



# **CITIES IN TRANSFORMATION RESEARCH & DESIGN**

**Ideas, Methods, Techniques, Tools, Case Studies**

edited by Marco Bovati, Michele Caja, Giancarlo Floridi, Martina Landsberger

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# **Cities in Transformation Research & Design**

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edited by  
Marco Bovati, Michele Caja  
Giancarlo Floridi, Martina Landsberger

scientific supervision  
Adalberto Del Bo, Ilaria Valente

VOLUME I

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SCIENTIFIC SUPERVISION

ADALBERTO DEL BO, ILARIA VALENTE

EDITORS

MARCO BOVATI, MICHELE CAJA

GIANCARLO FLORIDI, MARTINA LANDSBERGER

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## **Instrumental Re-stitching and Perceptual Rotation: Spatial Recalibration Strategies for Monumental Parks in Historic Cities**

Deborah A. Middleton

### *Introduction*

Historically the design of the park and garden has aimed to organize both the physical and perceptual structures of space (Steenbergen *et al*, 2003). Contemporary design strategies for monumental urban parks in historic cities aim to simultaneously balance the conservation of historic urban fabrics and create potentials for new development to revitalize distressed historic urban areas, while ideally retaining their cultural vitality and traditions. To achieve these aims, design strategies often employ instrumental tactics, such as the *re-stitching* of the urban fabric, to enable stronger spatial movement flows, in tandem with the *spatial framing* of historic monuments to emphasize perceptual focal points and construct district identity.

The design tactics selected collectively embody and construct the reproduction, conservation and transformation of space as explicit and implied relationships. Their ability to recalibrate the underlying instrumental and perceptual spatial structure of a historic area is grounded in the realism of urban experience and its representation. Topographic spatial knowledge – frequently defined in design representation as the plan – or the cartography of site, contains operations of locating, positioning and individuating our positions in the world situating events, processes and things within a coherent spatial frame that identifies and bounds phenomena (Harvey, 2001). The selection of representational forms for design projects adjacent or in a historic site inform notions of urban landscape and open space, and influence our knowledge of urban social and economic relations, imposing a spatial order on phenomena (Harvey, 2001). These representational forms support new intentional narrative readings and construct mental maps and memories of the city, which in themselves are novel constructions of spaces and visual relationships that never previously existed, and thus can be conceived as fictionalized deconstructions of the historic reality.

### *Instrumental and Perceptual Design Tactics*

Instrumental design interventions, as depicted within the space syntax field, stress theories of integration and connectivity of urban space as a foundational condition underlying vibrant city centers (Hillier, 1993). Instrumental design tactics aiming to improve accessibility and integration of urban spaces, conceptualize urban transformation as dependent upon variables of movement, connectivity and centrality. Re-stitching tactics aim to induce movement by involving major or minor re-alignments of streets and their pattern of connectivity. Re-stitching may also increase spatial permeability, and frequently involves

the integration of large and small urban centers or nodes, followed by the recalibration of axial street networks. Hillier's theories of "natural movement" and "the movement economy" (Hillier, 1996), highlight the important generative relationship between axial structures and movement in revitalizing urban space. Thus urban re-stitching, as an instrumental design tactic revitalize urban districts by increasing a historic districts spatial permeability for movement to establish stronger transformation at the local urban level. At the global level, re-stitching design tactics also formulate spatial compositions to construct an overarching network of local spaces related through axial avenues, as a global system of new spatial relations.

Perceptual tactics are imbedded in design strategies seeking to realign the visual form, experience and memory of urban space. *Perceptual re-orientation* as used in this paper, refers to a restructuring of the dominant point of view from which the city is approached and engaged, perceived and remembered as an image. Visual qualities associated with urban environments are closely related to the sequential changing of views when moving in an environment and corresponds to the construction of a city's imageability, memory and identity (Lynch, 1992). Hillier has pointed out that in designing the spatial configuration of urban areas to express formal axial arrangements of space, symbolic or instrumental meanings may be implied (Hillier, 1996). The strong symbiotic relationship between the configuration of space and its visual syntax, understood as the views generated from movement and position, may highlight essential and imaginary forms of local and global relations.

The insertion of monumental parks within or adjacent to historic urban areas, frequently reconstructs the visual syntax of experience and perceptual representation of "city" through the views imbedded within new spatial organizations. These new spatial configuration formulate synchronic and a-synchronic views to generate a variety of visual experiences from perceptions of distance, permeability, and panorama, to enclosure and proximity or accessibility, and may result in the blurring of previously functional spatial relations. Monumental parks establish relationships that result in an experience of the entire scene composition as visual panorama and afford comprehension of the diversity of topographic connections that link many dispersed sites. Distance is one visual syntactic construct afforded by the monumental park, which establishes a generalized perception of form, and privileges spatial knowledge through the collapsing of spatial layers. Distance also constructs a dialogue between flat and deep spaces, and calibrates views that allows for the close examination and exploration of an overall effect of a scene, deleting fine-grained details.

#### *Juxtapositions of Monumental and Historic Urban Space in Design Strategies*

Two recently completed monumental urban parks are analyzed to understand how they formulate a symbiotic development and conservation approach and engage perceptual and instrumental design strategies. The Al Azhar Park (2005) situated adjacent to the medieval city of Cairo Egypt, transforms a landfill

dating back to the 11<sup>th</sup> Century, and the King Abdul Aziz Historical Center in Riyadh, Saudi Arabia (1999), redevelops the site of the former Murabba' Palace compound of King Abdul Aziz. These designs employ two different approaches to contemporary historic city recalibration with comparable aims to construct open space, generate identity and memory, and revitalize the adjacent historic urban fabric and social community.

*Al-Azha Park, Cairo Egypt*

The Al Azhar Park, completed in 2005, is a signature development (a seventy acre park) located on the eastern periphery of the medieval city of Cairo; it is a project by the Aga Khan Historic Cities Program. The 30-hectare park sites topography is monumental in its dimensions, scale and vertical height, due to its function as a landfill since the 11<sup>th</sup> century. At the northern end of the park, a mixed-use urban plaza project comprised of cultural facilities, museum, shops, and parking, is under construction. The project intent aims to simultaneously restore historic Islamic monuments; upgrade the socio-economic environment, develops a new park, restores the historic eleventh century Ayyubid wall, and seeks to define urban structure spatial coherence.

The project site is adjacent to the historic urban area of Darb al Ahmar, a district that contains numerous historic buildings, monuments, and mosques with their signature minarets and domes.

The park is separated from the community by the historic Ayyubid period city wall, itself a monument. The historic Ayyubid wall, constructed in 1171 by Salah Eddin to defensively surround the city is one of two boundary edges, which defines the project. This historic wall that forms the eastern limits of Darb al Ahmar and reinforces the character of boundary by its scale, mass and continuous form is in sharp contrast to the residential building fabric and medieval Islamic street configuration, and the newly constructed open space of the Al Azhar Park. A highway defines the other boundary edge of the park on its two largest north and east perimeter edges. Previous social and economic flows between the communities of Darb al Ahmar and the impoverished community in the historic cemetery "the City of the Dead" located on the eastern edge of the park, have been disturbed and deconstructed with the development of the Al Azhar Park site and its previous informal path network. Transportation hubs and market areas establish strong convergence points of movement within the Darb al Ahmar community, which may be considered as centering nodes. Transportation hubs are located on the periphery edges of the Darb al Ahmar district while markets are internally located.

*King Abdul Aziz Historical Center, Riyadh Saudi Arabia*

The King Abdul Aziz Central Park and Murabba project, now known and the King 'Abdul Aziz Historical Center (KAHC) was inaugurated in January 1999. Originally envisioned by the Arriyadh Development Authority to be a development that would extensively impact and transform the center of Riyadh over a period of 50 years. Ali Shuaibi, Beeah and Rasem Badran collaborated on the

urban design master plan, with landscape architecture designed by Albert Speer and Partners.

The KAHC project was divided into five architectural developments carried out simultaneously. The design created two fabrics, vehicular roads that link the center to the city, and pedestrian strings of walkways and plazas that weaved the cultural buildings and parks to integrate the center into the social life of the surrounding city. Saudi Arabian planners decided to dedicate all areas as green parks, divide the large site and large buildings into small urban blocks that encourage pedestrians to penetrate and front all sides, increasing the visibility of plazas from surrounding streets, and domesticate the institutional character of the cultural functions of the center (BEEAH, 2010). The historic center grounds cover some 360,000 sqm (3,000,000 sqft) and integrate many buildings and palaces, some renovated using traditional Najdi approaches with a modern synthesis of materials for preservation. The site was originally a walled area of palaces constructed beyond the date palm trees that surrounded the old mud-house settlement of Arriyadh. The new national museum covering 29,000 sqm is positioned directly to the east of the main square. A major Riyadh avenue, King Sa'ud Street runs through the complex, connecting it to the adjacent districts and intended to make it a part of the daily memory of the city (Clark, 1999). A special park planted with 100 date palms symbolizes the centennial of the formation of the Kingdom, and is positioned across the avenue from the main public square, mosque and national museum complex. Included in the historic center is the Riyadh Water Tower, a city landmark, and the nearby distinctive red al-Hamra Palace. The surrounding urban fabric is comprised of historic building structures, new commercial, office and residential development.

The goal of the project was to create an inviting, open and accessible complex, which would be integrated within the urban fabric of Riyadh and to re-establish a center in the historic urban fabric which has become peripheral with the expansion of urban development towards the north. It is the first urban park complex to be developed in the historic heart of Riyadh, composing an extensive setting of open space, public squares, landscaped parks and gardens.

### *Analysis of Design Strategies*

The analysis of implemented designs reveals two primary strategies, the spatial re-stitching of the urban fabric, and the perceptual re-orientation or rotation of the urban parks' visual syntax. Perceptual re-orientation is found to inform spatial recalibration in both strategies. The Al Azhar Park design focus, primarily concentrates on constructing a city panorama, which due to the vertical height of the park enables a viewer to construct a global topographical network across the city. The Ayyubid wall and adjacent urban fabric compose the primary historic image, recreating a romantic orientalist image of Cairo constructed in David Roberts lithographs from the 1840s. In comparison implemented proposals for KAHC combine urban re-stitching strategies across multiple scales within the historic park site with multiple connections to the adjacent urban fabric. In the

KAHC project visual syntax structures emphasize integration and connectivity around internal historic nodes within the park, with longer views connecting parks areas to the surrounding community. The visual syntax of KAHC establishes a strong transformation at the local urban level, while the Al Azhar park project formulates a historic image.

Spatially the two parks engage the city in distinctly different ways. Al Azhar Park is an isolated project with no physical connectivity to with the adjacent community of Darb al Ahmar. The space syntax analysis of connectivity reveals low instrumental connection and integration between the park and surrounding urban fabric. Spatial integration with the surrounding urban fabric is constrained and not developed with absence of interactive spatial permeability between the park and the urban fabric of Darb al Ahmar. Interestingly the central street within the Darb Al Ahmar district emerges as a strong axial movement center for the urban area, highlighting a missed opportunity by the project to create park/district engagement for economic development. The mass and scale of the park reinforces distance from the surrounding urban areas in its visual configuration, with the design strategy emphasizing the restoration of the Ayyubid wall. Economic revitalization potential is under developed for this distressed community. Social engagement with the park is low as visual sightings of the park from within the community at street level or within residences are non-existent, especially as spatial permeability of residences traditionally favored views towards the Nile and center of modern Cairo vs. the site of a previous landfill.

In contrast the urban park and site plan for the King Abdul al Aziz Historic Center, was designed based on an initial strategy to create permeability with the surrounding urban fabric, and to encourage movement and social engagement on the park site. The park setting is characterized as open space surrounding multiple historic and contemporary buildings, creating a historic architectural complex and center. This multi-faceted design strategy generates public open space in the surrounding historic and contemporary urban fabric. The historic elements of King Abdul al Aziz palace complex is imbedded within a large site, redefined as a public plaza surrounded by green landscaped gardens with multiple water features and fountains. The park forms a backdrop to the historical architectural elements, and a foreground to the adjacent neighboring districts. The park forms an urban social oasis that is highly utilized in the evening hours due to cooler temperatures. The KAHC proposal improves connectivity and integration across the variable urban fabric creating multiple focal points and highly interactive spatial permeability.

# **PART FOUR. INFRA STRUCTURES, LAND AND LANDSCAPE**

Table 1 Comparison of Design Strategy: Concepts of Conservation and Development

<i>Concept of Conservation</i>	<i>Al Azhar</i> Stabilize damaged existing buildings	Strengthen social and business networks.	Individual monument restoration Ayyubid wall; reconstruction of community housing to preserve urban fabric image. on wall urban fabric interface.
	KAHC	Re-imaging identity and formulating narrative history with architectural conservation/ National Museum on Site.	
<i>Concept of Development</i>	<i>Al Azhar</i> Primary focus is the housing unit	No connectivity with adjacent urban areas to facilitate economic development.	New product/destination development to stimulate tourist economy for social economic gain.
	KAHC	Strong economic revitalization and development future for adjacent urban areas. Focus on enabling permeability of economic market.	

Table 2 Comparative and Descriptive Matrix of Design Strategies  
Comparative Matrix

<i>Interactive Matrix</i>	<i>Pre-Intervention Condition</i>	<i>Instrumental Strategy Re-stitching</i>	<i>Perceptual Strategy Re-orientation</i>
<i>Intervention Approach</i>	<i>Al Azhar</i> Strong internal configuration as spatial environment.	Focus is on place/ site position in relation to network. Proximity to other nodal points in the network.	Position is an institute site with an angle of vision rather than a geographical point. Destination specific. No historical value as destination.
	<i>KAHC</i> Strong internal configuration as spatial environment.		
<i>Attitude Towards Conservation</i>	<i>Al Azhar</i>	Stabilize and reconstruct damaged buildings	Aggressive conservation of monuments and peripheral edge urban fabric. Reconstruction of 19 <sup>th</sup> c. representational image found in D. Roberts Cairo paintings.
	<i>KAHC</i>	Transformative conservation.	Engagement with historic buildings.
<i>Attitude Towards Development</i>	<i>Al Azhar</i>	Passive economic revitalization restrictive spatial development	Invents new panorama of Cairo., Recreates vista found in 19 <sup>th</sup> c. orientalist paintings
	<i>KAHC</i>	Active economic revitalization and spatial development	Create green center for the city..



Riyadh Saudi Arabia, King Abdul Al Aziz Historic Center (KAHC)

1. Aerial view of KAHC with urban fabric context.
2. Space Syntax Connectivity.
3. Day and evening views within KAHC.

Cairo Egypt, Al Azhar Park

4. Aerial view of Al Azhar Park with the urban fabric context City of the Dead on the lower right of park, Darb al Ahmar district to the upper left.
5. Space Syntax Connectivity.
6. View towards Darb al Ahmar from the park, and view towards the park from within Darb al Ahmar.

#### PART FOUR. INFRA STRUCTURES, LAND AND LANDSCAPE

<i>Descriptive Matrix</i>	<i>Pre-intervention Condition</i>	<i>Instrumental Strategy Re-stitching</i>	<i>Perceptual Strategy Rotation</i>
<i>Local Spatial Fabric</i>	<i>Al Azhar</i> Strong internal configuration as spatial environment	Strong boundary conditions reinforced. Pedestrian movement focus along periphery edge Ayyubid wall inside the park.	Focus is on internal site position and its relation to peripheral edge spatial network (local/global); Position is an institutional site with an angle of vision rather than a geographical accessible point.
	<i>KAHC</i> Strong internal configuration as spatial environment	Street intersection nodes expressed as centers, reorganization and regulation of existing traffic centers and paths, focus on vehicular –pedestrian movement.	Park views are engaged from surrounding urban fabric, create diverse vista's within park.
<i>Global Spatial Fabric</i>	<i>Al Azhar</i> Historical connectivity between historic north-eastern cemetery district, Darb al Ahmar across park site vis a vis pedestrian paths.	No connectivity established between any historic communities on periphery of park. Disruption of connectivity to north-eastern cemetery district with Darb-al ahmar.	Multiple relational webs and observation position from which the park site – city is referenced. Perception of historic city constructed through rotation of cognitive image of the city.
	<i>KAHC</i> Moderate historical connectivity	Relational spatial integration strengthened through increased permeability across and between district; Focus on vehicular movement;	Poor to no perception of global urban spatial structure.
<i>Approach to Spatial Configuration</i>	<i>Al Azhar</i> Internal district oriented movement configuration. Spatial configuration expresses clear differentiation between public and private areas within district.	Isolated topographical site and functional building program.	Construction of strong clear boundary edge/boarders and spatial separation of community districts; Monumental scale addresses external global fabric; configuration focus on peripheral transport structure.
	<i>KAHC</i> Bounded compound site.	Multiple scales applied to complex hierarchical spatial development program.	Spatial permeability within and across park site and to adjacent urban fabric.



<i>Approach to Visual Syntax Configuration</i>	<i>Al Azhar</i> Open site.	A-synchronic – cumulative view shed constructs continuous panorama; views grounded in pictorial distance, no visual details of surrounding urban fabric. Expresses visual network to other nodal points in the urban system
	<i>KAHC</i> Abandoned historic palace compound	Synchronic Multiple relational webs and observation are internally permeable with focus on historic buildings – park site – city connectivity.

### Summary

This paper has demonstrated how design strategies for monumental parks and open spaces in historic cities may be characterized by their spatial and visual syntactic configuration. The matrix outlined in this paper describes the outcomes of instrumental and perceptual tactics found as constructs to the larger design strategy. Monumental landscape and urban design projects in historic cities seek to achieve multiple objectives aligned to conservation and development. The dominance of a perspective of conservation of monuments such as a historic fortification wall, is seen to override the developmental potentials within the Al Ahzar project to achieve social and economic revitalization for the distressed community of Darb al Ahmar. The glaring absence of community engagement with the park even at the superficial level of view from within the community highlights a critical failure of the project to achieve its stated objectives and aims. This analysis highlights how the instrumental and perceptual analysis of designs strategies may afford essential critical reflection at the earlier phase of project development to assist design strategies to formulate robust integrative strategies.

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