINK, 2011. *Dislodge art exhibition opens at UJ*. Available from: http://ardlink.co.za/news_article.htm?contentID=27501. Accessed on 5 July 2011.
- BARATAY, E. & HARDOUIN-FUGIER, E., 1998. *Zoos: A History of Zoological Gardens in the West*. Translated from the French *Zoos: Histoire des Jardins Zoologiques en Occident* by Oliver Welsh, 2002. London: Reaktion Books.
- BACON, E.N., 1967. *Design of Cities*. London: Thames and Hudson.
- BEALS, R.L. & HOIJER, H., 1966. *An Introduction to Anthropology: Third Edition*. New York: Collier-MacMillan.
- BETSKY, A., 2000. *Architecture Must Burn*. London: Thames & Hudson.
- BIERLEIN, J., 2003. *Exhibit Design and the Aesthetic of Nature*. Available from: <http://www.zoollex.org/about.html>. Accessed on 26 May 2011.
- BRAWNE, M., 2003. *Architectural Thought: The Design Process and the Expectant Eye*. London: Architectural Press, An imprint of Elsevier.
- BURKE, C. The edible landscape of school, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- CAMERON, B., 2000. *The Future of Cities in South Africa, Action in Transport for the New Millennium*. South African Transport Conference.
- CHILES, P. The classroom as an evolving landscape, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- CLARK, A. Talking and listening to children, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- COE, J., 2004. *Mixed Species Rotation Exhibits*. Paper prepared for 2004 ARAZPA Annual Conference, Australia. Available from: <http://www.joncoedesign.com/pub/PDFs/MxdSpRo.pdf>. Accessed on 11 June 2011.
- COE, J., 2011. *Trends in Exhibition*. Available from: http://www.joncoedesign.com/trends/exhibit_trends.htm. Accessed on 30 May 2011.
- COLLADOS, G. & HARRISON, B., YANEZ, L., 2005. *Visitor Circulation in Zoos*. Document presented at SEAZA/ARAZPA Joint Conference, Melbourne, Australia, May 2005. Available from: www.zoollex.org/publication/collados/circulation.pdf. Accessed on 5 June 2011.
- DA COSTA, M. & VAN RENSBURG, R.J., 2008^a. Space as ritual: rethinking spatial strategies in the African city. In *South African Journal of Art History*, Vol. 23.
- DA COSTA, M. & VAN RENSBURG, R.J., 2008^b. *Space as ritual: contesting the fixed interpretation of space in the African city*. SAJAH, ISSN 0258-3542, vol. 23, no.3.
- DE JAGER, E., 2011. National Zoological Gardens of South Africa. *A Comparative Evaluation of Educational Programmes at Zoological Institutions in Three Countries: A Literature Review*. Paper presented at PAAZAB Conference May 2011.
- DEPARTMENT OF THE ENVIRONMENT, ENVIRONMENT & HERITAGE SERVICE, 2009. Dangerous Wild Animals (Northern Ireland) Order 2004 : Guidance on the keeping of Small Primates. Available from: http://www.doeni.gov.uk/nica/small_primates_a5_rebranded_2009.pdf.pdf. Accessed on 17 July 2011.
- DUDEK, M. Digital landscapes – the new media playground, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- DURREL, G.M., 1960. *A Zoo in My Luggage*. New York: Penguin Books.
- DRY & JOUBERT ARCHITECTS, 1991. *Master Plan: National Zoological Gardens of Pretoria: Volume 1*. Presented on 9 August 1991.
- DRY, MOKOENA & PARTNERS, 1997. Extension to *Master Plan: National Zoological Gardens of Pretoria: Volume 3*. Presented during March 1997.
- EDWARDS, J. The classroom is a microcosm of the world, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- EGENTER, N., 1992. *Architectural Anthropology: Research Series: Volume 1: The Present Relevance of the Primitive in Architecture*. Switzerland: Presses Centrales Lausanne SA.
- ELIADE, M., 1974. The Myth of the Eternal Return: or Cosmos and History. Translated from the French *Le Mythe de l'éternal retour: archétypes et répétition*, 1949, by W.R. Trask, 1954. New Jersey: Princeton University Press.
- FAGAN, B.M., 2001. *In the Beginning: An Introduction to Archaeology*, 10th Edition. New Jersey: Prentice Hall.
- FIBY, M., 2008. *Trends in Zoo Design - Changing Needs in Keeping Wild Animals for a Visiting Audience*. Available from: <http://www.zoollex.org/about.html>. Accessed on 26 May 2011.
- FIBY, M. & WORSTELL, C., 2003. Developing a Zoo Master Plan. Document on behalf of ZooLex, Zoo Design Organization, March 2003.
- FRASCARI, M., 1991. *Monsters of Architecture: Anthropomorphism in Architectural Theory*. Maryland: Rowman & Littlefield Publishers, Inc.
- FREDIANI, K.L., 2009. *The ethics of plant use in Zoos: informing selection choices, uses and management strategies*. International Zoo Yearbook 43 (1).
- GAPP ARCHITECTS, 2011. *View our projects: Maropeng*. Available from: <http://www.gapp.net/content/projects.htm>. Accessed on: 7 August 2011.
- GRAAFLAND, A.D., 2008. *Understanding the Socus through Creative Mapping Techniques*. Delft: Delft School of Design.
- HALL, M., 1996. *Archaeology Africa*. Cape Town: David Philip.
- HAMMOND, M., 2006. *Performing Architecture: Opera Houses, Theatres and Concert Halls for the Twenty-First Century*. London: Merrell Publishers Limited.
- HARRIES, K., 1998. *The Ethical Function of Architecture*. Massachusetts: The Massachusetts Institute of Technology Press.
- HERRINGTON, S. The sustainable landscape, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- HICKS, JUDITH & JOHN. Razor blades and teddy bears – the health and safety protocol, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- HOLLIER, D., 1993. *Against Architecture: The Writings of George Bataille*. Translated from the French *La prise de la Concorde* by Betsy Wing. Cambridge: Massachusetts Institute of Technology.
- HOLM JORDAAN GROUP, 1999. *Apies River Urban Design Framework*, Prepared for Greater Pretoria Metropolitan Council, In collaboration with Pretoria City Council and Action Apies River Working Committee.
- JACKS, L. P., 1932. *Education through recreation*. New York: Harper & Brothers.
- JACOBSZ, S.W. 2011. Personal interview regarding a suitable retaining wall system for the proposed building in NZG. 14 September 2011. Office, Engineering Building, University of Pretoria.
- JILK, B.A. Place making and change in learning environments, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.
- JORDAN, M. 2011. Personal interview regarding the future animal collection plan for the National Zoological Gardens. 1 April 2011. NZG.
- JUNG, C.G., 1991. *The development of personality: Papers*

on child psychology, education, and related subjects. New Jersey: Princeton University Press. First published in 1954

KORALEK, B. & MITCHELL, M. The schools we'd like: young people's participation in architecture, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.

LARIS, M. Designing for play, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.

LAWSON, B., 1994. *Design in Mind*. London: Butterworth-Heinemann Ltd.

LEACH, N., 2000. *The Anaesthetics of Architecture*. Cambridge: The MIT Press.

MALLAPUR, A., 2005. *Managing primates in zoos: Lessons from animal behaviour*. Special Section: Animal Behaviour. Current Science, Vol. 89, No. 7, 10 October 2005. Available from: <http://www.ias.ac.in/currsci/oct102005/1214.pdf>. Accessed on 9 August 2011.

MAROPENG, 2011. About the Maropeng Visitor Centre. Available from: <http://www.maropeng.co.za/index.php/maropeng>. Accessed on: 9 August 2011.

MARTIENSSEN, H., 1976. *The Shapes of Structure*. London: Oxford University Press.

MARTIN, J.N. & NAKAYAMA, T.K., 2003. *Intercultural Communications in Contexts*. New York: McGraw-Hill.

NICHOLSON, E. The school building as third teacher, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.

OBERHOLSTER, J.M.M., 1992. *Die Geskiedenis van die Nasionale Dieretuin van Suid-Afrika, Pretoria, 1899-1984*. Verhandeling voorgelê ter vervulling van die vereistes vir die graad Magister Artium. Departement Geschiedenis en Kultuurgeschiedenis. Universiteit van Pretoria.

OBERPRIELER, U.B., 2011. National Zoological Gardens of South Africa. *Conservation Education and Career Development*. Paper presented at PAAZAB Conference May 2011.

ONIANS, J., 1993. Sign and Symbol, in Farmer, B. & Louw, H., 1993. Companion to Contemporary Architectural Thought. New York: Routledge.

OXFORD UNIVERSITY PRESS, 2002. *South African Concise Oxford Dictionary*, based on the Concise Oxford English Dictionary: Tenth Edition, Kathryn Kavanagh (ed). Cape Town: Oxford University Press.

PENN, H. Spaces without children, in Dudek, M., 2005. *Children's Spaces*. London: Architectural Press, An imprint of Elsevier.

PORTER, T., 2004. *Archispeak: An Illustrated Guide to Architectural Terms*. London: Spon Press.

RESTANY, P., 1998. *Hundertwasser: The Power of Art: The Painter King with the 5 Skins*. Translated by R. Stringer. Köln: Taschen.

ROHDE, J. 2011. Personal communication via E-mail regarding ornamentation and narrative. 23 May 2011.

RUGOFF, R. 2006. You Talking to Me? On curating Group Shows that Give You a Chance to Join the Group, in Marincola, P., 2006. *Questions of Practice: What Makes a Great Exhibition?* Philadelphia: Reaktion Books.

RYKWERT, J., 1972. *On Adam's House in Paradise: The Idea of the Primitive Hut in Architectural History*. The Museum Of Modern Art Papers On Architecture. New York: The Museum of Modern Art.

SOO-JUNG, Y., February, 2009. *Drawing Making a Comeback on the Art Scene*. Space. Check Referencing?

STEADMAN, P., 1979. *The Evolution of Design: Biological Analogy in Architecture and the Applied Arts*. London: Cambridge University Press.

STEYN, G., 2007. *Types and typologies of African urbanism*. SAJAH, ISSN 0258-3542, vol. 22, no. 2, pp. 49-65.

THE NATIONAL ZOOLOGICAL GARDENS OF SOUTH AFRICA (NZG), 2011. *About Us*. Available from: <http://www.nzg.ac.za/aboutus/index.php>. Accessed on 17 July 2011.

THE SOUTH AFRICAN AGENCY FOR SCIENCE AND TECHNOLOGY ADVANCEMENT (SAASTA), 2011. *Science Awareness Platform: NZG Life Science Centre*. Available from: <http://www.saasta.ac.za/scienceawareness/lifescience.shtml>. Accessed on 18 July 2011.

VAN DER WAAL & ASSOCIATES, 1999. River Historical Research sign: Sign erected by the Pretoria Inner City Partnership and the Action Apies River Working Committee.

VESELY, D., 2004. *Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production*. Massachusetts: The Massachusetts Institute of Technology Press.

VOASE, R. Rediscovering the imagination: meeting the needs of the 'new' visitor, in Fyall, A., Garrod, B. & Leask, A., 2003. *Managing Visitor Attractions: New Directions*. Oxford: Elsevier. Butterworth Heinemann.

WORLD ASSOCIATION OF ZOOS AND AQUARIUMS (WAZA), 2011. *Small primate fact sheets*. Available from: <http://www.waza.org/en/zoo/choose-a-species/mammals/primates/prosimians/varecia-variegata>. Accessed on 27 May 2011.

WRIGHT, A. & THE IMAGINEERS, 2003. *The Imagineering Field Guide to Disney's Animal Kingdom at Walt Disney World: An Imagineer's-Eye Tour*. New York: Disney Editions.



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In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this thesis, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my thesis has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Bertus van Sittert