



THE REVITALIZATION OF THE HISTORIC WATERFRONT OF OLD CAIRO

By

Eng / Asmaa Kamal Mohamed AbdEl-Fattah Kamaly

A Thesis Submitted to the
Faculty of Engineering at Cairo University and Brandenburg Technology
University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
In

Urban Design: Revitalization of Historic City Districts

BRANDENBURG TECHNOLOGY UNIVERSITY - COTTBUS, GERMANY FACULTY OF ENGINEERING, CAIRO UNIVERSITY - GIZA, EGYPT

THE REVITALIZATION OF THE HISTORIC WATERFRONT OF OLD CAIRO

By
Eng / Asmaa Kamal Mohamed Abd El-Fattah Kamaly

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE

In

Urban Design: Revitalization of Historic City Districts

Under the Supervision of

Prof. Dr. Nabil ElHady

Prof. Dr. Heinz Nagler

Professor of Architecture Faculty of Engineering, Cairo University Professor Faculty of Engineering, Brandenburg University of Technology

BRANDENBURG TECHNOLOGY UNIVERSITY - COTTBUS, GERMANY FACULTY OF ENGINEERING, CAIRO UNIVERSITY - GIZA, EGYPT

THE REVITALIZATION OF THE HISTORIC WATERFRONT OF OLD CAIRO

By

Eng/ Asmaa Kamal Mohamed Abd El-Fattah Kamaly

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE

in

Urban Design: Revitalization of Historic City Districts

Approved by the Examining Committee

Prof. Dr. Nabil Mohamed El Hady Architecture professor- Faculty of Engineering, Cairo University

Prof. Dr. Heinz Nagler Architecture and urban planning professor- Brandenburg Technology University

Prof. Dr. HeshamAlyGabr, Internal Examiner Architecture professor- Faculty of Engineering, Cairo University

A.Prof. Dr. IbtissamFarid External Examiner Architecture professor- Faculty of Fine Arts, Alexandria University

BRANDENBURG TECHNOLOGY UNIVERSITY - COTTBUS, GERMANY FACULTY OF ENGINEERING, CAIRO UNIVERSITY - GIZA, EGYPT

Engineer's Name: Asmaa Kamal Mohamed Kamaly

Date of Birth: 02/09/1991. **Nationality:** Egyptian

E-mail: asmaak.kamaly@gmail.com

Phone: 01008307563

Address: Ramo buildings – October city

Registration Date: 1 /10/2014 **Awarding Date:** //2017

Degree: Master of Science

Department: Urban Design: Revitalization of Historic City Districts.

Supervisors: Prof. Nabil El Hady

Architecture professor- Faculty of Engineering, Cairo

University

Prof Heinz Nagler

Architecture and urban planning professor- Brandenburg

Technology University

Examiners: Prof. Dr. Hisham Sherif Gabr, Internal Examiner

Architecture professor- Faculty of Engineering, Cairo

University

A.Prof. IbtissamFarid (External examiner)

Architecture professor- Faculty of Fine Arts, Alexandria

University

Prof. Nabil El Hady

Architecture professor- Faculty of Engineering, Cairo

University

Prof Heinz Nagler

Architecture and urban planning professor- Brandenburg

Technology University

Title of Thesis:

THE REVITALIZATION OF THE HISTORIC WATERFRONT OF OLD CAIRO

Key Words:

Historic Waterfront; Revitalization Strategies; Old Cairo; Public Spaces; Urban Connectivity

Summary:

Most of the city's built environment has been configured in relation to the Nile. The River Nile is a salient geographical feature of North Africa. It is the only river which is able to carry part of the drainage of Equatorial Africa through the barren and rainless Sahara to the Mediterranean Sea. Subsequently, the urban composition has an impact on the socioeconomic and cultural urban aspects. Historically and economically the waterfronts are urban features that could connect efficiently with the rest of city. The research aspires to propose some strategies for urban design scale interventions that could enhance the accessibility and connectivity between Old Cairo and its surrounding.



Acknowledgments

I am extremely grateful for the support my family has given me during the whole program and before. There is no doubt that I appreciate all the times they stood by me. A lot of praises have to go to my mother who i personally consider one of the most confident and intelligent human beings I have ever encountered with.

In addition, academically, I would like to recognize the credits of all the team of professors and teaching stuff in the master program and in other precedent academic programs I received. I appreciate the interpretations of my thesis supervisors.

Dedication

This work is dedicated to the valuable marginalized ones who bring the best in others, to what it is thought of as good, evil or in-between.

Table of Content

Contents

ACKNOWLEDGMENTS	I
DEDICATION	II
TABLE OF CONTENT	III
LIST OF TABLES	VI
LIST OF FIGURES	VII
NOMENCLATURE	IX
ABSTRACT	X
CHAPTER ONE: OVERVIEW	1
1.1. Introduction	1
1.2 Brief Introduction to the urban location of the study A	
1.3 Problem definition	
1.4 AIM OF THE WORK	
1.5 Research Questions	
1.6 Research Objectives	
1.7 Methodology	
CHAPTER TWO: LITERATURE REVIEW	
2.1 HERITAGE LED REGENERATION APPROACH FOR DEVELOPMENT	13
2.2Former interventions and proposed recommendation	
2.2.1 Master plan of urban planning scale	
2.2.2 Urban design and architectural scale	
2.2 NATIONAL STRATEGIES AND POLICIES	18
2.3.1 Critiques of the national strategies	18
2.3.2 Conclusion of the critiques of the national policies/projects	20
2.4 Legislations for Old Cairo	21
2.4.1 Urban Tissue legislative standards	
2.4.2 Street network and road legislative standards	
2.4.3 Building Violations in Historic Cairo	
2.5 ENVIRONMENTAL RISKS FOR OLD CAIRO	
2.5.1 The green areas whether historical revival or being a risk	
2.5.2 Earthquake	
2.5.3 Hydrosphere risks	
2.5.4 Atmosphere	∠0

2.5.5 Sensual pollution	26
2.5.6 Construction and demolition environmental menace	26
CHAPTER THREE: THE HISTORICAL MORPHOLOGY OF OLD CAIRO	27
3.1THE HISTORICAL URBAN MORPHOLOGY OF OLD CAIRO	27
3.1.1 The initial settlement of Babylon	27
3.1.2 The Roman Trajan canal and the historical Babylon	28
3.1.3 The construction of the Babylon Fortress	
3.1.4The historical social-religious circumstances	
3.1.5 Coptic heritage during the Arab conquest	
3.1.6 The socio-urban evolution of the Copts inside Babylon fortress	
3.1.8 The urban expansion of Cairo	
3.1.9 Deterioration of Old Cairo	
3.2THE HISTORICAL MORPHOLOGY OF URBAN WATERFRONT	39
3.2.1The history of Nile Culture and urbanity	39
3.2.2 The urbanity of the Nile Waterfront of Cairo	40
CHAPTER FOUR: PUBLIC SPACES FRAMEWORK FOR URI	3AN
REVITALIZATION	44
4.1 Introduction on Public Spaces	44
4.2 THE CHARTER OF PUBLIC SPACE	44
4.3 CLASSIFICATION OF PUBLIC SPACES	45
4.4THE INTERPRETATION OF THE URBAN WATERFRONT TERM	47
4.5CHARACTERISTICS OF WATERFRONT	47
4.5Sustainability of the waterfronts	48
4.6 THE CONNECTION BETWEEN STREET NETWORK AND PUBLIC SPACES.	50
4.7 Traffic interventions and urban reform	51
CHAPTER FIVE: REVITALIZATION OF WATERFRONT	53
5.1 CLASSIFICATION CRITERIA OF WATERFRONTS DEVELOPMENT	53
5.1.1 Integrated sectors for waterfront development	53
5.1.2 Land uses development	53
5.2 The role of urban design for waterfront revitalization	55
5.3 Public Private Partnerships	56
5.5.1 The origin of PPP	56
5.5.2 THE PROCESS OF PPP	
5.5.3 Public Partner Responsibilities	
5.5.4 Risks and rewards	58
CHAPTER SIX: CASES STUDIES FOR COMPARABLE WATERFRO	
REVITALIZATION	60

6.1 WICKER RIVERSIDE ACTION PLAN- SHEFFIELD UK	60
6.1.1 Land uses	61
6.1.2 The access and movement	62
6.1.3 Public Realm	63
6.2 Waterfront revitalization in developing countrie	S STUDY
CASE OF ZANZIBAR	64
6.3EGYPTIAN CASE OF PPP	65
6.3.1 Megawra organization	65
CHAPTER SEVEN: URBAN ANALYSIS OF OLD CAIRO STUDY ARE	EA67
7.1 THE HISTORIC WATERFRONT DEVELOPMENT	68
7.1.1 The recognized Historic waterfront of Historic Cairo	
7.1.2 The historical morphology of the waterfront	
7.1.3 The historic waterfront throughout the history in the study area	70
7.1.4 The morphology of the waterfront within UNESCO world heritage	
	71
7.2 STREET AND ROAD NETWORK ANALYSIS	72
7.2.1 Nile an the urban mass	72
7.2.2 The major road network on the city level	73
7.2.3 The urban relation between Old Cairo and Roda Island	74
7.2.4The Administrative division of Old Cairo	75
7.2.5 The accessibility study	76
7.2.6 The street patterns of Old Cairo	78
7.2.7 The dead ends roads study	79
7.2.8The traffic study	80
7.2.9The connection of bridges	81
7.2.10 The public spaces network	82
7.3 URBAN FABRIC STUDIES	84
7.3.1 The key features of the urban structure of Old Cairo	84
7.3.2 The historical morphology of the urban fabric	85
7.3.3 The urban structure study	86
7.3.3.3 the conclusion relation of the urban situation in the study area	89
7.3.4The Function study for the area	91
7.3.5The predictable partnership organizations for development	92
7.3.6 SWOT analysis study	
7.3.7Urban Guidelines for the proposal	94
CHAPTER EIGHT: CONCLUSION AND RECOMMENDATION	95
8.1 THE MASTER PLAN OF THE PROPOSAL	95
8.2 CONNECTED PATHS FOR REVITALIZATION	99
8.3 CONCLUSION	
REFERENCES	100

List of Tables	
Table 4.3: shows criteria of sustainable waterfront city in Abu Dhabi	49
Table 5.1.2: shows the degree of integration with water and its land uses	53
Table 5.5.4: shows the risks and rewards of the PPP	59

AFFIDAVIT.......113

Listof Figures

Fig 2.1: map of the Old Cairo (Masr El Qadima district)in Cairo	
Fig 3.1: The buffer zone and world heritage property proposed by UNESCO in URH	IC
project.	
Fig 3.1: sketch map shows the historical location of fortress of Babylon on the Nile	6
Fig 3.1: sketch map of the study area and historical landmarks	8
Fig 1.5 articulates the main research questions	9
Fig 1.6 articulates the thesis objectives	10
Fig 1.7 demonstrates the thesis general methodology	11
Fig 1.7 demonstrates the detailed thesis methodology	
Fig 2.1: represents the free space on the river banks of old Cairo and Roda Island	
Fig 2.2.1 Master plan of green corridors in Greater Cairo by prof. Barada	
Fig 2.2.2: represents the old Cairo development project map implemented by archite	ct
Mona Zakaria	17
Fig 2.3.1: represents the historical places at Cairo's core according to the 2050	
Egyptian government National Strategy	
Fig 3.1.1: Drawing sketch represents the Babylon fortress	
Fig 3.1.2: represents the location of the Roman Trajan canal	
Fig 3.1.2: articulates the location of Trajan canal in respect to the Roman Empire that	
serve Upper Egypt and the Delta	
Fig 3.1.4.1: diagram represents the various sects in the history of Christianity	
Fig 3.1.5: plan shows the historic churches within the Babylon fortress	
Fig 3.1.6: drawing sketch represent the urban environment after Arab conquest	
Fig 3.1.7: Historic map OF Cairo1549 AD shows the urbanity of old Cairo	
Fig 3.1.8: sketch map show the various historic cores of Cairo throughout its history	
Fig 3.1.9: historic map 1826 of old Cairo and Roda Island	
Fig 3.2.2: historic map of Bulaq port from the time of the French expedition	41
Fig 3.2.2: historic pictures shows the built environment along the river banks of old	40
Cairo and Roda Island,	
Fig 5.5.3: diagram for the process of PPP	
Fig 6.1: map shows the location of wicker riverside area in Sheffield-UK	
Fig 6.1.1: The proposed land use plan of Wicker riverside	01
Fig 6.1.2: The guidelines map for the proposed urban design framework of Wicker	62
riverside	
Fig 6.1.3: The urban design proposal plan of Wicker riverside	
Fig 7.1.1: The URHC boundaries in the study area of Old Cairo	
Fig 7.1.2: map shows the Nile banks development	
Source: author based SAID, R., 1993, THE RIVER NILE Geology, Hydrology and	1. 70
Utilization, PERGAMON press.	70
Fig 7.1.4: map shows the development Eastern Nile bank in the study area within	/ 0
	71
URHC boundryFig 7.2.1: Google map showsthe connections between the urban mass of Cairo and	
Nile	
Fig 7.2.1: photograph shows the Manasterly pedestrian bridge	
Fig 7.2.2: Google map shows the major road arterials in the site	
·	

Fig 7.2.3: Google map shows the connection between Old Cairo and Roda Island by	
pedestrian bridges	.74
Fig 7.2.4: Map shows administrative division of Old Cairo	.75
Fig 7.2.5: Map articulates the accesabiltiy study of Old Cairo	.76
Fig 7.2.5 a photograph respresent the distinction between the buildings on the sides of	\mathbf{f}
metro line	.77
Fig 7.2.6: Map shows street patterns in the study area	.78
Fig 7.2.7: photograph shows one of the alley ways with dead ends	.79
Fig 7.2.7: Map shows the dead ends roads	.79
Fig 7.2.8: Map shows the traffic categories in the area	.80
Fig 7.2.9: Map shows the urban pedestrian bridges in the study area	.81
Fig 7.2.10: Map displays the public spaces network in the area	.82
Fig 7.2.10: shows the criteria of selecting urban public spaces in the area	.83
Fig 7.3.1: map shows the urban key features in the study area	.84
Fig 7.3.2: Map shows the historical morphology in Old Cairo	.85
Fig 7.3.3.1: map shows the building fields	.86
Fig 7.3.3.2: map shows the valuable buildings in the study area according to the	
UNESCO	.87
Fig 7.3.3.2 photograph depicts the architecture character of the valuable buildings	.88
Fig 7.3.3.2 photograph shows close shot for one of the valuable buildings in the area	.88
Fig 7.3.3.3: Map displays conclusion of the urban fabric analysis	.89
Fig 7.3.3.3: photos show the deterioration of the urban environment particularly	
surrounded by the metro line	
Fig 7.3.5: Map shows the urban fuctions of the study area	
Fig 7.3.6: Map displays the potential partnership organizations in the study area	
Fig 7.3.6: map shows the SWOT analysis of the study area	
Fig 9.3.7: map articulates the guidelines map for the area development	
Fig 8.1: Map displays the recommended proposal	
Fig 8.1 sketch map shows the possibilities of urban transportation connections	
Fig 8.1: The historic trail of the Nile taxi	
Fig 8.2 shows the revitalized proposal for historic square path	
Fig 8.2 section of historic square1	00
8 ·	100
Fig 8.2 section in the commercial path Fig 8.2 the commercial path1	01
Fig 8.2 the educational path1	
Fig 8.2 section educational path.	
Fig 8.2 proposed landscape area	
Fig 8.2 proposed waterfront landscape area	
Fig 8.2 section in the waterfront landscape area	
Fig 8.2 community development path between Nile taxi and Metro	
Fig 8.2 urban section from 9 to 4	
Fig 8.2 pedestrian areas between buildings	06

Nomenclature

URHC: Urban Rehabilitation of Historic Cairo

NOAH: National Organization for Urban Harmony

PPP: Public private partnership

Abstract

The Nile is acknowledged as influential environmental and economic feature that manage to impact the social and political urban environment. Thus, the Nile has molded enormously in the urban mass of Cairo and Egypt throughout its entire history. Historically, Babylon the oldest urban settlement is located on the Nile. The current location of the settlement is in the south of Cairo. Subsequently, there was a sequence of urban centers for numerous eras established nearby the Babylon. Therefore, the URHC project affiliated to UNESCO proposed boundaries for world heritage property and buffer zone to preserve its urban and architectural value. The waterfront of Old Cairo is considered the only historic waterfront that is registered as world heritage property based on the UNESCO principles.

Nevertheless, although the area has a prominent historical value, there is an urban deterioration that is associated by low standards of living and quality of life. The deteriorated current situation has a direct relation to the urban growth of Cairo that was primarily towards the north. The urban expansion concentrated on constructing new settlements while, downgrading the old settlements. Furthermore, there was the gradual natural transformation of the eastern Nile bank border of old Cairo that led to unplanned urban crawls without any management.

The National polices have incorporated Old Cairo for the future 2050 development of Cairo. The development vision of the area contradicts with the sensitive environmental conditions and social justice that created a conflict between authorities and experts in various fields.

The development of the historic area begins with the strategic broad approach of heritage led development. From observation of the urban fabric and site location, there are more detailed urban development approaches of public spaces and accessibility. Waterfronts are vitals features in the surrounding urban grid. The revitalization design has the potential to impact on other levels of intervention.

The preservation of the past heritage begins by shedding light on the needs of the present for the future. The proposal of the revitalization of the waterfront of Old Cairo aspires to design more vibrant and innovative spacesfor the needs of people in the present. The proposal aims to capitalize on the potential urban assets in the light of legislations of the historical area. Correspondingly, it focuses on fostering the vibrant connection between the area and its surrounding urban environment.

The urban possibilities for revitalization of the study area rely on two main strategies. The first is to have an adaptive reuse and urban activities that are coherent with the urban historic and cultural context. The second is to have an overview master plan for the urban connectivity in the area that connects between more than one modes of transportation to make the area more accessible. In addition, the revitalization scheme should take into consideration the maintenance and urban management using some methods like Public Private Partnership to ensure sustainability of the design.

Chapter one: overview

1.1. Introduction

The River Nile was one of the first cognitive maps that interpreted the interaction between ecology and urbanity by molding it into concepts andimages. It was one of the earliest cradles in which humans copedwith nature, a space in which experiences were organized and translated into ideas, practices, beliefs, and orientations. The Nile, asboth the site of early beginnings as well as the space of mysterious diversity, has captured the human imagination since the earliest civilizations have resided along its banks [1].

According to Herodotus, the Nile brought floods, which spoiled crops throughout and caused droughts; the latter were the source of long famines. The Nile also, however, sustained the prosperity of Egypt[2]. Most of the city's built environment has been configured in relation to the Nile. The River Nile is a salient geographical feature of North Africa. It is the only river which is able to carry part of the drainage of Equatorial Africa through the barren and rainless Sahara to the Mediterranean Sea [3]. Subsequently, the urban composition has an impact on the socioeconomic and cultural urban aspects. The city of Cairo has been more than twenty-five centuries in the making. It took the efforts of many unlikely characters over time to turn a small residential cluster on the west bank of the Nile into the mammoth metropolis we know today [2].

Old Cairo neighborhood encompasses Babylon fortress the initial historical urban settlement of Cairo. Afterwards, the development of the modern Cairo emerged the historical nodes of Old Cairo, Fatimid Cairo and Khedive Cairo. The constant shifting of the Nile also determined the locations of the many different settlements that constituted Cairo throughout its history [2]. Thus, the Nile was one of the factors in selecting the Babylon geographical setting. According to the UNESCO report, the historical waterfront of old Cairo encompasses the river banks of Rhoda Island. The connection between the river banks of Rhoda Island and Old Cairo has been involved from the establishment of Babylon. Moreover, the Rhoda Island has one of the historic Nilometers which were placed in various places to measure the Nile levels.

Old Cairo has valuable architectural monuments from various religions and historical phases based on the UNESCO assessment. In Egypt, there is a high difficulty to mobilize from place to another. Moreover, like most of other urban areas, there is a struggle to access the historical and cultural sites. Historical sites have even a great priority to strengthen and create more accessible pathway in order to increase its urban value and exposure.

Therefore based on urban observation of the urban pattern in the area, Old Cairo has a monotonous character waterfront. Even though, it has substantial economic and urban values. There is a deficiency in the urban design of the area and the networks between its