

Thanks to:

THE STUDIO CREW 2011:

Tommy 'Feedback' Van Deventer, Darryn 'Cofeebreak' Botha, Leon 'PROCrastinate' Groebelar, Ahmed 'Late Night KFC' Akkayahli., Minnette 'Studio Ma' Thieuessan, Petri 'Die Bombasties se Prince' Van Wyk as well as Claudia 'Claudsch Out' Phillipe - and even you Jacqui - somewhere in your crazy you showed me how to be contextually critical in my own country.

The excellent guidance from Ida Breed, Carin Combrinck and Jacques Laubscher along the way.

Especially Carin, for always being the positive ray of light in the darkness that is the dissertation year.

Arthur Barker, Amira Osman, Donovan Gottsman, Thireshan Govender, and the other active professionals who gave their guidance at those crucial moments.

Katarzyna Pawelczyk and Alana Doyle for the editing, I appreciate the help this late in the game.

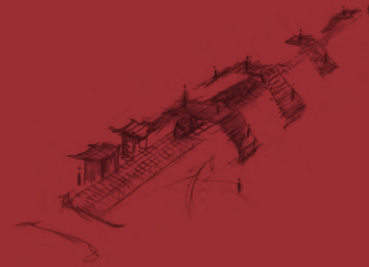
Thanks to Hardus, and the other undergrads who helped out along the way; Sandeep, Jessie and Kristen.

The Pretoria family, Dierdre in particular, and their constant worrying of my stomach's requirements

The people of Slovo Park, for guiding my critical stance on social Architecture and accepting me into their homes, that I will forever carry.

My parents, thank you for constantly reminding of what I should be doing.

PLATFORMS of ENGAGEMENT



Submitted in partial fulfillment of the requirement for the degree
MArch (Prof)
Faculty of Engineering, Built Environment and Information Technology
University of Pretoria
South Africa

Study Leaders:
Ida Breed
Barbara Jekot

Year Coordinator:
Jacques Laubscher

Mentor:
Carin Combrinck

JHONO BENNETT
10231341
DEPARTMENT OF ARCHITECTURE
BOUKUNDE 2011

This dissertation's core lies in a participative design/build project, held in Slovo Park, Gauteng 2010. Undertaken as a post graduate module, the process of engagement, research, design and construction laid foundation towards critical stance for this dissertation. *(see Illus: 26)*

The Slovo Park Project was followed by a field research trip. The trip was arranged by the author to gain a radical understanding of how contemporary architecturally recognized buildings functioned in the developing context and whether they truly engaged with their environments beyond the building process. *(Appendix Illus: 27, page 174)*

These research projects then set the foundation for the departure point of this dissertation, an exploration into what a truly appropriate architectural intervention in a developing context can be.

The South African population has been experiencing an unprecedented rate of urbanization that has left government bodies struggling to meet the qualitative and the infrastructural demands of the emergent sector in undeveloped areas. **(Todes et al, 2007: 14)**

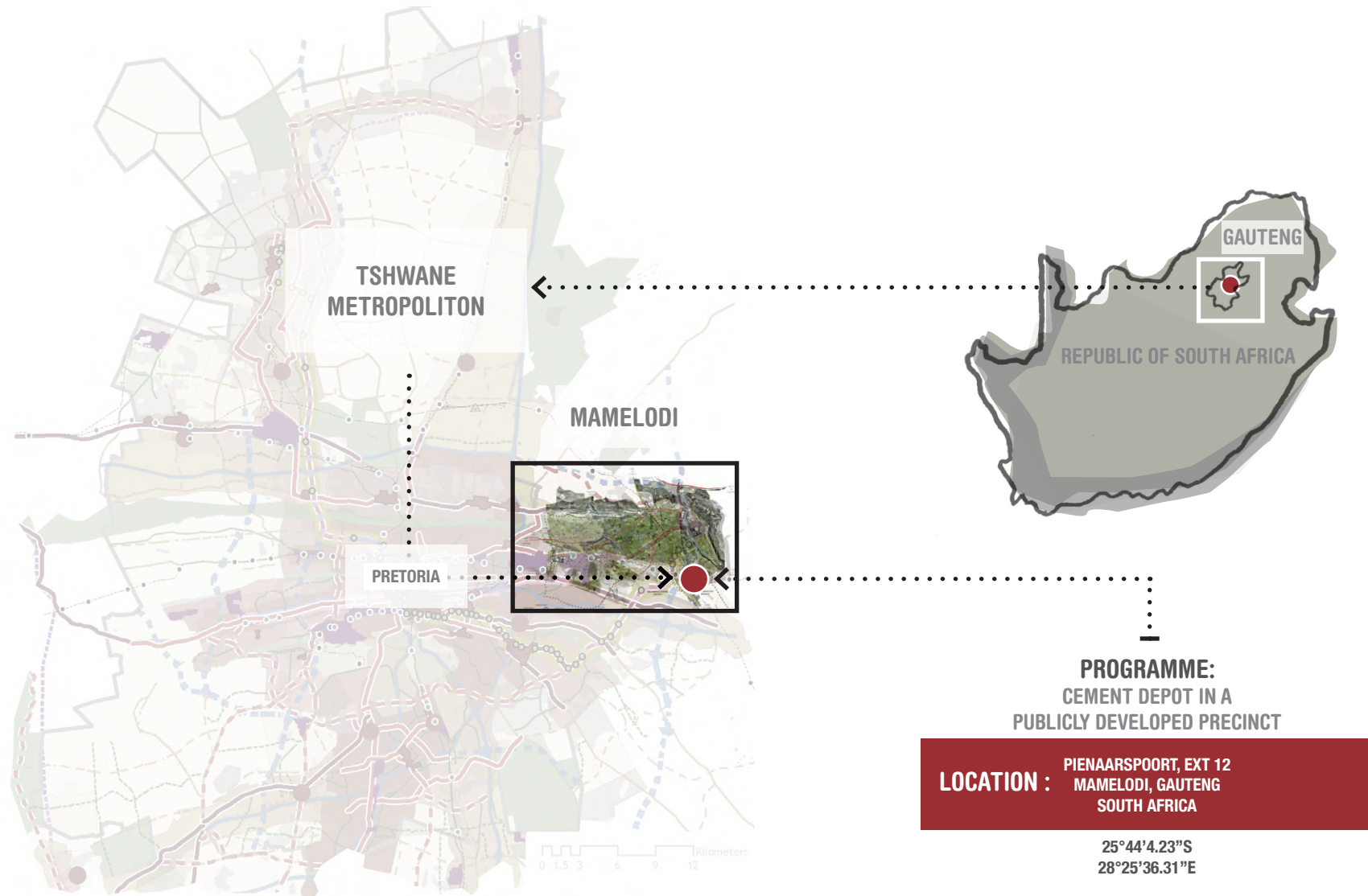
This dissertation aims to focus on the intensive networks found in these developing areas of vulnerability that display strong cohesion due to activities surrounding the production process. The premise presented is that in order to intervene architecturally with these networks, designers should critically engage these networks through participative processes of research, design and ideally construction.

Through the authors own process of engagement, several key Architectural principles for an intervention emerge. Primarily the concept that a built intervention in a vulnerable settlement should first seek to associate itself with a network for its initial survival, and then aim to exist in a symbiotic relationship with this network through a mutually beneficial relationship.

A context specific intervention programme is thus proposed based on the process of engagement, and guided by the observed genius of the site.

What emerges is a piece of architectural infrastructure that aims to facilitate ground-up-growth, while guiding larger scale development. This unit of growth allows network members to take ownership through a self-build building and control system.

This 'Infra-ecture' piece is then hypothetically placed on-site, and a small section of the larger development is explored Architecturally with an identified network as user.



Illus: 2 Location and Programme of Dissertation (Author, 2010)

Table of Contents

ABSTRACT	III		
BACKGROUND	III		
GLOSSARY OF TERMS	IX		
PLAGIARISM DECLARATION	X		
CHAPTER 1: ESTABLISHING THE PLATFORM	11		
1.0.1 THE SOUTH AFRICAN DEVELOPMENTAL LANDSCAPE	11		
1.1 A NEW ROLE FOR THE SPATIAL DISCIPLINES	12		
1.2 ENVIRONMENTS OF FLEXIBILITY AND FLUIDITY	12		
1.3 A CRITICAL STANCE	13		
1.4 SUPPORT AND INFILL	13		
1.5 CRITICAL ENGAGEMENT AS A STARTING POINT	14		
1.6 POTENTIAL IN SOCIAL CAPITAL	14		
1.7 POINT OF DEPARTURE	14		
1.8 DISSERTATION OVERVIEW	15		
CHAPTER 2: A PROCESS OF ENGAGEMENT	17		
2.0.1 RESEARCH PROBLEM STATEMENT	17		
2.0.2 GLOBAL PARADIGM TO BE EXPLORED CONTEXTUALLY	18		
2.0.3 RESEARCH QUESTIONS TO BE EXPLORED IN THEORY SURVEY	18		
PART 1: PATTERNS OF URBAN GROWTH	19		
2.1.1 URBANIZATION DEFINED	20		
2.1.2 TRENDS OF URBANIZATION	20		
2.1.3 SOUTH AFRICA'S FLUXUAL URBANIZATION	21		
2.1.4 CAUSE OF CURRENT FLUX IN URBANIZATION	21		
2.1.5 NEGATIVE EFFECTS OF URBANIZATION	22		
2.1.6 POSITIVE EFFECTS OF URBANIZATION	22		
2.1.7 GOVERNMENTAL RESPONSE TO URBANIZATION	22		
2.1.8 PATTERNS OF COHESION	22		
PART 2: POPULATION OF NETWORKS - NOT 'COMMUNITY'	23		
2.2.1 ENGAGING WITH AN UNFAMILIAR NETWORK	23		
2.2.2 DEFINITIONS OF COHESION IN 'COMMUNITY'	25		
2.2.3 NEED FOR RE DEFINITION	27		
2.2.4 CONCEPT FOR RE DEFINITION	27		
PART 3: DEFINING AN APPROACH	29		
2.3.1 ENGAGEMENT THROUGH PARTICIPATION	30		
2.3.2 FORESEEN CHALLENGES WITHIN ENGAGEMENT	30		
2.3.3 THE SLOVO PARK PROJECT - PRECEDENT OF ENGAGEMENT	31		
2.3.4 METHODOLOGY OF ENGAGEMENT	34		
2.3.5 LENS OF PARTICIPATION	34		
2.3.6.1 RESEARCH HYPOTHESIS	35		
2.3.6.2 DESIGN HYPOTHESIS	35		
2.3.6.3 PROGRAMME HYPOTHESIS	36		
2.3.6 RESEARCH QUESTION	35		
2.3.7 RESEARCH AIM	36		
RESULTANT DISJUNCTURE			
CHAPTER 3: ENGAGING WITH THE NETWORK	37		
3.0.1 PROBLEM STATEMENT	37		
3.0.2 CONSIDERING AN INTERVENTION	38		
PART 1: MAMELODI IN CONTEXT	39		
3.1.1 LAND-MARKED MAMELODI	40		
3.1.2 HISTORIC BACKGROUND TO MAMELODI	41		
PART 2: THE INTANGIBLE NETWORK	43		
3.2.1 CEMENT BRICK MAKERS OF MAMELODI	44		
3.2.2 PATTERNS OF APPROPRIATION	44		
3.2.3 FIELD RESEARCH CONDUCTED	44		
3.2.3 STUDY OF ACTIVITIES INVOLVED IN CEMENT BRICK MAKING PROCESS	45		
3.2.4 SUMMARY OF FIELD RESEARCH	47		
3.2.5 OBSERVED STATES OF FLEXIBILITY IN GROWTH	48		
3.2.6 OBSERVED STATES OF MOBILITY IN GROWTH	49		
PART 3: INTERPRETATION OF FINDINGS	51		
3.3.1 KEY FINDINGS - SUMMARY	52		
3.3.2 PERMANENCE VS TEMPORALITY	52		
3.3.3 MOBILITY	53		
3.3.4 MOBILITY AS A SYMBOL	53		
3.3.5 FLEXIBILITY	54		
3.3.7 STRATEGIC INTERVENTION	55		
3.3.8.1 ARCHITECTURAL INTERVENTION PROPOSAL	55		
3.3.8.2 INTERVENTION NICHE	55		
3.3.8.3 INTERVENTION STRATEGY	55		
3.3.8 STRATEGIC DESIGN	55		
CHAPTER 4 : PRECEDENT STUDIES	57		
4.0.1 DESIGNING FOR VULNERABILITY	57		
4.0.2 RESPONSIVE INTERVENTION	58		
4.0.3 OVERVIEW OF CASE STUDIES	58		
4.1 SELECTED WORK OF CEDRIC PRICE	59		
4.2 ELEMENTAL DO TANK- QUINTA MONROY HOUSING PROJECT	61		
4.3 BARAGWANATH TRANSPORT INTER. - URBAN SOLUTIONS	63		
4.4 CASE STUDIES OF FRAME AND INFILL STRUCTURAL ORDERS	65		



CHAPTER 5 : CONTEXT & SITE

5.0.1 SITE SELECTION

5.1 MAMELODI/ NELLMAPIUS REGENERATION OVERALL STRATEGY

5.1 MAMELODI/ NELLMAPIUS REGENERATION STRATEGIES

5.2 MAMELODI EAST IN CONTEXT

5.3 FRAMEWORK AREA - INTERVENTION PROPOSAL

5.4 FOCUS AREA - SITE ANALYSIS

5.5 PIENAARSPORT - SITE ANALYSIS

5.6 SITE ANALYSIS SUMMARY

CHAPTER 6 : DESIGN DEVELOPMENT

6.0.1 FORM FROM RESEARCH

6.0.2 GENIUS PRINCIPLES OF THE INTERVENTION

6.1 CONCEPTUAL STORYBOARD

6.2 TRANSITION OF STORYBOARD TO BUILDING

6.3 PROGRAMME RE-INTERPRETED

6.4 AGENTS OF CONTROL

6.5 CONCEPT OF FORM - THE PORTAL

6.6 APPLYING THE PORTAL

6.7 ANALYSIS OF CONTEXTUAL ELEMENTS

6.8 SUMMARY OF ELEMENT ANALYSIS

6.9 FACTORS IN SUSTAINABLE URBAN DEVELOPMENT

6.11 A VERTICAL ELEMENT OF SUPPORT

6.12 DEVELOPMENT OF THE VERTICAL SUPPORT

6.13 A UNIT OF APPROPRIATE GROWTH

6.15 RATIONALIZATION OF FORM

6.16 PROJECTED PATTERNS OF GROWTH

6.17 CONTROL OF UNIT

6.20 NODAL GROWTH DEVELOPMENT

CHAPTER 7: DESIGN RESOLUTION

7.0.1 ELEMENTS OF INCREMENTAL GROWTH

7.0.2 PHASE 3 - THE ZENITH OF GROWTH AND ENGAGEMENT

7.1 THE PLATFORM OF ENGAGEMENT

7.2 FACTORS IN MASTER PLAN SPECULATION

7.3 MASTER PLAN AT PHASE 3

7.4 EARLY INCREMENTAL PHASES

7.5 MAJOR DEVELOPMENT PHASES

7.6 PHASE 3 - CAPTURED IN A MOMENT

7.7 THE CEMENT DEPOT

7.8 PROVIDING SHELTER

7.9 RATIONALIZING THE ROOF

7.10 DISTRIBUTION OF CEMENT

67

67

68

69

70

71

73

74

75

77

77

77

78

78

79

79

81

81

83

84

85

86

87

89

91

91

97

99

101

101

101

102

102

103

105

107

109

117

121

125

127

CHAPTER 8 : TECHNICAL REPORT

8.0.1 TECHNICAL RESOLUTION

8.0.2 THE UNIT OF GROWTH

8.0.3 THE UNIT MANIFESTED IN CONTEXT

8.0.4 THE ELEMENT OF UNIFICATION - THE ROOF

8.1 THE UNIT OF GROWTH

8.2.2 MATERIAL SELECTION & STRUCTURAL DIAGRAM

8.2.3 WIND TURBINE CALCULATIONS

8.2.4 PV CELL CALCULATIONS

8.2 THE UNIT IN CONTEXT

8.3 THE ARCHITECTURAL MANIFESTATION - THE ROOF

8.4 ROOF SYSTEMS

CHAPTER 9: CONCLUSION & APPENDIX

9.0.1 CONCLUSION

9.0.2 REFLECTION

9.0.3 APPENDIX SECTIONS

APPENDIX SECTION A: INTERVIEW SUMMARY

9.1.1 INTERVIEW SUMMARY: BRICK MAKER PROFILES

9.1.2 INTERVIEW SUMMARY: BRICK MAKER DATA

9.1.3 INTERVIEW SUMMARY: BRICK MAKER PROFILES

APPENDIX SECTION B: ON-SITE ANALYSIS

9.2.1 STUDY OF PROCESS OF BRICK MANUFACTURE WITHIN THE NETWORK

9.2.2 ON-SITE OBSERVATION OF CONTAINER APPROPRIATION

9.2.3 ON-SITE OBSERVATION OF CONTAINER SPATIAL CONDITION

APPENDIX SECTION C: DESIGN OPTIONS AND FURTHER ANALYSIS

9.3.1 SPATIAL AND STRUCTURAL RESEARCH ON LIFTING

9.3.2 HISTORIC SUMMARY OF FRAME AND INFILL

9.3.3 CONDITIONS BETWEEN BRICK MAKERS AND HOUSING

9.3.4 ORIGINAL CONCEPTION OF UNIT OF GROWTH

9.3.5 FURTHER EXPLANATION OF UNIT OF GROWTH

9.3.6 SUMMARY OF UNIT OF GROWTH

APPENDIX SECTION D: SHORT FILM COMPETITION

9.4.1 STORY BOARD TO CNCI FILM COMPETITION

APPENDIX SECTION E: RESEARCH TRIP

9.5.1 RESEARCH TRIP SUMMARY

REFERENCES

137

137

137

137

137

139

141

141

141

143

147

149

151

151

152

152

153

153

155

157

159

159

161

163

165

165

166

166

167

169

170

171

171

173

173

175

LIST OF FIGURES

Illus: 1	Cover: Platforms of engagement (Author, 2010)	i	Illus: 58	The Ubuntu Centre - An example of a building that is questionably contextual and responsive (Author, 2010)	57
Illus: 2	Location and Programme of Dissertation (Author, 2010)	iv	Illus: 62	Walter Sisulu Square of Dedication (Author, 2010)	58
Illus: 3	A new RDP scheme being handed over in Mamelodi, an example of the fluxual dynamics of South Africa's current Context (Author, 2011)	11	Illus: 61	Kayalitsha Youth Centre (Author, 2010)	58
Illus: 4	Mamelodi residents moving temporary home to make way for RDP (Author, 2011)	12	Illus: 60	Nelson Mandela Interpretation Centre (Author, 2010)	58
Illus: 5	The author involved in a process of critical engagement in Slovo Park (Author, 2010)	13	Illus: 59	Red Location (Author, 2010)	58
Illus: 6	Frame and infill hierarchies as described by Habraken (Habraken, 2011: http://www.habraken.com/html/downloads/type_as_a_social_agreement.pdf)	14	Illus: 63	Interaction Centre - Mobile elements within ordered structural system (Kroenberg, 2007)	59
Illus: 7	Poem of participation ethos by Nabeel Hamdi (Hamdi, 2010)	14	Illus: 65	The Fun Palace - depicting the industrial but human feel of the building (Kroenberg, 2007)	60
Fig: 1	Project Synthesis Diagram (Author, 2010)	14	Illus: 64	Potteries ThinkBelt (http://www.arch.cuhk.edu.hk/server2/m08/wlmg/potteries%20thinkbelt, 2011)	60
Illus: 8	The Author involved in the dissertation's process of engagement (Author, 2011)	15	Illus: 66	Interaction Centre - Industrial Structure in balance with organic material (Kroenberg, 2007)	60
Illus: 9	Mamelodi East, Extension 12 road before RDP housing was implemented in Piensaarspoort (Author, 2011)	17	Illus: 69	Depiction of Incremental Growth through time (http://www.elementalchile.cl/viviendas/quinta-monroy/quinta-monroy, 2011)	61
Illus: 10	Diagram depicting the global rates of urbanization (Nordregio, 2011: www.nordregio.nw)	18	Illus: 68	Diagram depicting the systems that support structural growth (http://www.elementalchile.cl/viviendas/quinta-monroy/quinta-monroy, 2011)	61
Fig: 2	Urban and rural population by development regions in millions (UN, 2007: 23)	19	Illus: 67	The families were asked to illustrate their ideas of 'Home' (http://www.elementalchile.cl/viviendas/quinta-monroy/quinta-monroy, 2011)	61
Fig: 3	Urban and rural population by major region in million (UN, 2007:34)	20	Illus: 71	The Support Provided (http://www.elementalchile.cl/viviendas/quinta-monroy/quinta-monroy, 2011)	62
Fig: 4	Urbanization per province in South Africa (Kok & Collinson, 2006: 24)	20	Illus: 70	Images Depicting the appropriation of support and Infill (http://www.elementalchile.cl/viviendas/quinta-monroy/quinta-monroy, 2011)	62
Fig: 5	Rates of urbanisation for the last century in South Africa (Kok & Collinson, 2006: 22)	21	Illus: 72	Focal points in the Baragwanath Transport Interchange (Author, 2011)	63
Illus: 11	Example of a Network of Cohesion, A group of Women workers in Protest (UN, 2007)	21	Illus: 74	Plans of Interchange - Programming dependant on function with space for appropriation (Digest SA, 2006)	64
Illus: 12	Visual thesaurus exploration of terms around 'Networks' (Author, 2011)	23	Illus: 73	Site Plan of Interchange - Long thin plan in fluid context (Digest SA, 2006)	64
Illus: 13	Diagram depicting the connections within a family network (Author, 2011)	24	Illus: 76	Market interior - Depicting the spaces of appropriation (Author, 2011)	64
Illus: 14	Diagram depicting networks around family network (Author, 2011)	25	Illus: 75	Human Movement in Concrete Elements - allowing for public engagement with seats e.t.c (Author, 2011)	64
Illus: 15	Layering of networks to gain better understanding of the connections (Author, 2011)	26	Illus: 77	A Historic timeline of point, line, plane and volumetric support and infill including South African examples. (Author, 2011)	65
Illus: 16	Analogy of the social organism in regard to networks (Author, 2011)	26	Illus: 78	Proposed Point of Intervention - Piensaarspoort Crossing Point (Author, 2011)	67
Illus: 17	Concept for analysis of networks, a social organism (Author, 2011)	27	Illus: 79	GAPP FRAMEWORK PROPOSAL & site of intervention (GAPP, 2010)	68
Illus: 19	Visual Thesaurus exploration of terms within 'engagement' (Author, 2011)	28	Illus: 80	Nodal development strategy (GAPP,2010)	69
Illus: 20	Diagram depicting the author's understanding of participation (Author, 2011)	29	Illus: 82	Vehicular movement strategy (GAPP,2010)	69
Illus: 21	Slovo Park: Engagement through Research (Author, 2010)	30	Illus: 81	Housing density strategy (GAPP,2010)	69
Illus: 22	Slovo Park: Engagement through public participation (Slovo Group, 2010)	31	Illus: 83	Open space green strategy (GAPP,2010)	69
Illus: 23	Slovo Park: Engagement through construction1 (Author, 2010)	31	Illus: 84	Mamelodi East (Author, 2011)	70
Illus: 24	Slovo Park: Engagement through construction 2 (Author, 2010)	31	Illus: 85	Analysis of Current Land Use in Mamelodi East (Author, 2011)	70
Illus: 25	Slovo Park: Engagement through process (Author, 2010)	32	Illus: 86	The framework proposal development for Piensaarspoort (Author, 2011)	71
Illus: 26	Slovo Park: Engagement through completion of Slovo Hall (Author, 2010)	32	Illus: 87	Key frames of framework plan (Author, 2011)	72
Illus: 27	Diagram depicting the analysis of network through respect as a social organism (Author, 2011)	32	Illus: 88	Proposed Framework by Author for Development (Author, 2011)	72
Illus: 28	Diagram depicting an example of extraction of strengths, weakness's, threats and opportunities of network through a process of participation and engagement (Author, 2011)	33	Illus: 89	Summary of analysis Elements found in Framework Area (Author, 2011)	73
Illus: 29	Mindmap of Ideas from process that led to research and eventual design (Author, 2011)	34	Illus: 90	Identification of Temporary & Permanent Mobility Elements in Piensaarspoort (Author, 2011)	74
Illus: 30	Author undertaking the process of engagement (Author, 2011)	35	Illus: 91	Identification of Temporary & Permanent Structural Elements in Piensaarspoort (Author, 2011)	74
Illus: 31	Symbol of the social capital - the act of self guidance and control (Author, 2011)	36	Illus: 92	Identification of Movement Routes in Piensaarspoort (Author, 2011)	74
Illus: 32	Permanent structural elements exemplifying their temporality - the bricks (Author, 2011)	37	Illus: 96	Sketched Summary depicting major retail and housing around crossing point (Author, 2011)	75
Illus: 33	Mamelodi in context (Author [GAPP,2010:56], 2011)	38	Illus: 95	Piensaarspoort Retail Stands (Author, 2011)	75
Illus: 34	Mamelodi - Major routes, landmarks and divisions- including dissertation site in Mamelodi East (Author, 2011)	39	Illus: 94	Piensaarspoort Housing Area (Author, 2011)	75
Fig: 6	Historical flux around development of Mamelodi (Author, 2011) (Nice & Walker et al, 1991)	40	Illus: 93	Piensaarspoort Rail Crossing (Author, 2011)	75
Illus: 35	Mamelodi Map depicting brick makers supply, production and distribution network. (Author , 2011)	42	Illus: 97	Site Analysis Summary of Movement and Retail in Piensaarspoort (Author, 2011)	76
Illus: 36	Family Planning- a brickyard in Mamelodi East (Author, 2011)	43	Illus: 98	A process of growth through temporality and permanence on-site (Author, 2011)	77
Illus: 37	Diagram depicting the brick makers process of appropriation (Author,2011)	44	Illus: 100	A conceptual image for the spirit of growth through temporality (Author, 2011)	78
Illus: 38	Profiles of cement brick makers in Mamelodi (Author, 2011)	44	Illus: 99	The spiritual principles of the intervention (Author, 2011)	78
Illus: 39	Diagram depicting the discovered network of production around cement brick makers (Author, 2011)	45	Illus: 103	Agents of Control (Author, 2011)	79
Illus: 42	Identification of link between brick makers and housing through resource use i.e. water and space (Author,2011)	46	Illus: 101	The Infraset Cement Brick factory in Midrand, Gauteng (Author, 2011)	79
Illus: 41	Identification of connections between brick makers and supply points through lens of participation (Author,2011)	47	Illus: 102	Programmematic diagram of Industrial Building (Author, 2011)	79
Illus: 43	States of observed flux within self built homes (Author, 2011)	47	Illus: 104	A re-programming of the Industrial Typology into the Mamelodi Context (Author, 2011)	80
Illus: 44	Diagram depicting the states of flux within Mamelodi homes (Author, 2011)	48	Illus: 105	Re-Interpretation of Schedule into factors of mobility and temporality (Author, 2011)	80
Illus: 45	Observed relationship between temporary brick makers and permanent housing (Author, 2011)	48	Illus: 106	The warehouse typology in its new context, focussing on Distribution (Author, 2011)	80
Illus: 46	Relationship between temporary and permanent housing elements in structural growth (Author, 2011)	49	Illus: 107	The 'Portal'. (Author, 2011)	81
Illus: 47	Double Storey Self-build onto RDP (Author, 2011)	49	Illus: 108	The process of research from where the portal emerged. (Author, 2011)	81
Illus: 48	RDP with potential future growth (Author, 2011)	49	Illus: 109	The re-interpretation of the industrial portal through Stewart Brand classification of building elements. (Author, 2011)	82
Illus: 50	RDP with sheet addition and bricks waiting (Author, 2011)	50	Illus: 110	The analysis of contextual elements (Author, 2011)	83
Illus: 49	Self-build with future bricks in yard (Author, 2011)	50	Illus: 111	An analysis of patterns of growth from contextual elements - culminating in the simplification of potential space (Author, 2011)	84
Illus: 51	Diagram depicting the Methodology of emergence through states of fluxual growth as seen in Mamelodi (Author, 2011)	50	Illus: 112	Vertical elements in developing contexts (Author, 2011)	85
Illus: 52	Interpretation of Habraken's patterns of permanence in settlement (Author, 2011)	50	Illus: 113	Analysis of potential in vertical element of support, service and structural ordering (Author, 2011)	86
Illus: 53	Larger connections between RDP and brick makers through temporary housing. (Author, 2011)	51	Illus: 114	Analysis of Lamp post layout and edge response (Author, 2011)	86
Illus: 54	Simplification of human mobility through history - Pre 20th Century (Author, 2011)	52	Illus: 115	Current condition brought on by road reserve limit, creating potentially dangerous scenarios (Author, 2011) (CoT,2011: www.tshwane.gov.za)	87
Illus: 55	Simplification of current human permanence being replaced by digital temporality and mobility - 21th Century (Author, 2011)	52	Illus: 116	Proposed adjustment of road reserve boundaries using lamp posts as ordering elements (Author, 2011)	87
Illus: 56	Diagrams depicting elements of flexibility in Architecture and examples [Ottis,2011] (Author, 2011)	53	Illus: 117	Re-configuring the pole towards service and infrastructural development (Author, 2011)	88
Illus: 57	Diagram depicting where the niche intervention lies within the tangible and intangible networks (Author, 2011)	53	Illus: 118	Spatial exploration of point, line, plane and volume to determine spatial support and infill unit (Author, 2011)	89
		54	Illus: 119	The multi planar multidirectional unit (Author, 2011)	90
		56	Illus: 120	The unit and its secondary structural and service pieces (Author, 2011)	90

Illus: 121	Structural resolve of element - Engineer notes supporting form, profile and lifting device (Author, 2011)	91	Illus: 187	Walling system of Meetse-A-Bophela Primary school in Mamelodi (Architecture SA, 2011)	143
Illus: 122	Projected patterns of growth (Author, 2011)	92	Illus: 188	Sandwich Board - A1 Non-Flammable (ArcelorMittal, 2011)	143
Illus: 123	Rendering of possible manifestation of unit in context with structural and service components of unit (Author, 2011)	92	Illus: 189	ArcelorMittal- Arval Alliance Sandwich Walling system (ArcelorMittal, 2011)	143
Illus: 124	Patterns of projected growth, ordering principles that allow for mobility routes and public infrastructure (Author, 2011)	93	Illus: 190	Unit of Growth technical resolution -Callout A- Not to scale (Author, 2011)	144
Illus: 125	Patterns of projected growth, ordering principles that allow for mobility routes and public infrastructure (Author, 2011)	94	Illus: 192	Eva-Last recycled plastic lumber (Eva-Last, 2011)	145
Illus: 126	Patterns of projected growth, ordering principles that allow for mobility routes and public infrastructure (Author, 2011)	95	Illus: 193	Eva-Last plastic fastenings (Eva-Last, 2011)	145
Illus: 128	Analysis of potential in vertical element of support, service and structural ordering (Author, 2011)	96	Illus: 194	Eva-Last recycled plastic lumber joist (Eva-Last, 2011)	145
Illus: 127	Depicting the various material, service and programmematic options in the unit (Author, 2011)	96	Illus: 195	Detail E - Not to scale (Author, 2011)	145
Illus: 129	Systems of control, ownership and growth facilitation (Author, 2011)	97	Illus: 196	Detail F - Not to scale (Author, 2011)	146
Illus: 130	Phased development based on cement use (Author, 2011)	98	Illus: 197	Detail G - Not to scale (Author, 2011)	146
Illus: 131	System of control and ownership during the development (Author, 2011)	98	Illus: 198	Diagrammatic depiction of process of construction (Author, 2011)	147
Illus: 132	Analysis of potential in vertical element of support, service and structural ordering (Author, 2011)	99	Illus: 199	Unit of Growth technical resolution - Detail H - Scale:1:20 (Author, 2011)	147
Illus: 133	Prototypical public infrastructural units used to guide development (Author, 2011)	99	Illus: 200	The roof structure unit in its assembled form (Author, 2011)	148
Illus: 134	Key Infrastructural Support Elements (Author, 2011)	100	Illus: 201	Water Calculation table (Author, 2011)	149
Illus: 135	Current vs Future edge conditions on-site (Author, 2011)	100	Illus: 202	The roof structure and the sheeting layout (Author, 2011)	149
Illus: 136	Conceptual model exploring possible forms of incremental growth in context (Author, 2011)	101	Illus: 203	Diagrammatic depiction of roof and sub-systems of resource harvesting (Author, 2011)	150
Illus: 137	Speculative sketched inquiring into Pienaarspoort's future (Author, 2011)	102	Illus: 204	Pienaarspoort day end (Author, 2011)	151
Illus: 138	Conceptual model of form, spatial and structural interventions on-site (Author, 2011)	102	Appendix Illus: 2	Photographic journal of interviews (Author, 2011)	153
Illus: 139	Diagrammatic functional process of Pienaarspoort at Phase 5 (Author, 2011)	103	Appendix Illus: 1	On-site interview map used for analysis of Extension 12 & Pienaarspoort (Author, 2011)	153
Illus: 140	Phase 3 development in its context, possibilities of future edge response (Author, 2011)	103	Appendix Illus: 3	On-site interview map used for analysis of brick makers and supply networks (Author, 2011)	154
Illus: 141	Sketch Speculation of Possible processes of development and growth in Pienaarspoort (Author, 2011)	104	Appendix Illus: 4	Graphic representation of questionnaire : 1 (Author, 2011)	155
Illus: 145	Speculation of Pienaarspoort growth - incremental phases (Author, 2011)	106	Appendix Illus: 5	Graphic representation of questionnaire : 2 (Author, 2011)	156
Illus: 146	Speculation of Pienaarspoort Growth - Major Phases (Author, 2011)	108	Appendix Illus: 6	Profiles of various brick makers : 1 (Author, 2011)	157
Illus: 147	Phase 3 - plan - captured in a moment (Author, 2011)	109	Appendix Illus: 7	Profiles of various brick makers : 2 (Author, 2011)	158
Illus: 148	Phase 3 - perspective - captured in a moment (Author, 2011)	110	Appendix Illus: 8	Graphic summary of process of production undertaken by the brick makers: 1 (Author, 2011)	159
Illus: 149	Phase 2 - Site section - phase A - C (Author, 2011)	112	Appendix Illus: 9	Graphic summary of Process of Production undertaken by the brick makers: 2 (Author, 2011)	160
Illus: 150	Phase 2 - Site section - phase 1 - 5 (Author, 2011)	114	Appendix Illus: 10	Summary of container retail, storage and living (Author, 2011)	161
Illus: 151	Phase 2 - site perspective - view from cross roads (Author, 2011)	116	Appendix Illus: 11	Summary of agents of ownership in container form. (Author, 2011)	162
Illus: 152	Design elements in loading platform (Author, 2011)	117	Appendix Illus: 12	Spatial exploration of container appropriation: 1 (Author, 2011)	163
Illus: 153	The Cement Depot in Phase 3 - Loading Platform Design (Author, 2011)	118	Appendix Illus: 13	Spatial exploration of container appropriation: 2 (Author, 2011)	164
Illus: 154	The Cement Depot in Phase 3 - Level 1 (Author, 2011)	119	Appendix Illus: 14	Diagrammatic exploration of cranes to support manual mechanical lifting (Author, 2011)	165
Illus: 155	The Cement Depot in Phase 3 - Level 2 (Author, 2011)	120	Appendix Illus: 15	Historic breakdown of frame and infill structure (Author, 2011)	166
Illus: 157	Evolution of the roof form based on shelter requirements below and resource harvesting above (Author, 2011)	121	Appendix Illus: 16	Summary of observed conditions in Mamelodi (Author, 2011)	166
Illus: 156	Structural exploration of roof form (Author, 2011)	121	Appendix Illus: 18	Elemental Urban-Do-Tank breakdown of appropriatable spaces (www.elemental.com,2011)	167
Illus: 158	Sketched process of roof form based on structural, process and resource requirements (Author, 2011)	122	Appendix Illus: 17	The use of containers to create spaces of appropriation for hierarchy of control and ownership (Author, 2011)	167
Illus: 159	Rationalization of roof form (Author, 2011)	122	Appendix Illus: 19	Original Concept for Unit Of Growth (Author, 2011)	168
Illus: 160	Proposal for Cement Facility, Using the roof to define the spatial quality (Author, 2011)	124	Appendix Illus: 21	Exploration of form and process to create a process of self-build : 1 (Author, 2011)	169
Illus: 161	The Cement Depot - structural breakdown (Author, 2011)	125	Appendix Illus: 20	Exploration of form and process to create a process of self-build : 2 (Author, 2011)	169
Illus: 162	Axonometric explanation of Roof Structure (Author, 2011)	125	Appendix Illus: 22	Summary of form, process and history of form (Author, 2011)	170
Illus: 163	Spatial Programming of Cement Depot (Author, 2011)	126	Appendix Illus: 23	The storyboard for the CnCI Moving Spaces film competition (Author, 2011)	171
Illus: 164	Section CC (Author, 2011)	127	Appendix Illus: 24	Conceptual breakdown of film concept into dissertation concept (Author, 2011)	172
Illus: 165	Service street perspective looking East (Author, 2011)	127	Appendix Illus: 26	Summary of research trip (Author, 2011)	173
Illus: 166	Section AA (Author, 2011)	128	Appendix Illus: 25	Summary of research trip: Western Cape (Author, 2011)	173
Illus: 167	Section DD (Author, 2011)	129	Appendix Illus: 27	Summary of research trip: Kwa-Zulu Natal & Eastern Cape (Author, 2011)	174
Illus: 168	Service street perspective looking West (Author, 2011)	129	Appendix Illus: 28	Summary of research trip: Gauteng (Author, 2011)	174
Illus: 169	Back of house perspective (Author, 2011)	129			
Illus: 170	Street View (Author, 2011)	130			
Illus: 171	Section EE (Author, 2011)	131			
Illus: 172	Section FF (Author, 2011)	132			
Illus: 173	Section BB (Author, 2011)	133			
Illus: 174	Street View 2 (Author, 2011)	135			
Illus: 175	Vicky's BnB in Kayalitsha, Cape Town - the tectonic and structural inspiration (Author, 2011)	137			
Illus: 176	Unit of Growth technical resolution - Site Plan (Author, 2011)	138			
Illus: 177	Infraset product brochure - pre-cast concrete lamp post (Infraset, 2011)	139			
Illus: 178	Unit Axonometric (Author, 2011)	140			
Illus: 179	Technical Detailing of the Unit of Growth- Not to scale (Author, 2011)	140			
Illus: 180	Engineer's Notes (Author, 2011)	141			
Illus: 181	Unit of Growth technical resolution - Detail A- Not to scale (Author, 2011)	141			
Illus: 182	Unit of Growth technical resolution - Detail C - Not to scale (Author, 2011)	141			
Illus: 183	Unit of Growth technical resolution - Detail B- Not to scale (Author, 2011)	142			
Illus: 184	Unit of Growth technical resolution - Detail D - Not to scale (Author, 2011)	142			
Illus: 185	Unit of Growth technical resolution - Spatial allocation (Author, 2011)	142			
Illus: 186	Unit of Growth technical resolution - Detail E (Author, 2011)	142			

GLOSSARY OF TERMS

COMMUNITY - In this dissertation the notion of the community has been replaced by concept of the relationships between people and place within an intangible network.

CRITICAL ACTIVISM - term describing the academic stance on social issues that require objective and productive activist attitude.

GROWN/GROWTH - used in place of development or structural construction. The term growth implies a more organic process of development.

GROUP AREAS ACT - The mandate law segregating the people of South Africa into areas by race, enforced by the government during Apartheid.

NETWORKS - dissertational term used to replace the relationships that currently define 'community'.

RDP HOMES- Reconstruction and Development Programme Government subsidized housing

RESILIENCE - the term indicative to the ability to survive and bounce back from adversity in any form; political, natural social etc. (Hamdi, 2010; 54)

SELF-BUILD/SELF-BUILT - Structures built by inhabitants of permanent materials (bricks, steel or concrete)

SOCIAL CAPITAL - networks and alliances and neighborhoods not easily visible. through quantitative methods of analysis. (Hamdi, pg 80, 2010)

STALLETJIE - roadside stand selling vegetables, cigarettes, airtime e.t.c

MOKHUKU/SHACK/ZOZO - Term to describe temporary housing made from sheet metal or any other 'temporary' material.

URBANIZATION - process of transition from a rural to a more urban society. Statistically, urbanization reflects an increasing proportion of the population living in settlements defined as urban, primarily through rural-to-urban migration.

URBAN GROWTH - increase in the number of people who live in towns and cities, measured either in relative or absolute terms. (UN,2007;6)

URBAN TRANSITION - passage from a predominantly rural to a predominantly urban society. (UN,2007;6)

VULNERABILITY - term used to describing defenselessness, insecurity and exposure to risk, shocks and stress.

Vulnerability stands out as recurrent concerns of people living in poverty which professional definitions of poverty overlook. (Hamdi, 92;2010)

PLAGIARISM DECLARATION

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, 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 dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this dissertation 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.

Signature:_____

Jhono Bennett