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Ordering the Land:
Urban Metaphors for a Park in Cairo

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Abstract

This study proposes a method for the design of a contemporary urban park on the eastern edge of the Old City in Cairo.

Precedents in park design are briefly explored with a focus on the relation of the park to the city. The urban fabric of the Old City is analyzed in detail to extract metaphors, models and principles that can serve to devise an ordering framework for the park. The design as it emerges is informed by two themes - the site as an urban quarter of the city and the park as palimpsest.

The intention is to create a framework that will place the site securely in relation to its geographical locale and to its historic context.

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Acknowledgments

Contents

Foreword

An abiding interest in the Old City of Cairo and the Mamluk period led me to investigate the disposition of Mamluk monuments on the main thoroughfare of the city in the summer of 1993. Subsequently, I worked as a research associate with Prof. William Porter on the 'Cairo Park Project'. This project initiated under the auspices of the Aga Khan Program at MIT and Harvard University in Fall 1993 is interested in evolving a formal vocabulary for the Al Azhar Park in Cairo. The interaction I have had with the project team has been a fertile source of ideas for this thesis. Base information on both Old Cairo and the Al Azhar Park site has been compiled while working on the project.

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Chapter 1

Introduction

1.1 Objective

The primary objective of this study is to devise an ordering framework for the Al Azhar Park site in Cairo. To achieve this I propose to analyze the historic context of the site. The intention is to neither mimic nor nostalgically recreate its places and events but to search for principles, models, and metaphors that may enrich and inform the park design.

1.2 Park Design - a historic perspective

A park in common parlance connotes a spacious area with scenic 'natural' character often coupled with historical, archaeological, and ecological values, and providing opportunity for appropriate types of recreation. Typically, it is *distinct* from the city in which it exists.

Historically, parks and garden systems have been symbolic representations of the cosmos, and of man's place within it. The ancient Egyptians cultivated inward looking gardens celebrating water and life and, usually focused on a pool or shrine (fig. 1.1). The gardens were surrounded by a mud brick wall and associated with a temple, a funerary complex or palace.[1] The Romans created gardens which were ordered, introspective and symbolically Rome-centered. The ancient Chinese saw parks and gardens as a natural expression of mankind's complete communion with nature. For the Renaissance gardens were a celebration of man's dominance over nature and his

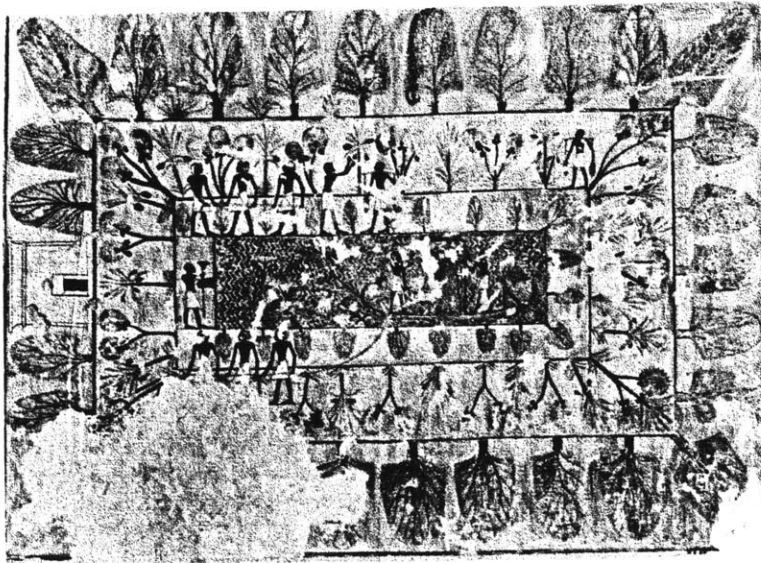**Fig. 1.1** Pool in garden with statue of deceased towed in boat. Tempura copy of wall painting from tomb of Rekhmira, Thebes.

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[1]Wilkinson, "Gardens in ancient Egypt: their locations and symbolism", p 199.

central importance to it, and for 18th century England, parks were a welcome return to the wilderness of 'Eden'.[2]

Islam saw the art of gardening as an endeavor to interpret eternal paradise into splendid earthly garden systems, a foretaste of the ideal paradise (fig. 1.2). As a consequence gardens in Persia, Moorish Spain and the Indian sub-continent were developed as 'retreats' from the rigors of the climate and the city.

The 19th century witnessed many efforts to define and reconcile the position of the park vis-a-vis the city. The rapid expansion of cities, and the distressing character of urban fringe settlements began to stimulate new thinking as some of these problems became apparent in the industrial centers of Victorian England.[3] Ebenezer Howard advocated the 'garden city', Olmsted introduced park systems 'in which the city did not exist' and Haussmann can be credited with the introduction of the first real urban park system.[4]

Park Design- 20th century antecedents

The 20th century provides two families of antecedents for park building: the 'painterly and the 'programmatic'. Works of Gabriel Guverkian (gardens derived from Cubist paintings) and Roberto Burle Marx (gardens in Brazil) exemplify the painterly (fig. 1.3). Projects

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[2]Farrely, "The Triumph of Jellicoe", p 53.
[3]DeChiara, "Urban Planning and Design Criteria", p 497.
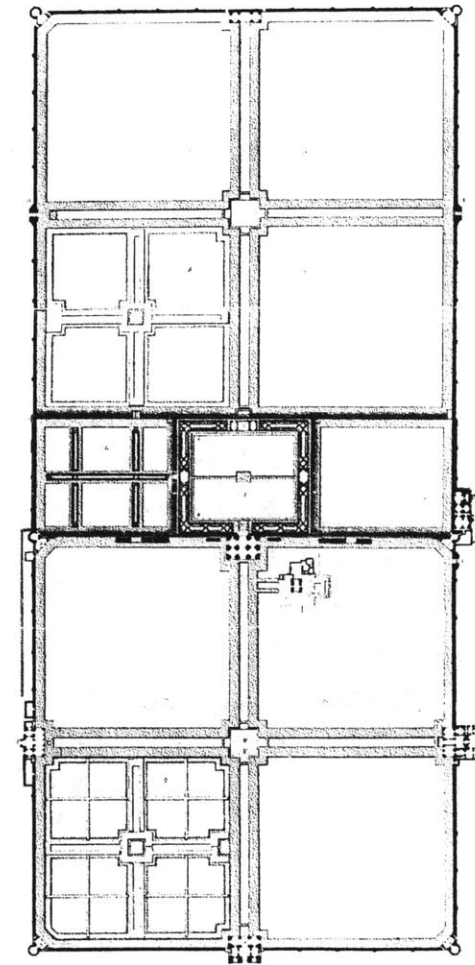[4]Tschumi, "An Urban Park for the 21st Century", p.27

Fig. 1.2 Shalimar gardens, India.
Mughal gardens are symbolically expansive yet spatially contained, geometricised landscapes of fountains, axial paths and exotic trees.
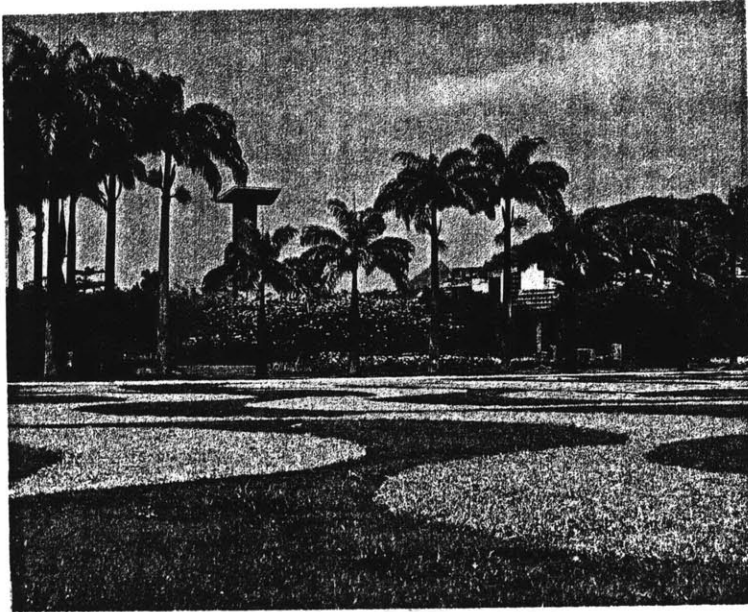
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Fig. 1.3 Flowing patterns in an immense rectangle illustrate Burle Marx's 'painterly' approach.

Fig. 1.4 La Villa Contemporaine (1922).

where there is a programmatic interaction of social, educational and technological systems as in Le Corbusier's 'La Villa Contemporaine' (the city as point blocks set on a vast pastoral swathe, fig. 1.4) constitute the latter antecedent.[5] Both approaches however continue to see the urban park as a refuge from the city or as a green lung to the countryside. The competition for the Parc de la Villette (1982), demonstrated a marked shift in this perception.

Parc de la Villette: An Urban Park for the 21st Century
Calling for ideas that would successfully devise the concept for a park in the 21st century, the organizers rejected the traditional Haussmannian park systems which were seen as deserted and disconnected from the new styles of urban life.[6] The park was to be conceived as a circle of dynamic activity without rejecting the charm and mystique of the natural.[7] The project brief included a comprehensive and detailed program which by itself was seen as a linking element between the park, the neighborhood and the metropolis.

Entries by Bernard Tschumi (currently under construction) and the OMA team headed by Rem Koolhaas were considered by the jury as

[5]Wall, "La Villette Competition: The Programme for a New Type of Urban Park", p 26.
[6]The competition for the Parc de la Villette in Paris, was sponsored jointly by the International Federation of Landscape Architects (IFLA) and the International Union of Architects (UIA).
[7]Wall, "La Villette Competition", p 36.

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best embodying the ideals expressed in the brief. Tschumi's entry (fig. 1.5) conceived the park as one of the largest 'building' ever constructed - "a discontinuous building but nevertheless a single structure overlapping in certain areas with the city and the suburbs."[8] In responding to "the power of urban reality" Tschumi postulated a formal system in which the programmatic requirements of the park were arrayed uniformly over the total site in a regular arrangement of points of intensity designated as 'follies'. The 'folly' grid was seen as corresponding to the columnar grid of a modern building, permitting a similar fluidity of pedestrian movement and multiplying the possibilities for programmatic choice. The new park is a result of the encounter of three autonomous systems - the system of objects (realized as a point grid of 'folly' structures), the system of movement (realized as 'lines' or paths) and the system of spaces (realized as 'surfaces').[9]

In contrast, the OMA team saw the design as the proposition of a 'method' that "combines architectural specificity with programmatic indeterminacy."[10] The park program was seen to be in a constant state of revision in the lifetime of the park and the design solution was therefore, a tactical proposal for the implantation of a wide range of activities in an efficient manner. The OMA solution is a decentralized,

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[8]Tschumi.
[9]Tschumi.
[10]OMA, "Parc de la Villette: A Proposition in Two Phases", p 32.
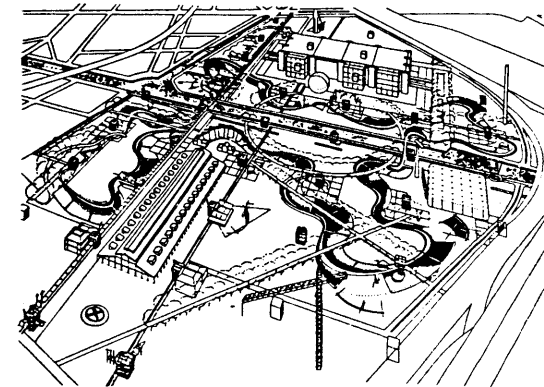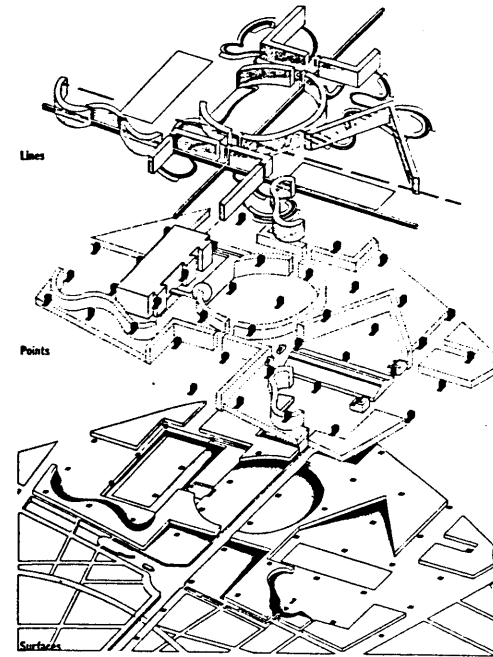
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Fig. 1.5 'Park as Building,' the Tschumi scheme for Parc de la Villette.
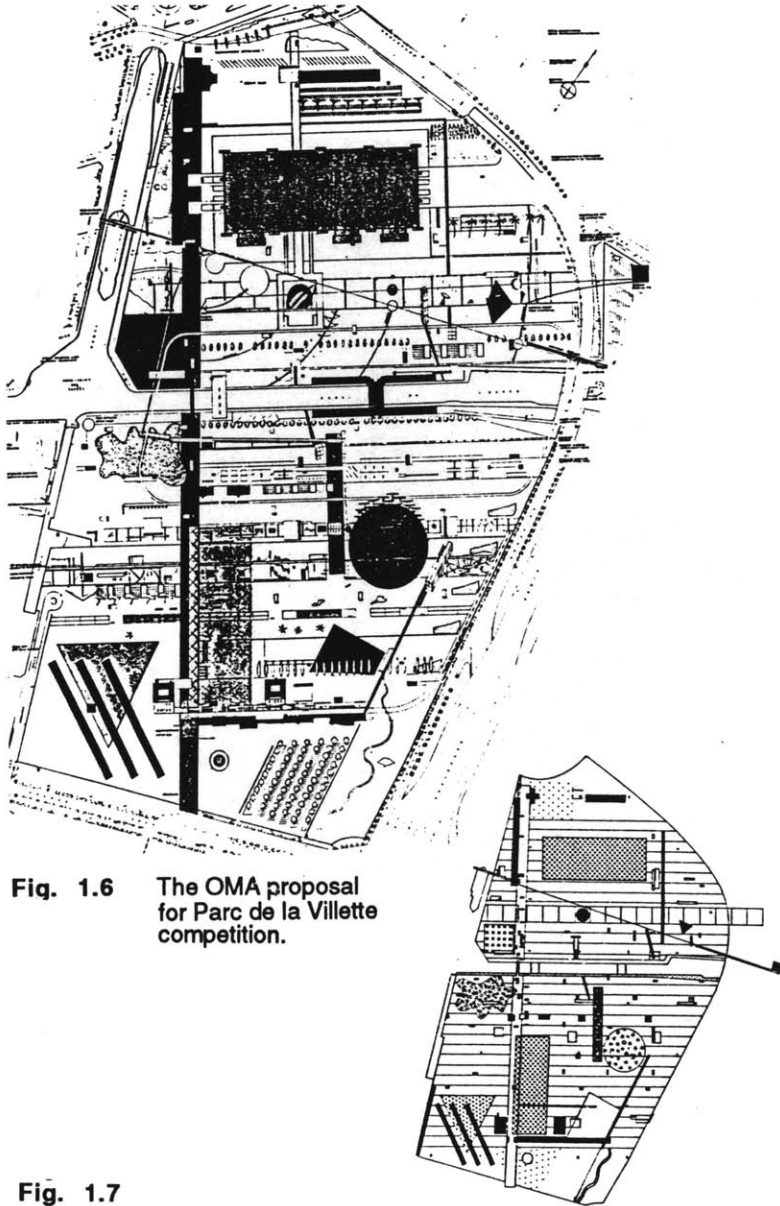
Fig. 1.6   The OMA proposal for Parc de la Villette competition.

Fig. 1.7

non-hierarchical plan wherein interest is generated by the interaction of different components placed adjacent to each other (fig. 1.6). This layering of the park is likened by the architects to the experience of a high rise building, where the superimposed floors are all capable of supporting different programmatic events.[11]

The la Villette competition called for the transformation of urban parks from a passive role to active generators of urban culture. In addition, it served to underscore a new perception of the city. One in which, *the park is no longer an isolated enclave, but in spatial continuity with the city* and as Betsy Cann puts it, "an arena for further expressing the ideological structures that underlie the city as a whole".[12]

1.3 The Al Azhar Park Project

Cairo, till the middle of the 19th century was a city characterized as much by its vast number of pools and gardens, as by the minarets and domes that dotted its skyline. Gerard de Nerval in his 'Voyage en Orient' makes reference to pools, canals, lush vegetation and shade in describing Cairo.[13] This account is supported by the illustration of the map of Cairo in the *'Description de l'Egypte'* (fig. 1.8) which shows a profusion of pools and gardens. However, the inauguration of the regulation and control works on the Nile, triggered a surge of

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[11]OMA.
[12]Cann, "The Park of La Villette: Urban Park as Building", p 56.
[13]Panerai, "Cairo: The Old Town", p 60.

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building activity in the city. Pressures of rapidly escalating population growth and modernization resulted in the filling in and building over of pools and gardens, and the establishment of private and semi-private enclaves on the banks of the Nile.

The adverse effects of this rapid expansion were most pronounced in the Old City - the historic and physical core of Cairo. In addition to encroachments on buildings and premises of historic and cultural significance and an overloaded infrastructure, Old Cairo lost ready access to open spaces providing active and passive recreational facilities. Parks and gardens introduced through different urban design schemes were either far removed, or, not conducive to providing large scale recreational facilities for the residents of the historic core.

To redress this imbalance and augment the open spaces and green areas in Cairo, the Aga Khan, on the occasion of the presentation ceremony of the 1989 Aga Khan Awards for Architecture made a commitment to the city of Cairo, to assist in developing a park. The site selected for this project is a large tract of land on the eastern edge of the Old City. Fortuitously, this tract has eluded the pressures of urban growth. The presence of the old city wall, and the spread of historic cemeteries around this site prevented its incorporation in the variety of urban development schemes that

Fig. 1.8 Cairo: Beginning of the 19th century.

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affected the area since the beginning of the 19th century.[14] The site is suitably positioned for the development of a park that serves the needs of its surrounding communities, as well as the city.[15]

1.4 Perception and Thesis

It is my belief that the park design should integrate the millennium old barren tract of land into the fabric of Cairo. The park should be neither a secluded oasis in the urbanscape of Cairo nor a theatrical landscaped setting, dramatically fossilized against the dense built form of its surroundings. Instead it should be an extension of the residential and commercial quarters of the city - in continuous flux and active interaction with its context.

The pattern of the historic dense residential districts adjoining the site holds principles and models that can be suitably adapted to park design. It is possible through a series of analyses of the historic fabric to cull appropriate urban metaphors that can serve as useful tools, for ordering an appropriate framework.

Fig. 1.9   The flood plains of the Nile: Cairo in the 1800s.

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[14]From the early decades of the 19th century, Cairo went through a period of rapid westernization and remodeling. The apogee of this exercise was reached under the rule of Khedive Ismail (1863 - 1879). For a detailed account refer Abu-Lughod, *Cairo 1001 Years of the City Victorious*, pp. 83 - 117.

[15]The commission for the Al Azhar Park has been awarded to Sasaaki Associates, a well known landscape design concern based in Watertown, Massachusetts. They are currently engaged in developing preliminary design and cost estimates for the Park.

The Tschumi and OMA schemes for the Parc de la Villette are two antecedents which I wish to use for the design proposal for the Al Azhar Park. The concept of the park in spatial continuum with the city and the perception of the park as a framework capable of absorbing an endless series of further meanings and extensions are fundamental ideas in this thesis. However, in proposing a design solution for the Al Azhar Park, I reject the notion of 'park as building' as postulated by Tschumi. Such an approach completely subordinates the landscape elements of the park to the architectural elements of the design by relegating nature to infill between the organizing built structures of the project. I also do not agree with an approach modeled on the park as a uniform, non-hierarchical spatial entity, as demonstrated by OMA. Hierarchies are inherent in districts and quarters of the Old City. As I see the park as an extension of its predominantly historic neighborhood, I intend to propose a framework which would permit the overlay of spaces with varying degrees of privacy. The park as a composite is not seen as a retreat from the city but provides spaces that can serve as retreats. It is for the formal design of these spaces that the various traditions of gardens, briefly discussed earlier, are possible precedents.

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Chapter 2

The Site

OLD CITY

AL AZHAR
UNIVERSITY

AQSUNQUR
MOSQUE

SALAH DIN WALL

DARASSAH HILLS

DARB AL AHMR
STREET

AL AZHAR STREET

BUS STOP

SALEH SALEM AVENUE

TO
HELIOPOLIS

METRO
TERMINAL

BAB AL WAZIR
CEMETRY

MAMLUKI / EASTERN
CEMETRY

SITE CONTEXT

0 20   100   200   300

TO
CITADEL

Fig. 2.1

OLD CITY

AL AZHAR
UNIVERSITY

AQSUNQUR
MOSQUE

SALAH DIN WALL

DARASSAH HILLS

DARB AL AHMR
STREET

AL AZHAR STREET

BUS STOP

SALEH SALEM AVENUE

TO
HELIOPOLIS

METRO
TERMINAL

BAB AL WAZIR
CEMETRY

MAMLUKI / EASTERN
CEMETRY

ACCESS

0 20   100   200   300

TO
CITADEL

Fig. 2.2

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Fig. 2.3   Cairo metropolitan limits, Old City and the Al Azhar Park Site.
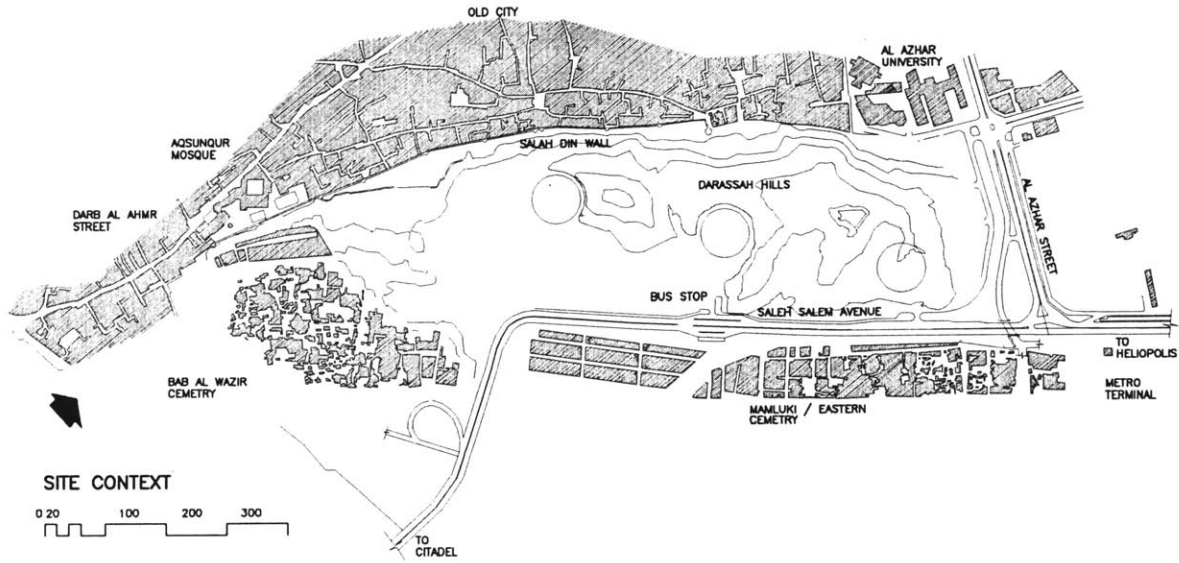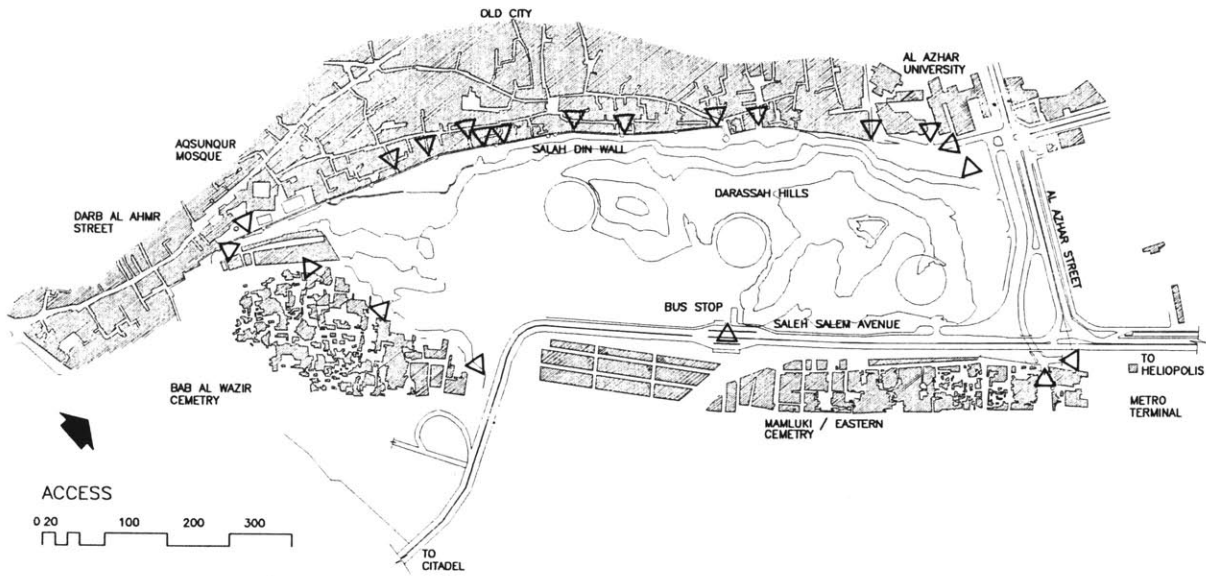
2.1 Location and Context[16]

The site allocated for the project is a tract of land measuring approximately 75 acres located on the eastern edge of the Old City in the heart of metropolitan Cairo (fig. 2.3). It is conveniently positioned to provide city wide cultural and recreational facilities as well as amenities for communities in the immediate vicinity. Proximity to the Citadel, Sultan Hassan, Al Azhar and Aqsunqur Mosques in addition to hundreds of significant monuments in the Old City makes the park setting an attractive proposition for tourists.

The site is bound by heavy traffic arteries on two of its sides- the Al-Azhar Street on the north and the Salem Salem Avenue on the East. The Saleh Salem Avenue alienates the site from the Eastern Mamluki Cemetery- home to a sizable portion of Cairo's poor. On the south is the Bab al Wazir Cemetery and the western edge of the site is defined by the remnants of the Salah Din or Old City Wall. A vertical drop of nearly 10m along the wall segregates the site from the Bab al Wazir, Nabaweya, Darb al Ahmr and Batineya quarters of the Old City (fig. 2.1).

2.2 Access

Saleh Salem Avenue and Al Azhar Street provide automobile and bus links with downtown and greater Cairo. The Heliopolis transit line,
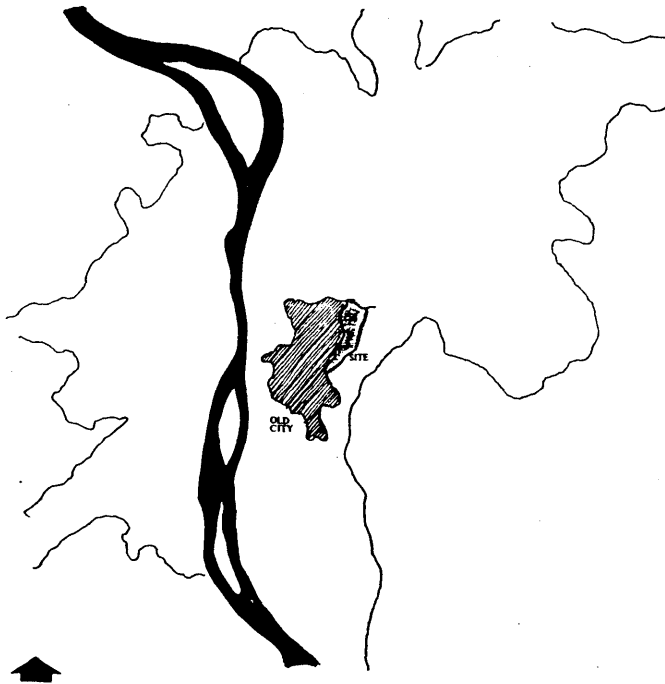
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[16]Information on the Al Azhar Park site has been taken from Halim, *Al Darrasah Park Project*, and the *Al Azhar Park Draft Report* prepared by Sasaaki Associates.
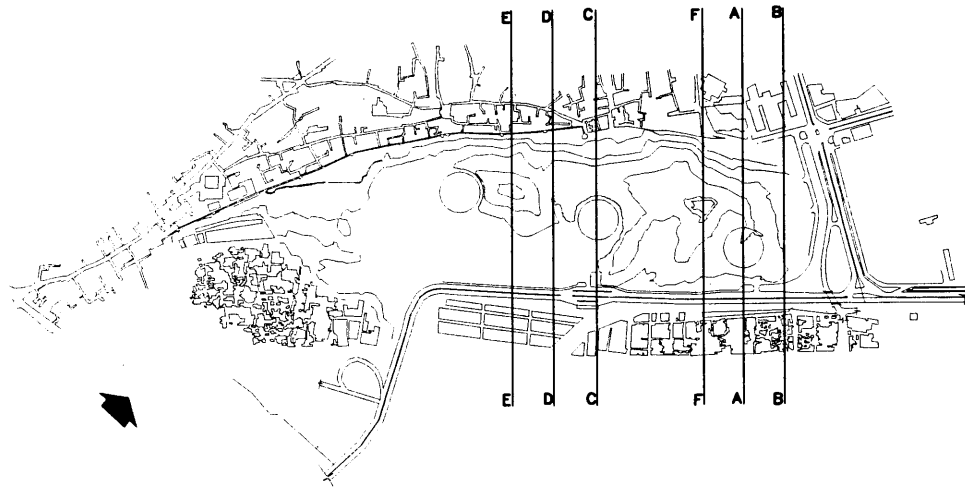
Fig. 2.4   Site Topography

Fig. 2.5a   Key Plan

SECTION AA

SECTION BB
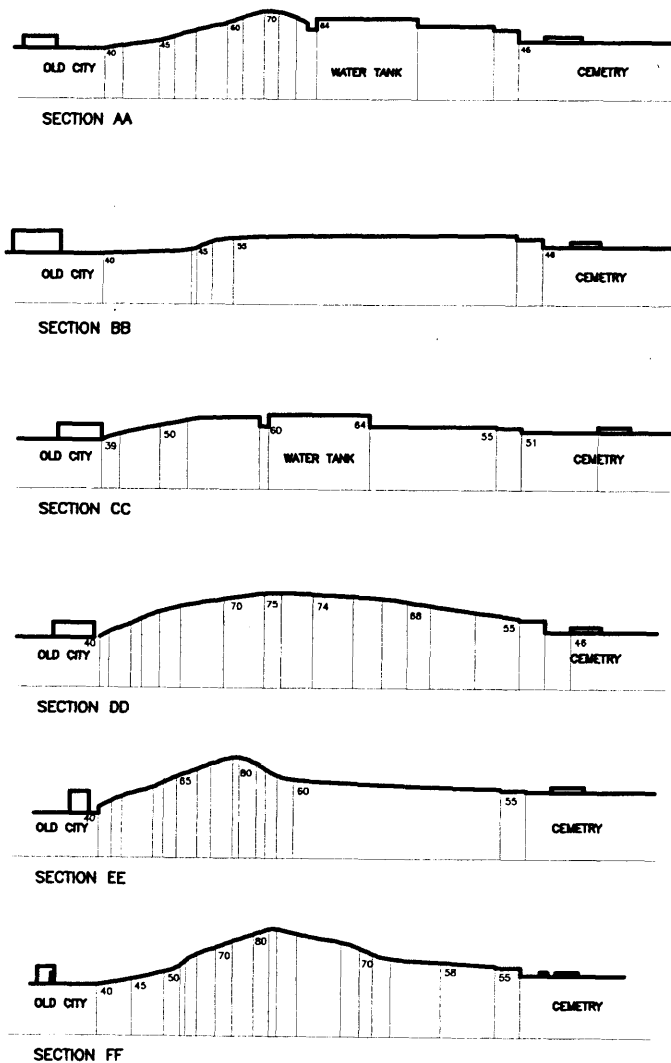
SECTION CC

SECTION DD

SECTION EE

SECTION FF

Fig. 2.5b Site Sections

which now terminates just north of the site, is slated for extension as part of the expansion of the Metro system. This will further enhance the sites' accessibility to a broad spectrum of potential park users. On the eastern edge a number of roads terminating at the City Wall can be treated to develop linkages to and through the site. Limited vehicular access can also be obtained on the south through a branch road emanating from the Bab al Wazir section of the Darb al Ahmr road (fig. 2.2).

2.3 Physical Characteristics
Topography

The site which originally comprised of mounds (referred to as the Darassah Hills) has witnessed filling in the form of rubble, silt and garbage for over a millennium. This has resulted in hilltop elevations some 35 meters above the plain of the Old City. The original land form in the area has been in a continuous state of flux. Recent interventions include the ongoing construction of three large water reservoirs through the auspices of US AID and the large scale dumping of rubble and building material on the site after the earthquake of 1993.

The site as it exists today comprises hilly areas interspersed with flat tracts. The Darrasah Hills form approximately two thirds of the total site area and have steep slopes averaging 1 in 2 and rising to contour elevation 80 . These hills are visible from various parts of Cairo and
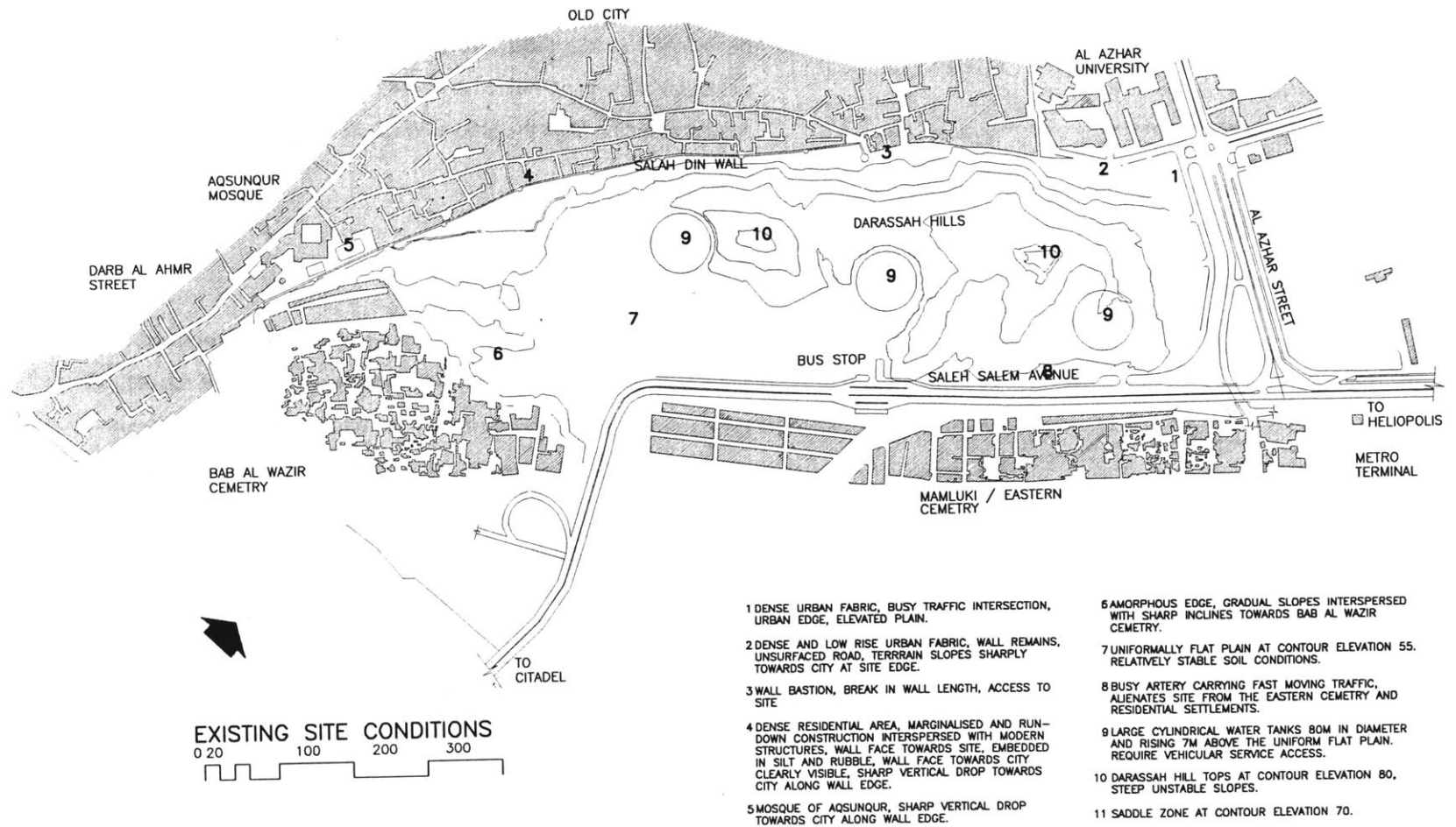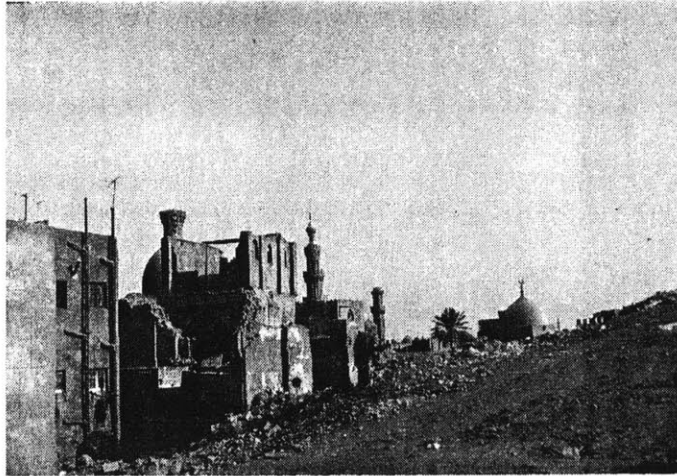
OLD CITY

AL AZHAR
UNIVERSITY

AQSUNQUR
MOSQUE

SALAH DIN WALL

DARASSAH HILLS

DARB AL AHMR
STREET

AL AZHAR STREET

BUS STOP

SALEH SALEM AVENUE

TO
HELIOPOLIS

METRO
TERMINAL

BAB AL WAZIR
CEMETRY

MAMLUKI / EASTERN
CEMETRY

TO
CITADEL

EXISTING SITE CONDITIONS

0 20   100   200   300

1 DENSE URBAN FABRIC, BUSY TRAFFIC INTERSECTION, URBAN EDGE, ELEVATED PLAIN.

2 DENSE AND LOW RISE URBAN FABRIC, WALL REMAINS, UNSURFACED ROAD, TERRRAIN SLOPES SHARPLY TOWARDS CITY AT SITE EDGE.

3 WALL BASTION, BREAK IN WALL LENGTH, ACCESS TO SITE

4 DENSE RESIDENTIAL AREA, MARGINALISED AND RUN-DOWN CONSTRUCTION INTERSPERSED WITH MODERN STRUCTURES, WALL FACE TOWARDS SITE, EMBEDDED IN SILT AND RUBBLE, WALL FACE TOWARDS CITY CLEARLY VISIBLE, SHARP VERTICAL DROP TOWARDS CITY ALONG WALL EDGE.

5 MOSQUE OF AQSUNQUR, SHARP VERTICAL DROP TOWARDS CITY ALONG WALL EDGE.

6 AMORPHOUS EDGE, GRADUAL SLOPES INTERSPERSED WITH SHARP INCLINES TOWARDS BAB AL WAZIR CEMETRY.

7 UNIFORMALLY FLAT PLAIN AT CONTOUR ELEVATION 55. RELATIVELY STABLE SOIL CONDITIONS.

8 BUSY ARTERY CARRYING FAST MOVING TRAFFIC, ALIENATES SITE FROM THE EASTERN CEMETRY AND RESIDENTIAL SETTLEMENTS.

9 LARGE CYLINDRICAL WATER TANKS 80M IN DIAMETER AND RISING 7M ABOVE THE UNIFORM FLAT PLAIN. REQUIRE VEHICULAR SERVICE ACCESS.

10 DARASSAH HILL TOPS AT CONTOUR ELEVATION 80, STEEP UNSTABLE SLOPES.

11 SADDLE ZONE AT CONTOUR ELEVATION 70.

Fig. 2.6
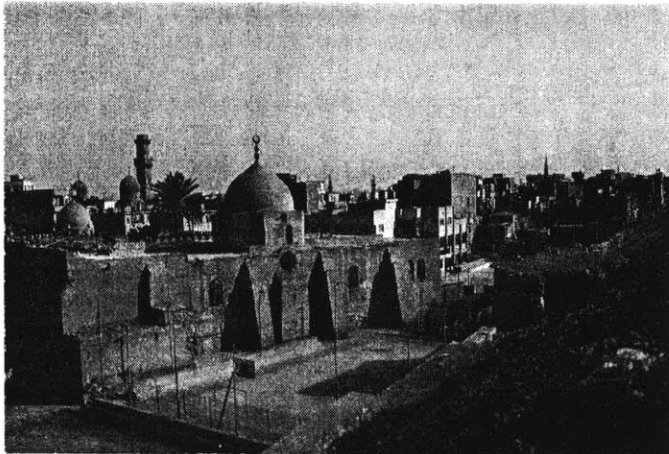
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Fig. 2.7a Approach from the south-west.

Fig. 2.7b The rear of the mosque of Aqsunqur

give the site a strong sense of position and identity. The western slopes of the hills now rest against the Salah Din Wall, only the crenelated battlements of which protrude above grade.

The dominant base plain of the site is that of Saleh Salem Avenue or contour elevation 55 (20 m above the plain of the Old City). This flat tract gradually slopes down towards the Bab al Wazir cemetery on the southern edge. In addition there is a saddle zone at contour elevation 70 between the two hilltop elevations of the Darrasah Hills. The three new water reservoirs under construction impose themselves as significant land forms. In the form of squat cylinders built into the hilly terrain, each reservoir has a flat top measuring 80 m in diameter and rises 7 m above the dominant base plain (fig. 2.6).

Soil

The soil conditions of the site are not very conducive to either plantation or building. Fill consisting of building debris from earthquakes, fires and destruction of obsolete buildings has been placed on the site since the Fatimid era (10th century)[17]. In addition the site has been used as a garbage dumping ground by the inhabitants of the Walled City for centuries. This has resulted in soil

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[17]According to the *Al Azhar Park Draft Report* prepared by Sasaaki Associates about 10,000,000 cubic meters of fill has been placed on site over the centuries. This is based on assuming the average natural ground surface as 37m and the average height of the fill as 69m.
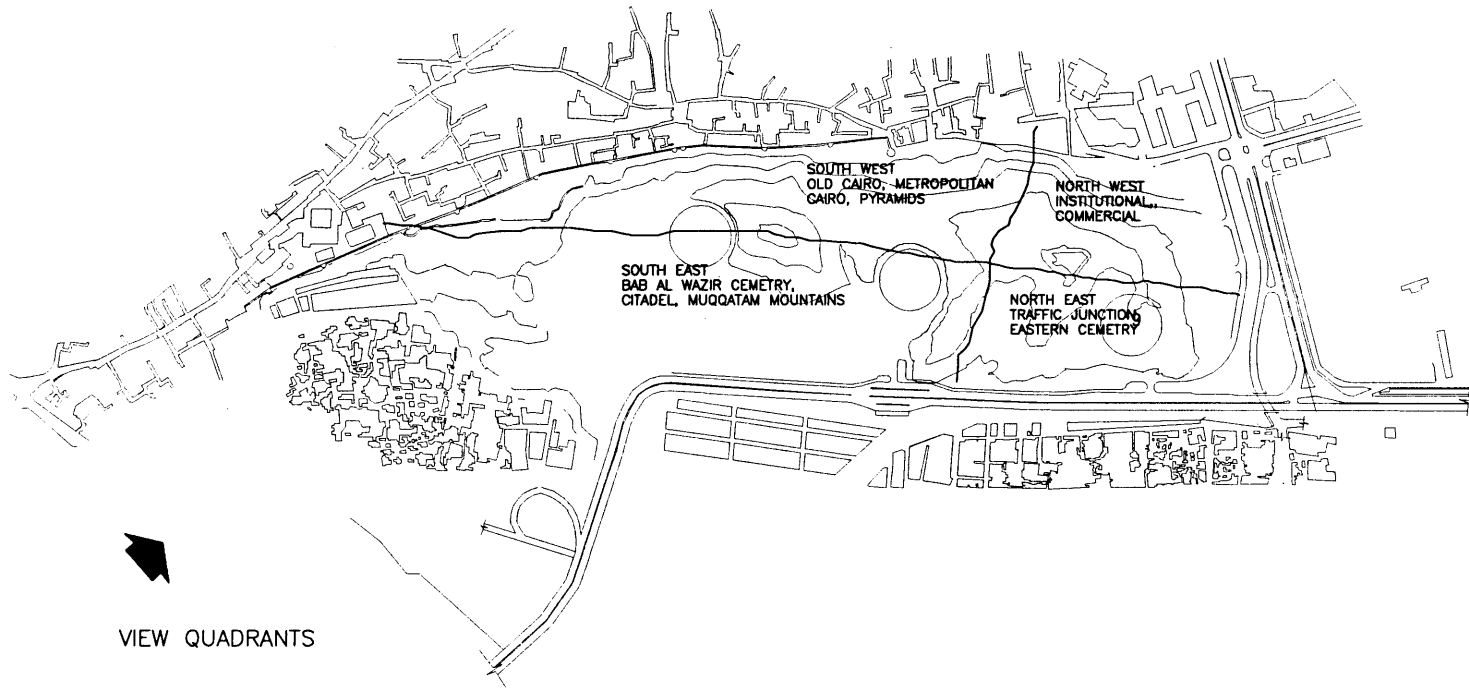
SOUTH WEST
OLD CAIRO, METROPOLITAN
CAIRO, PYRAMIDS

NORTH WEST
INSTITUTIONAL,
COMMERCIAL

SOUTH EAST
BAB AL WAZIR CEMETRY,
CITADEL, MUQQATAM MOUNTAINS

NORTH EAST
TRAFFIC JUNCTION,
EASTERN CEMETRY

VIEW QUADRANTS

Fig. 2.8

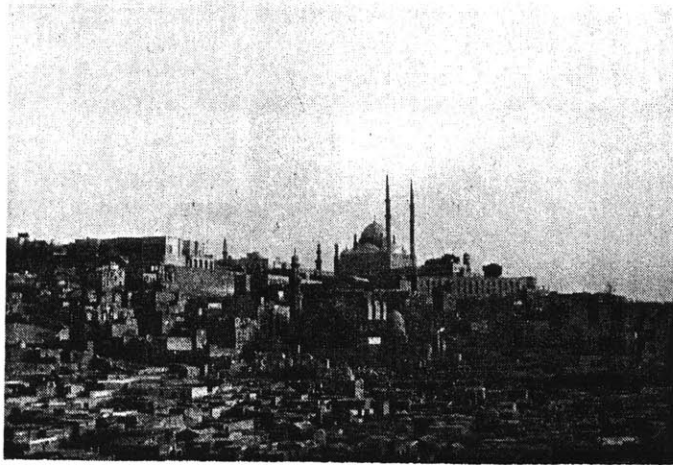**Fig.2.9a**   Bastion in the wall of Salah Din.

Fig. 2.9b   View towards the citadel. Bab al Wazir cemetery in the foreground.

conditions marked by very high salinity and lime content. The soil and debris on the slopes is extremely unstable and prone to subsidence.

To ensure the success of any vegetation programs that may be adopted, suitable soil detoxification measures coupled with stabilization and regrading of slopes on the Darrasah Hills are necessary Moreover, the very low bearing capacity of the soil on the Darrasah Hill component of the site makes the use of pile foundation supports for even relatively low weight structures like pavilions, inevitable.

2.4 Views

The ridge lines of the Darrasah Hills can be used as a device to structure the site into four visual quadrants (fig. 2.8). The northwest overlooks Al Azhar University and the commercial activity on Al Azhar Street. The magnificent view of the Mamluki Cemetery on the northeast is tempered by the heavy vehicular traffic on the junction of Al Azhar Street and Saleh Salem Avenue, and the recent construction of high rises in close visual proximity to the site. The southeast benefits from views of the Citadel with the Bab al Wazir cemetery in the foreground and the Muqattam Mountains behind. The southwest affords panoramic views of Cairo with a myriad of minarets and domes of the Old City spectacularly juxtaposed against the skyline of modern Cairo. On a clear day it is possible to see the Pyramids of Giza.

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2.5 Potential

Despite the difficulties presented by the prevailing terrain and soils conditions, the development of the site as a Park is an attractive proposition for both the Old City and Metropolitan Cairo. In addition to environmental benefits and the provision of recreational facilities, the Park setting can serve the role of a social condenser, gradually eroding the rigid hierarchies prevalent in Cairene society. By focusing attention on the Old City, the park can be a potential catalyst for the conservation of the numerous monuments within the city that are in a state of dilapidation and neglect. A sensitively devised program for the park can provide an impetus to the economies of communities in the Old City and the cemeteries by providing avenues for employment and commerce.

Fig. 2.10a   View along Al Azhar street.

However, the development of the park will inevitably create major changes in the area as a whole. Communities immediately adjacent to the wall will undergo structural changes shifting their status, and function from being peripheral and somewhat marginal, to intermediary between the Park, as a major recreational facility, and the Old City, as a residential, cultural and commercial center. Cemeteries to the South and to the East of the site, housing several communities, will face a new neighboring condition which will affect their relation to the Old City. The relation of prominent institutions to the North-West and the Citadel to the South, with the site shall be radically altered. It is therefore, necessary that the design of the Park be based on a clear understanding of the context of the site.
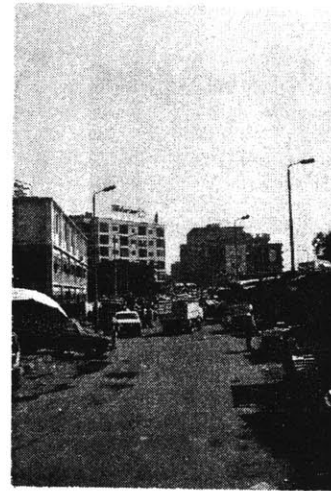

Fig. 2.10b   Residences and mausoleum in the Eastern cemetery.

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Chapter 3

Ordering The Land

Fig. 3.1 The urban context of the site.

3.1 Concept

The size of the allocated site suggests it being seen as a 'quarter' or 'district' of the city . The concept of the quarter is not a direct analogy or an iconic reference for the park site. Rather it is to be used, at a fundamental level, to work out appropriate scales, dimensions and sequence of spaces for the park.

3.2 Approach

Having remained uninhabited for a millennium, the park quarter emerges as a secluded and barren tract on the map of Cairo (fig. 3.1). The problem of laying a park on this site is *first* a problem of integrating it into the fabric of the city and *second* invigorating it with an appropriate program.

The unification of the park quarter with the adjoining fabric necessarily involves the development of linkages *to* features (present and future) within the park site and *through* that link to features and districts within the Old City and beyond the park site. A path skeleton is a necessary component of a framework that shall serve as an ordering device for the park quarter. The continuous agglomeration of rubble leading to steep inclines on the site, is on one hand an impediment in developing pathways; on the other, it is fortuitous since the elevation makes for an active visual interaction between the park quarter and its context.

The latent grid networks, dimensions and spatial orders that operate within the Old City and the Eastern Cemetery, can serve to inform the ordering framework for the quarter. A framework that balances special programmatic requirements of a park with dimensional information derived from the context can result in a design in sympathy with, and in correspondence to, spaces within the Old City and the cemeteries, thereby making for a closer integration of the park and its context.

The framework can be a component of a *palimpsest* - a 'mystical writing pad' on which past, present and future conditions exist. And it is in the search for generating this palimpsest that this study turns to the Old City and the Eastern Cemetery.

3.3 The evolution of a palimpsest
Old City - origins and growth
The Old City is situated on an ancestral route, extending along the east of the Nile, linking Memphis with Heliopolis, Upper Egypt with the Delta, Africa with the Mediterranean and with Asia Minor. Since the Arab conquest under Amr in the year 640 AD, three towns had already followed one another along this route before the Fatimid Army in its turn set up its capital, Al Qahira, there in 969 AD (fig. 3.2).[18] This historic caravan route became the organizing axis and main thoroughfare of the Fatimid Capital. Al Qahira as it was built was a rectangular settlement encircled by fortification walls and divided from
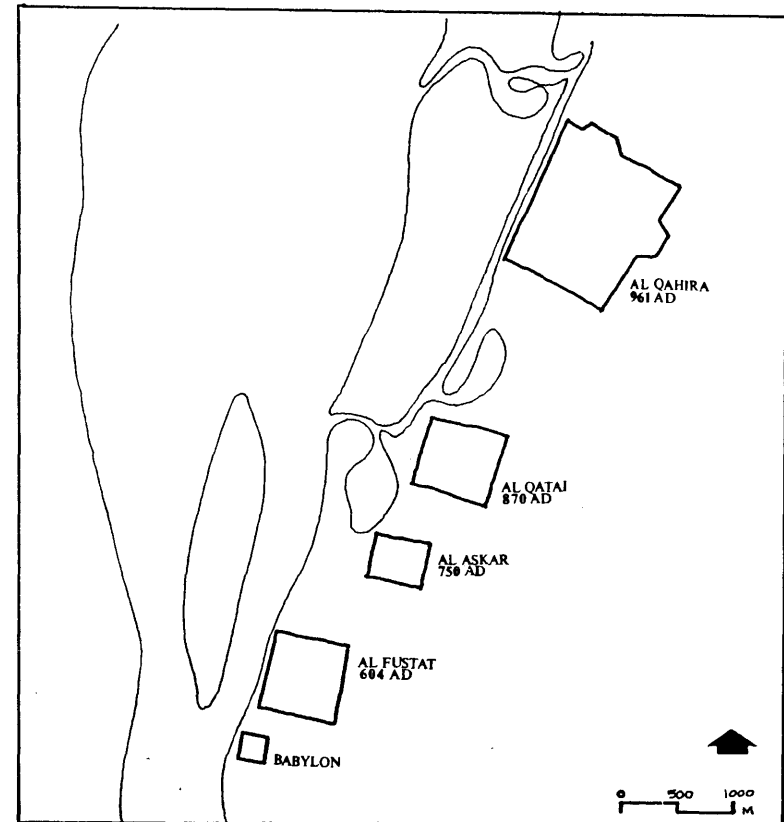

Fig. 3.2 Successive settlements on the eastern bank of the Nile.
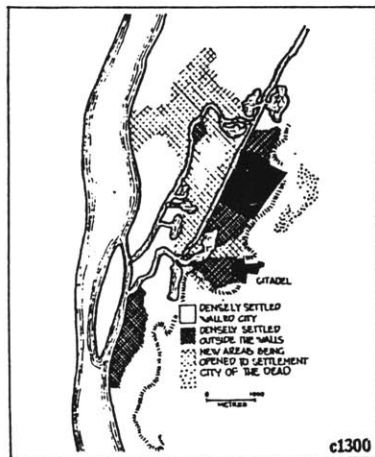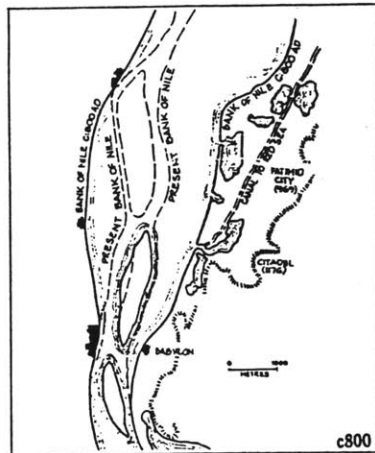
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[18]Panerai.

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Fig. 3.3a The expansion of Cairo c800 to c1300.

north to south by the great thoroughfare or Qasba. In the center were erected, two large palace complexes, government facilities, play fields and gardens. In keeping with the prevailing practice of Arab settlements of the time, the city was divided into various quarters to house the ethnically different units of the Caliph's military entourage. The ancient canal at the western boundary leading from the Nile to the Red Sea was reactivated for the city's water supply (fig. 3.3). Al Qahira thus began as a military settlement with the city of Fustat serving as a resource for public utilities and commerce. The city grew rapidly under subsequent dynasties. [19]

The Ayyubid rule (1169 AD - 1250 AD) saw the destruction of the Fatimid palaces, rebuilding within the city, and under Salah al Din the commencement of the citadel on the south and the extension of the city walls. The establishment of the citadel led to a spurt of building activity between the walled Fatimid city and the fortification.

The Mamluk era (1250 AD - 1517 AD) witnessed the building of a profusion of monuments specifically on what came to be established as 'the Processional Route of the Mamluk Sultans' - (the Qasba or Al Muizz Street, and its extension on the south from Bab Zuwalaya - the southern gate, to the Citadel, fig. 3.11). This era also saw the establishment of the Eastern Cemeteries which in addition to mausoleums and graves had from their inception, a significant

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[19]Panerai.

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residential population comprising, resident retainers, their families, and squatters.[20]

The Ottomans who followed the Mamluks laid the seeds for the present day city. Enormous building and urban efforts in the 19th century saw the transformation of Cairo into a modern westernized metropolis. An entire new city was laid out to the west of Old Cairo, towards the Nile, leaving the historic fabric to a large extent untouched. The Old City structure however did undergo changes with the introduction of the automobile and the consequent remodeling to accommodate vehicular streets like Al Azhar Street.

The search for latent orders and dimensions
The urban fabric of Old Cairo as it exists today is a composite of the history outlined above. The major part of the ancient fabric consists of buildings less than a century old, and plot by plot renewal of whole districts is continuing. Numerous pools and gardens within the city have been filled and built upon. It is therefore necessary that the search for latent orders and dimensions within the city which can inform the ordering framework for the park site, should focus on monuments (relative permanencies when compared to the transient nature of their adjoining residential fabric), and plot configurations
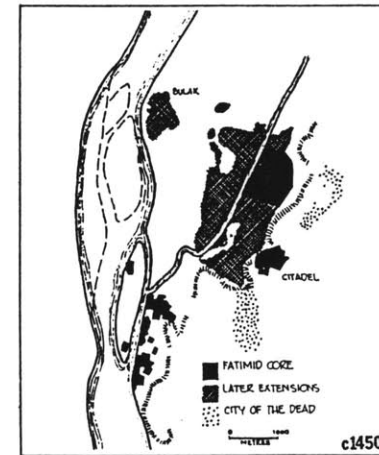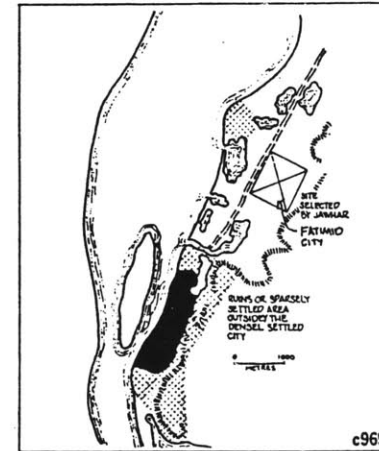

Fig. 3.3b   The expansion of Cairo c969 to c1450.

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[20]This Cairene tradition of living with the dead continues to this day and the Eastern Cemetery has along with the dead, residential enclaves inhabited by the poorer segments of society.

Fig. 3.4   The Al Azhar Street appears as a gash in the dense urban fabric of Cairo.

which retain the outlines of preceding occupations.[21] Further, the investigation should be limited to the planar ordering systems latent in the city fabric, the disposition and placement of monuments along the processional route, intervals of street intersections along the processional route, the order of open spaces within the Old City and, plot dimensions in different quarters of the Old City and the Eastern Cemetery. These are discussed below.

1. Planar ordering systems latent in the city fabric

The *qibla,*, or the local direction of Mecca, is a major factor in the orientation and disposition of mausolea and mosques in Muslim societies. In Cairo, the *qibla* was an important consideration not only in the alignment of monuments but also, in the evolution and disposition of the street networks, in both the Old City and the Eastern cemeteries.[22]

The Fatimid city of Al Qahira staked out in 969 AD underlies the present day Old City. Al Qahira was laid out as a rectilinear enclosure with an orthogonal street network in alignment with the pharaonic Red Sea canal (present day Port Said Road). Coincidentally, this canal was aligned exactly perpendicular to the *qibla* of the Mosque of Amr in Fustat. As a result the street plan of Fatimid

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[21]Though the residential fabric has been in continuous flux, changes have been mostly limited to the built form. Plot boundaries and configurations have been generally persevered with.

[22]For a detailed description of qibla oriented architecture in Egypt refer, King, "The Astronomy of Mamluks, a brief overview", p 48 - 82.
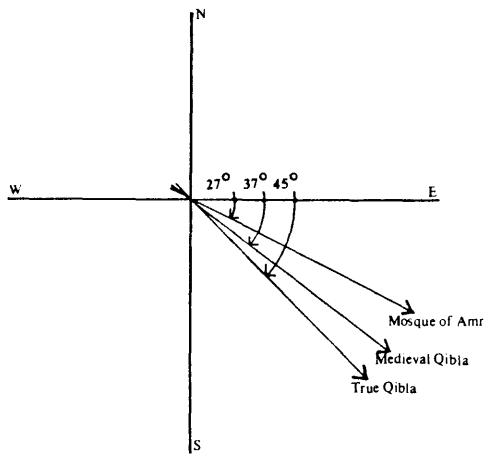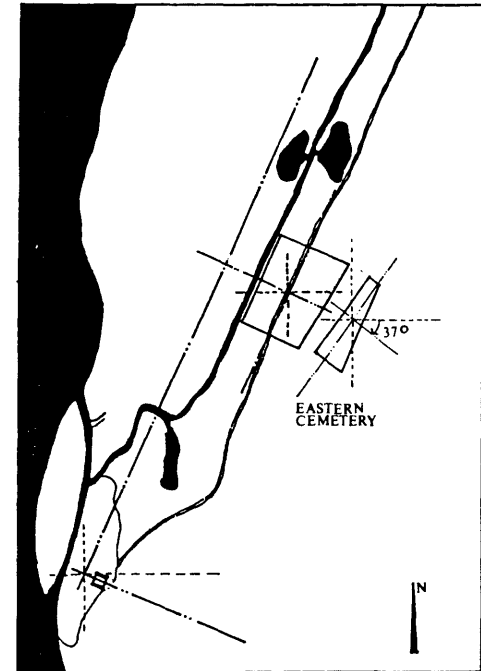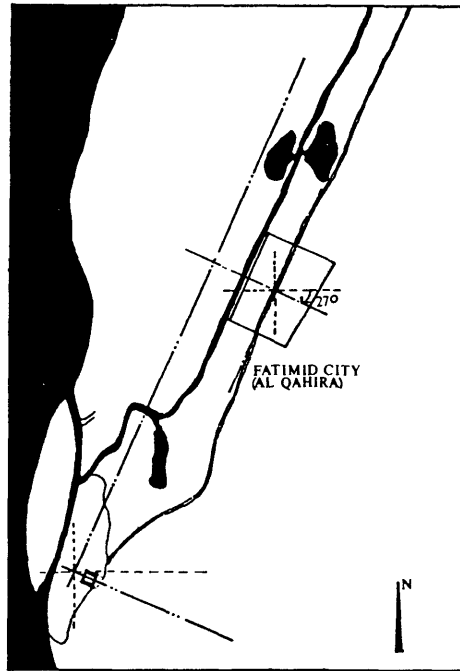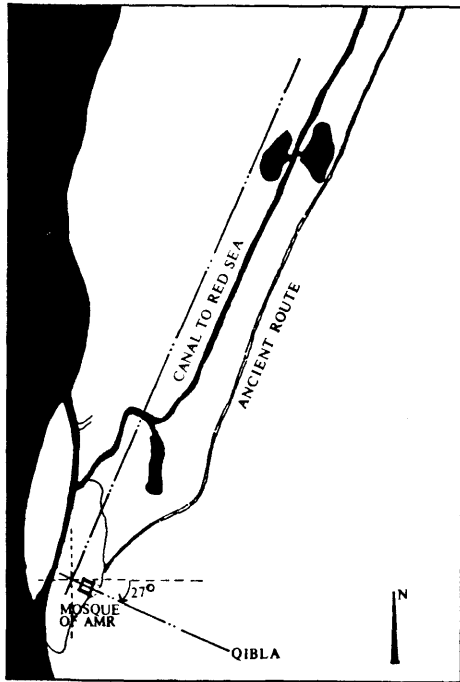
Fig. 3.5 The different *qiblas* in Cairo.

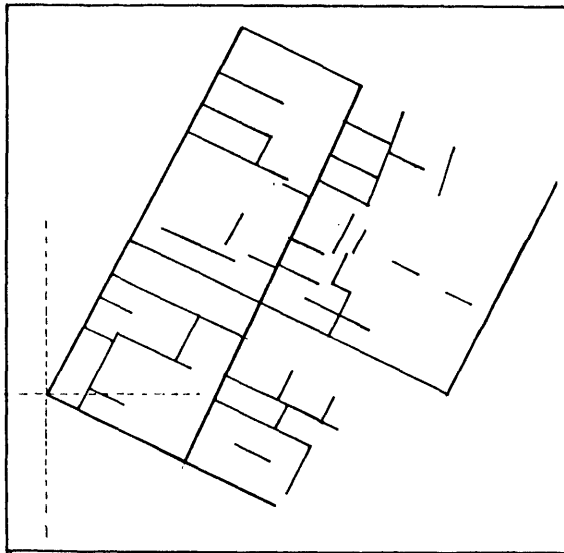**Fig. 3.6** The different *qiblas* and the orientation of settlements.

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Cairo was aligned to this qibla or 27 degrees south of east (fig.).[23] The Fatimid astronomers however, calculated the correct *qibla* as 37 degrees south of east. The Al Azhar and Al Hakim mosques were therefore laid out skew to the street pattern by some 10 degrees. Later, Mamluk monuments were built with exteriors aligned to the street plan and interiors twisted by 10 degrees to face the *qibla* as determined by the astronomers. The Eastern Cemetery or the Mamluk 'City of the Dead' was also laid out in alignment with the *qibla* of the astronomers, at 10 degrees to the axis of the Fatimid city. Mamluk mausolea and mosques in the eastern Cemetery were built aligned to the street network (fig. 3.6). The true *qibla* for Cairo is however oriented 45 degrees south of east, and modern mosques and tombs are aligned along an axis at variance to the medieval qibla by 8 degrees (fig. 3.5). The underlay of the fabric of the present day old city is thus, essentially formed of orthogonal grids oriented to different *qiblas*.

A further analysis of the fabric reveals variations to this theme. The medieval Darb al Ahmr street connecting Bab Zuwalaya to the citadel is in alignment with the cardinal north-south axis. Whether this is intentional or coincidental is a moot point, what is clear is that the urban fabric around the street exhibits traces of an orthogonal cardinal network (fig 3.8). Again, a number of streets violate and

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[23] 27 degrees south of east is the direction of the rising sun in mid-winter in Cairo. The first Muslims in Egypt took this direction as the qibla, or direction of Mecca.

Fig. 3.7   Traces of the orthogonal street network underlying the Old City and oriented 27 degrees south of east.

Fig. 3.8 Darb al Ahmr Street aligned with the north - south axis.

Fig. 3.9a The urban fabric near the Mosque of Ibn Tulun built over what used to be a large pool - the Birkat al Fil.

Fig. 3.9b The Birkat al Fil

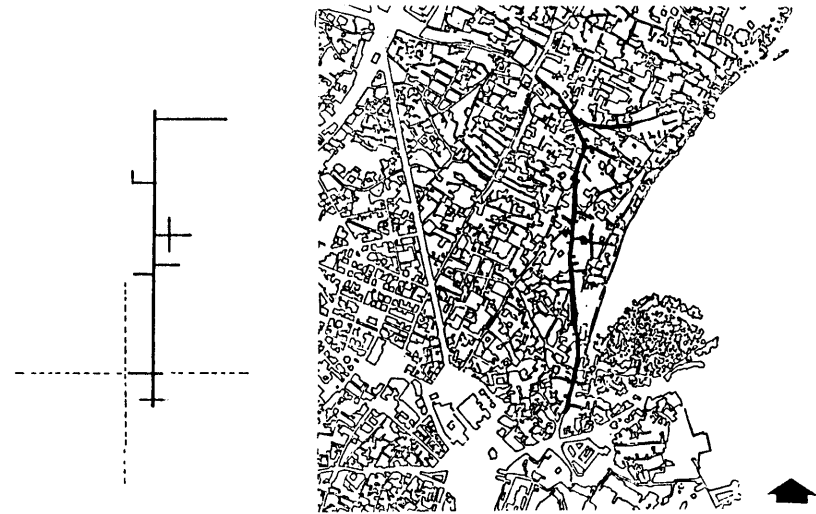**Fig. 3.9c** Streets echoing the profile of the now absent Birkat al Fil.
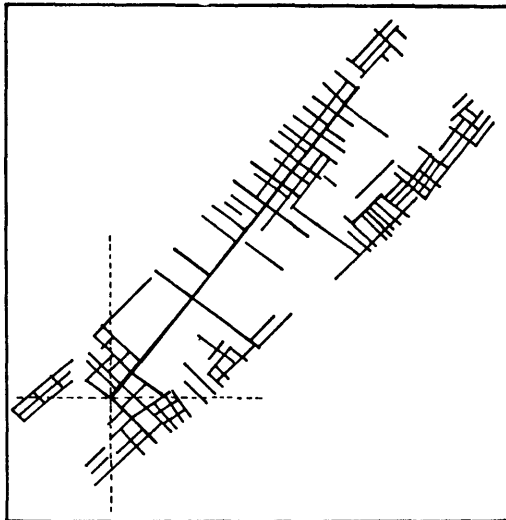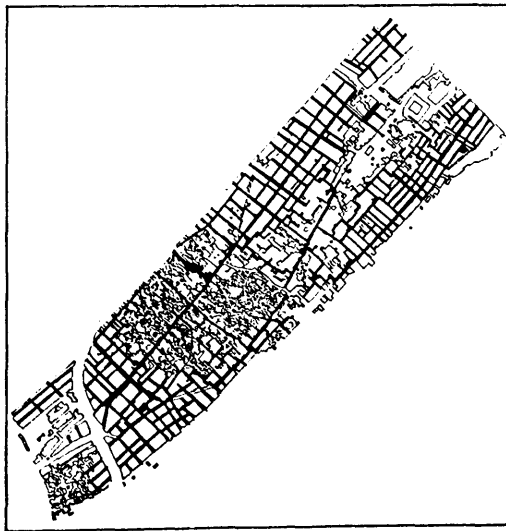

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Fig. 3.10 The orthogonal street network underlying the Eastern Cemetery and oriented 37 degrees south of east.

fracture the latent orthogonal organization. The roots of their particular dispositions can be traced to contours of pools, gardens or swamps which have been subsequently built over (fig. 3.9).

Therefore, the convoluted pattern of streets and alleys that characterizes present day Old Cairo is in addition to social and political considerations, to a large extent a derivative of the super positioning of grid networks oriented to different *qiblas* and reflecting the outlines of topographical features of earlier eras.

2. Disposition and placement of monuments along the 'Processional Route'
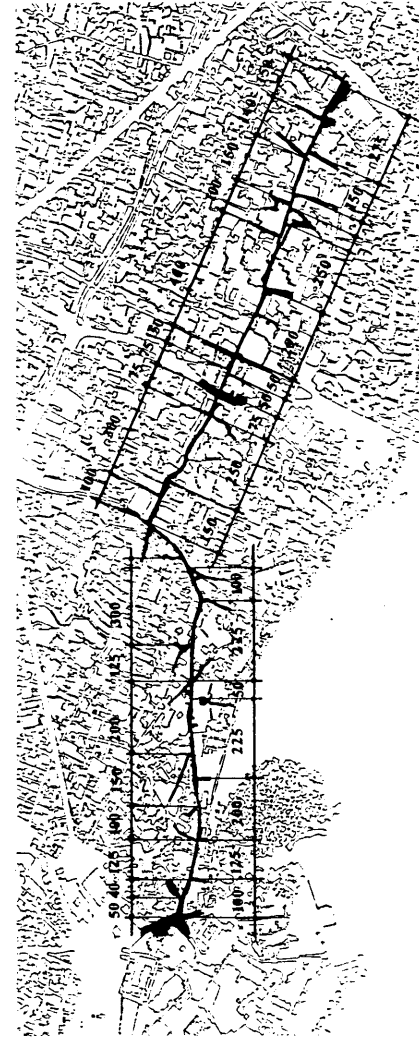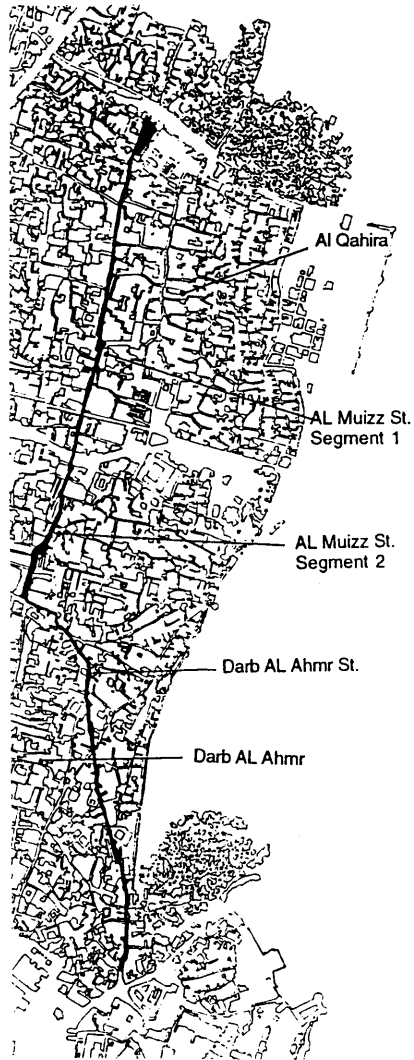
The Processional Route (fig. 3.11) has over the centuries been the scene of intense building activity. The Fatimids and their succeeding dynasties recognized the prominence of this ancient route and through their building activities served to emphasize its importance as the major organizing axis of the Old City. The building of monuments along this route came to be associated with political legitimacy and successive sultans and emirs vied with each other to construct mosques, mausolea and charitable institutions. The otherwise linear thoroughfare was, as a result, gradually modified to the segmented street of today.

The builders of the time had refined urban design sensibilities and utilized a number of expedients to ensure visual prominence for each monument. The various means employed, included an emphasis on

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Fig. 3.11 The Processional Route.
Fig. 3.12 Intervals of monuments along the Processional Route.
The average interval is 150m.
Fig. 3.13 Intervals of street intersections along the Processional
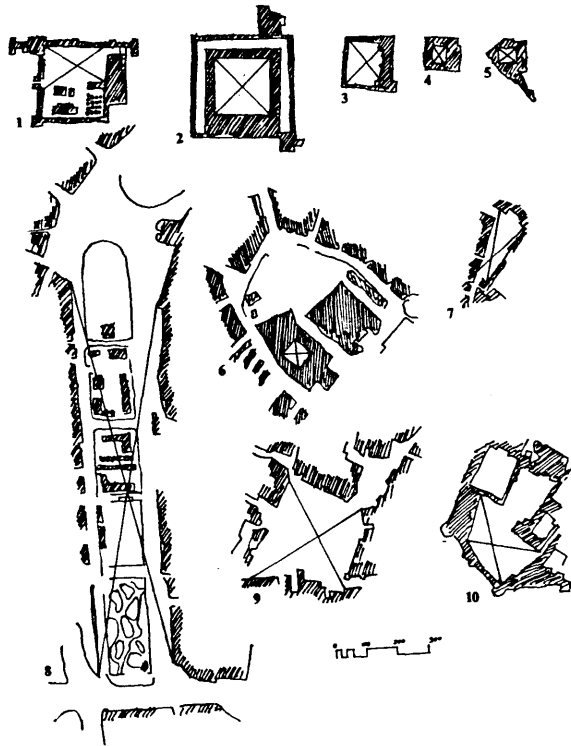Route. The average interval is 150m.

Al Qahira

AL Muizz St.
Segment 1

AL Muizz St.
Segment 2

Darb AL Ahmr St.

Darb AL Ahmr

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the verticality of the facades to set up contrasts with the predominantly horizontal residential context, the use of minarets and domes as signifiers, and the disposition of the monuments whereby the variegations in the facade plans served to fracture the street alignment, setting up new end conditions to abut to. As a result, the thoroughfare emerged as a series of spatial segments in which the goal is continually deflected and the minarets serve as visual 'leads' for a participator moving from segment to segment.

The intervals between different monuments and monument groupings play a crucial role in ordering the range of visual perception along the street. At an average this interval is 150 meters (fig. 3.12) and this can serve as a constituting dimension for the park framework.

3. Intervals of street intersections

Streets emanating or leading to the Qasba are always perpendicular to it. The intervals of street intersections is representative of the width of the quarters that border the thoroughfare (fig. 3.13).

4. Order of open spaces

Open spaces within the Old City are restricted mainly to courts and courtyards in residences, mosques and public buildings. The major community open space is the main thoroughfare on which religious, social, commercial, creative and small scale recreational needs of the various neighborhoods are centered.

Fig. 3.14 Order of Open Spaces

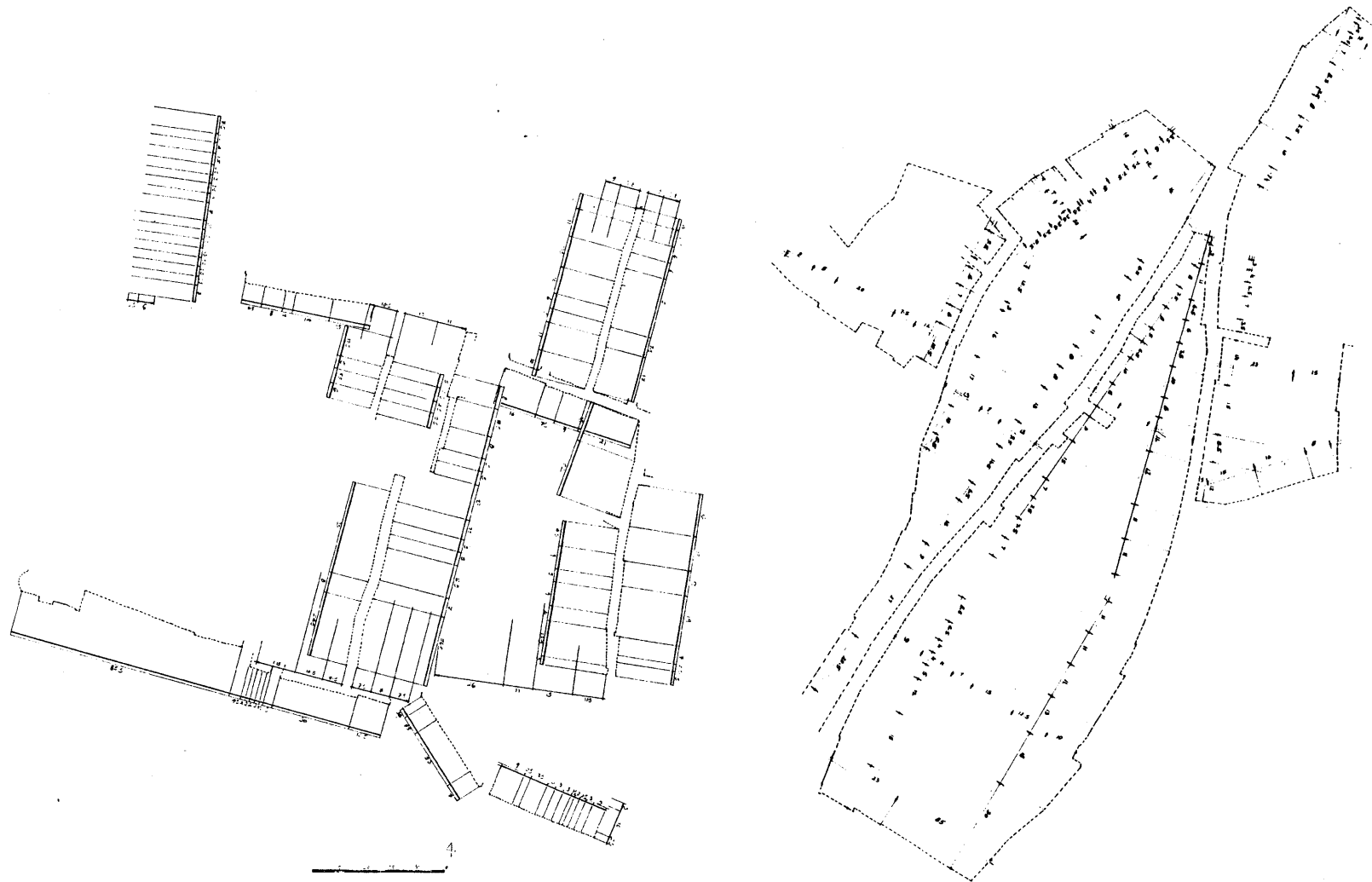|	
1. Al Hakim Mosque	90m x 50m
2. Mosque of Ibn Tulun	90m x 90m
3. Al Muayad Mosque	45m x 70m
4. Mosque of Maridani	25m x 25m
5. Mosque of Aqsunqur	30m x 20m
6. Mosque of Sultan Hassan	30m x 30m
7. Open Space fronting Hakim Mosque	30m x 30m
8. Maydan Salah Din	110m x 650m
9.	135m x 135m
10. Open Space within the Citadel	100m x 150m

Fig. 3.15 Order of plots within the Old City. Median plot sizes are
3.5m x 10m, 7.5m x 10m, 25m x 50m, 50m x 85m

Fig. 3.16   Order of residential precincts within the Old City.

For areas of the park quarter that are conceived as a series of enclosures, the order of open spaces illustrated in fig.   represents a range from the largest open space within the city - the courtyard of the Mosque of Ibn Tulun, to the small courts that dot the residential fabric (fig. 3.14).
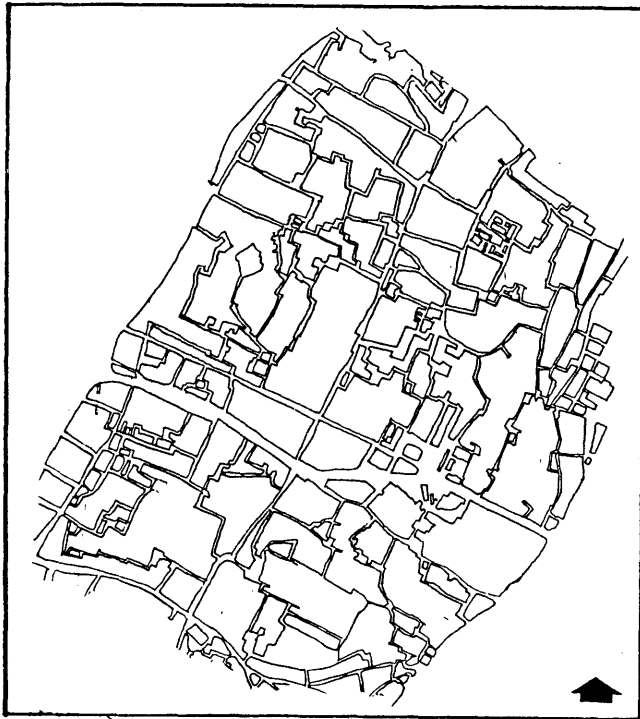
5. Plot dimensions

Figure 3.15 represents the range within which plots in the city are organized for residential, commercial and religious activities. The range serves as a guide for the organization of what are perceived to be analogous activities on the park site.

The ordering framework for the park quarter

The ordering framework for the park is a resultant of three frameworks - the primary path skeleton, the *qibla* grid systems and the cardinal grid system.

1. The primary path skeleton

The primary path skeleton is a framework of desire lines *to* and *through* the park. The desire lines are potential path vectors leading to and linking places and events within and beyond the park quarter (fig. 3.17 and 3.18). In the process of 'inhabitation' of the quarter secondary and tertiary path systems shall emerge.

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2. The qibla grid systems

These are a series of homogenous grids with modules measuring 150m x 150m, representative of the qibla grid systems latent in the neighboring quarters of the park (fig. 3.19).

3. The cardinal grid system

This is a homogenous grid composed of square modules with 50m sides, and sub divisible in increments of 5, 10 and 25m to facilitate change and replacement without distortion (fig. 3.20).

The emerging palimpsest

The additive effect of the primary path skeleton, the qibla grid systems (generated from the center of the courtyard of the Mosque of Aqsunqur - the most prominent mosque in the vicinity of the park quarter), and the cardinal grid system (generated from the middle reservoir which is seen as the location for the Aga Khan Garden and symbolic center of the quarter) contributes to the emerging park palimpsest. The choice of the frameworks that constitute the palimpsest is both functional and symbolic. The path skeleton represents the contextual, the qibla systems are symbolic of the past and the cardinal represents the future (fig. 3.21 to 3.24). At a programmatic level, sports facilities can be oriented along the north-south axis and mosques, meditation spaces and the Aga Khan Garden can be oriented along the qibla.

The juxtaposition of the grid systems leads to varying points of intensity across the surface of the park . These points are seen as 'distillations' of direction (fig. 3.25). 'Direction' is an important component in the architectural expression of structures in the Old City and the cemeteries. It is reflected in the disposition of mosques and mausolea as well as ventilators on the rooftop of traditional residences.[24] The monuments and the ventilators can be regarded as real representations of the latent grids that dictate the organization of the urban fabric. An analog to this phenomena within the city are the 'points' within the park In addition to serving as possible locations for small scale elements like kiosks, pavilions, fountains and seating, they are to be developed as sculptural elements signifying direction and reflecting the latent grid system within the park quarter (fig. 3.26).

The application of the ordering framework to the park site is to vest it with a latent system - a suggestion for development and a guide sheet for inhabiting the quarter with a program.

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[24]David King in his paper, 'The astronomy of the Mamluks: A brief overview" mentions that most private houses built in medieval Cairo were fitted with ventilators. These were aligned with the major axis of the city, perpendicular to the qibla and parallel to the ancient Red Sea canal. In addition they had facets with openings towards the northwest and the northeast to receive the favorable winds.
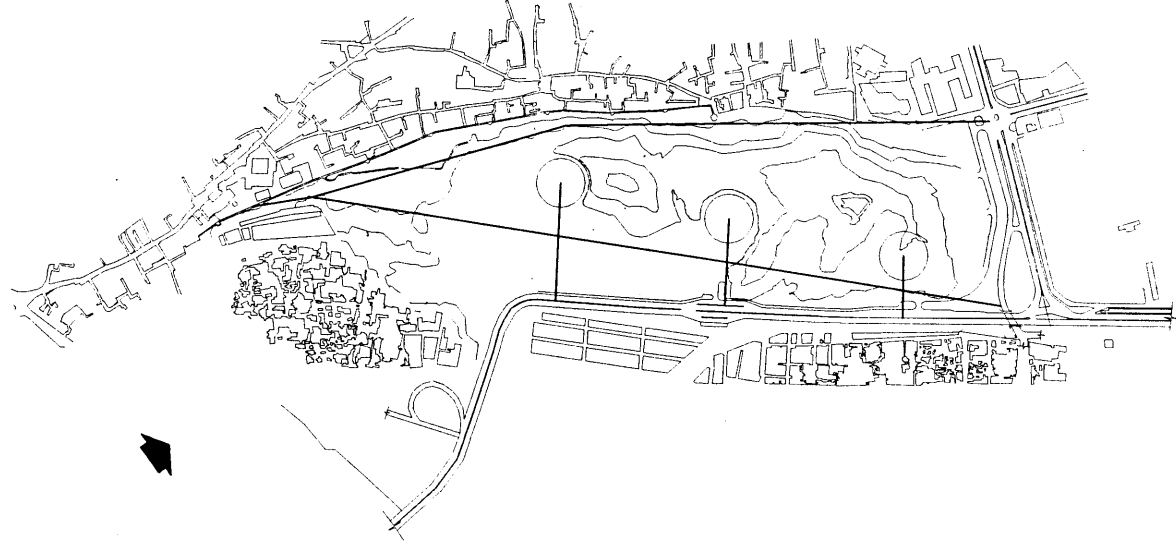
Fig. 3.17 Primary path vectors.

Fig. 3.18 Path vectors to site context.
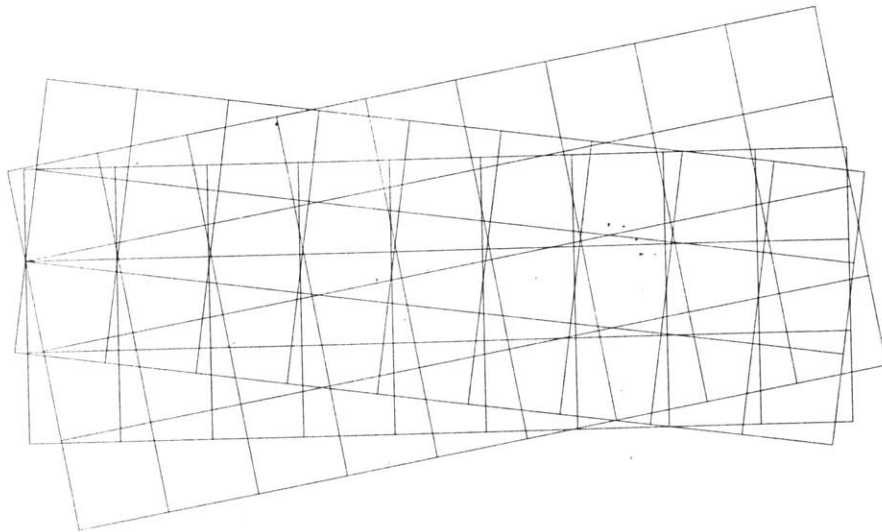
Fig. 3.19 The *qibla* grid system comprising three homogenous grids with modules 150m x 150m and oriented 27 degrees south of east, 37 degrees south of east, and 45 degrees south of east respectively.
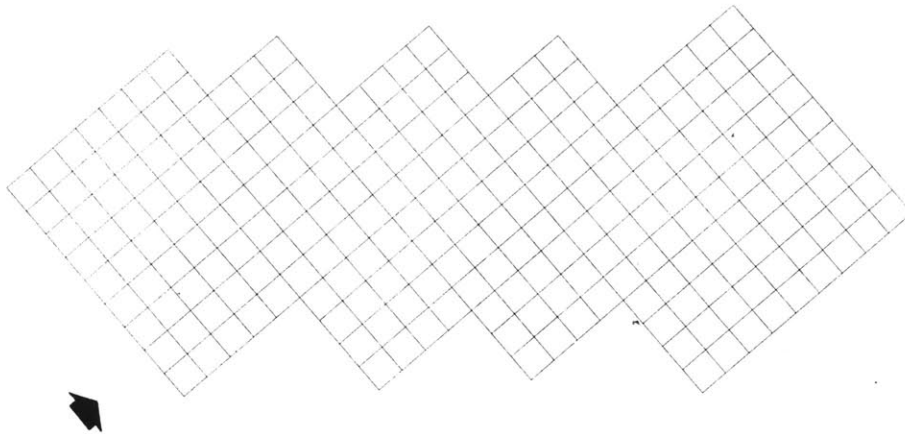
Fig. 3.20 The cardinal grid system with modules 50m x 50m.
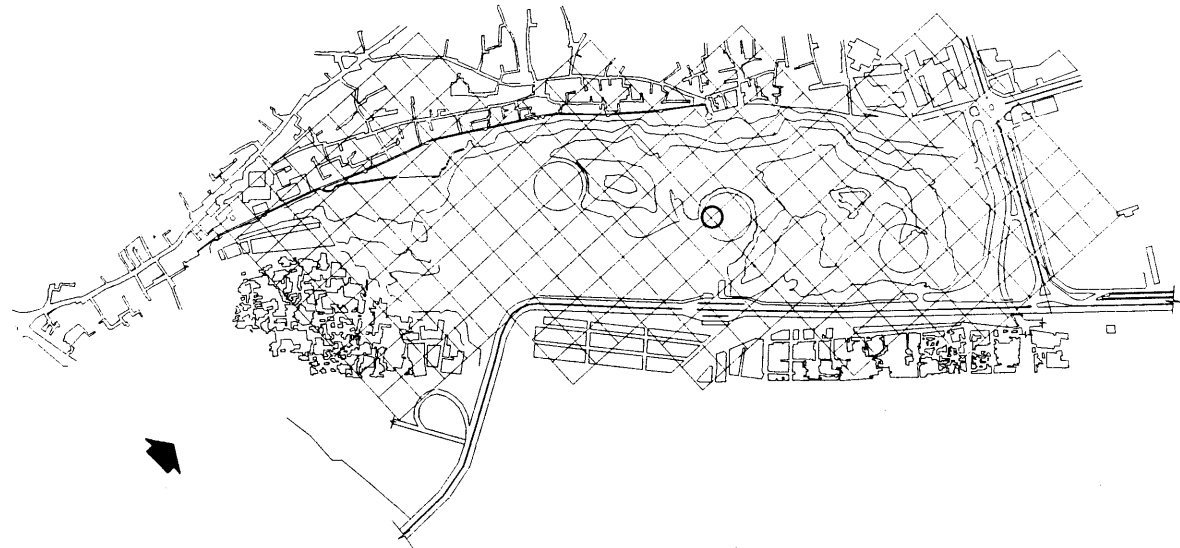
Fig. 3.21 The cardinal grid system applied from the middle reservoir (potential location of the Aga Khan garden) on the site.
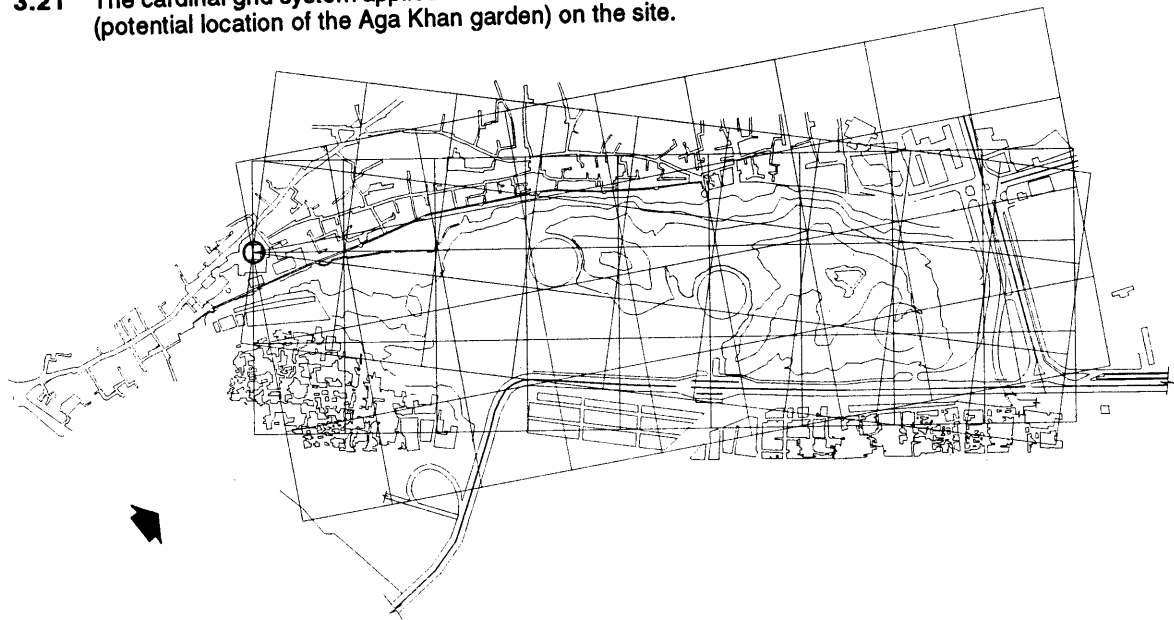
Fig. 3.22 The *qibla* grid system applied from the center of the Mosque of Aqsunqur.

0 20   100   200   300
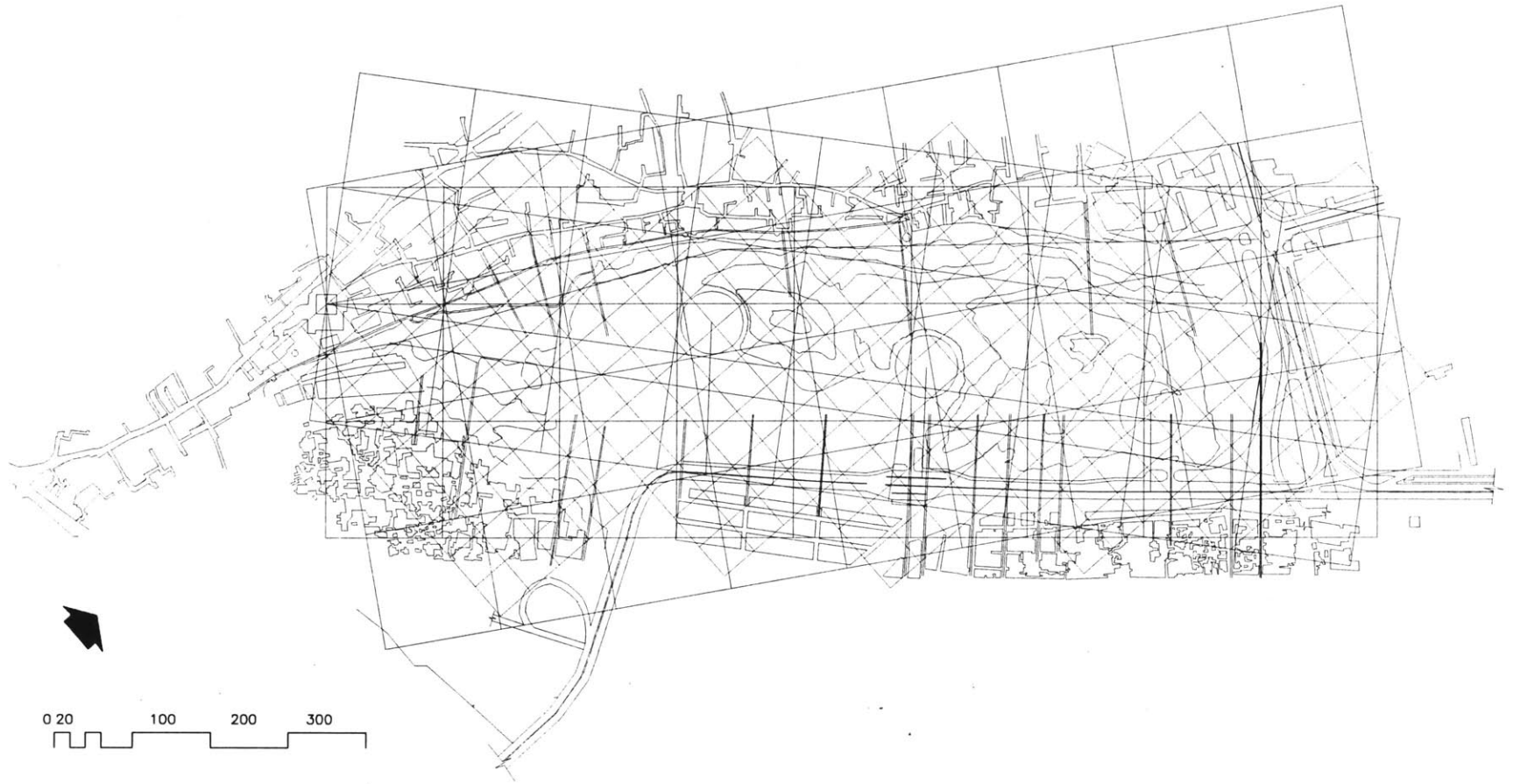
Fig. 3.23 The ordering framework: a resultant of the superposition of the path skeletons, the *qibla* grid system and the cardinal grid system.

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Fig. 3.24 Varying 'points of intensity ' on the ordering framework.

0 20   100   200   300
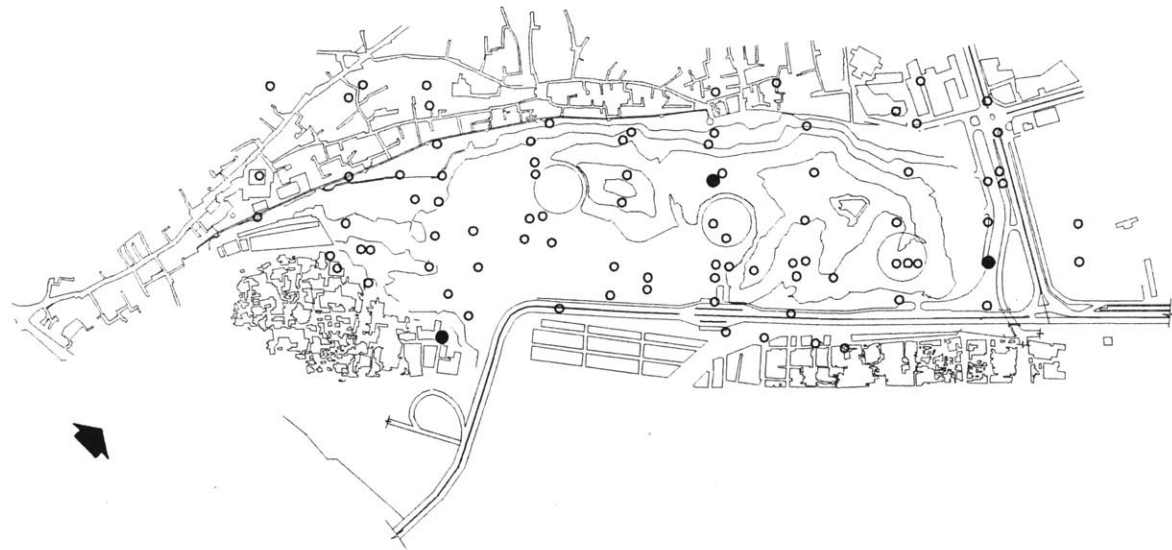
Fig. 3.25 The distribution of the 'points of intensity' on the surface of the site.
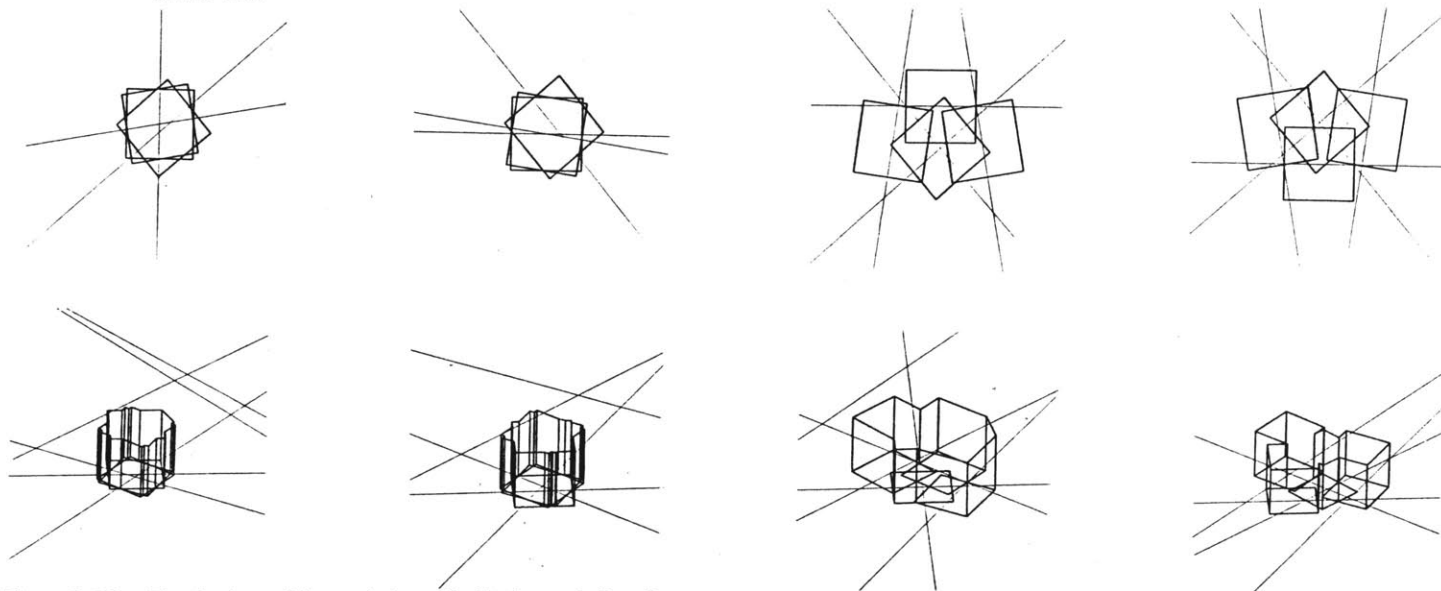
Fig. 3.26 The 'points of intensity' as distillations of direction.

Chapter 4

Enriching the palimpsest

PROPOSED DEVELOPMENT

0 20   100   200   300

Fig. 4.1

Labels on map:

OLD CITY

AL AZHAR UNIVERSITY

AQSUNQUR MOSQUE

SALAH DIN WALL

DARASSAH HILLS

AL AZHAR STREET

DARB AL AHMR STREET

BAB AL WAZIR CEMETRY

BUS STOP

SALEH SALEM AVENUE

TO HELIOPOLIS

METRO TERMINAL

MAMLUKI / EASTERN CEMETRY

TO CITADEL

1 USE: COMMERCIAL. A CONTINUATION OF THE URBAN FABRIC, ACCESS TO MULTI-LEVEL PARKING STRUCTURE, PROVISION FOR SURFACE PARKING, VEGETATION AS A BUFFER AGAINST TRAFFIC GENERATED NOISE AND POLLUTION.

2 USE: SURFACE PARKING, SMALL SCALE COMMERCIAL ACTIVITIES. ACCESS POINTS TO PARK.

3 WALL INTERPETATION, MUSEUM, ACESS TO AND FROM SITE

4 PATHS FROM CITY TO WALL TO BE DEVELOPED AS POINTS OF ACCESS TO AND THROUGH SITE. PROMENADE OVERLOOKING CITY ALONG WALL.

5 ACCESS TO AQSUNQUR MOSQUE AND RELATED FACILITIES

6 USE: NURSERIES, CONSERVATORY, SERICULTURE, TERRACED GARDENS WITH PLANTATION TO CONSOLIDATE SLOPES.

7 USE: COMMUNITY OUTDOOR PLAY FACILITIES, PASSIVE RECREATION FACILITIES, COMMERCIAL FACILITIES, GARDENS, CAFES, MUSEUM/INTERPETATION CENTER, HANDICRAFT WORKSHOPS AND DISPLAY.

8 DENSE FOLIAGE AS BUFFER AGAINST TRAFFIC GENERATED NOISE AND UNDESIRABLE VIEWS.

9 USE: ACTIVE RECREATION, CEREMONIES. FORMAL GARDENS, CHILDREN PARK, MARRIAGE HALL, RESTAURANTS.

10 DENSE FOLIAGE TO CONSOLIDATE SLOPES, VIEWING PLATFORMS, AMPHITHEATRES, INFORMAL LANDSCAPE, DARASSAH HILL TOPS AT CONTOUR ELEVATION 80, STEEP UNSTABLE SLOPES.
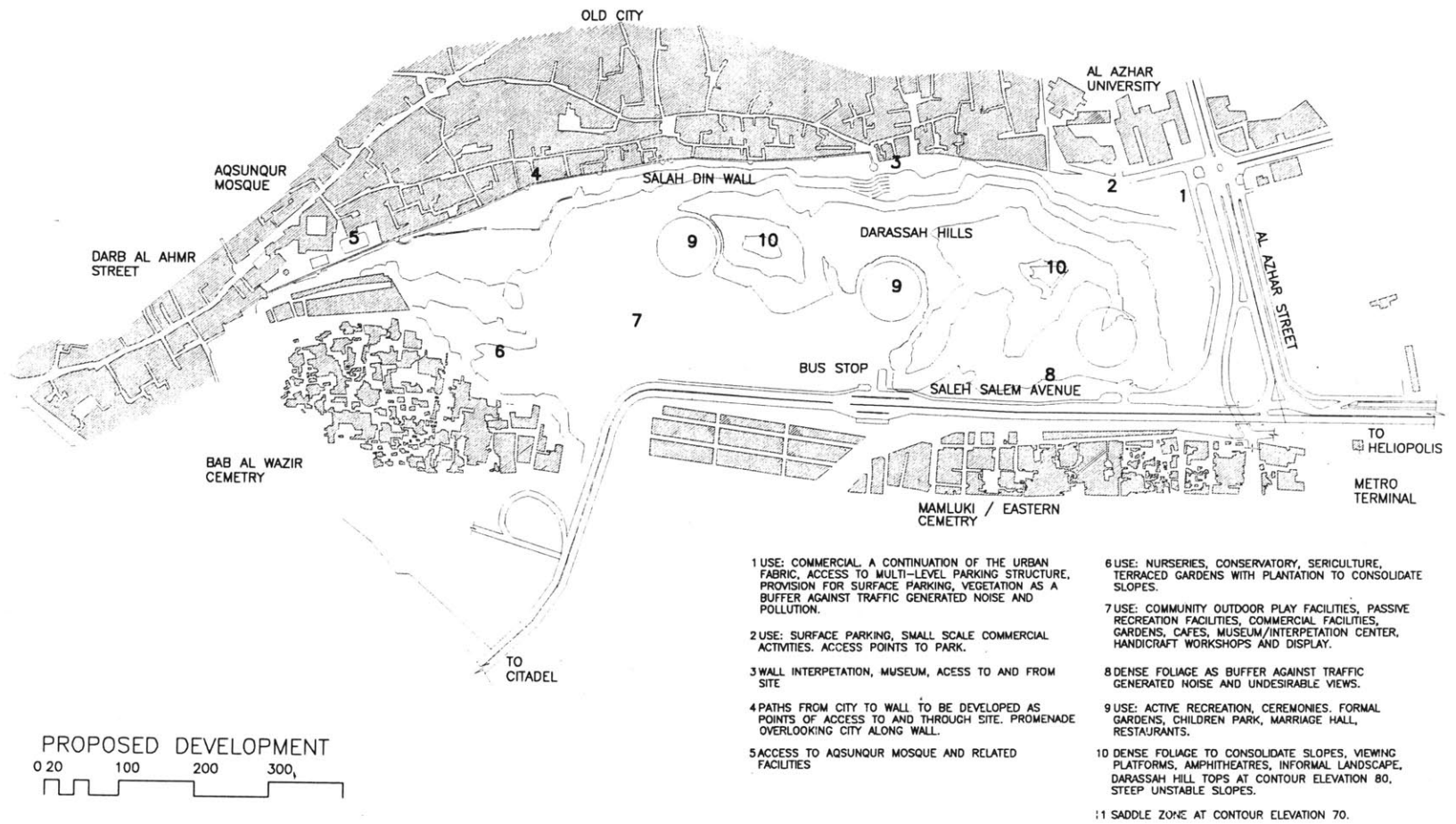
11 SADDLE ZONE AT CONTOUR ELEVATION 70.

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4.1 The park program

The latent ordering framework discussed in the previous chapter is made manifest by the imposition of the program for a park. The concept of the park site as a quarter implies that the park, at any period of time, is in a state of evolution. It will continue to develop over the years, and as the other quarters within the city, shall be in a state of perpetual revision. Functions within the park will change over time, independent of any programmatic control. Any program for the park is therefore, a starting point rather than an end. The program has to be seen as a suggestion and not a delimiting influence that defines the boundaries of the design problem. Nor, can it be seen as a primary determinant for arriving at a formal vocabulary for the park.

In proposing a program I do not intend to suggest a specific inventory of functional requirements. Instead, I shall confine myself to suggesting a broad mix of a range of facilities in keeping with the vision for the Al Azhar Park as a resource for the city and communities adjacent to the park site. These can include

1. Social facilities - formal and informal gardens, multi-facility halls for ceremonies like marriages, spaces for meditation, a diversity of eating places from restaurants, refreshment bars and cafes and promenades.

2. Educational facilities - workshops for handicrafts, sericulture, park maintenance and management, nurseries, museums and interpretation centers.
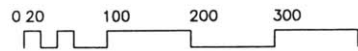
DESIGN OVERLAY

0 20   100   200   300

Fig.4.2

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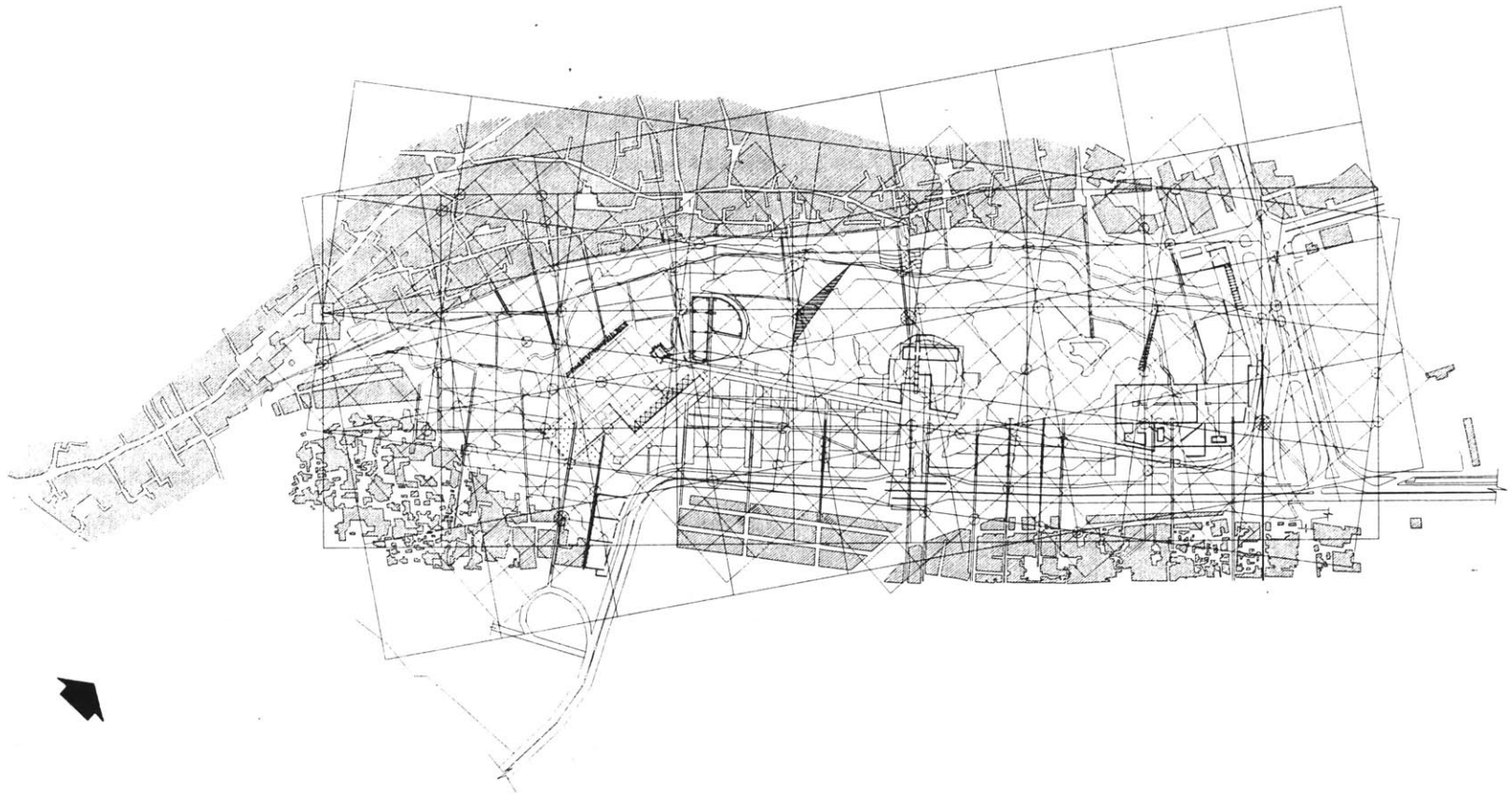
3. Sports facilities - play fields and infrastructure for outdoor soccer, basketball and volleyball. Play areas for children of various age groups.

4. Entertainment facilities - outdoor theaters, view platforms, promenades and, exhibitions and theme shows.

5. Commercial facilities - permanent and temporary commercial outlets, urban plaza and multi-level parking.

4.2 Inhabiting the quarter - Park as settlement

The scheme for the park is a manifestation of the concept in response to three factors:

1. The dictates of the existing topography
2. The dictates of the ordering framework with which the site is vested.
3. The evolving park program.

Metaphors are utilized to inform and enrich the park palimpsest.

The laying out of the scheme is likened to inhabiting the quarter. The park is seen as a growing settlement. The metaphor of the park as settlement enables the visualization of the natural as an extension of the built form. Vegetal elements form the residential tissue of this settlement. In their growth cycles and response to seasonal change the vegetation reflects the transient nature of the residences within the quarters of the old city. Built structures are relative permanences and are conceived as flexible spaces permitting change in use over
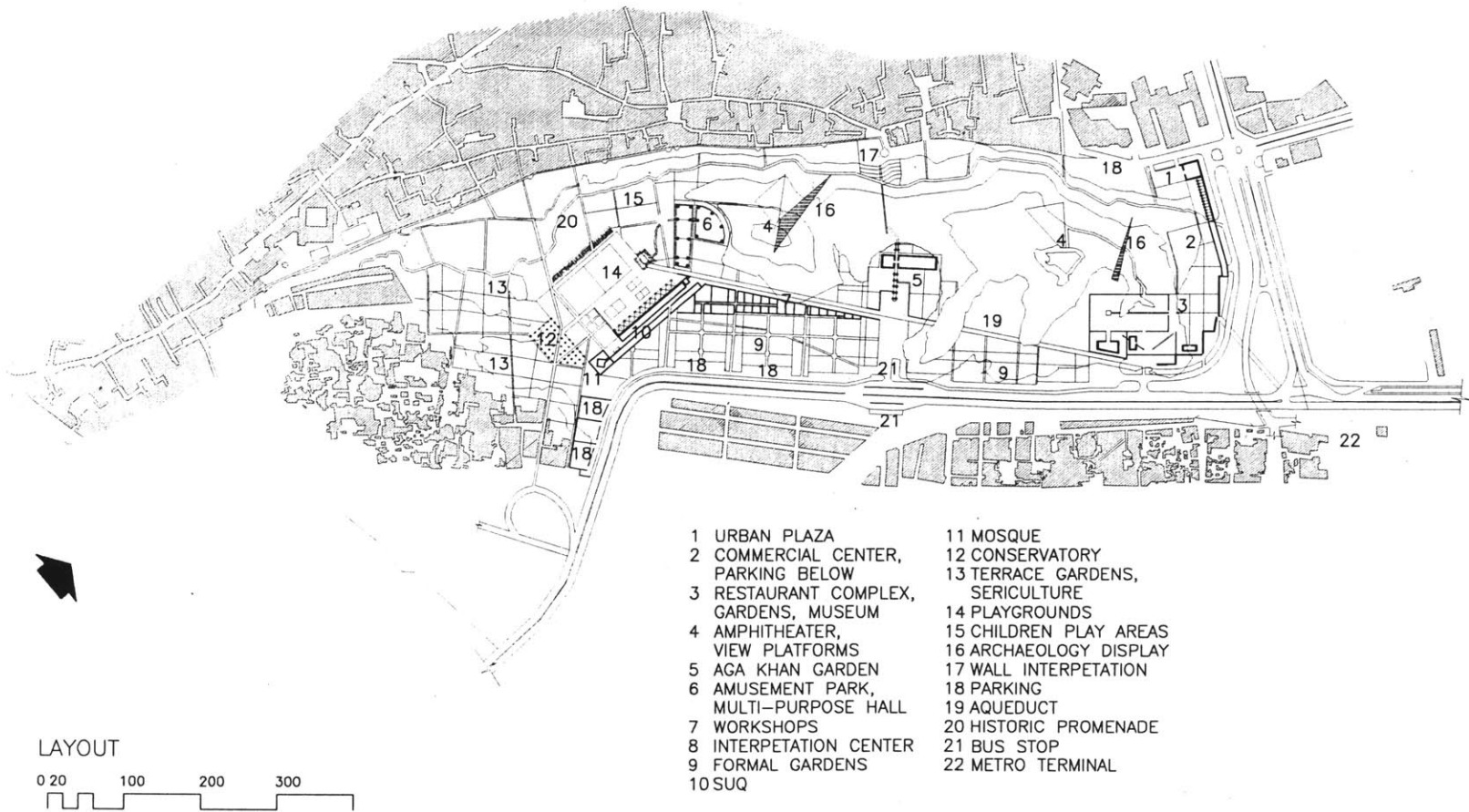
1 URBAN PLAZA
2 COMMERCIAL CENTER,
   PARKING BELOW
3 RESTAURANT COMPLEX,
   GARDENS, MUSEUM
4 AMPHITHEATER,
   VIEW PLATFORMS
5 AGA KHAN GARDEN
6 AMUSEMENT PARK,
   MULTI—PURPOSE HALL
7 WORKSHOPS
8 INTERPETATION CENTER
9 FORMAL GARDENS
10 SUQ

11 MOSQUE
12 CONSERVATORY
13 TERRACE GARDENS,
   SERICULTURE
14 PLAYGROUNDS
15 CHILDREN PLAY AREAS
16 ARCHAEOLOGY DISPLAY
17 WALL INTERPETATION
18 PARKING
19 AQUEDUCT
20 HISTORIC PROMENADE
21 BUS STOP
22 METRO TERMINAL

LAYOUT

0 20   100   200   300

Fig. 4.3a

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time. Vegetal elements in conjunction with the built structures are used to define and set up spatial hierarchies.

The scheme however is not a detailed landscape proposal and should be seen as an organizing diagram permitting the overlay of activities and plantation programs. The design layout is discussed below with reference to topographic modulations, path organization, park interfaces and program layout.

Topographic modulations

The first gesture involves the modulation of the topography. The distinctive terrain of the site makes for a clear distinction between the steep mounds or 'hills' and the flat 'plain'. The huge circular tank tops appear as alien elements on the topography. They are seen as 'encroachments' fingering on to the hills. The expedient of terracing is used to dissolve the abruptness with which the tanks rise from the flat plain. Terracing is also used as a device to structure the amorphous slope towards the Bab Al Wazir cemetery.

Path organization

The primary path skeleton as suggested in the framework is slightly modified and generally persisted with. The desire line or path vector along the Salah Din Wall is realized as a historic promenade (fig. 4.4). It recreates a segment of the historic 'Processional Route of the Mamluk Sultans' traces of which lie buried under the accumulated
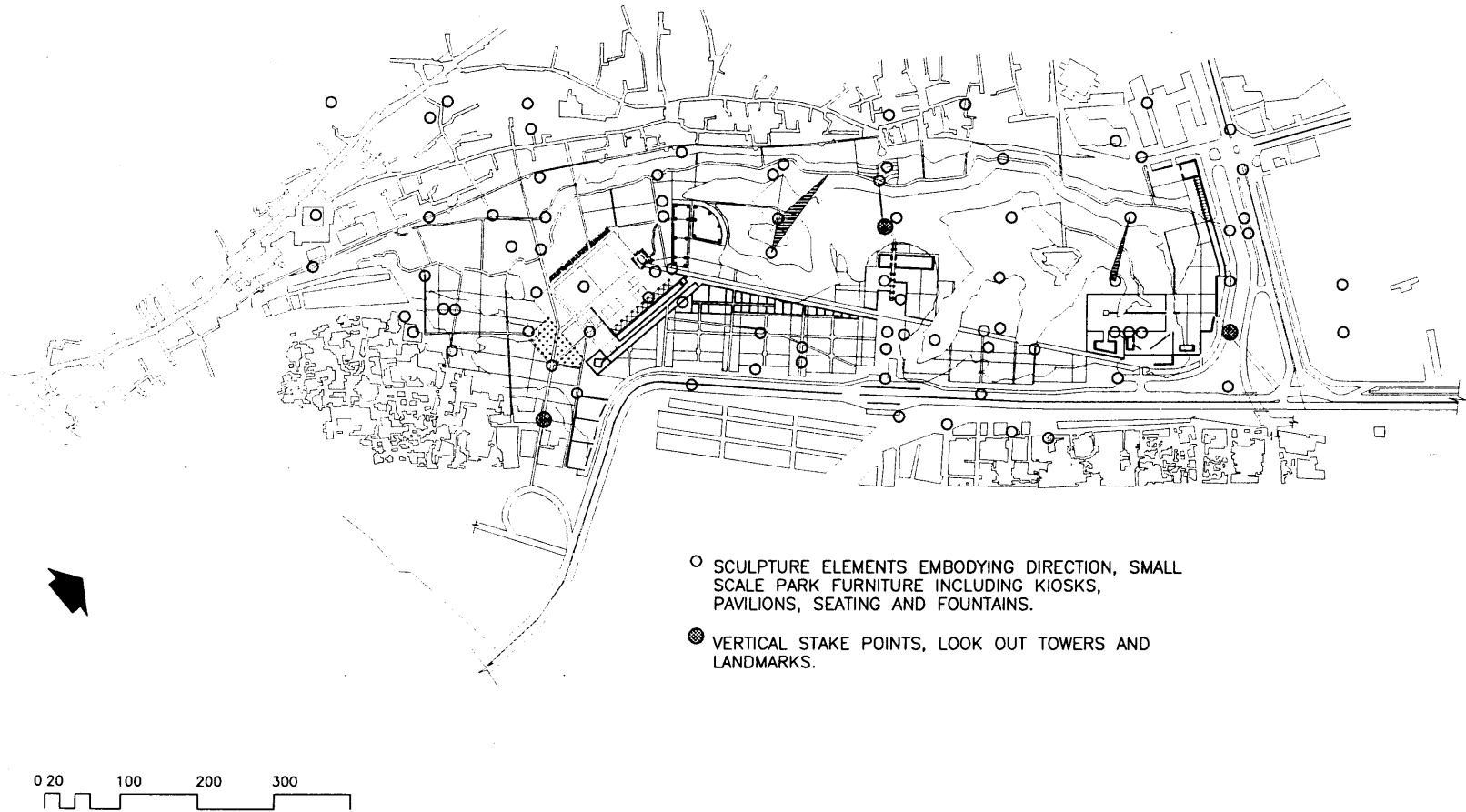
○ SCULPTURE ELEMENTS EMBODYING DIRECTION, SMALL
  SCALE PARK FURNITURE INCLUDING KIOSKS,
  PAVILIONS, SEATING AND FOUNTAINS.

◉ VERTICAL STAKE POINTS, LOOK OUT TOWERS AND
  LANDMARKS.

Fig. 4.3b Distribution of Points of Intensity on the park surface.

debris.[25] This promenade along contour level 45 affords rooftop views of the Old City. Plantation along the route can reflect the colors of the various trades along the Qasba. Connections from the path lead to features on the hills and plain of the park and the precincts of the Old City. The promenade is essentially for pedestrians with possibility for limited vehicular access.

The diagonal path vector from the south-west to the south-east corner of the site is realized as an organizational spine of the scheme(fig. 4.5). In principle it is modeled after the Qasba or main thoroughfare of the quarter. Like the Qasba this path is a conduit to events both within and outside the park settlement. The Qasba in its course through the city makes for a varied visual experience brought forth by fluctuations in spatial enclosures. Variations along the thoroughfare are brought about by both modulations in space as well as variations in elevation.

A large linear segment of the spine is conceived as an aqueduct - an elevated promenade . The aqueduct is seen as a conveyor of people which infuses the settlement with life and activity and a purveyor of

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[25]Karl Stowaser in the "Manners and Customs of the Mamluks" writes that the Mamluk Sultans rode in splendid royal processions on a number of occasions. It is believed that these processions originated at the citadel, moved along the Salah Din Wall through the Al Azhar Park site, re-entered the city from the north gate and completed the circuit to the citadel via the present day Qasba and Darb al Ahmr Street.
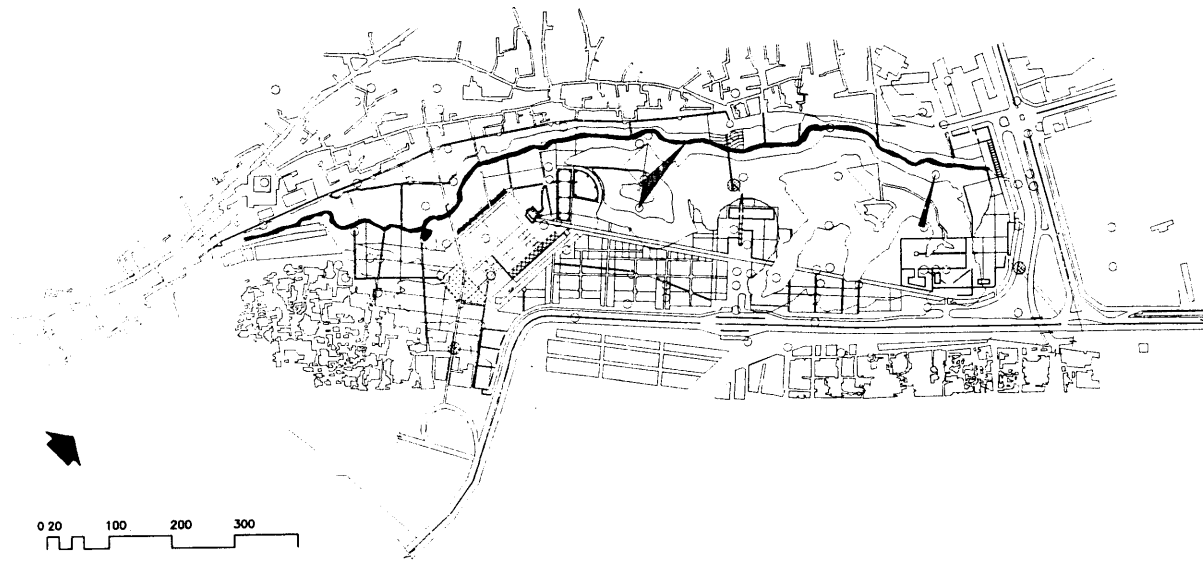
0 20   100   200   300

Fig. 4.4   The proposed historic promenade.
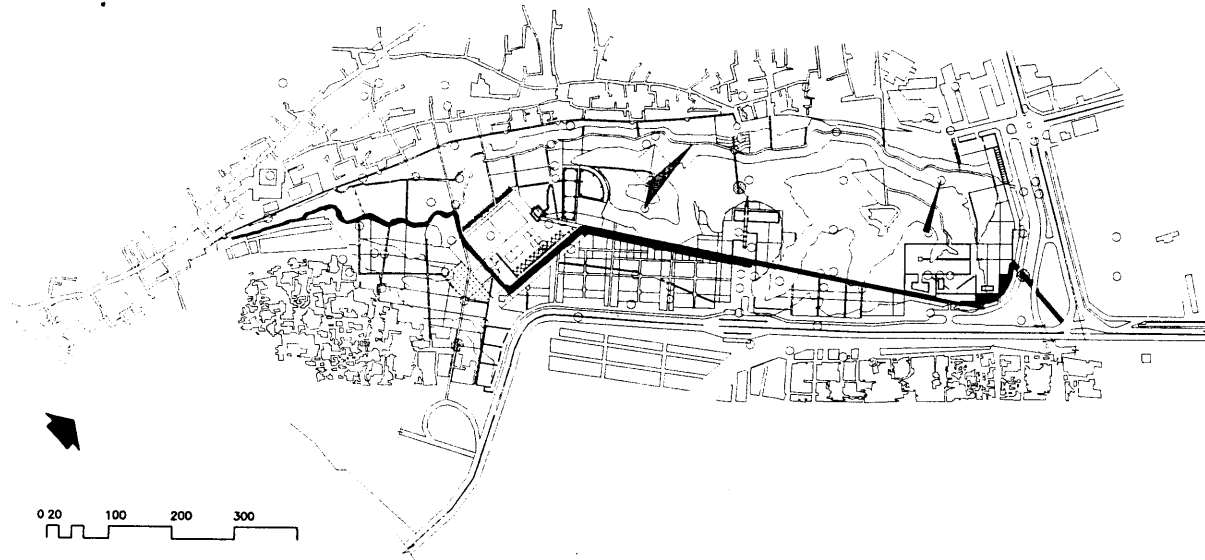

0 20   100   200   300
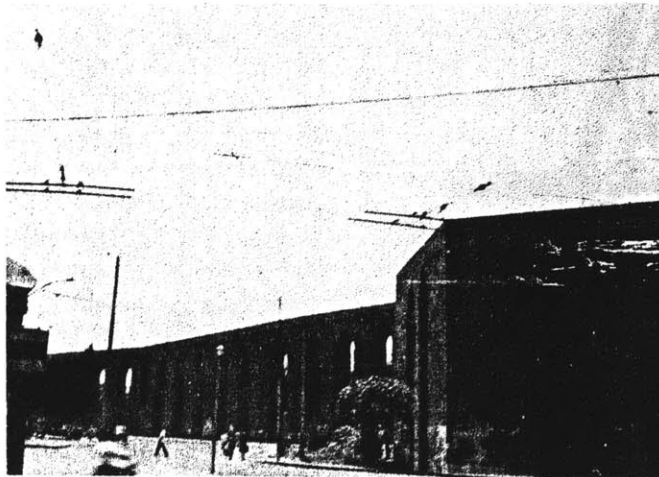
Fig. 4.5   The thoroughfare.

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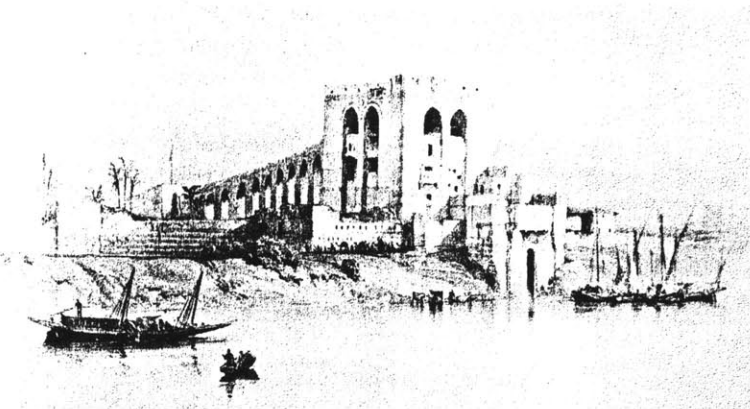**Fig. 4.6a** The Al Ghuri aqueduct, Cairo.

Fig. 4.6b The Al Ghuri aqueduct in the 18th century.

water which suffuses the flora with life. Through its delineation the aqueduct or elevated promenade marks the seam between the hills and the plain and connects prominent features on the hills with those on the plain. The promenade overlooks the Eastern Cemetery, and the geometries and disposition of features on the site plain. Its elevation serves to segregate the pedestrian experience from the vehicular roads to the reservoirs. Vehicular access to the settlement is limited to access ways along the Saleh Salem Avenue and the Al Azhar Street. Path systems within the park are predominantly pedestrian.

Secondary paths emanating from, or connecting to the promenades are developed along the desire lines to the site context. Path systems on the plain are imposed as orthogonal networks in correspondence to the underlying organizing framework. The alignment of the paths on the hills shall remain subservient to the dictates of the topography (fig. 4.7). Further, the actual disposition of these paths shall be formalized over time with use as people visit features of interest including amphitheaters and view pavilions.

The path system serves to structure the gardens within the park. Gardens on the plain are therefore, formal enclosures of varying sizes. The hills in contrast are conceived as large informal green areas with rugged plantation requiring little maintenance and emphasizing the vertical.
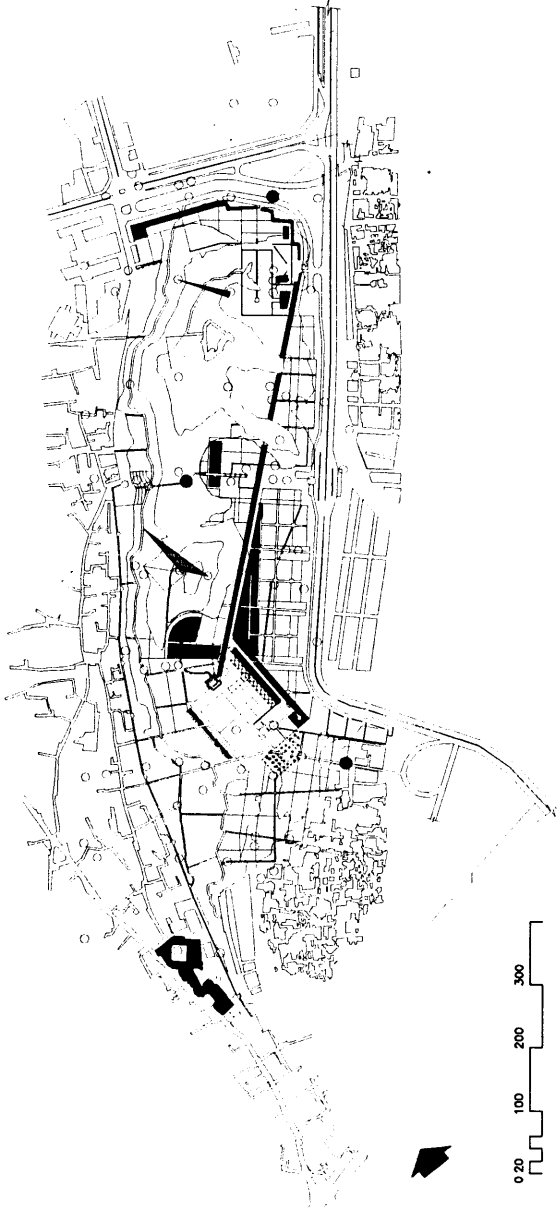
Fig. 4.7 Path skeleton.

0 20   100   200   300

Fig. 4.8 Permanences.
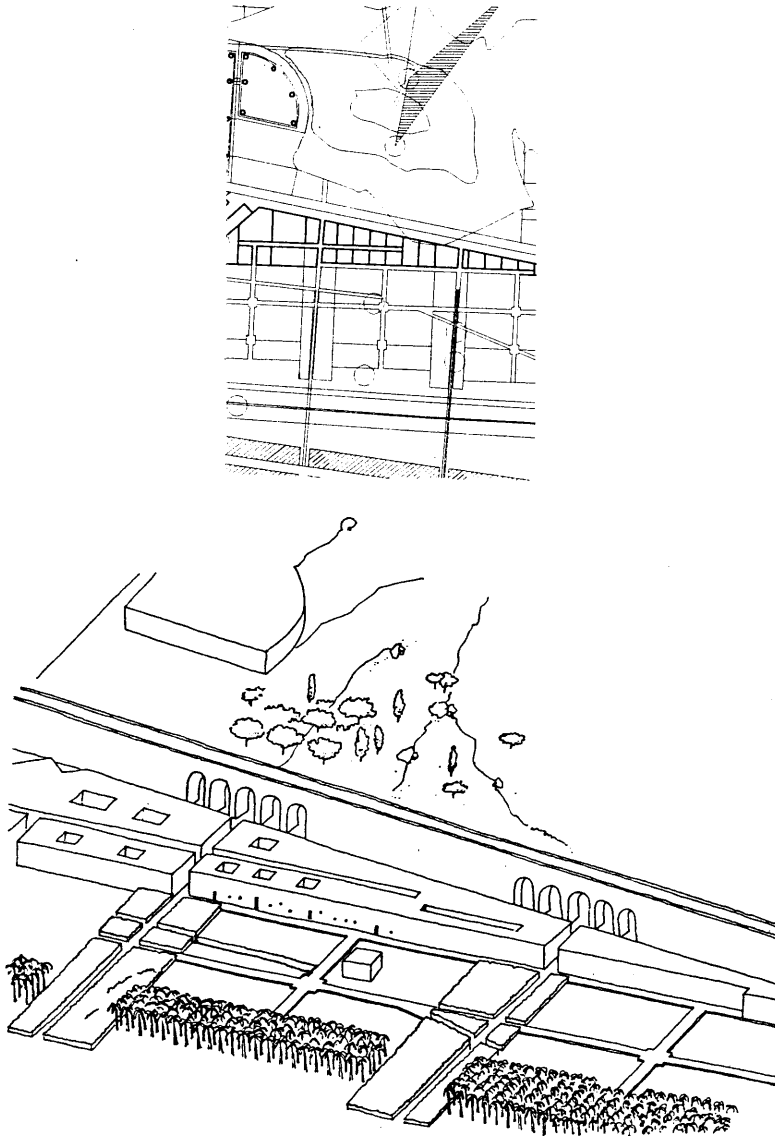
0 20   100   200   300

64

Fig. 4.9   Suggested development: The formal gardens

Park interfaces

The interface of the park quarter with the Old City marked by the Salah Din Wall and the vertical drop along its surface is diluted by developing a series of linkages in the form of steps and ramps connecting to the street network and prominent mosques in the immediate vicinity of the site.

On the eastern edge of the site the Saleh Salem Avenue is recognized as a major impediment in developing physical linkages with the Eastern Cemetery. Consequently, such links are confined to two under passes which also serve as pedestrian links to the Metro terminal and bus stop . In addition, the plantation on this edge is designed as a screen against undesirable traffic views and emissions.

The predominantly horizontal profile of the Bab Al Wazir cemetery aids in its perception as a continuum of the park settlement. To strengthen this perception gardens on the southern edge of the site are conceived as terraces stepping down to the plain of the cemetery. The northern edge of the site, as indicated earlier, is developed in sympathy with the urban character of its neighborhood.

Program layout

At a programmatic level no rigid boundaries are assigned to the precincts within the park settlement by use. Facilities such as play areas, workshops and nurseries are located in the southern sector of the site, affording easy access for the residents of the communities

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within the Old City. The Aga Khan Garden occupies the top of the middle reservoir - the symbolic center of the site (fig. 4.10). The position is suitable from considerations of ready vehicular access and the possibility of expansion on to the saddle zone at contour elevation 70. Activities such as commercial facilities and restaurant complexes are located in the northern sector of the site. Considerations of ready vehicular access, parking facilities and the predominantly urban nature of development in the vicinity of this edge have influenced this allocation.

The points of intensity on the ordering framework are manifested as sculpture elements embodying the directionality of the underlying grids (fig. 4.3b). These are also locations for small scale park furniture. The disposition of these points leads to an even distribution of kiosks, seating, water fountains and pavilions on the park surface. The points of maximum intensity - occurring on the northern and southern edges, and the middle of the site are developed as vertical elements. They are seen as analogs to the minarets within the Old City and serve the function of look out towers and orienting devices.

4.3 A concluding note

The scheme illustrated here is not seen as a prescription for all urban parks. However, as a method it is a strong prescription for the Al Azhar Park site. The design overlay manifests some of the systems latent in the ordering framework evolved for the park. A different design approach may lead to other aspects of the framework being
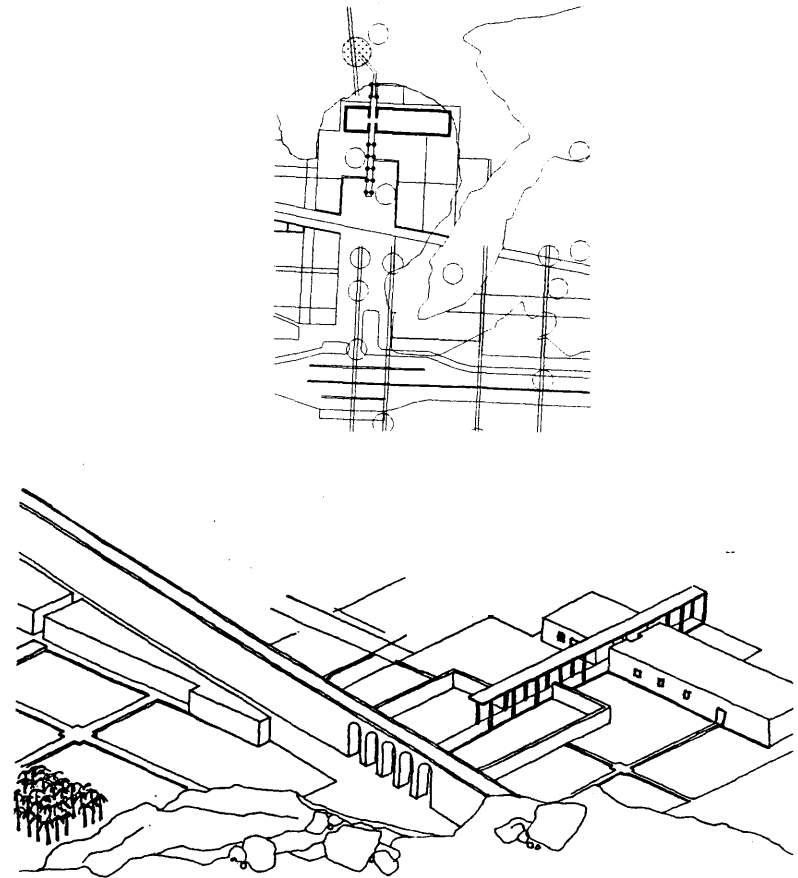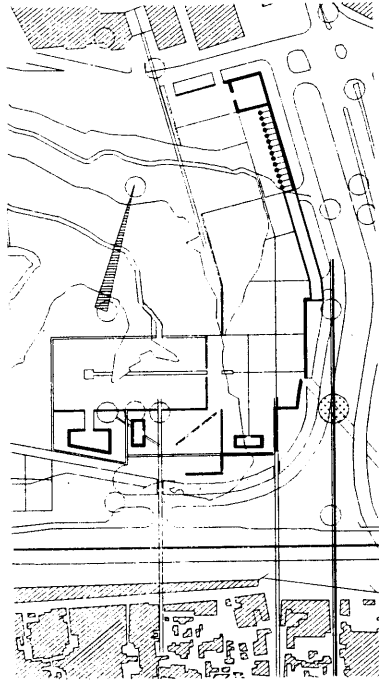

Fig. 4.10 Suggested development: The Aga Khan garden.

realized. This process of manifestation and the dialectics of use over time serve to enrich the park palimpsest. As a corollary it needs to be added that in the process of evolving an ordering framework and a scheme for the park, *design emerges as a tool for analyzing the city.*
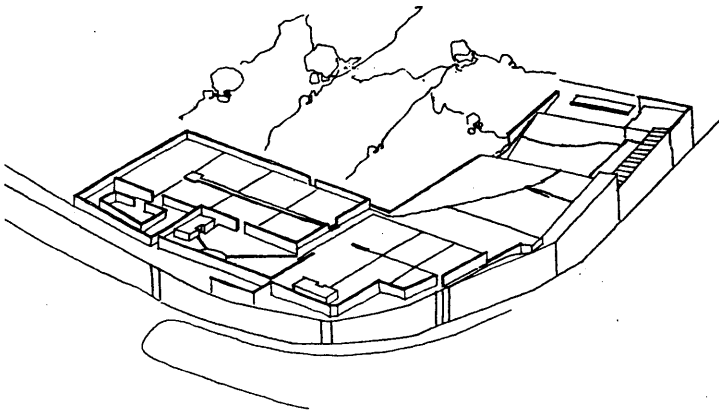
Fig. 4.11 Suggested development: The northern edge

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Source of Illustrations

All Illustrations are by the author except those listed below.

Figure 1.1	Wilkinson."Gadens in ancient Egypt: their location and symbolism", <u>Journal of Garden History</u>. vol. 10. no.4.
Figure 1.2	Sikander. "The Shalimar", <u>Environmental Design</u>. iv yr. no.4.
Figure 1.3	Elioson. <u>The Gardens of Roberto Burle Marx</u>.
Figure 1.4	Padovano (ed.). <u>Le Corbusier</u>. p.189.
Figure 1.5	Cann. "The Park of La Villette: Urban Park as Building". <u>Places</u>. Vol.4. no.3.
Figure 1.6 and Figure 1.7	OMA. "Park de la Villette: A competition for a New Type of Urban Park". <u>UIA International Architect</u>. issue 1. 1983.
Figure 1.8	Panerai. "Cairo:The Old Town". <u>Environmental Design</u>. vii yr. no.8.
Figure 1.9	Abu Lughod. <u>Cairo: 1001 years of the City Victorious</u>.
Figure 2.10b	Abu Lughod. <u>Cairo: 1001 years of the City Victorious</u>.
Figure 4.6 and Figure 4.7	Abu Lughod. <u>Cairo: 1001 Years of the City Victorious.</u>