# The Manifestation of Patterns and the Reconstruction of Meaning: The Reproduction of Spatial Patterns and Role Interpretation Along Xi'an's Historical Urban Axis

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**Abstract:**
The layering of historical spaces in Xi'an has led to the preservation and renewal of historical forms being maintained through the underlying structural control logic of residual forms,such as growth patterns along axes,partitioning relationships along enclosed structures,and isomorphic textures derived from fractal structures.As a representative of such historical cities,Xi'an's spatial text further reveals that the significance of architectural ruins as elements within the urban framework determines the linguistic structural characteristics of their formal value.

Based on the renewal cases of Xi'an's axial spatial morphology,this study explores how architectural forms,as extensions of urban morphology,rely on urban morphological research to sustain their historical significance in contemporary layered historical spaces,as well as the value continuity of East Asian urban heritage's unique morphological composition in the rewriting of contemporary urban forms.

**Keywords:** Typology, Xi'an, Historical axis, Urban morphology, Urban palimpsest, Architecture and city, Systemic transformation, Site rewriting

## 1. Architectural Fragments in Systemic Transformation

As urban forms evolve structurally over long historical periods, architectural elements from the previous era's structural system often face being captured and reorganized by the new structural system in the construction of a new layer of urban material text. These buildings or groups of buildings continuously integrate into the writing of the new urban fabric. The study of morphological typology becomes an indispensable premise for site research in architectural design during the renewal of such multi-layered, superimposed historical cities. It provides necessary systematic contextual analysis for architectural sites along the two dimensions of diachrony and synchrony, emphasizing the study and generation of architectural forms as linguistic elements of the urban morphological typology system through a textual organizational model. In terms of textual linguistic elements, context expresses the relationship between the whole and its parts, which only have complete meaning when understood as a whole. (Pezzetti, 2025) Whether surviving or renovated historical buildings or building clusters, or urban structural information hidden in city blocks and archaeological strata, they can be understood at the fragment or system level as layers of historical information within this overall superimposed collection that urgently need to be revealed and organized. It is worth noting that for traditional Chinese urban settlements: in the context of changes in urban morphological structure, buildings are not always subordinate to the urban structural system; rather, with structural evolution, most building forms continuously participate in or even determine the fractal occurrence and operation of urban structures at different fractal levels. For example, the architectural forms of city walls, gates, and towers themselves mark the same level of urban enclosure structure, while the forms of city towers and the centrally located bell tower arise from the urban axial spatial structural system. These buildings' "symbolic forms" are woven by a multidimensional systemic whole and are not fundamentally determined by themselves. Moreover, they do not participate in the adjustment of synchronous morphological relationships as "individual building" entities in relation to the continuously changing "residential fabric." Caniggia and Maffei, 2008 Rossi, 1966 This differs significantly from the European structural system, where streets and public spaces divide and juxtapose urban building plots, and at the level of architectural form operation. Compared to the expression of architectural form itself, the vast majority of important buildings in Chinese urban history have architectural significance because their form types reveal urban-level patterns. A typical example is the Xi'an Bell Tower, which, after urbanization, serves as the center of a road roundabout with a "symbolic form." Its representative construction form is unrelated to timekeeping functions or commemorating any event; it purely acts as a nodal element integrating the city and geographical environment structure. This nodal element is gradually integrated by urban cultural construction into a form of urban structural morphology; it strengthens the architectural form types of the same-level related elements to provide a reference system for

marking multi-level macrostructures in the urban landscape dimension.This also brings difficulties for Chinese historical urban renewal in borrowing European experiences.

The tremendous transformation of Chinese urban architectural typologies and site structural types has forced traditional architectural linguistic elements to continue in the contemporary urbanization context, where they have lost their systemic linguistic significance. In the capital-driven planning practices where linguistic elements lose their systemic function and the system context is completely segmented by plots, the traditional Chinese urban architectural typology, which originally spanned systems, can only be reduced to a convenient mode of "style experiments" decorating city streets as a subsidiary context for architects to choose from.

The classical Chinese city, whose urban system structure determines the architectural form types, has lost the cognitive context of architectural form types and the holistic connection of formal operations in the contemporary urban modernization movement; the typological combinations that lost control at the architectural dimension have been dismantled. While the classical language frees itself from typological constraints, it imitates the classical symbols competing under Western commercial trends, which in turn leads to the smearing and concealment of the city's deep historical structure in the preserved fragments carrying certain historical information. The superficial behavior that seemingly strives to reveal a certain historical layer's characteristics instead severely weakens the typological features of the remaining authentic historical form information. In 1985, Rossi described Japanese cities with characteristics similar to those of China: "I find it difficult to distinguish past civil buildings, religious buildings, and community buildings. Similarly, some more refined contemporary buildings are the same. My first impression of their reality is typological, that is, the principles followed by usually very different architectural structures."

**2. The Transformation of the Site Context of Xi'an Urban Architecture**

The continuous layering and superimposition of Xi'an's historical urban space have led to the preservation and renewal of historical forms being maintained in each era through the morphological control logic of the residual form's underlying structure. However, the morphological structure of the Chinese urban context has been in flux: what changes is the segmentation form of residential and commercial building land at the end of the macro-structural system (such as the transformation from "lilong" to "hutong alleys"); what remains unchanged is the mutually reinforcing relationship between the structural system and architectural form types, namely the typological organization of architectural forms and the construction of meaning (such as the gate tower system and city gate system). This unchanging control logic of urban form types, from top to bottom, from mountains and rivers to buildings, thoroughly creates the typical characteristics of East Asian layered historical cities as "rewritten editions." These characteristics include: fractal growth patterns of courtyard units along axial directions, division relationships along enclosed structures, and isomorphic textures derived from fractal structures(Miu, 1990).These typical structures of East Asian urban forms collectively define the attributes and form types of buildings and courtyards within the spatial framework. This cultural landscape information, formed by the synergy of interior and exterior spaces, is hidden in the "remnants" of the city's historical landscape and has a multi-level nested logic completely different from modern cities that emphasize the split relationship between buildings and road networks. This exacerbates the accelerated dilution of these historical landscapes at the morphological level and further dissolution at the structural level within the contemporary urban structural system.

**3. Architectural Design's Revelation of the City's Historical Pattern**

As a representative of this type of historic city, Xi'an's spatial text further reveals the significance of architectural sites as elements within the urban framework, determining the linguistic structural characteristics of their formal value. Since the beginning of this century, driven by urbanization efficiency, Xi'an's important historical sites have faced reorganization within the contemporary urban structure, generating new urban forms along their stratified historical axes. These new forms of spatial restoration not only attempt to reinterpret the historical significance of the site under a certain cultural construction but also provide buffering and self-protection mechanisms for the "important heritage" facing urbanization pressures; on the other hand, the axial forms of remnants at various levels in the city signify structural growth that goes far beyond the "symmetry" of architectural form and volume, existing within an environmental system beyond the "important heritage," and have long served as a control system for architectural types evolving with history. While new urban architecture plays a role in cultural narrative, it cannot avoid the systemic structural context revealed by these "important heritage" sites

as partial fragments of a potential historical whole. From the perspective of urban renewal, this excavation of renewal conditions determines the strategic direction of new architecture rewriting the historical structure of the urban dimension; from the perspective of heritage conservation, this awakening of design principles precedes architects' subjective formal experiments and their coincidental alignment with cultural narratives Rogers, 199 Through the analytical study of the evolution of Xi'an's urban historical morphology, within the urban pattern centered on axes, the axis serves as the main principle organizing the growth of architectural interior and exterior spatial layers through courtyard patterns. Architectural forms developed around this system are woven, concealed, repaired, or even dispersed within the stratified layers of the city's historical text. The architectural creation sites around urban heritage areas strictly accept the allocation of contemporary urban land, with historical axes being captured by the land-use logic of contemporary urban architecture, causing misleading misinterpretations and evasions in understanding the site's historical axes. The continuation of axes in new architecture related to ruins or historic buildings often stops at the inheritance of superficial symbols, leading to systemic isolation. In the formal strategies of such architectural designs, truly understanding and deeply conveying the value and significance of the city's historical structure, revealing the connotations of the site's multilayered system, generally relies on the following three experimental steps, here still exemplified by the architectural continuation of the historical axial pattern:

**1) Morphological Analysis:** Focus on the evolution process of the axial spatial forms in these areas, using the diachronic evolution of the figure-ground relationship of group buildings as an analytical element of the urban historical landscape system. The relational patterns of synchronic structures from various eras serve as the analytical basis for the diachronic evolution of architectural forms. In the East-West heritage value contest, respect the stratification process of the existing texture (including diachronic structural evolution and synchronic structural collage), dissecting the morphological texture of new architecture to organize and reveal opportunities to uncover hidden historical structures while respecting the existing complex structural system.

**2) Site Decoding:** Explore how architectural forms, as extensions of the urban landscape in contemporary stratified historical spaces, maintain historical significance through morphological studies, as well as the value continuity of East Asian urban historical landscapes in contemporary rewriting. Decode the spatial grammar of the site's historical stratification through morphological analysis and typological research.

**3) Structural Verification:** The fractal growth logic embedded in the axial structure constitutes the texture of Xi'an's urban historical landscape. Following the architectural volume under this structure naturally achieves its typological significance in form.

**4. Practical Research on Interpretive Rewriting of Historical Axes**

As a typical example of this type of site condition, the spatial text of Xi'an, represented by the Beilin Historical District, further reveals the significance of architectural landscape relics as elements woven into the hierarchical system of the city's historical landscape, as well as their linguistic structural characteristics that determine their formal value. The first case involves repairing the relationship between the new and old buildings of the Beilin Museum through landscape design. Since modern times, urban construction forms dominated by Soviet-influenced architectural entities have gradually interfered with the renovation and renewal of traditional neighborhoods originally dominated by courtyard patterns, under the pretext of seeking higher indoor utilization rates. The ancient inscription museum located in the core area of Xi'an's old city—the Xi'an Beilin—shares a historical texture similar to that of most Chinese and even East Asian cities, which unfold layer by layer along the north-south axis. Within it, vague pattern sequences and scattered individual buildings are submerged in the increasingly dense and morphologically changing urban fabric. Modern heritage workers, drawing on Western models of protecting individual buildings and groups of buildings, have allowed these remaining historical fragments to continue the traces of ancient civilization in the urbanization process by gradually expanding isolated individual buildings. Although this model formally repairs and continues the ancient texture, it causes a serious loss of the informational and value significance of these individual historic buildings at the group level of courtyard patterns. The newly completed north-side annex, half-embedded underground, continues this model in its strategy for updating the city's environmental historical information, despite the building's own design offering a new typological interpretation of the individual buildings housing the steles. The organizational structure of courtyard axes in ancient East Asian cities determines and constitutes the typological derivation of individual buildings; as nodes that "segment" the city's axial pattern, their significance usually precedes the

formal meaning of the buildings themselves. The new museum's repeated emphasis and focus on the typological interpretation of the building's own historical form instead intensifies its opposition to the city's contextual system. The limited landscape design task needs to structurally transform the axis and the spatial pattern of its two wings between the new and old buildings while connecting the traffic and evacuation routes of the new and old museums. (Figure 1)

**1) Morphological Analysis:** The design first organizes the basic logic of urban spatial segmentation by hierarchical levels. It then compares several courtyard generation methods based on "segmentation" as a spatial generation principle to assess their patching effect on the existing courtyard sequence and evaluate the opportunities revealed by this patching for the pattern to which the historical individual relics belong. The "preview" action of the new museum's building wall logic can simultaneously serve as the finishing and tidying of the preceding historical space dominated by courtyards. Thus, the "plaza" in front of the new museum building is understood as the "cross street" following the Confucius Temple courtyard at the end of the old venue. While organizing vertical circulation of the historical terrain, the landscape wall controls people's bidirectional understanding of the north-south structure as they stand between it.

**2) Site Decoding:** The new wall, matching the materials of the new and old venues, stands independently between the new and old buildings, constituting a linguistic type of "ruins" in the nostalgic sentiment of ancient Chinese literati. The converging and dispersing walls penetrate the grid between the new and old buildings, becoming an intermediate mediator that treats the new and old buildings—systems of different kinds—as exhibits to each other. Within the movement lines defined by the walls that are at once near and far, the perspective images of the new and old building landscapes complete the camera's transitions and edits through the organization of scene fragments.

**3) Structural Verification:** The landscape design on both wings around the axis forms spatial extensions adapted to the historical terrain under a symmetrical relationship, maintaining the growth of the courtyard axis at different levels. The Xi'an Beilin Museum complex, submerged in two different types of urban structures from ancient and modern times, transforms from an ambiguous and unclear structural relationship into a conclusion of the historical structure and a "camera transition" between the old and new Beilin through landscape mediation here. It realizes the originally mixed but overall museum and ancient temple complex, shifting from the single and strict whole of "Beilin as Confucius Temple" to a woven system of two opposing yet unified forms of "Beilin and Confucius Temple overlapping out of alignment." The city itself is a fabric formed by multiple systems layered through history. This both separates the historical venue from the new venue in terms of morphological type and maintains the structural integrity of the historical venue as a "historical building complex" heritage attribute.

The museum's landscape renewal ultimately respects the existing historical building complex by implanting a new "wall system" as a frame of reference for the historical space, organizing and integrating the scattered courtyard spatial sequence, highlighting the courtyard-dominated urban spatial order, and revealing the courtyard relationships to which individual building remains belong. At the same time, it also achieves the new venue building's own persistence and focus on formal innovation based on a certain historical type.

## 5. Conclusion: Structural Writing of This Time and Place

The "design site" in historical urban renewal activities is based on the standpoint of urban architecture, adapting both to the planning logic of contemporary Chinese urban renewal building land and serving as a meso-level research object for tuning the continuation of urban context on important urban heritage sites within a rapidly changing and complexly layered historical urban morphological environment. The Chinese character for "site" itself provides an accurate explanation of the synchronic and diachronic research dimensions of the historical attitude toward design land, representing a dynamic spatiotemporal concept of "this time and place." It signifies respect for the systemic meaning behind its own temporal condition and spatial state. The research emphasizes the principles and recognition patterns of architectural design interventions on the urban heritage landscape of the area but does not necessarily rely on strong intervention strategies involving urban architectural body conflicts. This intervention approach involves: revealing, protecting, and marking the core grammatical structure of the historical landscape; transitional buffering methods with morphological continuity research; and interpretive spatial language for contemporary interventions. The study shows that heritage landscape renewal in East Asian historic cities represented by Xi'an should establish a dynamic interpretive mechanism

while studying and continuing the deep structural genes of historical forms. Through typological experiments simulating the inherited urban context system, it comparatively discusses the reweaving and renewed contest of the urban structural systems in the area. This allows the city's "rewritten edition" to provide a readable formal sorting and structural inheritance for historical landscape fragments through the "site rewriting" model, enabling them to integrate into the future urban heritage system with dignity.

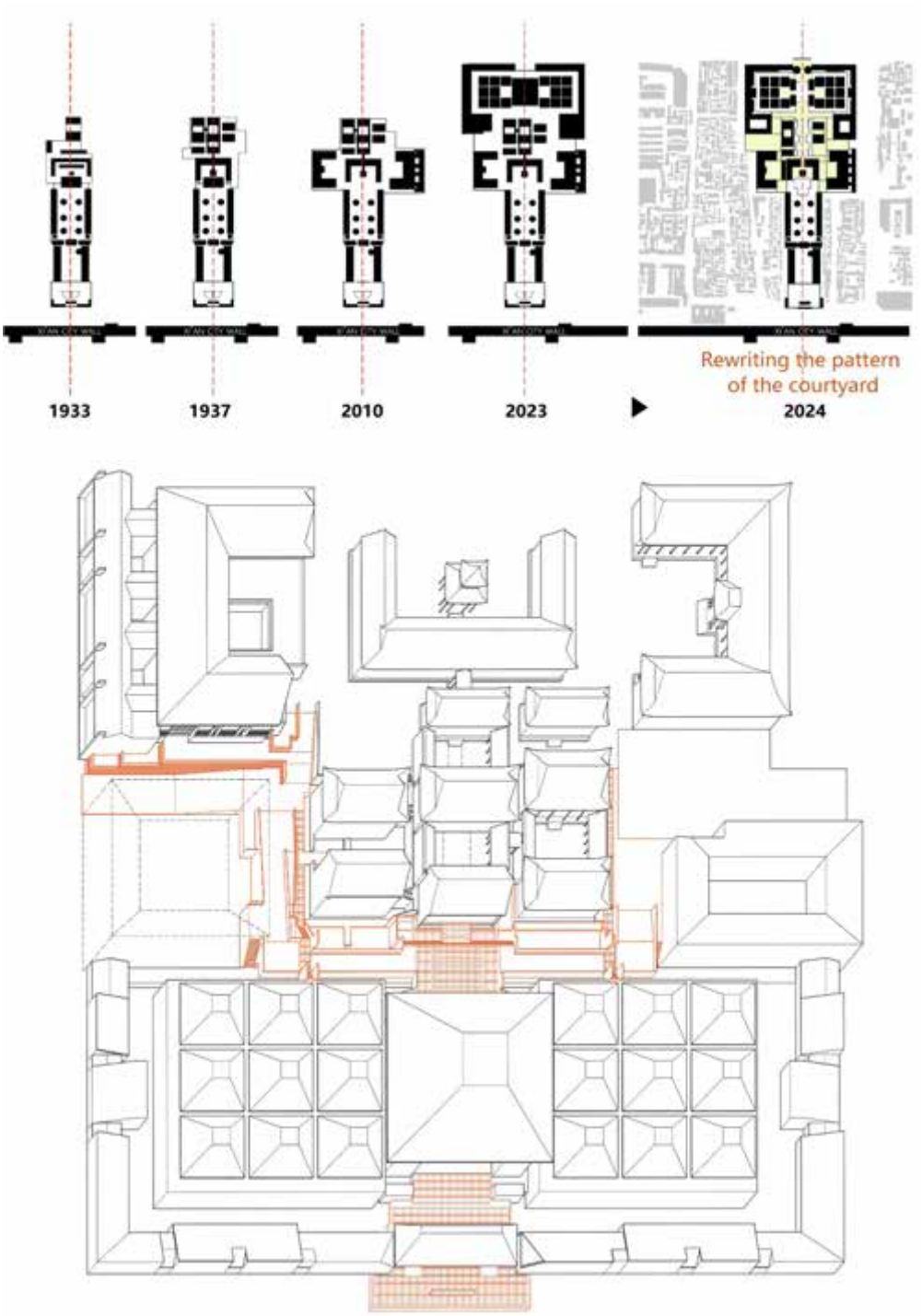


**Figure 1:** Landscape integration design of the new and old building complexes at Xi'an Beilin Museum, Designers: Liu Kecheng, Li Xinfei

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