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Urban Strata Interpretation: Xi'an's Fragile Urban Form Inside the Ming City Wall

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Abstract

Within a troublesome notion of historicity, any attempt to deal with the fast re-development of Chinese historic cities needs to confront with a different concept of integrity, permanence, and memory of the historic space. The end of the 20th century and the beginning of 21st century, moreover, were particularly disruptive for historic cities where an unprecedented development took place on the 'tabula rasa' of all pre-existing typo-morphological orders. Despite its early preservation plan in the 1980s, the historic Ming City in Xi'an has retained only its major cultural symbols while continuing the erasure of historic urban textures, which fragments are now mostly traceable in the topography of the fabric patterns. Around the Ming City Wall, nonetheless, a composite tissue has grown onto old traces and fabrics, defining an assemblage of typo-morphological forms and topographical traces that should be considered historicised as well. If understood as a 'tabula plena', this miscellaneous text could be regenerated and enhanced to support complexity and the restoration of a local identity rather than being indistinctively demolished in the name of a homogeneous stylistic coordination for touristic exploitation. The multiple times and memories absorbed in this composite layering of traces reveal the essential cultural meaning of urban form and the continuous need of interpretative tools to support a coevolutionary sustainable development. The paper focuses its analysis on both structure and morphology of Xi'an Ming City's urban forms and characters, deepening the understanding of the urban substrata in the Jiangguo District.

Keyword: *Chinese built heritage, Xi'an, urban form substrata, urban palimpsest, urban morphology*

The 'Tabula Rasa' Concept as Unsustainable Policy for the Modern China

The unprecedented urban development of Chinese cities has raised an increasing interest towards the issues of conservation and management of the Cultural Heritage in China in recent years. Despite the early admonishments of Liang Sicheng, addressed to the preservation of historical structures (Liang, 1944), the rapid urbanisation after the 1950s irreparably erased most of the traditional urban fabrics, depriving Chinese cities of their identity built on the continuity, which used to link the present with their past.

Chinese architecture was not conceived to be everlasting in its materiality and cities used to be dismantled and rebuilt elsewhere by the following dynasties as it happened in Xi'an itself. Yet, until modernisation, this 'planned ephemerality' and 'de-spatialised memory' did not undermine the prescriptive value of the historical precedent (Pezzetti, 2017).

A millennial building tradition clashed against the disrupting principles of 'modern China'. The structural review of the residential units under Mao's guidance, the widespread demolitions carried out during the

Cultural Revolution and the radical urban renewal after 1978's reforms bore strong consequences on the survival of old monuments, urban fabrics and layouts.

As a capital city under thirteen dynasties, Xi'an has a hidden, fragile but meaningful layering of urban structures and underground traces. Nowadays, in the Ming City, the history of Xi'an is mainly associated to a few major heritage buildings and districts that have conserved their old urban texture - namely the Beiyuanmen District, near to the Drum Tower and the Shuyuanmen District, surrounding the Beilin Museum - although the courtyard houses have been almost completely altered. Yet, some traces of this recent past should be considered as already historicised as well, since they have acted as new *primary elements* (Rossi, 1966) polarising social life and providing specific identity, such as the Jiangguo Market, in the south-east corner of the Ming Wall (dot-hatched in Figure 1).

To understand the structural, typological, and morphological features of the Ming City, the investigation should therefore work on two levels: decoding the composite *whole* formed by the superposition of later fabric on traditional tissues and on the Tang and Ming Dynasties' urban structure; considering case by case the specific character of each urban part in its historic and logical extension (Rogers, 1958).

Mainstream policies for the Ming City are still making a *tabula rasa* of the old fabric, whether they pursue reconstruction for a stylistic homogenisation - as already happened along the Sanxue Street next to the South Gate - or gigantic tourism-led 'cultural attractions' such as the recent case of the Beilin Museum (2019).

This research has instead analysed the Ming City's tissues as a 'tabula plena', showing the overlapping orders and underlying structures to provide a knowledge base for enhancing and to supporting the multifarious complexity of its historic space.

Background: A History of Continuous Urban Rewriting

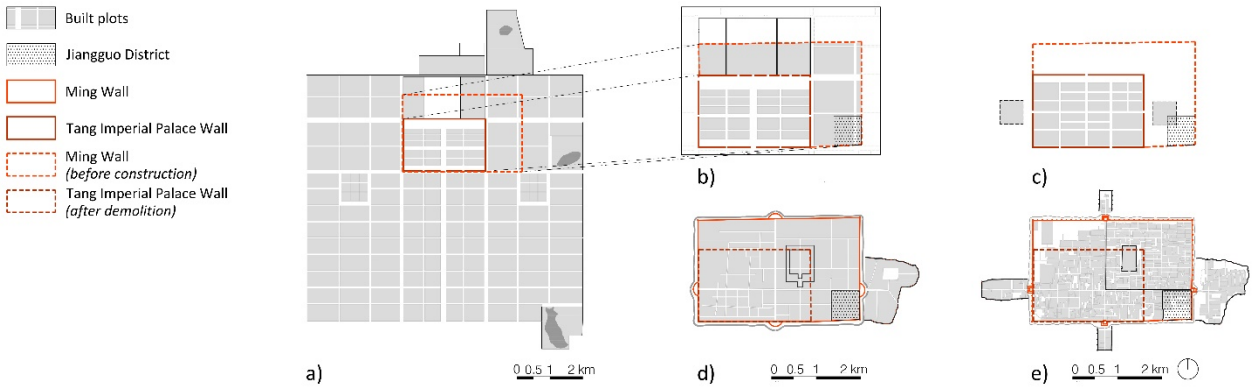

Figure 1. *Urban layout of Xi'an in a) Sui-Tang dynasty (581 AD); b) Sui-Tang dynasty (detail of the Imperial Palace and the perimeter of the later Ming City); c) Wudai period (907 AD); d) Ming dynasty (1368); e) Qing dynasty (1893). Elaboration by the authors.*

Since the Western Zhou dynasty (1046-771 BC), the Guanzhong Plain has been identified as the site for building the capital city, confirmed by the succeeding Qin and Han dynasties (221 BC-220 AD) which built their own cities only a few kilometres away one from each other.

It was only with Tang Chang'an City (618 AD, Figure 1a) that the Guanzhong 'moving capital' was built for the first time upon the same site of another dynasty inheriting the layout of the Daxing City of the Sui dynasty (581-618 AD) and thus beginning the superposition of signs and layering of several ages (Pezzetti, 2020). By continuing the Daxing bold planning based on a gridiron and built by a series of peculiar blocks called *li fang* (a unique enclosed typo-morphological element), the Tang city became a long-standing model for Chinese and Asian capitals (Shatzman Steinhardt, 1990).

With the fall of the Tang dynasty in 907 AD, the Capital City moved away from the Guanzhong Plain, causing a dramatic urban shrinking (Figure 1c) in the Wudai dynasty (907-960 AD), both in population and dimension. The former Tang Imperial Palace became the only inhabited area (Figure 1b). The city's layout was maintained unchanged until 1368, when the Ming dynasty enlarged it northward and eastward, extending and restoring the existing walls (Figure 1d) and re-naming the city as Xi'an.

Another change occurred when the Qing took over, which were seen as foreign rulers because of their *Man* ethnicity. For safety reasons they separated the city in three sections: the *Hancheng* (for *Han* people), the *Mancheng* (for the rulers) and the *Nancheng* City for the army (Figure 1e), which coincided approximately with the Jiangguo District. This division caused the individual development of these urban sections and explains the road network's peculiarities in the three different areas.

When in the 1950s the alliance between the neo-born Chinese Republic and the Soviet Union fostered the industrialisation of the city, some Western urban design principles and architectural types were imported.

In the encounter with an unprecedented development, the atemporal reality of Chinese architecture was interrupted by the violent transformations of a modernity that failed to evolve from tradition (Pezzetti, 2017). Abandoning the traditional types and codes, buildings became mere functional objects extending the traditional principle of enclosing space to the new collective *danwei* enclosures (working unit), grouping residences and manufacturing plants together. Later, in the 1960s, the national policy standardised housing units and encouraged the *hanglieshi* system – i. e. rows of linear blocks – causing the growth of a monotonous landscape.

During the 1980s, when the policy of housing standardisation came officially to the end, the new market-driven urban development fostered the diversification of building types and stylistic characters. By the end of the decade, the replacement of old urban fabrics gradually proceeded substituting the almost entirety of the traditional courtyard houses with modern typologies (He, 2004).

Multi-scalar and Multi-temporal Approach

Xi'an Capital City planning was synchronically conceived in the Sui-Tang dynasties (Shatzman Steinhardt, 1990). So was its shrinkage in Wudai period and its extension in Ming dynasty.

To understand Xi'an current urban structure and morphology it is therefore necessary to assess the formal unity of its paradigmatic planning modifications, considering the city both in the *formal completeness of its*

entirety (Aymonino, 1984) and in the specific individual nature and completeness of its single parts (Aymonino, 1975).

To understand the relations among historic underlying structures and the morphological features of the case study, discovering the traces of permanencies in the urban forms, the research was based on a multi-scalar approach organised in four levels.

In the first stage, the structural features of Xi'an city in its entirety have been studied diachronically (Figure 1), by comparing archaeological maps, geometric-surveyed plans (1893) and the essential literature about Xi'an (Fayolle-Lussac, et. al., 2007 and Pezzetti, 2017 and 2020).

The second level dealt with investigating eventual historical persistences, focussing on the Ming City's heritage and urban form. It compared data from historic maps (1893, 1935, 1986), aerial pictures (1950, 2018), atlases, and records with the *Master Plans* and the *Protection Plans* of Xi'an, while carefully conducting many on-site surveys during 2015-2017. In China, indeed, the lack of reliable historical maps and iconography until recent times makes crucial the understanding of the site as a living archive of urban forms and latent structures (Pezzetti, 2019), which requires to be decoded in combination with surveys.

A synchronic interpretative map (Figure 2) resulted considering all the accessible data based on urban topographical survey, which importance is demonstrated in the early research by Muratori (1959), Rossi (1964 and 1966) and Conzen (1960). This map highlights the relationship between the Tang *li fang* and the structure of the road network, together with the influence of old and recent *primary elements* (such as the ancient Great Mosque and the Jiangguo industrial buildings) to preserve the morphological completeness of historic urban areas.

Concentrating the investigation area to the southern district of the Ming City (Figure 3), the third level examined the ancient Tang *li fang* as a latent substratum of the present urban block.

Finally, the fourth level focussed on the scale of the Jiangguo District, elaborating diachronic maps based on the ground print of buildings, which revealed the several phases of urban development and disclosed permanencies in single elements and urban form (Figure 4).

Understanding the City through Interpretative Mapping Tools

Interpretative Mapping: Synchronic Map of Historical Matrices

The road network, as the most persistent element among urban components, defines the basic module of the contemporary Ming City: the urban block.

In those parts of the Ming City that have grown onto the *substrata* of the former Tang Imperial Palace (Pezzetti, 2020), the size of the urban block confirms the proportions of the previous *li fang*. To say it with Caniggia, the 'consonance' between the *li fang* and the modern urban block reveals a consistency with the concept of *co-presence* (*compresenza*), or 'spatial correlation' (Caniggia and Maffei, 1979). The persistence of the *substratum* in the form of a later urban element constitutes, according to Rossi (1966), an *urban fact* 'par excellence' that prove the resilience of the older structure. The map (Figure 2) shows also clearly that

the northern and eastern extensions in Ming dynasty have been developed considering the dimensions of the *li fang*, coherently with the concept of *derivation* (*derivazione*), or 'temporal correlation' (Caniggia and Maffei, 1979). Although Caniggia conceived those two notions as the conditions to assess the *historicity* of an element, it is possible to argue that in some case, one of them might be predominant.

Interpretative Mapping to Decode the Morphological Composition of the Urban Blocks

The identification of a clear structure in the southern blocks of the Ming City highlights the rationale of their formation and the features of the urban form unity that has been developed from a *substratum* that is unitary as well. Nevertheless, the continuity in the urban structure is not derived linearly from morphological continuity but rather from scattered discontinuities of the tissues within a 'morphological unity', which remained distinct and clearly recognizable in this part of the Ming City. It is therefore possible to assume the concept of *morphological discontinuity* to understand the parts of the city that have different morphological characteristics, with regard to the continuity of its main structural characters.

The concept of the 'city made by parts' (Aymonino, 1975) provides a theoretical background to assess those discontinuities. In the Ming City, the modern substitution of the old urban fabric has left indeed some scattered areas where the previous texture might still be traced. Moreover, the influence of some *primary elements* has guided the formation of specific parts of the city (Rossi, 1966), and seems to have also conditioned the preservation of the old texture, wherever the presence of *primary elements* was denser, as in the Beyuanmen and the Shuyuanmen Districts (Figure 3).

The map is focussing on the southern districts of the Ming City and is meant to survey and decode the structuring composition of the urban blocks. To read the Chinese city, the research has identified four macro type-morphological categories that constitute the typical structure of the block itself, namely: *primary elements*, *urban block borders*, *inner urban block fabric, old urban fabrics and residual scattered buildings.*

Primary elements (Figure 3, in black colour) have undoubtedly conducted a meaningful role in the survival of surrounding old fabrics. Given the enduring identification of 'historic' with monuments, nonetheless, many *primary elements* – e. g. the St. Francis Cathedral in the southern Ming City's district - have been isolated and now 'fluctuate' within modern tissues or roundabouts, deprived of their catalyst's capacity.

The *urban block borders* (Figures 3, in red colour) identify two sub-categories. The first one is composed by *large artifacts*, which are the oversized buildings that began to appear in the end of 1980s and extensively after 1995, with few exceptions (He, 2004). They fix the hierarchy of the road network along the two main axes. The second sub-category is made of *boundary buildings* that fix the borders of minor orthogonal roads, providing an identifiable form to the urban blocks. The absence or the irregularity of the 'urban block borders' is the main indicator of those sites where a *morphological discontinuity* might be perceived.

The *inner urban block* (Figure 3, in grey colour) is constituted by buildings that fill the block's core area in gated compounds. Their establishment has erased all traces and previous tissues. They are characterised by

a scarce permeability as compounds are separated by walls and fences with only one or two gate-entrances. The classification of its buildings is based on typological attributes: *linear*, *courtyard-like,* and *tower buildings*. The macro-category named *old urban fabrics* and *residual scattered buildings* (Figure 3, in brown colour) collects three sub-categories with peculiar characters: *traditional urban fabric*, *traditional urban plots* and *parasite constructions*. The *traditional urban fabric* is composed by residential tissues which have maintained the morphology of the old courtyard houses. Despite the typological alterations these fabrics have conserved some features of the courtyard-type, while in the *traditional urban plots* the modern buildings have completely replaced the old buildings, but the dimension of the plots and urban patterns still clearly reveal the former courtyards' fabric. The last sub-category, the *parasite constructions*, represents low-rise buildings, with unclear typologies and mixed uses which does not present a clear structure and seem to have infilled informally, 'embracing' other buildings.

Interpretative Mapping: Diachronic Phases of the Jiangguo District

The Jiangguo District in Xi'an has also absorbed multi-temporal layers that the research has traced back in its structural logics over time and ascertained in its persisting traces and peculiar character. As a matter of fact, this area was first urbanised, then excluded, and finally re-included within the urban boundaries but it was always subtracted to a mere residential function. Its core was first a religious a site in Ming dynasty, later a military area in Qing dynasty and during the 1950 it turned into a *danwei* that spontaneously evolved as a neighbourhood market in 1990s. The mapping revealed that the Jiangguo area still plays a distinctive role and a rare exception from the aforementioned logic that structures all the blocks of the modern city.

Some of its former industrial buildings have assumed in the neighbourhood's life the polarising role that is attributed to monuments, becoming the 'identifier elements' at the district scale. In addition, the research has disclosed the persistent morphological alterity that this part of the city has always played since it was included within the Ming wall.

The shortage of maps before 1893, induced the research to use archaeological maps reconstructions (Figure 4a, b, c). It might be assumed that the Tang *li fangs* (Figure 4a) and ground traces, have constituted structural substrata even after the shrinkage of the city (Figure 4b), because the boundaries of some temples' enclosure existing in the Ming dynasty (Figure 4c) likely remarks the tracing of the Tang streets (Figure 4a). In turn, the tracing of the Ming's temples, once demolished, might also have influenced the generation of feeder roads with smaller blocks that have presumably been implemented during Qing dynasty (Figure 4d).

During Qing dynasty, the construction of the military area and the *Nancheng* wall separated this area from the rest of the city and arrested its development (Figure 4d) and most of the district was still unbuilt in the 1930s, when a first squared enclosure named 'Xuanfeng Bridge' appeared (Figure 4e). Although the form of the enclosure clearly identifies a different function rather than a real bridge, it is still not clear for what use this land was destined to. This enclosure acquired a distinctive identification in the 1950s (Figure 4f), when a set of low-rise buildings defined the form of the Pingrong *danwei* remarking the precedent form. During the

following decades, the *danwei* was turned into a proper industrial plant with the construction of larger buildings that replaced the lower ones (Figure 4g).

When the discovery of the Terracotta Army brought the attention of the policymakers toward the historical values of Xi'an City in 1974, most factories were ejected from the Ming City to cultivate the new national cultural role of China's Ancient Capital. This event favoured the spontaneous formation of a local market that occupied the entire enclosure in the end of the 1990s (Figure 4h). As the plots' form still witnesses the tracing of the Xuanfeng Bridge's enclosure, the later-built industrial buildings seems to have absorbed the memory of its underlying matrix.

Conclusions: The Potential Structuring Role of Latent Structures for the Chinese City

The paper intends to demonstrate that despite the extended alterations since the Cultural Revolution, the disregard for morphological layering and the emphasis on intangible values at the expenses of physical carriers, a deep reading of urban form can disclose hidden matrices and meaningful relationships among scarce physical remains as well as the rich intangible vessel of latent urban structures.

The case study of Jiangguo District in Xi'an Ming City shows that by reading the site in its historical development through interpretative mapping, a persistence of character and structures emerges, which long-duration meanings can be identified and traced back beyond present appearance. If understood as a '*tabula plena'*, the present miscellaneous text could find constitutive tracings to support its regeneration and enhancement while favouring complexity and local identity, rather than be indistinctively demolished in the name of a homogeneous stylistic coordination for touristic exploitation. The multiple times and memories absorbed in this composite layering of traces reveal the essential cultural meaning of urban form.

Thus, the exploration of new interpretative tools to support a coevolutionary sustainable development.

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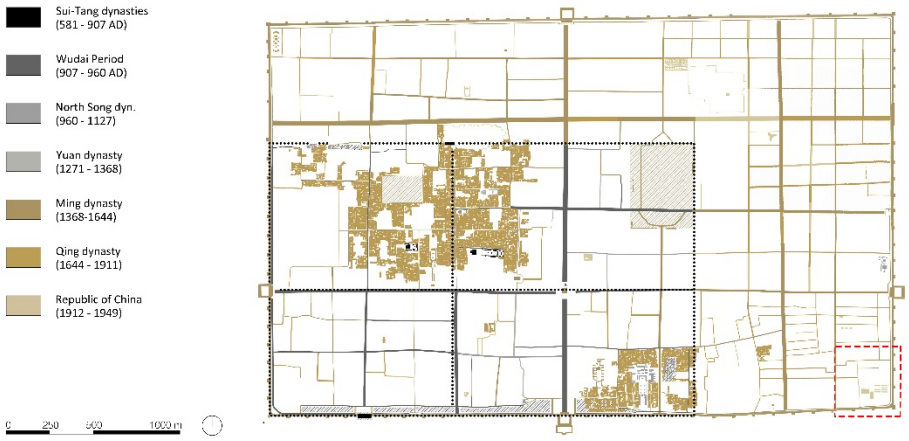

Figure 2. *Synchronic interpretative map of historical matrices in the Ming City. Drawn by the authors.*

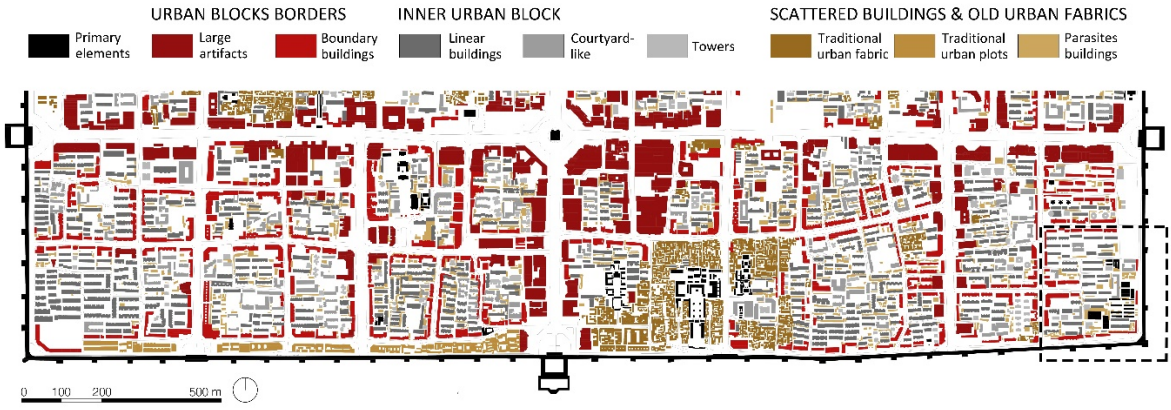

Figure 3. *Synchronic interpretative map: structural composition of the urban blocks. Drawn by the authors.*

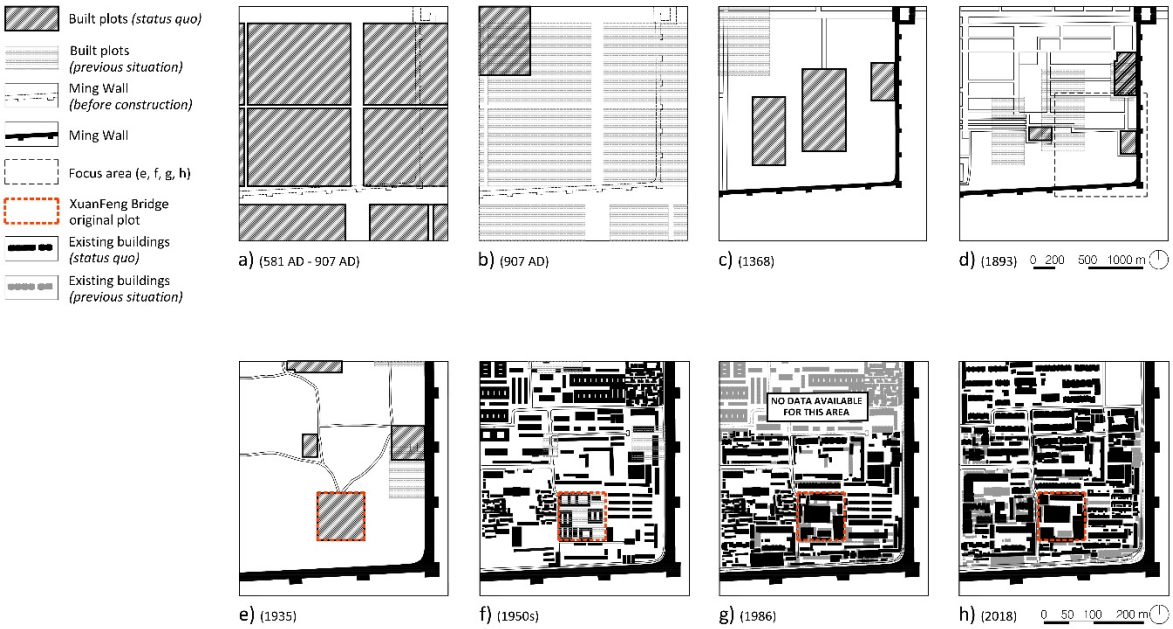

Figure 4. *Diachronic phases of the Jiangguo District in: a) Sui-Tang dynasties; b) Wudai period; c) Ming dynasty; d) Qing dynasty; e) 1935; f) 1950; g)1986; h) 2018. Drawn by the authors.*