

Finding the Maputo Central Market: Seeing the Informal Economy in Formal Architecture

Byron Snow

University of Pretoria, 2011 Student No. 10436180



Finding the Mercardo Central de Maputo / Maputo Central Market Seeing the Informal Economy in Formal Architecture

Author:

Byron Snow

Submitted in partial fulfilment of the requirements for the degree:

Masters in Architecture (Professional)

in the Faculty of
Engineering & The Built Environment
at the
University of Pretoria

Study leader:

Professor Karel Bakker

Course Coordinator / Studio Master:

Dr. Jacques Laubscher

University of Pretoria

2011





Detailed Dissertation Information

Full dissertation title: Finding the Maputo Central Market (Mercardo Central de Maputo): Seeing the

Informal Economy in Formal Architecture

Submitted by: Mr. Byron Snow

Student number: 10436180

Study Leader: Prof. Karel Bakker

Course Coordinator: Dr. Jacques Laubscher

Degree: Master of Architecture (Professional)

Department: Department of Architecture

Faculty: Faculty of Engineering, Built Environment and Information Technology

University: University of Pretoria

Project Summary

Programme: Urban Market and Consolidation of Informal Trade

Site Description: The area immediately around the existing historic Maputo Central Market (Mercardo

Central de Maputo) in the Baixa CBD area of Maputo, Mozambique.

Proposed Client: Maputo Municipality and a donor organization such as the World Bank

Users: Vendors and micro-enterprisers currently operating in and around the Maputo

Central Market, and their customers.

Site Location: Consolidation of sites to the East and West of the existing Maputo Central Market.

Address: cnr. Avenida 25 de Setembro & Rua do Mesquita, Baixa, Maputo, Mozambique

GPS Coordinates: \$ 25° 97′ 0715"

E 32° 56′ 8541′′

Architectural Theoretical Premise: Micro-enterprise and informal trade in Formal Architecture

within a historic city centre

Architectural Approach: Facilitating informal trade and micro-enterprise within an area rich in built and

un-built heritage through the expansion of suitable formal architecture, in order

to formally recognise previously marginalised street vendors.

Research Field: Urbanism and Human Settlements



Abstract

The low-lying Baixa area of Maputo, is the historic and current city centre of Maputo. The district is an important transport hub, and business centre of Mozambique.

The *Mercado Central de Maputo* (Maputo Central Market), is the only infrastructure provided in support of the micro-enterprisers and traders of the city. The Central Market has reached capacity, and informal street markets have developed to the north. These have become fractured and disconnected from facilities that allow for clean, comfortable, hygienic trade, and a healthier business environment.

The architectural proposal offers a solution to the current inadequate trader infrastructure, while also recognizing the area's heritage and economic significance. The fluxing character of the market is also important in the design. While promotion of micro-enterprise and consequent economic growth will be achieved through an upgrade and expansion of market related facilities. This will allow a greater number of marganalised vendors formal recognition and legitimacy.

The intervention will act as a catalyst project in the urban regeneration, through the consolidation of the fractured market areas. Increasing the market's drawing power on potential customers will promote the Central Market as a destination within its own right.

Samevatting

Die laagliggende Baixa gebied van Maputo, is die historiese en huidige sentale besigheids distrik van Maputo. Die distrik is 'n belangrike vervoer-, en sakesentrum van Mosambiek.

Die *Mercado Central de Maputo* (Maputo Sentrale Mark), is die enigste infrastruktuur wat mikroondernemings en handelaars van die stad ondersteun. Die stampvol mark het informeel versprei na die strate in die noorde. Hierdie straatmarkte is afgesny van skoon, gemaklike en higiëniese fasiliteite wat 'n gesonde besigheidsomgewing kan skep.

Die argitektoniese oplossing bied voldoende handelaar infrastruktuur, terwyl dit die erfenis, en ekonomiese geskiedenis erken. Die veranderende eienskap van die mark is belangrik in die ontwerp. Die bevordering van mikro-ondernemings en gevolglike ekonomiese groei, sal bereik kan word deur middel van 'n opgradering en uitbreiding van die mark-verwante fasiliteite. Dit sal 'n groter aantal entrepreneurs akkommodeer.

Die konsolidasie van die verwyderde straatmark in die argitektoniese oplossing sal as 'n katalisator vir stedelike hergebruik dien. Die projek sal die Sentrale Mark as 'n bestemming vir potensiële kliënte in die stad artikuleer.



Plagiarism Declaration

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.

The dissertation is 23 552 words long (excluding captions, tables, contents & reference sections).

Signed

Byron Snow



Contents

Preamble

Glossary and Terms

Chapter 1: Orientation & General Background			
Introduction: Project Context	1		
Problem Statement			
Hypothesis			
Conceptual Framework			
Conceptual Approach			
Proposed Client	8		
Research Objectives	9		
Delimitation of Research or Study	9		
Chapter 2: Theoretical Background Context Previous Industrial Architecture Normative Position	11 12 15		
Chapter 3: Regional Urban Characte	r		
Context Identity	18		
Threats	29		
Potential & Needs	31		
Demonstration of Need	35		
Program & Site	36		

Chapter 4: Precedents & Case Studio	es
Precedents:	39
Case Study	44
Precedent Conclusions	51
Chapter 5: Framework	
Selected Site	55
Existing Effects on the Site	56
Mapping of Existing Urban Phenomen	
•	а 58
Draw and Contactual Franciscosts	63
Proposed Contextual Framework	
Framwork Summarised	66
Proposed Informal Economy Strategy	
	67
Vehicular Strategy	68
Specific Site Recommendations	68
Chapter 6: Specific Site	
Site Hierarchy	71
Significant Buildings	72
Topography & Flooding	78
Functioning of the Maputo Central	
Market	79
The Importance of the Intangible	86

Chapter 7: Proposed Intervention	
Aim of Proposal	89
Parti Diagram	90
Interface with Transport	90
Proposal	92
Proposed Core Market Building	
Intervention	94
Interface with significant existing fab	ric
	95
Market Functioning & Fabric	97
The Vending Stand	102
Production	105
Lighting	107
Thresholds	108
Ventilation	109
Environmental Sustainability	110
Topography & Flooding	111
Services	111
Fire: Escaping, Isolation, Extinguishin	g,
Smoke	115
Surfaces, Materials, Finishes	116
Health & Cleanliness	118
Identity of Space	120
Overview	121

Chapter 8: Design Sketches & Conclusion		
Levels	125	
Relationship Between Levels	127	
Plans:	128	
Structural	131	
Fire Plans	132	
Technical Section & Details	136	
Elevations	138	
Sections:	140	
Views:	142	
Model:	144	
Conclusion	148	
References		

Appendix 1: SBAT Rating



List of Figures

- Fig. 1: Average Annual Temperature
- Fig. 2: Annual Rainfall
- Fig. 3: Climatic Zone
- Fig. 4: Altitude
- Fig. 5: Maputo: average temperature by month (author: BBC Weather)
- Fig. 6: Maputo: Relative Humidity by month (author: BBC Weather)
- Fig. 7: Maputo: Relative Humidity by month (author: BBC Weather)
- Fig. 8: Average Years In Business in the Baixa.
- Fig. 10: UV light reduction through polycarbonate sheeting (Manufacturer)
- Fig. 9: Graph showing the number of full hours of full sun per day in Maputo (author, BBC Weather)
- Fig. 12: Air-flow rates for ablution stacks (author)
- Fig. 11: SBAT Report Graph (author)
- Fig. 13: Graph showing the average monthly rainfall for Maputo (author, BBC Weather)
- Fig. 14: Graph showing the average monthly water storage vs harvesting levels (author, BBC Weather)

List of Tables

- Table 1: Materials Locally unique to Maputo / Mozambique
- Table 2: Sea Level Rise Scenarios (Republic of Mozambique National Institute for Disaster Management (INGC), 2009)
- Table 3: Sanitary Fixtures Required
- Table 4: Level Character
- Table 5: Structural Considerations



List of Illustrations

Droamhla

Illus. 1: Mobile vendors selling Cashew nuts (J Casso	n)
---	---	---

1 Teamble	
Glossary and Terms	20

Illus. 2: Woman selling Bananas (Michael Tallman Photography)

Chapter 1: Orientation & General Background

- Illus. 3: Mozambique locality (author)
- Illus. 4: Maputo Baixa locality (author)
- Illus. 5: Communist era (1970-1990) graphic, painted on a wall near the station. Photo taken 2011 (author)

Chapter 2: Theoretical Background 11

- Illus. 6: The German Pavillion, Barcelona, 1929
- Illus. 7: Furniture designed for the German Pavillion by
 Mies van der Rohe
- Illus. 8: The Maputo Baixa in focus aerial view (C Deacon)

Chapter 3: Regional Urban Character 17

Illus. 9: Statutory Declared Heritage Buildings & Precinct

Illus. 10:	Building by Pancho Guedes, opposite tr
	station (author)

- Illus. 11: Church building by Craveiro Lopes (author)
- Illus. 12: Baixa Functions Map
- Illus. 13: Contextual Character
- Illus. 14: Street Scale (top author, bottom J Casson)
- Illus. 15: Maputo Baixa Panorama (author from images C Deacon)
- Illus. 16: Contextual Materiality
- Illus. 18: Transport triangles, creating pedestrian movement past the market (author)
- Illus. 17: The Patina of time (C Deacon, author, C Deacon)
- Illus. 19: Stripped Lead-wood poles (author)
- Illus. 20: Mozambican clay bricks (author), Stripped poles and reeds (author)
- Illus. 21: Mopane poles (author), Eucalyptus timber (author), Reeds (author)
- Illus. 22: Baixa Flooding Ave 25 Setembro looking west
- Illus. 23: Baixa Flooding cnr. Ave 25 Setembro & Karl Marx
- Illus. 24: Baixa Flooding cnr. Ave 25 Setembro & Karl Marx
- Illus. 25: Baixa Flooding Municipal Market
- Illus. 27: Baixa Flooding: Various methods currently used by occupants to deal with flooding (author)
- Illus. 26: Baixa Flooding Map
- Illus. 28: Contextual Character
- Illus. 29: Baixa Commerce Map

- Illus. 30: Ruins & temporary infrastructure (parking & shaded parking etc)
- Illus. 31: Extended Market boundary & Core Building site (author)
- Illus. 32: Ground Medicinal Plants for sale, Muthi

 Market, Warwick Junction, Durban (author)

Chapter 4: Precedents & Case Studies

39

- Illus. 34: Photo: Lusaka City Market (Gantner, 2009: 3)
- Illus. 33: Lusaka City Market layout, red indicates the transport hub (Gantner, 2009: 3)
- Illus. 35: Makola Market Accra Ghana: Transport Hub (Gantner, 2009: 11)
- Illus. 36: Transport nodes around Kariakoo Market Dar es Salaam (Gantner, 2009: 9)
- Illus. 37: Makoko Land Reclaimation
- Illus. 38: Warwick Junction Mielies cooking over fire (Dobson & Skinner, 2009: 76)
- Illus. 39: Warwick Junction Markets Layout (Dobson & Skinner, 2009: 6)
- Illus. 41: Numbering of Market Stalls. From left to right: Warwick Junction (Dobson & Skinner, 2009: 82), Stone Town Zanzibar (K Bakker), Bamako Mali (K Bakker), Timbouctou Mali (K Bakker), Temporary market Maputo Central Market (author)
- Illus. 40: Warwick Junction Transport Triangle
- Illus. 42: Marked street stalls Warwick Ave. Warwick Junction (author)

- Illus. 43: Warwick Junction Brook Street Market.

 Badsha Peer Festival (Dobson & Skinner,
 2009)
- Illus. 44: Warwick Junction Brook Street Market.

 Normal operation (Dobson & Skinner, 2009)
- Illus. 45: Warwick Junction Bovine Head Market Original Design Sketch (Dobson & Skinner,
 2009: 14)
- Illus. 46: Warwick Junction Bovine Head Market Sketch of Existing (author)
- Illus. 47: Warwick Junction Municipal street cleaning (Dobson & Skinner, 2009: 114)
- Illus. 48: Warwick Junction Muthi Market, furniture variations (author)
- Illus. 49: Some stalls survive by 'intercepting customers who are drawn to stalls behind them (Dewar & Watson, 1990: 42)
- Illus. 50: Dead spots caused by end walls (Dewar & Watson, 1990: 49)
- Illus. 51: Ineffective customer penetration, due to stall run being too long, ie. +35m (Dewar & Watson, 1990: 50)
- Illus. 52: A circulation space that is too wide (+6m)
 causes customers to favour one side (Dewar
 & Watson, 1990: 51)
- Illus. 55: Ineffective customer to stall exposure because of stall run layout (Dewar & Watson, 1990: 45)
- Illus. 54: More appropriate stall-run dimensions (Dewar & Watson, 1990: 50)

- Illus. 56: Ineffective customer to stall exposure because of stall run layout (Dewar & Watson, 1990: 45)
- Illus. 53: Loose stalls in circulation spaces wider than
 4m promotes cross movement (Dewar &
 Watson, 1990: 53)
- Illus. 57: Entrance position & grain of stall-runs working with customer flow (Dewar & Watson, 1990: 45)
- Illus. 58: South facing windows, Baixa, Maputo (C Deacon)
- Illus. 59: Baixa Location

Chapter 5: Framework

- Illus. 60: Location of the Maputo Central Market
- Illus. 61: 1954 Urban Framework for Maputo
- Illus. 62: 1969 Urban Framework for Maputo
- Illus. 63: 2008 Urban Framework for Maputo
- Illus. 64: Map showing transport networks around the Maputo Bay (Baixa Framework Group)
- Illus. 65: Map showing transport networks in the

 Centre of Maputo City (Baixa Framework

 Group)
- Illus. 66: Map showing transport & Pedestrian movement (Baixa Framework Group)
- Illus. 67: Map showing vegetated areas in Maputo (Baixa Framework Group)
- Illus. 68: Map showing open spaces and vacant
 Buildings (Baixa Framework Group)
- Illus. 69: Map showing transport nodes. (Baixa Framework Group)

- Illus. 70: Map showing links and street hierarchy. (Baixa Framework Group)
- Illus. 71: Formal street stalls, Ave. Guerra Popular (J Casson)
- Illus. 72: Vehicles in competition with vendors (J Casson)
- Illus. 73: Vehicular congestion Ave Zedequias Manganhela (J Casson)
- Illus. 74: Market transaction, Market Square, Maputo
 Central Market (J Casson)

Chapter 6: Specific Site

55

Illus. 75: Expanded Market boundary & Core Market Site (author)

71

- Illus. 76: Existing hierarchy of space around the existing market (author)
- Illus. 78: Location of BIM Building (authour)
- Illus. 77: Millenium BIM Building, from Ave Karl Marx (author)
- Illus. 79: Ave Filipe Samuel Magaia street edge collage (author)
- Illus. 80: Ave Zedequias Manganhela shadeing (E Willeumier)
- Illus. 81: Rua do Mesquita Mosque, Maputo (author)
- Illus. 82: Location of Rua do Mesquita Mosque (authour)
- Illus. 83: Market Hall collage, Maputo Central Market (author)
- Illus. 84: Historic photo, Maputo Central Market
- Illus. 86: Historic photo, Ave 25 de Setembro street facade, Maputo Central Market



Illus. 157: Section E-E

Illus. 158: View from cnr. Zedequias Manganhela &

Samuel Filipe Magaia

Illus. 87: Market stalls in the Market Square behind	Chapter 7: Proposed Intervention 89	Illus. 127: Market Production - Dressmaker sewing	Illus. 139: Mopane Poles, informal market, Ximelene,	Illus. 161: Ave Samuel Filipe Magaia view	
the historic Maputo Central Market Building	Illus. 106: Parti diagram	a pinafore, Warwick Junction. (Dobson &	Maputo (author)	Illus. 159: Heritage view of Existing Market building	
(author)	Illus. 108: Location of Chappa Mini-bus Rank (author)	Skinner, 2009)		facade	
Illus. 85: Ave 25 de Setembro Street facade, Maputo	Illus. 107: Consolidation of surrounding transport	Illus. 129: Some of the vegitable that could be grown	Chapter 8: Design Sketches &	Illus. 160: Ave 25 Setembro view	
Central Market, Maputo	(author)	on the production level	Conclusion 125	Illus. 162: Rua do Mesquita, Showing the maintenance	
Illus. 88: Flooding, Ave 25 de Setembro, in front of	Illus. 109: Existing (author)	Illus. 128: General Hydroponics - DutchPot/EuroGrower	Illus. 140: Street / Ground Floor enclosure plan	of the the visual link to the Mosque	
Maputo Central Market	Illus. 110: Expanded Market Framework (author)	Hydroponics system	(author)	Illus. 163: View of the proposed Market Square	
Illus. 89: Existing historic Market Building, Maputo	Illus. 111: Core Market Building (author)	Illus. 130: 'MODEK Opal 50' polycarbonate sheeting	Illus. 141: Street Level/Ground floor plan (author)	Illus. 164: Model: Ave Zedequas Manganhela view	
Illus. 90: Fish Vendor, Maputo Central Market (J	Illus. 112: Complete (author)	(Manufacturer)	Illus. 142: Upper Level enclosure plan (author)	Illus. 166: Model: View of food court entry (east)	
Casson)	Illus. 113: Expanded Market Framework Buildings	Illus. 131: Balustrade sketch detail (author)	Illus. 143: Production Level enclosure plan (author)	Illus. 165: Model: View from North	
Illus. 91: Box & Rope Market Cnr. Aves. 25 de Setembro	(author)	Illus. 132: The Makoko Informal Settlement, Lagos,	Illus. 144: Polycarbonate sheeting to be in SAFLOK700	Illus. 167: Model: View of cnr. Ave Samuel Filipe	
& Filipe Samuel Magaia (author)	Illus. 114: Core Market Buildings (author)	Nigeria. The precident for 'self-cleaning'	profile, fixed with Stainless steel clips	Magaia & Ave 25 de Setembro	
Illus. 92: Shoe sales (author)	Illus. 116: Consolidation of the Street Markets (author)	waste removal	(Manufacturer)	Illus. 169: Model: View from North East	
Illus. 93: Curio vending at market entrance (J Casson)	Illus. 115: Location of BIM Building & Ave Zedequias	Illus. 133: Nakivubo Park Yard Market smoulders,	Illus. 145: Upper Level plan (author)	Illus. 168: Model: Market Square & solar panels on	
Illus. 97: Mobile vendor - Maputo (J Casson)	Manganhela(author)	Kampala, Uganda, 2009. Fire trucks where	Illus. 146: Roof Plan (author)	ablution roof	
Illus. 95: Level 4 vendors - Maputo (author)	Illus. 117: Location of Rua do Mesquita & Historic	unable to get into the market, which was a	Illus. 147: Roof plan (author)	Illus. 171: Model: View from South East	
Illus. 98: Level 5 vendor - Durban (author)	market open space (author)	continuous mass of timber framed stalls (M	Illus. 148: Street Level/Ground floor fire strategy plan	Illus. 170: Model: View from South	
Illus. 94: Level 2 vendors - Maputo (J Casson)	Illus. 118: Extension of the market square along its	Mbabazi / Musinguzi, 2011)	showing fire escapes and 45 meter radii	Illus. 172: Signage painted onto a wall, Maputo Baixa (J	
Illus. 96: Level 3 vendors - Durban (author)	East-West Axes (author)	Illus. 134: Fire Damage, historic market building, Baixa	around them	Casson)	
Illus. 99: Level 6 vendor - Durban (M Teesen)	Illus. 120: Heritage lighting strategy precedent. Pedro	(author, photo June 2011)	Illus. 149: Upper Level fire strategy plan showing fire		
Illus. 100: Shading in the existing market square (J	Paulo de Melo Saraiva (1930), Adaptive	Illus. 136: Calçada Portuguesa crushed-stone paving	escapes and 45 meter radii around them	References 151	
Casson)	re-use of a public market, São Paulo, Brazil	common in Maputo. The particular example	Illus. 150: Production fire strategy plan showing fire		
Illus. 101: Vendors in shaded arcade (J Casson)	(Arcoweb)	is notable for the use of multiple coloured	escapes and 45 meter radii around them	Appendix 1: SBAT Rating 157	
Illus. 103: Lettuce delivery (J Casson)	Illus. 119: Location of goods delivery area (author)	stone. (author)	Illus. 151: Detailed Section		
Illus. 102: Maputo - Tshova Push-Cart (J Casson)	Illus. 121: Location of the Ave Zedequias Manganhela	Illus. 135: Goods defining space, Alcohol Market -	Illus. 152: North East Elevation		
Illus. 104: Market Push-Carts & Barrows. Left to	ramps (author)	Maputo (J Casson)	Illus. 153: South West Elevation		
Right: Kampala (K Bakker), Lamu (K Bakker),	Illus. 122: Sketch of a shading currently used (author)	Illus. 137: Trafficable waterproofed floor, sketch detail	Illus. 154: South East Elevation		
Bamako - Mali (K Bakker), Stone Town -	Illus. 123: A variation of the modular market stall	(author)	Illus. 155: Section B-B		
Zanzibar (K Bakker), Stone Town - Zanzibar (K	(author)	Illus. 138: Tiling in 'Prédio Emose', Baixa. Remeniscant	Illus. 156: Section C-C		

of Calçada Portuguesa crushed stone paving

common in Maputo (author)

Bakker), Xindao (K Bakker)

Illus. 105: Shoe vendor outside the Maputo Central

Market. Note car on pavement (author)

Illus. 124: The formation of the market stall (author)

Illus. 126: Modular stall panels for adaptation (author)

Illus. 125: Customization of market stall (author)



Preamble

Oxford professor Nabeel Hamdi in the book Small Change: About the Art of Practice and the Limits of Planning in Cities states that "Not knowing can be an advantage. [Since] It leaves space to think creatively in search of alternatives", he presses designers to challenge popularly held consensus (2004: 131 & 137). In this case, perceptions, assumptions, and consensus regarding both the tangible and intangible context of Mozambique had to be abandoned and the given context evaluated from a neutral point of view.

The following dissertation deals with an approach to architecture in this developing 'third-world' country, in an area with strong environmental and historical influences.



Glossary and Terms

- Avenida Portuguese: (n.) Avenue, used throughout the document with the Portuguese street names.
- Baixa A word used to refer to the downtown CBD of Maputo, literally descriptive of the flat low-lying area near the historic port reclaimed in the late 1800s and early 1900s. Inclusive of much of the oldest most historically significant built fabric of Maputo.
 - North Baixa The Baixa area North of Avenida 25 de Setembro
 - South Baixa The Baixa area South of Avenida 25 de Setembro
 - New Baixa The Baixa area East of Avenida Samora Machel, generally inclusive of larger newer built fabric on reclaimed land.
 - Old Baixa The Baixa area West of Avenida Samora Machel, generally inclusive of the oldest historic fabric and the initial trading island from which the city of Maputo sprang.
- Calçada Portuguesa Portuguese: cobbling using small angular stones no bigger than a fist.

 Particular to Portuguese tradition, used extensively in Maputo, often i patterns of contrasting stone colours.
- Chappa A mini-bus taxi. These operate along informal routes, stopping where needed to pick-up or drop-off passengers, who pay cash. In Mozambique these are notoriously overloaded, and are major part of the public transport system, being used by a large portion of the population.
- Fortaleza Nossa Senhora Da Conceição The name of the Portuguese Fortaleza or Fort in the Maputo Baixa. Reconstructed in the 1960s.

- *Praça* Portuguese: (n.) a park, plaza, or public square. Used throughout the document with the Portuguese names.
- *Rua* Portuguese: (n.) Road, used throughout the document with the Portuguese street names.
- Run / vending run An unbroken usually linear arangment of vending areas. Usually parallel to pedestrian movement.
- Trinta-três-andares Portuguese: (n.) Thirty-three-storeys, the nick-name given to the 33 storey landmark 'M-Cell building', tallest in Maputo and in Mozambique
- *Tshova* Two wheeled push-cart pushed by a single mobile vendor or *Tshovadore*. *Tshovas* can also be hired to make deliveries and sometimes operate as mobile vendors.
- Tuk-tuk Term used throughout the document to refer to small three wheeled motorcycle with a wind-screen and canvas hood to protect the driver and one to three passengers seated on the rear bench seat. Known in Mozambique as Tchopelas. Generally used for short-distance transport.