

Wallace Honiball

Elandspoort 357-JR



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Wallace Honiball

Elandspoort 357-JR

BUILDING

Address: Elandspoort 357-JR, Pretoria.
Function: Governmental, destination (tourism) and recreation (public)
Research field: Environmental potential.



Contents

7	Acknowledgments
8	List of figures
10	Abstract
17	Theory
18.	Theory on Form
19.	Antiquity (i)
21.	Antiquity (ii)
25.	The Middle Ages
28.	Renaissance
31.	Baroque
34.	Enlightenment
37.	19 TH Century
40.	20 TH Century
45.	Synthesis of theory
50.	Architectural form
53	Context
54.	Urban Framework
63	Setting
64.	Site
66.	Part 1
71.	Part 2
74.	Part 3
81	Programme
82.	South African Botany
84.	Brief
87	Design
88.	Introduction to form
90.	Order
98.	Botanic garden
108.	Entrance garden
120.	Exhibition buildings
180	References
184	List of figures (ii)

THANKS:

N.M Honiball, T.S Honiball, W.G Nieuhoudt, N. Botes, L. Muller, C. Schutte,
G. Gernike & R van Rensburg (Study Leader)



LIST OF FIGURES

Fig_1: Antiquity: Diagramme illustrating the typology of Domestic Garden.
Image by Author

Fig_2: Antiquity: Diagramme illustrating the typology of Palace Garden.
Image by Author

Fig_3: Antiquity: Diagramme illustrating the typology of Egyptian Sancturay.
Image by Author

Fig_4: Antiquity: Diagramme illustrating the typology of Greek Sancturay.
Image by Author

Fig_5: Antiquity: Diagrammes illustrating the typologies of Greek and Roman Courts.
Image by Author

Fig_6: Antiquity: Diagramme illustrating the typology of Roman Villa.
Image by Author

Fig_7: Antiquity: Diagramme illustrating the typology of Hunting Park.
Image by Author

Fig_8: Antiquity: the typology of West Asian Palaces.
Image by Author

Fig_9: Antiquity: Diagramme illustrating the typology of Mosque Court.
Image by Author

Fig_10: Antiquity: Diagramme illustrating the typology of Paradise Garden.
Image by Author

Fig_11: Middle Ages: Diagramme illustrating the typology of Castle Garden.
Image by Author

Fig_12: Middle Ages: Diagramme illustrating the typology of Cloister Garden.
Image by Author

Fig_13: Middle Ages: Diagramme illustrating the typology of Medieval Garden.
Image by Author

Fig_13: Renaissance: Diagramme illustrating the typology of Early Renaissance.
Image by Author

Fig_14: Renaissance: Diagramme illustrating the typology of High Renaissance.
Image by Author

Fig_15: Renaissance: Diagramme illustrating the typology of Mannerism.
Image by Author

Fig_16: Baroque: Diagramme illustrating the typology of Early Baroque.
Image by Author

Fig_17: Baroque: Diagramme illustrating the typology of Early Baroque.
Image by Author

Fig_18: Enlightenment: Diagramme illustrating the typology of Forest Style.
Image by Author

Fig_19: Enlightenment: Diagramme illustrating the typology of Augustan Style.
Image by Author

Fig_20: Enlightenment: Diagramme illustrating the typology of Picturesque Style.
Image by Author

Fig_21: Enlightenment: Diagramme illustrating the typology of Picturesque Style.
Image by Author

Fig_22: 19th Century: Diagramme illustrating the typology of Mixed Style.
Image by Author

Fig_23: 19th Century: Diagramme illustrating the typology of Landscape Style.
Image by Author

Fig_24: 20th Century: Diagramme illustrating the typology of Arts & Craft Style.
Image by Author

Fig_25: 20th Century: Diagramme illustrating the typology of Abstract Style.
Image by Author

Fig_26: 20th Century: Diagramme illustrating the typology of Abstract Style.
Image by Author

Fig_27: Diagram of Theory 1.
Image by Author

Fig_28: Diagram of Theory 2.
Image by Author

Fig_27: Diagram of Theory 3.
Image by Author

Fig_29: Diagram of Theory 4.
Image by Author

Fig_30: Diagram of Theory 5.
Image by Author

Fig_31: 1st Dynasty Egyptian tomb.
Available at: <http://xoomer.virgilio.it/francescoraf/hesyra/Saqqara.htm>
Accessed: May 10, 2010

Fig_32: Parthenon.
Available at: <http://www2.bc.edu/~mcdonadh/course/parthenonelevation.jpg>
Accessed: May 10, 2010

Fig_34: Basilica of St. Sernin.
Available at: <http://upload.wikimedia.org/wikipedia/commons/8/83/StSerminToulouseDB22.jpg>
Accessed: May 10, 2010

Fig_35: Palladio: Villa Rotonda
Available at: <http://www.architecture.com/LibraryDrawingsAndPhotographs/Palladio/PalladianBritain/VillasInBritain/VillaRotondasInfluence/Mereworth.asp>
Accessed: May 10, 2010

Fig_36: Borromini: San Carlino.
Available at: http://upload.wikimedia.org/wikipedia/commons/9/9d/Borromini_Drawing_02-2009-23-01-retouched.jpg
Fig_37: Boullée: Cénotaphe a Newton.
<http://hanser.ceat.okstate.edu/4073%20pages/boullée3.htm>
Accessed: May 10, 2010

Fig_38: Paxton: Crystal Palace.
Available at: http://www.vam.ac.uk/vastatic/microsites/bg_teachers_packs/supp_info/i/plan_palacea.jpg
Accessed: May 10, 2010

Fig_39: Le Corbusier: Villa Savoye.
Available at: <http://www.dpdsb.org/NR/rdonlyres/1823A9A9-12E5-460F-9D1E-03AB6B64F9A2/39041/0007Savoyeplan.jpg>
Accessed: May 10, 2010

Fig_40: Venturi: Vanna Venturi House.
Available at: <http://homepages.mty.itesm.mx/al780176/09.jpg>
Accessed: May 10, 2010

Fig_41: Eisenman: Diagrammi concettuali.
Available at: <http://arch48gpascucci.files.wordpress.com/2008/12/eisenman-1.jpg>
Accessed: May 10, 2010



LIST OF FIGURES

Fig_42: Oscar Niemeyer: 1956 Master Plan for the capital of Brazil.
Available at: <http://rudhro.wordpress.com/2010/05/26/brasil-a-radiant-city-vision-in-concrete-oscar-niemeyer%E2%80%99s-work-continues-to-enthrall-and-appall-students-of-architecture-and-urban-planning/>
Accessed: August 20, 2010

Fig_43: 5th Studio: 1999 Public Realm Strategy for Park Royal.
Available at: <http://www.5thstudio.co.uk/docs/popup.php?id=7:47:436>
Accessed: August 20, 2010

Fig_44: Gauteng: Metropolitan strategy.
Image by Author

Fig_45: Tshwane: Local context.
Image by Author

Fig_46: The development framework for Tshwane's capital centre.
Image by Author

Fig_47: Urban framework model.
Image by Author

Fig_48 : Allegorical scene: the muse Clío and time chained.
Available at: <http://www.mlahanas.de/Greeks/Mythology/Muse.html>
Accessed: August 30, 2010

Fig_49 : 1825 - Chief Mzilikazi's.
Available at: <http://www.campamalinda.com/footprint.html>
Accessed: August 30, 2010

Fig_50 : 1858 – First Homesteads.
Available at: <http://www.pinetreeweb.com/conan-doyle-chapter-25.htm>
Accessed: August 30, 2010

Fig_51 : 1889 – Pretoria from Meintjeskop, early 20th Century
Tshwane Info Collection 603

Fig_52 : 1902 – Lisdogan Park Hospital, established on the southern slopes of Meintjeskop.
Tshwane Info Collection

Fig_53 : 1920 – Union Buildings after construction, seen from Church Street.
Tshwane Info Collection 2637

Figure 54: Coordinates: 25°44'25.68"S 28°12'43.28"E 25.7404667°S 28.2120222°E
Image by Author

Figure 55: The CPM of the Union Buildings estate.
MULLER, L. & YOUNG, G. (2005). Heritage audit Union Buildings estate. Newtown landscape architects
18 April 2005, third draft.

Fig_56: Union Buildings Estate, Diagram of Elandspoort357-JR
Image by Author

Fig_57: 1888 - Craigelela
Tshwane Info Collection 1561

Fig_58: 1890 - Vredehuis
Tshwane Info Collection 1561

Fig_59: 1909- H Baker's vision for the town planning scheme.
National Archives: SAB File DPW 5269 Vol. 1

Fig_60: Sketch plan designs for the Union Building.
National Archives: SAB File DPW 5269 Vol. 1

Fig_61: H Baker's terrain plan after construction finished in November 1913.
Image by Author

Fig_62: 1910 -1920 Vredehuis used as government residence.
Image by Author

Fig_63: House Vrede - adapted through time.
Image by Author

Fig_64: Jan Smuts Memorial.
Image by Author

Fig_65: Police Memorial.
Image by Author

Fig_66: 2001-2003 Paved Beach and Walkways
Image by Author

Fig_67: Elandspoort Botanical Garden.
Image by Author

Fig_68: Order: Diagrams on four scales.
Image by Author

Fig_69: H Baker perspective of the Union Building estate.
MULLER, L. & YOUNG, G. (2008). Union Buildings Chronology. Newtown landscape architects
BAKER, H. Perspective

Fig_70: Site Plan of the Union Building Estate.
Image by Author

Fig_71 & Fig_72: Existing & New site development plan.
Image by Author

Fig_73: Diagramme of Site Plan.
Image by Author

Fig_74: Perspective of the 2010 site development plan.
Image by Author

Fig_75: Concept for the Botanic garden in Barcelona.
CROFT, C. (2004: 188). Concrete architecture. Salt Lake City, Gibbs Smith Publishers.

Fig_76 & 77: Walter Sisulu botanical garden.
Image by Author

Fig_78: Concept model of Elandspoort Botanical Garden.
Image by Author

Fig_79: Diagramme illustrating the organization of the four gardens on Elandspoort National Botanical Garden.
Image by Author

Fig_80 & 81: Before and after, site plan of the botanical garden.
Image by Author

Fig_82: Diagramme of botanical garden.
Image by Author

Fig_83: Perspective of Union, building, with old botanical garden in foreground.
MULLER, L. & YOUNG, G. (2008). Union Buildings Chronology. Newtown landscape architects
PIERNEEF, J.H. 1915

Fig_84: Essai Sur l'Architecture, illustration by Marc-Antoine Laugier.
http://www.tu-cottbus.de/theoriederarchitektur/Wolke/wolke_neu/inhalt/de/heft/ausgaben/109/Noell/Noell_6.jpg
[Accessed 21 February 2010]

Fig_85: Light+6H₂O+6CO₂ = Photosynthesis.
VAN RENSBURG. (2007). Cladding material What effect does it have on plant growth and productivity –Prof van Rensburg.pdf
<http://www.iasa.co.za/downloadssymposium2007>.
[Accessed 4 October 2010]



LIST OF FIGURES

Fig_86 & 87: Before & After, perspective view of the entrance garden.
Image by Author

Fig_88: Concept model of the entrance garden.
Image by Author

Fig_89: Site plan of the entrance garden.
Image by Author

Fig_90: Diagramme of the entrance garden.
Image by Author

Fig_91: Concept models: Exhibition garden and shade netting for the horticultural propagation tunnels.
Image by Author

Fig_92: Victoria regia at Chatsworth: Paxton's daughter Anne on a leaf.
CHADWICK, G.F. (1961:37). *The Works of Sir Joseph Paxton*. Architectural press London

Fig_93: Victoria regia lily house, Chatsworth. Plan, interior and roof detail.
CHADWICK, G.F. (1961:89). *The Works of Sir Joseph Paxton*. Architectural press London

Fig_94: Plan of the central garden: the path system as originally planned in 1994.
DE JAGER, R. (1997:20). *A new conservatory at Kirstenbosch*. Architecture S.A Volume 7 & 8, 1997

Fig_95: View from entrance: central garden and interior space.
Image by Author

Fig_99: House Vrede, 1913.
MULLER, L. & YOUNG, G. (2008:6). *Union Buildings Chronology*. Newtown landscape architects
18 January 2008.

Fig_100 & 101: Old Herbarium 1923 & 2008.
RONG, I. R. & BAXTER, A.P. (2006:3). *The South African National Collection of Fungi: celebrating a centenary 1905-2005*. *Studies in Mycology* 55: 1-12.

Fig_102 & 103: House Vrede c. 1932 & 1947.
MULLER, L. & YOUNG, G. (2005:45). *Heritage audit Union Buildings estate*. Newtown landscape architects
18 April 2005, third draft.
MULLER, L. & YOUNG, G. (2005:42). *Union Buildings Chronology*. Newtown landscape architects
18 January 2008.

Fig_104: House Vrede and Exhibition Buildings: Concept model.
Image by Author

Fig_105: Administration building: Concept model.
Image by Author

Fig_106: Victorian cast-iron potting house: c. 1914.
Image by Author

Fig_107: Roof detail with timber louvers.
Image by Author

Fig_108: Administration building: Lower ground floor plan.
Image by Author

Fig_109: Administration building: Ground floor plan.
Image by Author

Fig_110: Administration building: Section & roof detail.
Image by Author

Fig_112: House Vrede: Concept model.
Image by Author

Fig_113: House Vrede: ground floor plan.
Image by Author

Fig_114: House Vrede: North elevation.
Image by Author

Fig_115: Temporary exhibition building: Concept model.
Image by Author

Fig_116: Magaliesburg krans.
<http://www.exploring-downtown-joburg-the-fanpark-in-newtown.jpeg>
[Accessed 9 October 2010]

Fig_117: House Vrede and the old Herbarium: Existing relationship between the two buildings.
Image by Author

Fig_118: *Kirkia Acuminata* (White Selingia) and 1929 Plant Pathology shed.
Image by Author

Fig_119: Temporary exhibition: Ground floor plan.
Image by Author

Fig_120: Temporary exhibition: Detail plan.
Image by Author

Fig_121: Temporary exhibition: W/C plan.
Image by Author

Fig_122: Temporary exhibition: Wall detail.
Image by Author

Fig_123: Timber folly: Concept model.
Image by Author

Fig_124: *The Social Struggle of plants*.
<http://www.minerallake.com/Iverson%20Photos/IversonMineralBigTree35.jpg>
[Accessed 9 October 2010]
Sketched by C. Holdrege

Fig_125: Timber folly: Ground floor plan.
Image by Author

Fig_126 & 127: Timber folly: 6m & 18m floor plans.
Image by Author

Fig_128: Timber folly: Section.
Image by Author

Fig_129: Timber folly: Details.
Image by Author

Fig_130: Lily pond: Concept model.
Image by Author

Fig_131: Hydrologic cycle.
<http://www.buffer.forestry.iastate.edu/Photogallery/illustrations/Images/HydrologicCycle.jpg>. [Accessed 9 October 2010]

Fig_132: Lily pond: Plan.
Image by Author

Fig_133 & 134: Lily pond: Section & Detail.
Image by Author

Fig_135: Exhibition hall: Concept model.
Image by Author

Fig_136: Concept diagramme of the exhibition building.
Image by Author

Fig_137: Exhibition hall: Plan.
Image by Author

Fig_138: Exhibition hall: Section.
Image by Author

Fig_139: Exhibition buildings: Section.
Image by Author

Fig_140: House Vrede and exhibition buildings: Final model.
Image by Author

Abstract

Any full history of the uses of nature would be a history of human thought.

- Raymond Williams on Nature

(FORTY, 2000:220).

The architect must be a form-artist; only the art of form leads the way to a new architecture.

- August Endell on Form

(FORTY, 2000:149).

Landscape design and architecture adhere to the similar principles of form making. These have been affiliated with nature through history, sharing dialogues of philosophy. As theoretical premise, an investigation at the relationship between form and programme in the Western world (*from Antiquity to the 21st Century*). The conclusion was that there is a relationship between form and programme, that different periods in history have drawn varying conclusions regarding this relationship. My conclusion views the *idea* as the most important aim of architecture, that the relationship between form and programme influences/guides/shapes the *idea* through the design process.

The urban framework aims to preserve, to link and enhance open space in the Pretoria Central Business District. The theoretical investigation and framework directed the need for a site that would allow me to convey my own conclusion regarding the relationship, ingrained with the idea of preserving and linking open space in the focus area of Pretoria. The Union Buildings as selected site, orientated around its natural landscape, is layered with different interventions representative of relationships between form and programme, presenting the opportunity to explore my premise. The site is dominated by biota or nature, allowing the assessment of the terrain in terms of how landscape (more specifically plants) as a programme influences architectural form.

Interventions focused on the *Vredenhuis* complex (sited on the Union Buildings grounds) function as the focus of the argument. The site is classified as a botanic garden. The programme of botany is informed by the site history; residential (1880-1914), botanic gardens (1914-1975), nursery (1915-1950), greenhouse (1918-1975) and entomology/plant pathology division (1914-2007). A further investigation of plants informs the function and programme of the design.

