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The architectural structures and urban development projects that shaped the urban fabric of Cairo during the Mamluk period

Marwa Abdaljawad

marwa.abdeljawad.vip@gmail.com

Ain Shams University

Research Article

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Title

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Abstract

This study examines the causes of the significant urban transformations that Cairo underwent during the Mamluk period—an era representing one of the richest phases in the city's urban and architectural development. Spanning more than two centuries, this period gave rise to superimposed urban layers and imposing architectural monuments. The study posits that a primary factor shaping the urban and architectural fabric of historic Cairo—in the form that has persisted to the present day—was a series of construction projects and urban expansions. These developments, which at times followed a pre-planned approach, were intertwined with complex political, social, and economic dynamics. Such major urban transformations played a fundamental role in structuring the city and defining its distinct urban character.

The research also examines the influence of pre-existing urban fabric on Mamluk-era urbanism and its role in shaping new patterns. This is explored through a study of a key urban element inherited by the Mamluk state: the Fatimid-era wall of Cairo, which served as an urban starting point for the development of new Mamluk streets.

Keywords

Cairo during the Mamluk period – Urban development of the Mamluk state – Mamluk architecture – Urban structures – The city of Cairo

Article Highlights

First:

The research concludes that Mamluk-era Cairo took shape through a series of urban decisions blends of deliberate planning and spontaneous development. Specific locations were chosen at particular points in time for the construction of major architectural projects, which served as nuclei for the emergence of new surrounding urban environments.

Second:

Mamluk Cairo was formed through the accumulation of various preceding urban layers, with its development influenced by the elements of these earlier strata. A notable example is the Fatimid wall of Cairo, which acted as a focal point for urban intensification; from this point, an expansive urban process unfolded, giving rise to new streets and circulation axes.

Third:

Through testing the proposed hypothesis, this research seeks to provide a new explanation for the historical dynamics that governed the formation of the city during the Mamluk era.

1. Methodology for selecting measurement criteria

The measurement methodology was based on the selection of a set of fixed determinants of an urban nature or influencing urban development, namely: time periods, urban areas, and urban and architectural indicators.

1.1. Firstly: Time periods

Two time periods were selected from the history of the Mamluk era. The two selected time periods span the entire Mamluk era, encompassing both the Bahri and Burji historical periods. This approach does not follow the historical division of time periods based on the political classification of the two ruling factions, but rather follows an urban classification based primarily on the measurement of architectural activity and urban expansion, which may bring together, chronologically, periods in the state's history that are not consecutive on the timeline. Examples include the period of its emergence and formation, the period of its demise, periods of natural disasters and epidemics, periods of stagnation and decline, and periods of economic prosperity and political stability.

1.2. Secondly: Urban Areas

Three urban zones were selected to represent the main cultural spheres of the city of Cairo, which were distributed amongst already inhabited urban areas, areas undergoing urban regeneration, areas of urban expansion and extension, and new urban areas that were previously vacant or part of the Mamluk Desert, considered a vast, sparsely built-up urban void.

It is worth noting that the Fatimid Wall of Cairo serves as the urban boundary separating the three districts. Although the built-up area came to overlap with the wall following the end of the Fatimid state—thereby removing its function as a barrier between Cairo within its Fatimid boundaries and the area beyond—it continued to be regarded as an important urban boundary distinguishing the built-up area inside from that outside, and its use to characterize the urban space inside and outside it continued to be employed in historical literature until the end of the Mamluk period and the beginning of the Ottoman period.

1.3. Thirdly: Architectural and Urban Indicators

Several architectural and urban indicators were employed to measure the extent of urban transformation by comparing the urban environment before and after construction and assessing the impact of various architectural elements on the urban context as a whole.

2. The following is a breakdown of these criteria and the method of applying their various indicators to the selected measurement models:

2.1. Firstly: Time periods

Historical periods that witnessed genuine and significant transformations in Cairo's urban environment were selected, despite the varying political and economic influences that accompanied them. Two time periods were chosen:

2.1.1. The period of urban prosperity: This encompasses the periods of significant urban activity witnessed during the Mamluk period, characterized by a degree of regularity and chronological sequence.

2.1.2. The Period of Urban Stagnation: This encompasses periods during which the state saw no architectural activity, or periods of sporadic architectural activity separated by long intervals.

2.2. Secondly: Urban Areas

Three urban areas covering the city of Cairo during the Mamluk period were selected, namely:

2.2.1. Within the walls of Fatimid Cairo
which was still considered a spatial area defining a specific urban boundary, despite the merging of the building blocks with the walls.

2.2.2. Outside the walls of Cairo (to the north)
This includes the urban expansion that took place in the northern areas, which consisted mainly of new urban spaces, whether new neighborhoods or the Mamluk desert region.

2.2.3. Outside the walls of Cairo (to the south)
The urban expansion that extended into the areas south of the Cairo walls was characterized by higher building densities than in the northern areas, whilst being directly linked to the route of the Qala'at al-Jabal.

Reason for selecting the Fatimid Wall of Cairo as a spatial benchmark:

The Fatimid wall of Cairo was chosen as a spatial benchmark because it acts as an urban boundary that has shaped urban activity both within and beyond it; it can be regarded as an active urban belt that has led to a shift in urban densities, transforming them from low to high both around and beyond it.

2.3. Thirdly: Architectural and urban indicators

The buildings under study were selected on the basis of a uniform architectural style—namely, architectural complexes—in accordance with their location within the selected urban areas and the chosen time periods. A total of 16 architectural complexes and buildings were selected from across the Mamluk period.

These are:

- The Al-Mansur Qalawun Complex
- The Madrasa of al-Nasir Muhammad ibn Qalawun
- The Al-Ghuri Complex
- The Qaitbay Complex
- The Yashbak Domes of Mahdi
- Azbek ibn Tatakh Complex
- The Prince Sheikho al-Omari Complex
- The Sanjar and Salar Complex
- The Mosque and Dome of Qajmas al-Ishaqi
- Qaitbay Sabil
- Al-Zahir Baybars Mosque at Mansha'at al-Mahrani
- The Sultan Muhammad ibn Qalawun's Zriba Complex on the Nile
- Al-Zahir Barquq Madrasa
- The Mu'ayyad Sheikh Complex
- The Faraj ibn Barquq Complex
- The Madrasa and Dome of Sultan Hasan

A set of architectural and urban parameters has been identified to measure the extent of urban transformation, namely:

- Architectural ensemble
- Construction method employed
- Urban context prior to construction
- Iconic dimension: (horizontal projection / vertical projection / massing / skyline)
- The urban environment after construction

The other parameters were assessed in terms of the strength of their impact as follows:
(weak – moderate – high – very high)

Procedural definition of the measurement criterion:
The degree of the measurement criterion in terms of strength and weakness is determined based on the following factors:

1. The degree of change in the built environment before and after the construction of the building
2. Change in building density within the built environment
3. Changes in the nature of land use in the area and the reorganization of traffic flows
4. The development of the street network as a result of the building

Upon closer examination of the methodology for erecting significant architectural structures and diverse activities in specific locations within the city's various urban zones (inner, outer, peripheral, extensions, etc.) which clearly impact the urban context as a whole, it can be assumed that these construction processes were carried out according to a pre-planned approach aimed at the urban expansion of the city, increasing its urban footprint and meeting its urban needs, rather than merely as a temporary response to population growth or a shortage of functional services.

The hypothesis put forward examines several different spatial and temporal determinants and analyses their urban impact both before and after construction, in a manner that allows the validity of the hypothesis presented in this chapter to be tested throughout Mamluk history.

This provides a clear picture of the nature and pattern of the city's urban transformation throughout its history under Mamluk rule, during specific time periods and in specific geographical locations, through which the complex urban transformations of Cairo during the Mamluk period as a whole can be interpreted.

3. The first period: the period of urban prosperity

This period encompasses various phases of the Mamluk state, which witnessed significant urban development accompanied by economic, political, social and urban factors that contributed to this activity. We observe these various phases in the emergence of the fledgling Mamluk state following its predecessor, the Ayyubid state; at the height of its urban and economic prosperity under the reign of al-Nasir Muhammad ibn Qalawun; and during certain scattered periods right up to the end of the state.

The aforementioned factors, along with the changes they brought about in the urban landscape, can be summarized in the following table:

Time period	Urban Area	Architectural Complex	Start date of construction	Urban context prior to construction	Construction Method Used	Iconic dimension	Change in the urban context
Period of activity Urban	Within the walls of Cairo	Complex Al-Mansur Qalawun	638 AH/ 1283 AD	Dar al-Qutbya	Non-existence of Reconstruction	High	Very High
		Al-Nasir Muhammad ibn Qalawun	695 AH /1295 AD	The Palace Courtyard West	Construction and completion Construction	High	High
		Al-Ghuri	909 AH /1503 AD	Dar al-Maktaba Al-Zakiya	Demolition and Reconstruction	High	Very High
	Outside the walls of Cairo North	Qaitbay	877 AH /1472 AD	Desert The Mamluks	Architecture	High	High
		The domes of Yashbak from Mahdi	881 AH/ 1476 AD	A prepared urban space	The building	Medium	High
		The Buildings of Azbek ibn Tatakh	880 AH/ 1475 AD	Undeveloped urban space	Reclamation and construction	Medium	Very High
	Outside the walls of Cairo to the south	Prince Shaykh al-‘Umari	750 AH /1349 AD	Residential buildings and shops	Demolished and reconstruction	High	Very High

		Sanjar and Salar	703 AH / 1303 AD	Unbuilt urban area	Architecture	High	High
		Qajmas Al-Ishaqi	886 AH /1480 AD	Compact building footprint	The building	High	Medium
		Sabil Qaitbay	884 AH/ 1479 AD	Horse market	The building	High	Very High
		Al-Zahir Baybars Mosque in Mansha'at al-Mahrani		The Nile Embankment	Architecture	–	Poor
		The Sultan Muhammad ibn Qalawun's Zriba Complex on the Nile		Nile Embankment	Architecture	–	Poor
Period of stagnation Urban	Within the city walls Cairo	Al-Zahir Barqouq	786 AH /1384 AD	Hotel and Khan al-Zakat	Demolition and Reconstruction	High	High
		Al-Mu'ayyad Sheikh	818 AH /1415 AD	Khazana Prison Shamail	Demolition and Reconstruction	High	High
	Outside the walls of Cairo to the north	Faraj ibn Barqouq	801 AH/ 1398 AD	Desert The Mamluks	The building	High	High
	Outside the walls Cairo, south	Sultan Hassan	757 AH /1356 AD	Two palaces Residential	Demolition and reconstruction	High	High

4. The following conclusions can be drawn from this analysis:

4.1. The selected architectural structures in the 'architectural complexes' category – that is, those comprising more than one structure and serving multiple religious and civic functions – and are characterised by their vast size, have succeeded in bringing about urban change in their surrounding areas ranging from moderate to very high, whilst among the scattered architectural structures, some have succeeded in bringing about urban change reaching a very high level and others have had a weak impact; these are the structures that have failed to achieve genuine or sustained urban change over a long period of time.

4.2. The selected architectural structures were erected in specific urban locations considered to be 'urban junctions', ranging from the city center to its outskirts, new suburbs and the Qarafa district.

4.3. The previous urban conditions of the selected sites varied between demolition, replacement, new construction and reuse, and each case was dealt with dynamically on an individual basis.

4.4. These urban structures took on an iconic architectural character that shaped a distinct visual identity for the Mamluk city and served as a practical showcase for the stages of engineering development and architectural excellence characteristic of the Mamluk period.

4.5. The periods during which these structures were erected spanned various phases of Mamluk history, which witnessed periods of stagnation and urban activity linked to political, economic and military upheavals, as well as periods of natural disasters and epidemics that altered the city's demographics and significantly affected its urban density.

4.6. These structures brought about major urban changes in the areas where they were built and altered the nature of human activity in the surrounding neighborhoods; for example, the construction of the Al-Mu'ayyad Sheikh Mosque brought about a significant change in the character of this area of the Kasbah, transforming it from a restricted security zone into a vibrant area serving religious, commercial and service functions.

4.7. A clear dynamic interaction emerged in the relationship between the street and the building in most of these structures, where the relationship with the street was not merely a boundary separating the exterior from the interior of the building, but rather the space between the street and the building formed a complete urban space open to interaction and expansion between them; In another instance, the street was shaped by the building rather than the other way round (Sheikh al-Omari).

4.8. The selected architectural structures complemented the process of urban growth within their respective sites and served as urban nuclei for central hubs generating both existing and newly developed urban areas.

4.9. Not all structures succeeded in forming urban centers; some failed, such as the Al-Zahir Baybars Mosque in the Al-Mahpa complex and the structures of Al-Nasir Muhammad ibn Qalawun on the Nile.

When these architectural complexes are superimposed onto a map of Cairo during the Mamluk period, it can be observed that each served as an urban center within its own urban area, which in turn formed the nucleus for the development of new urban activity around it; that is to say, they combined the initial planning stage—involving the construction of a large architectural complex within a defined urban area— which then became a central urban hub for the surrounding area and its activities.

A prime example of this is the Fatimid wall of Cairo, which became absorbed into the Mamluk urban fabric and transformed into a focal point for urban intensification within its surrounding area; from this point, new Mamluk-era streets emerged—namely Al-Darb al-Ahmar and Al-Saliba on one side, and Taht al-Rub‘ on the other. The following map (Figure 1) shows the new population density in Cairo during this period:



Figure 1: General map of Cairo during Mamluk period

This research put forward and tested the hypothesis that the Mamluk state witnessed an urban system combining both systematic and spontaneous elements, and that one of the causes of its radical urban transformations—and one of the tools of this systematic transformation—was the construction of significant architectural structures and urban, municipal and religious projects that served the city’s expanding infrastructure. Specific pivotal sites within the city were selected, and these choices were repeated at the same locations during different periods of the state’s history; this makes it difficult to argue that these repeated construction processes at these specific sites occurred by historical chance.

The hypothesis was tested on specific sites within the city of clear urban significance, namely:

1. Within the walls of Fatimi Cairo
2. Outside the walls of Fatimi Cairo to the north
3. Outside the walls of Fatimi Cairo to the south

This was carried out during specific time periods which are presumed to have witnessed a systematic urban development pattern, whilst at the same time encompassing all stages of the state's history—from its emergence and prosperity, through periods of disaster, to its decline and collapse namely:

1. The period of architectural activity
2. The period of architectural stagnation

Several architectural criteria were used to measure changes in the built environment before and after construction, namely:

1. The built environment prior to construction
2. The construction method employed
3. Iconic dimensions (horizontal projection, vertical projection, massing, skyline)
4. Change in the environment built

Testing these parameters on the selected architectural and urban structures revealed changes in the urban landscape before and after construction, ranging from moderate to high and then to low. It can therefore be said that the Mamluk state chose pivotal locations within the city to erect a series of significant architectural structures and urban projects, which contributed fundamentally to the city's urban growth and brought about clear urban transformations that altered the composition of Cairo in the Middle Ages. These large-scale architectural structures subsequently served to stimulate urban development in their vicinity.

The Fatimid wall of Cairo was not treated as a spatial boundary or a divider between the interior and exterior, as was the case with the Old City; rather, it was transformed into a dense urban belt, along which—and starting from which—new urban zones emerged during the Mamluk period

It was here that Taht Al-Ruba' Street emerged as a dense belt along the southern wall of Cairo, and from there new Mamluk streets such as Al-Darb al-Ahmar and Al-Saliba began to take shape.

An existing boundary—the Cairo Wall—was treated as a focal point for the urban development emerging around it.

Research findings

Firstly:

Urban expansion in Cairo during the Mamluk period was based on the selection of a group of generative nodes (generative centers) in specific locations within the city to establish major urban projects offering a range of services at locations considered vital junctions for the city, in accordance with a pre-planned layout; These urban nodes subsequently acquired a central generative character for their surrounding areas, leading to the expansion of the urban area around them and a change in the surrounding building patterns, in addition to a significant change in the nature of urban activities.

Secondly:

The consistent temporal and spatial choices throughout the state's history have combined prior planning decisions aimed at urban expansion and the diversification of activities and multiple uses within the urban area, with the centralized nature of urban growth ensured by these urban nodes through the construction of large-scale architectural projects. By applying consistent measurement criteria, it can be said that this planning approach has not experienced any exceptions or interruptions, even during periods of urban stagnation, pandemics or natural disasters, although not all instances were crowned with success.

Thirdly:

The unique and distinctive architectural character of Mamluk architecture was one of the cornerstones of this planning approach, and was directly influenced by temporal and spatial constraints; these factors enabled it to pursue a continuous course of architectural development that was only interrupted by the fall of the Mamluk state.

Conclusion

The analytical study concluded that the city of Cairo during the Mamluk period did not follow a purely planned pattern, nor did it follow a purely spontaneous pattern; rather, it combined the two and prioritized one over the other.
A series of urban centers were established through the construction of a number of significant architectural structures in specific locations within the city; these projects ensured the formation of new, smaller-scale urban spaces around them, owing to their institutional, service-oriented and religious nature, as well as their selection in diverse and varied locations.

Furthermore, the urban fabric of Cairo is a cumulative formation in which elements of the present interacted with those of the past, The most significant urban feature predating the Mamluk period is the Fatimid wall of Cairo, which was treated as an urban belt around and beyond which development could be intensified; the area outside the outer wall transformed from a low-density urban zone into a high-density one after the wall was incorporated into the urban fabric during the Mamluk period.

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