

urban cemetery

Carlu Gerhardus Swart

Mentor: Rudolf van Rensburg

Submitted in fulfilment of part of the requirements for the degree of Magister of Architecture (Professional) in the faculty of Engineering, Built Environment and Information Technology, University of Pretoria, South Africa.

November 2006

Prologue:

During the July holidays the Swart family undertook a two-week safari trip through Botswana, which included travelling through the Okavango Delta up north into Savuti and beyond. An experience during an early morning game drive in the Savuti echoed my initial visions concerning the essence of the following dissertation:

The sandy road that snakes through the monotonous, lifeless Mopanie bush hides the horizon, alternating greens, reds and browns trapped in nothing but a vastness of un-choreographed repetition. The road continuously curves left and right; lost in a labyrinth the road seems to lead to the depths of nowhere, but suddenly a sort of unexpected place appears that is secret and evocative of the past.

a sacred gathering of the wise.

This is the essence of the dissertation: *to envisage a hiding place, a place of rejuvenation, a place where the city dweller can listen to those who speak in silent memories.*



Figure 001: Baobabs in Savuti National Game Reserve



Figure 002: Landscape photo of the Baobabs in its context

urban cemetery
contents

<i>introduction</i>	<i>(01)</i>
<i>problem statement</i>	<i>(02)</i>
<i>context analysis</i>	<i>(03)</i>
<i>site analysis</i>	<i>(04)</i>
<i>precedents</i>	<i>(05)</i>
<i>design development</i>	<i>(06)</i>

Table of Contents

01	Introduction		(01) - 01
		Abstract	(01) - 01
		Theoretical Premise	(01) - 02
02	Problem Statement		(02) - 01
		Abstract	(02) - 01
		Death Denial	(02) - 02
		Refuse	(02) - 02
		Programme	(02) - 02
		A Spatial problem	(02) - 03
		Site Theoretical	(02) - 03
		Site Practical	(02) - 04
03	Context		(03) - 01
		Edge (Abstract)	(03) - 01
		Macro scale	(03) - 02
		Border crossing	(03) - 02
		Gateway	(03) - 02
		Meso scale	(03) - 04
		Heterotopic space	(03) - 04
		MDC Impact	(03) - 05
04	Site Analysis		(04) - 01
		Micro scale (Introduction)	(04) - 02
		Site Elements	(04) - 05
		River	(04) - 05
		Drie Lelies Peripheral Wall	(04) - 05
		Drie Lelies High density Residential Building	(04) - 06
		Site Data	(04) - 09
05	Theoretical precedent studies		(05) - 01
		Theoretical precedent introduction	(05) - 02
		Wexner Center - Peter Eisenman	(05) - 02
		The tower	(05) - 02
		The grid	(05) - 02
		Theoretical precedent conclusion	(05) - 05
		Crematoria precedent	(05) - 06
		International precedent	(05) - 06
		Local precedent	(05) - 09

06	Design Development	(06) - 01
	Introduction	(06) - 02
	Architecture and Experience	(06) - 02
	Conceptual Development	(06) - 02
	Architectural Translation	(06) - 02
	Site plan development	(06) - 06
	Ritual and Perception	(06) - 06
	Circulation	(06) - 14
	Vehicles and hearse	(06) - 14
	Coffins	(06) - 15
	Visitors	(06) - 16
	Movement	(06) - 17
	Ritual movement and gathering of a burial	(06) - 17
	Movement of mourners	(06) - 18
	Movement of public	(06) - 19
	Water collection and storage	(06) - 20
	Replanting of existing vegetation	(06) - 21
	Burial Structure	(06) - 23
	Location	(06) - 23
	Form	(06) - 23
	Ramps	(06) - 23
	Tectonics	(06) - 24
	Planter caskets	(06) - 24
	Memorial	(06) - 31
	Location	(06) - 31
	Concept and Meaning	(06) - 32
	Form	(06) - 32
	Materials and Rituals	(06) - 32
	Chapel	(06) - 37
	Location	(06) - 37
	Form	(06) - 38
	Structure	(06) - 40
	Primary Structure system	(06) - 40
	Secondary Structure system	(06) - 41
	Light	(06) - 51
	Acoustics and Ventilation	(06) - 53
	Interior	(06) - 53
	Exterior	(06) - 53
	Materials	(06) - 53
07	References	(07) - 55

Electronic References

List of figures

- Figure 001: Baobabs in Savuti National Game Reserve, photograph by Jaco Swart
- Figure 002: Landscape photo of the Baobabs in its context, photo by Carlu Swart
- Figure 003: *Miss Lucy Pink 1963, John Chamberlain.* (Fleming 1995, p.648)
- Figure 004: Site position, by Carlu Swart
- Figure 005: Conceptual Model February 2006
- Figure 006: Digital Collage indicating position of site and surrounding infrastructure, by Carlu Swart
- Figure 007: Photograph of the 15 storey Drie Lelies South Block, by Carlu Swart
- Figure 008: Landscape photograph looking west at the Drie Lelies buildings and site, by Carlu Swart
- Figure 009: Figure 008: Plan of Pretoria 1887 (Fisher 1998, p.73)
- Figure 010: Recent Aerial photograph of Pretoria. Digital Collage by Carlu Swart. (Aerial Photograph - Geography Department, University of Pretoria)
- Figure 011: Visual diary sketch, by Carlu Swart
- Figure 012: Land uses surrounding site. Digital Collage by Carlu Swart. (Aerial Photograph - Geography Department, University of Pretoria)
- Figure 013: Activity - Movement diagram. Digital Collage by Carlu Swart. (Aerial Photograph - Geography Department, University of Pretoria)
- Figure 014: Public transport grid. Digital Collage by Carlu Swart. (Aerial Photograph - Geography Department, University of Pretoria)
- Figure 015: Site and surrounding links on the meso-scale, by Carlu Swart
- Figure 016: Site and surrounding land uses at the meso-scale, by Carlu Swart
- Figure 017: MDC proposal in relation to site. Digital Collage by Carlu Swart. (Aerial Photograph - Geography Department, University of Pretoria)
- Figure 019: Sketch of Drie Lelies south building, by Carlu Swart
- Figure 020: Diagrammatical plan of site, by Carlu Swart
- Figure 021: Diagrammatical East-West section of site, by Carlu Swart
- Figure 022: Juxtaposition and fragmentation
- Figure 023: Progressional photographs through the site, by Carlu Swart
- Figure 024: Vertical landscape photograph of the Drie Lelies buildings and peripheral wall, by Carlu Swart
- Figure 025: Movement analysis diagram, indicating vehicular and pedestrian traffic, Digital Collage by Carlu Swart. (Aerial Photograph - Geography Department, University of Pretoria)
- Figure 026: Site analysis diagram restrictions and opportunities, by Carlu Swart
- Figure 027: Site analysis diagram, position of trees, by Carlu Swart
- Figure 028: Concept Sketch, implying the notion of discontinuity
- Figure 029: The Wexner Centre towers (Ghirardo 2004, p.80)
- Figure 030: The Wexner Centre grid exterior view (Ghirardo 2004, p.80)
- Figure 031: Interior view of the Wexner Centre (Ghirardo 2004, p. 85)
- Figure 032: Tschumi's disjunctive strategy of superimposition (Taylor 1992, p.249)
- Figure 033: One of the 34 follies at La Villette. (Boles 1987, p.97)
- Figure 035: Addition to cemetery of San Cataldo in Modena by Aldo Rossi. (Cook 1991, p.68)
- Figure 036: Interior View of the columbarium building and concrete niches. (Cook 1991, p. 69)
- Figure 037: Exterior View of the communal columbarium building
- Figure 038: Crematorium unit and Ashes Temple view of the Ashes Temple (Phaidon 2004, p.758)
- Figure 039: Interior view of Chapel (Phaidon 2004, p.758) , The Phaidon Atlas of Contemporary World Architecture, Phaidon press Ltd, London, p.758
- Figure 040: Open skylight at gathering space clad in cor-ten steel (Phaidon 2004, p.758)
- Figure 041: Gathering space and skylight (Phaidon 2004, p.758) 2004, The Phaidon Atlas of Contemporary World Architecture, Phaidon press Ltd, London, p.758
- Figure 042: Digital collage: Plan of Cremation Unit and Ashes Temple (Phaidon 2004, p.758)
: Diagrammatical analysis of the separation of the public and cremation related functions. (by Carlu Swart)
- Figure 043: Digital collage: Plan of Cremation Unit and Ashes Temple (Phaidon 2004, p.758)
: Diagrammatical analysis of the visitor circulation. (by Carlu Swart)
- Figure 043: Digital collage: Plan of Cremation Unit (Phaidon 2004, p.758) and
: Functional breakdown (by Carlu Swart)
- Figure 044: Digital Collage: Plan of Cremation Unit (Phaidon 2004, p.758)
: Diagrammatical analysis of the coffin circulation (by Carlu Swart)
- Figure 045: Pretoria Crematorium and diagrammatical analysis of the visitor circulation. Drawn by Carlu Swart.
- Figure 046: Photograph of entrance to Pretoria Crematorium chapel. by Amandio Castenheira
- Figure 047: Pretoria Crematorium and diagrammatical analysis of the separation of the public and cremation related functions. Drawn by Author.
- Figure 048: Pretoria Crematorium and diagrammatical analysis of the coffin circulation. Drawn by Author.

- Figure 049: Concept model August 2006. Drawn by Carlu Swart.
- Figure 050: Concept sketch April 2006. Drawn by Carlu Swart.
- Figure 051: First concept model. Drawn by Carlu Swart.
- Figure 052: The idea of ramps and burial integration. Drawn by Carlu Swart.
- Figure 053: Three dimensional Concept June 2006. Drawn by Carlu Swart.
- Figure 054: Three dimensional Concept June 2006. Drawn by Carlu Swart.
- Figure 055: Concrete fragments which float in a forest of columns. Drawn by Carlu Swart.
- Figure 056: A sense of fragmentation is achieved. Drawn by Carlu Swart.
- Figure 058: Final concept model, the formal organization becomes realistic. Drawn by Carlu Swart.
- Figure 057: Concepts of the labyrinth become apparent through the conceptual translation. Drawn by Carlu Swart.
- Figure 059: Final concept model, looking at the burial structure and memorial. Drawn by Carlu Swart.
- Figure 060: Final concept model, looking at the northern entrance into the burial structure. Drawn by Carlu Swart.
- Figure 061: Final concept model, looking at the eastern entrance into the burial structure. Drawn by Carlu Swart.
- Figure 062: Concept sketch defining the boundaries of the structure. Drawn by Carlu Swart.
- Figure 063: Diagram indicating vehicular circulation. Drawn by Carlu Swart.
- Figure 064: Coffin circulation option 1. Drawn by Carlu Swart.
- Figure 065: Coffin circulation option 2. Drawn by Carlu Swart.
- Figure 066: Coffin circulation option 2. Drawn by Carlu Swart.
- Figure 067: Coffin circulation option 4. Drawn by Carlu Swart.
- Figure 068: Coffin circulation option 5. Drawn by Carlu Swart.
- Figure 069: Visitor circulation diagram that takes into account the reduction of visitors throughout the ritual. Drawn by Carlu Swart.
- Figure 070: Visitor circulation diagram indicating movement and gathering. Drawn by Carlu Swart.
- Figure 071: Visitor circulation diagram indicating movement and gathering. Drawn by Carlu Swart.
- Figure 072: Visitor circulation diagram indicating movement and gathering. Drawn by Carlu Swart.
- Figure 073: Diagram indicating the collection and storage of water. Drawn by Carlu Swart.
- Figure 074: Diagram indicating the re-planting of trees. Drawn by Carlu Swart.
- Figure 075: Three dimensional block model elevation. Drawn by Carlu Swart.
- Figure 076: Three dimensional block model of the final building. Drawn by Carlu Swart.
- Figure 077: Diagrammatic representation of the time-space interval of 'the between' above the river. Drawn by Carlu Swart.
- Figure 078: Shadows during winter at approximately five pm and the sunset caught between the Drie Lelies Buildings. Drawn by Carlu Swart.
- Figure 079: Secrets of the woods. Image with permission from Gerrie Venter. Drawn by Carlu Swart.
- Figure 080: Initial concept sketch of burial structure. Drawn by Carlu Swart.
- Figure 081: Initial concept sketch of burial structure. Drawn by Carlu Swart.
- Figure 082: Initial three dimensional model of the burial structure. Drawn by Carlu Swart.
- Figure 083: Conceptual resolution of security problem. Drawn by Carlu Swart.
- Figure 084: Drawn by Carlu Swart.
- Figure 085: Drawn by Carlu Swart.
- Figure 086: Drawn by Carlu Swart.
- Figure 087: Drawn by Carlu Swart.
- Figure 088: Drawn by Carlu Swart.
- Figure 089: Explanational sketch indicating the fragmentation of the concrete columns by means of change in perception. Drawn by Carlu Swart.
- Figure 090: Exploded view of burial structure detail. Drawn by Carlu Swart.
- Figure 091: Three dimensional rendering of a burial structure module. Drawn by Carlu Swart.
- Figure 092: Assembly drawing of lipped channel steel joists connecting to the U-profile steel beams. Drawn by Carlu Swart.
- Figure 093: Assembly drawing of burial structure. Drawn by Carlu Swart.
- Figure 094: Abstract three dimensional rendering showing the structure which contains the planter caskets. Drawn by Carlu Swart.
- Figure 095: Possible tourist walkway through Pretoria. Drawn by Carlu Swart.
- Figure 096: The regional connectivity by Nelson Mandela Drive Justifies the location of the memoria. Drawn by Carlu Swart.
- Figure 097: Concept sketch of the wall disappearing in time. Drawn by Carlu Swart.
- Figure 098: Concept of the positive and negative appears through the deconstructed memorial walls and constructed concrete fragments emphasizing the structure as a continuously changing process. Drawn by Carlu Swart.
- Figure 099: The tile pattern enhances the concept of cleaving. Drawn by Carlu Swart.
- Figure 100: Conceptual construction possibility of the memorial walls. Drawn by Carlu Swart.
- Figure 104: Los Nogales chapel. Functions as a preaching altar which allows for the accommodation of large gatherings by means of the wall planes which swing open.

Figure 105: Los Nogales Chapel. Wall planes closed during smaller services. .

Figure 106: Los Nogales Chapel. Ethereal light quality created through the combined use of small window openings and reflective timber finishes.

Figure 107: Los Nogales Chapel Plan. Entrance to the chapel occurs through an intermediate space which allows for the eyes to adjust from the outside glare.

Figure 108: The converging city grids. Drawn by Carlu Swart.

Figure 109: The formal translation of the process of fragmentation. Drawn by Carlu Swart.

Figure 110: Concept sketch of the chapel. Drawn by Carlu Swart.

Figure 111: Early concept sketch showing scale and light transmission. Drawn by Carlu Swart.

Figure 112: Conceptual three dimensional model. Drawn by Carlu Swart.

Figure 113: Chapel which opens to large gatherings. Drawn by Carlu Swart.

Figure 114: Primary structure conception. Drawn by Carlu Swart.

Figure 115: Load tracing diagram. Drawn by Carlu Swart.

Figure 116: Primary structure load tracing digital rendering. Drawn by Carlu Swart.

Figure 118: Opening which slices through the vertical and horizontal planes allows light into the interior similar to the Basilika. Drawn by Carlu Swart.

Figure 119: Light Planes that filter into the chapel. Drawn by Carlu Swart.

Figure 120: Indication of materials. Drawn by Carlu Swart.

Figure 121: Roof detail conceptual development. Drawn by Carlu Swart.

Figure 122: Roof detail resolution. Drawn by Carlu Swart.

Figure 123: Acoustics. Drawn by Carlu Swart.

Figure 124: Resolving the acoustic and ventilation problem simultaneously. Drawn by Carlu Swart.