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Urban Morphology versus Urban Redevelopment and Revitalisation

Proceedings of the XXIX Conference
of the International Seminar on Urban
Form 2022

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Chapter 7

Reading for Rewriting Chinese Urban Form: The Dual Typo-Morphology of Nanshijie Block in Ganzhou



Laura Anna Pezzetti and Li Bao

Abstract Reading urban form is essential for establishing a cultural relationship with the site's history, memory and future writings. As Chinese historic sites are generally considered the loci of a despatialised textual memory lacking physical substance, the condition of latency and disappearance together with an overestimation of intangible values too often open the path to unjustified erasures, substitutions and re-historicisation through replicas. Yet, by understanding the place not only through what is today detectable by the eye but rather as a historically layered and culturally defined context, we can inaugurate a methodology to decode the site as an “already-written” text that requires interpretation and guides future writing. The Nanshijie site in Ganzhou Historic City is a paradigmatic urban text that has become unreadable. Through the reading of morphology and building types combined with the hermeneutic work of decoding traces and absences, the research revealed the latent urban form in three structuring components and “Latent Structures” that still inform the site's readability and potential *rewritability*. The cognition and interaction between these essential components should be the starting point for defining the “city part” and its conservation boundaries, that is, integrating preservation, regeneration and design approaches into one co-evolutionary *rewriting* of urban form.

Keywords Rewriting urban form · Latent structures · Ganzhou Nanshijie unit

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7.1 Decoding a Composite City Part

Understanding urban form through the interaction between the substrata of urban origins and the palimpsest of their historical structures and imbued cultural narratives is a decisive issue for *continuing to write* (Pezzetti 2020a, b) on the text formed by the existent city.

In Chinese historic sites, which are generally considered as the loci of a despatialised textual memory lacking physical substance, the condition of latency and disappearance together with an overestimation of intangible values too often open the path to unjustified erasures, substitutions and re-historicisation through generic replicas. Besides, the absence of morphological investigation within urban and architectural design projects also contributes to the massive erasure of any topographical urban and rural sign, resulting in the production of estranged objects rather than a layered cultural construction of meaningful urban morphologies.

On the contrary, if we understand the site not only as what is today perceivable by the eye but rather as a historically and culturally defined context, Chinese historic places can be then read as “already-written” text and the design project as a new “active writing”, which need to be linked together by relations of meaning (Pezzetti 2020a).

Reading the generative matrixes of urban form is essential for establishing a cultural relationship with the site’s history, memory and future writings. Including its visible, lost and underground traces, the site forms a composite, interrupted or incomplete text that requires interpretation of its multiple components, memories and signs, including future ones.

The Nanshijie historic site in Ganzhou Historic City is a paradigmatic miscellaneous urban text that has become unreadable (Fig. 7.1). Besides, it is also representative for studying the urban form of those *city parts* (“parti di città”, Aymonino 1970) in the Chinese historic city presenting the interaction between *serial buildings* morphology and *nodal specialised buildings* (Caniggia and Maffei 1979), or *primary elements* (Rossi 1966). The morphological and compositional study of these urban parts characterised by the compresence of types related to ordinary mixed residential-commercial use and nodal types characterised by singular dimensions and use, in this case the temples, has not been explored in China. The two components are studied separately, the second mainly by historians and restorers.

The research on Nanshijie structuring principles, types and morphology combined with the hermeneutic work of decoding fragile traces and absences as well, revealed a composite hidden order established by three compositional principles connected with as many built components. Although fragmentary, concealed or disappeared, they still provide the major key for the cognition of Nanshi site urban form. The interaction among these three essential components in the morphogenesis of urban form should be instead the starting point for defining the variables of congruence/incongruence, continuity/discontinuity, that is, rooting the boundary of the conservation area and design schemes in the urban form structure while integrating



Fig. 7.1 Aerial view of the central part of the Nanshijie Block, with the temple complex and the Ciyun Pagoda now enclosed in the school boundary (*Source* Workshop Survey by the authors in 2021)

preservation, regeneration and redevelopment into one co-evolutionary urban form *rewriting*.

7.2 Ganzhou Nanshijie Block Case Study

Ganzhou is a waterfront fluvial city in the south of Jiangxi (Gan) Province in a context of mountains, valleys and plain at the confluence of the Zhang and Gong Rivers forming the Gan River, the second largest tributary of the Yangtze River (Fig. 7.2). Its 2000 history dates back to Western Han Dynasty, which had its most flourishing point during the Song Dynasty (960–1269).

As for most Chinese cities, the historicity of Ganzhou does not correspond to the physical permanence of the city and not even to the persistence on the same place. Besides ancient capital cities like Xi'an, defensive and commercial cities like Ganzhou were often equally “moving cities” (Pezzetti 2020a, b) that changed site and name throughout their history. Gan County, in fact, went through four sites (Wu 2016; Han and Huang 2013) and five relocations (Figs. 7.2 and 7.3).

Firstly, during the Han Dynasty (201 BC) the Emperor Liu Bang settled the town as a defensive position in the upper reaches of the Gan River. Between 349 and 411 AD, during the Western Jin Dynasty, the town moved to Hugang Gelao City, still conceived as a stronghold organised around military functions. During the Eastern Jin Dynasty (349 AD) the town moved again to the site between Zhanggong and the two rivers, Zhang River and Gong River, where Ganzhou Old Town is now located.



Fig. 7.2 Geo-topographical map, 1721–1722 (*Source* Kangxi Provincial Atlas of China)

After its destruction caused by war, Gan County moved to Qili Town, southeast to Gong River, where porcelain was fired during the Five Dynasties. Finally, due to the superior geographical advantage, the site of Gan County was moved back to the confluence of the three rivers in 552 AD (Southern Liang Dynasty), and Ganzhou earned a new role as a political, economic and cultural centre of the region began during the Tang and Song Dynasties (Han 2001; Wu 2016), when the town was renamed from Qianzhou to Ganzhou (Fig. 7.12).

As waterways were the main transportation mode, the location at the confluence with the second largest tributary of the Yangtze River turned Ganzhou into a rich river transport hub (Wu 2016). As pontoon bridges and docks were built in the Song Dynasty to the east of the city, merchants and workers settled along the rivers (Fig. 7.12b).

In addition to commerce, the flourishing of the city fostered cultural and educational facilities such as prefectural schools, county schools, Confucian temples, and governmental and private examination institutions. While the political and constitutive centre settled on the highest terrain in the northern urban part, south to the confluence of the rivers, the new religious-cultural buildings were built in the new urban expansion area southeast of the city, endowed by the best Fengshui and landscape scenery.

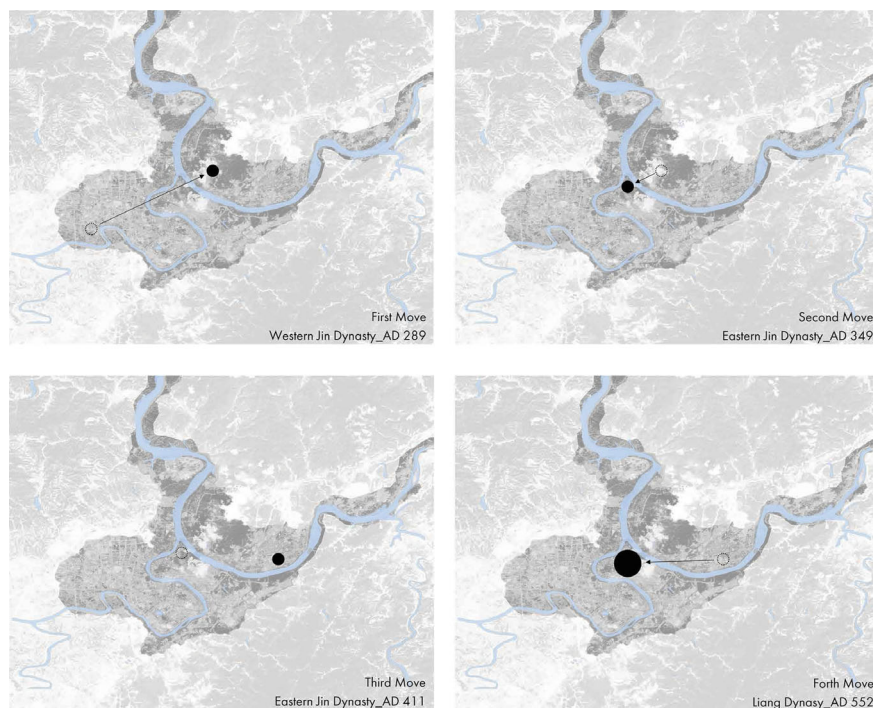


Fig. 7.3 Schemes illustrating the four locations of Ganzhou in history (drawn in the PoliMi-SEU Collaborative Class, a.a. 2021–22, after Wu 2016)

7.2.1 *The Fushougou Ditches as the City’s Underground Plan*

Ganzhou Fushougou is a system of pools, underground ditches and walls planned by Liu Yi in the Song Dynasty to control flood-related hazard. Later an ingenious system of “water windows” was added to the city wall in order to drain water into the river. It was a complete urban drainage system in stone and blue bricks that is mostly still in use today (Han and Huang 2013; Ye-Shuang et al. 2018).

As the rivers surrounded the city on two out of the three sides (Fig. 7.2), the floods occurred frequently in the rainy season. The original Jing Dynasty city was located on the highest ground and relied on the surrounding earthen city wall to resist floods to a certain extent, while the later Song expansion included wetlands. This initial settlement strategy relying on topography needed to be complemented by strengthening the earthen walls with bricks and iron to improve their flood resistance and by planning an underground system of ditches. On two maps drawn during the Qing Dynasty (1862–74, Tongzhi Period; 1875–1908 circa), the underground drainage system called Fushougou is the very subject of the maps. They represent



Fig. 7.4 Map of Ganzhou in 1862–74 (Qing Dynasty) (Source Wei and Zhong 1989)

the “Fu” and “Shou” characters formed by the meandering ditches in the two flood zoning sections (Figs. 7.4 and 7.5).

In the absence of maps recording Ganzhou urban form in the Song Dynasty, and despite the approximation of the Qing Dynasty maps, the research carefully confronted and overlapped the hierarchy of the road network with the Fushougou underground structure, from the Qing Dynasty onwards (Fig. 7.7). The paper postulates that the structure of the Ganzhou plan in the Song Dynasty can be firstly understood from its underground. Besides the technical role of the ditches, their layout had to be necessarily integrated with the new urban planning of the urban area within the new extended city wall (Figs. 7.4, 7.5, 7.6 and 7.7).

7.2.2 The Nanshijie Historic Block

The area considered for our morphological investigation is the Nanshijie historic district and overall block (bordered by Zhongjieying, Dagon Road, Haihui Road and Houde Road) in Ganzhou Historic City (Figs. 7.10, 7.11 and 7.20a) where



Fig. 7.5 Qing Dynasty Map of Fushougou (1875–1908) overlapped onto the present aerial map (by the authors)

most cultural and educational facilities were settled in the Song Dynasty because of the favourable Fengshui and scenery. In the Song Dynasty, the city wall expanded considerably outside the Chen-Tang Dynasty wall to include large areas of wetlands and highlands (Fig. 7.12a, b). Besides, several new roads were needed to shape the expansion, including the Nanshijie block.

In this southern part of the city, the main cultural and educational facilities of the Song City expansion were concentrated. In the Nanshijie block, five temples could be listed: the disappeared Jingde Temple (Tang Dynasty) with the Ciyun Pagoda (Song Dynasty), the Confucius Wen Temple (Qing Dynasty), the Martial Wu Temple (Qing Dynasty) and the disappeared Dafo and Guangxiao Temples. Besides, the presence of educational facilities was recorded by the County and State Schools (Song Dynasty) and Yangming Academy (Republic of China). Moreover, in the block north of Nanshijie we can also find the relevant institution of the Examination Hall and Xianxian Academy, both established in the Song Dynasty.

At the centre of the block, on a higher level, the partial remains of three of those cultural buildings are now listed as Heritage Preservation Units: the Wen Temple,



Fig. 7.6 Map of Ganzhou Fushougou surveyed in the 1990s (*Source* Urban Construction Chronicle)

the Wu Temple and the Ciyun Pagoda (1023), a fragment of the disappeared Jingde Temple (Fig. 7.10). The Wen Temple was a Confucian temple first built in 1050, during the Song Dynasty and moved several times. The present building mostly dates back to its reconstruction in the Qing Dynasty, around 1731–36. Listed as a Provincial-level heritage site in 1987, the Temple was converted into a new school during the Cultural Revolution. While the reuse destroyed the Pan Pond, Lingxing Gate, Wanren Wall by turning them into playgrounds, on the other hand, it saved the building from demolition. A couple of years later, the Houde Road Primary School was relocated from the Wen Temple to the present site (Fig. 7.11).

The adjacent Wu Temple was also a Confucian architecture built during the Qing Dynasty. While the Wen Temple represented the foundation of traditional Chinese education, the Wu Temple was intended to praise and express loyalty and righteousness. Today it is part of the Ganzhou Zhixing High School (Figs. 7.11).

The Ciyun Pagoda built in 1023 AD, during the Northern Song Dynasty (960–1127), features a hexagonal plan and nine floors in a slender and light tower in brick structure, which escaped the fire that destroyed the wooden parts during the Qing Dynasty. It used to belong to the Jingde Temple, now disappeared. An undated map probably drawn by Han himself (Han 1992) shows the Pagoda in relation to the Wu,



Fig. 7.7 Overlapping of the Fu and Shou ditches and the collecting ponds in 1965 (by the authors)



Fig. 7.8 Map of Ganzhou in 1946 with built-up areas (*Source* Gazetteer Bureau of Ganxian, Zhang and Chen 1946)



Fig. 7.9 Map around the 1930s, detail (Source <https://chmap.mpiwg-berlin.mpg.de/lgtu>)



Fig. 7.10 Protection levels and boundary in Nanshijie established by the existing Conservation Plan, based solely on the age of surviving buildings (Redrawn by the authors after the Conservation Plan of 2009)



Fig. 7.11 Survey of functional systems in Nanshijie block in 2021 (Source Hou et al. 2021)

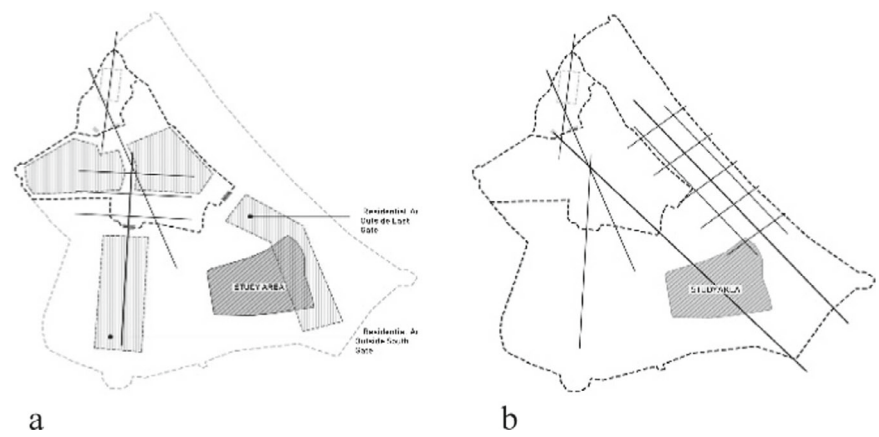


Fig. 7.12 Diagrams of Ganzhou structure in: **a** Southern Cheng Dynasty-Tang Dynasty (AD 552–902); **b** Song Dynasty (AD 902–1073), (redrawn by the authors after Wu 2016)



Fig. 7.13 Heights of buildings in Nanshijie block (by the authors in the Collaborative Class)

Wen and a remnant of the Ciyun Temple turned into a school building (Figs. 7.25, 7.26, 7.27, 7.28 and 7.29).

At present, the public cannot visit the Pagoda since it has been included in the relocation area of the Houde Road Primary School. If, on the one hand, this is close to the original educational zoning of the Song City, on the other hand, the segregation of the Pagoda excludes this relevant heritage from urban life (Figs. 7.11 and 7.23).

Another relevant component of the historic district is Nanshijie Street (Figs. 7.16, 7.21, 7.30, 7.31 and 7.32) with its courtyard houses that are nowadays listed as “historic buildings” (only 8 of them) and as “traditional buildings” in the present Conservation Plan (2010, Fig. 7.10). The relation of the Wu Temple and Ciyun



Fig. 7.14 Nanshijie, Ciguling and Zao'erxiang morphological semantic units (drawn by the authors in the Collaborative Class)

Pagoda with the schools' areas reflects the courtyards escaped from the widespread demolitions of the 1970s and has mainly survived along the western side of the Nanshijie, which until 1965 formed the eastern boundary of the block before the construction of the wide thoroughfare, Haihui Road. Some scattered courtyard houses also remain north of the temple area, along Dagong Road and the adjacent historic districts (Figs. 7.13, 7.14, 7.17, 7.18, 7.19 and 7.20).

Some previous research mostly investigated the Fushougou as a technical infrastructure (Han and Huang 2013; Ye-Shuang et al. 2018). A preliminary study by Huang and Wang (1999) explored the characteristics of general urban planning of Ganzhou. Recently, Wu (2016) studied the origins of the urban structure keeping the investigation work at the same very large scale while relating the layout of major



Fig. 7.15 Mapping of the roof types in Nanshijie's Semantic Unit (by the authors)

roads and planning axes to the definition of the large functional zoning areas, which have been hypothesised relying on the interpretation of written sources rather than on the evidence of urban facts, built heritage, topographical traces and maps (Fig. 7.12a, b). Such a broad scale of investigation is insufficient to shed light onto the urban structure and morphology of urban parts, their relation to architectural types and fabrics, the comparison with existing historical records and the archive constituted by the reality of the site itself.

Other studies, in the form of “conservation” plans or surveys for repair and renovation design, have instead targeted preservation zones, including Nanshijie, by mapping the basic characteristics of the fabrics, they too with no relation to urban form and morphology (“Ganzhou Preservation Plan 2010”, Shanghai Tongji Institute of Urban Planning and Design 2009), or surveying single courtyard houses as static objects with no relation to the palimpsest formed by both buildings and tissue (Cultural Relics Conservation and Research Centre of Guizhou 2017). Some



Fig. 7.16 Morphological periods (in black Traditional Period; in grey Planned Economy Period; in light grey Contemporary Period after 2000) (by the authors in the Collaborative Class)

Fig. 7.17 Aerial map of Nanshijie historic block in Ganzhou in 1965 (courtesy of SEU University)



Fig. 7.18 Aerial map of Nanshijie historic block in Ganzhou in 2001 (courtesy of SEU University)





Fig. 7.19 Study on the evolution of Nanshijie morphological semantic unit in Ganzhou in the 1920s, 1965, 2004 and 2020 (drawn by the authors in the Collaborative Class)

courtyards built during the Republic of China were not included in the Traditional Buildings while along Dagong Road some others fell into the Construction Control Zone, that is, have no protection. The block form and its relations with the adjacent historic districts and Fushougou are ignored and thus also the role of the temples in shaping the urban form (Fig. 7.10).

There is a need to read the city through an integrated reading of *urban facts* and traces in their relations to a meaningful urban form. The urban form architects need to interpret when they conserve or add new signs of design.



Fig. 7.20 Synchronic superposition of four morphological periods (1912–1946; 1965; 2004; 2020) analysing permanencies and transformations (in black, the previous period; in grey, the historic section; in red, the present time) (drawn by Pezzetti L.A. in the Collaborative Class)

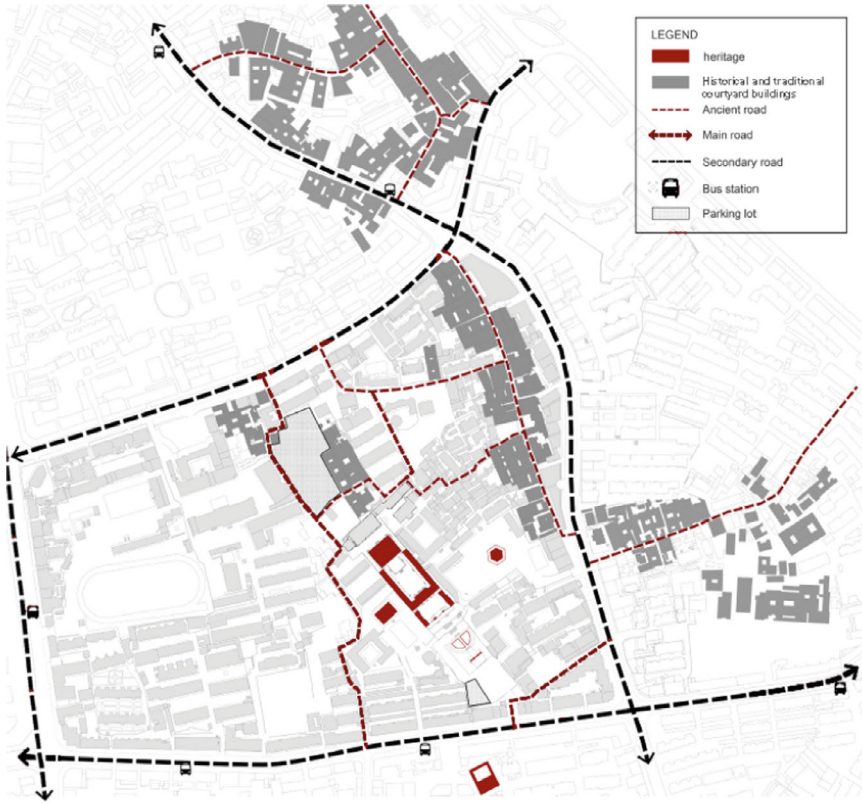


Fig. 7.21 Identification of the *urban part* and historic conservation area according to the *semantic unit*, in its relationship with the Zao'erxiang and Ciguling historic districts (by Pezzetti L.A.)

7.3 Methodology

The purpose of this paper is to study the *latent structures* and principles presiding over the urban form laying under the present disorder of this Chinese composite block where two essential traditional structures are located: the temple enclosures with an adjoining pagoda and the courtyard houses.

The aim is to clarify the latent order to define preservation boundaries and renewal design principles that are meaningful to urban form, that is, *continuing to write* on the existent text. The paper explores and discusses the morphological *invariants* of the Song block and the dual composition structured by the two historic structures, clarifying their related orders.

Typo-morphological studies can provide a sound methodology to analyse urban form synchronically and diachronically, in its hierarchical structures and orders, morphological units and components, plot's structure and building types.



Fig. 7.22 Hierarchy of historic streets in relation to the Fushougou and existing historic and traditional building patterns (by the authors and the Collaborative Class)



Fig. 7.23 Gated compounds and their accessibility (by the authors and the Collaborative Class)



Fig. 7.26 Illustration of Ganzhou with the Ciyun Pagoda by Nieuhoff (1665) (<https://zh.wikipedia.org>)

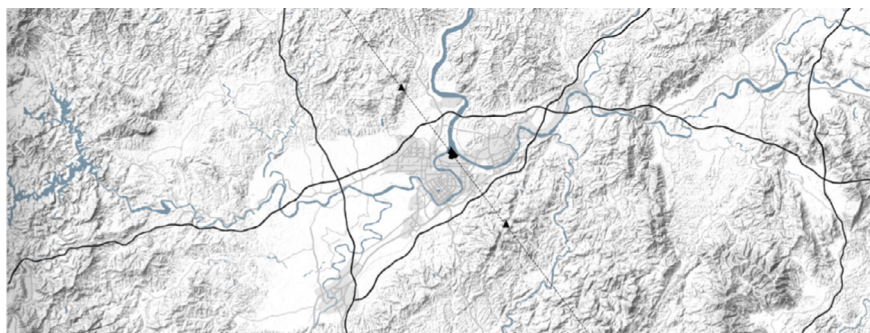


Fig. 7.27 The axis of the Wen Confucius Temple of Ganzhou in its relation to the two geographical landmarks (drawn by Hou F., Wei X., and Zhou B., Master Thesis, Politecnico di Milano)

of architectural design, the analytical and conceptual tools are never separated from the composition of architecture and urban form as a specific form of knowledge of reality.

Typo-morphology (Aymonino 1970) studies the relation between building types and the *city's parts* in the urban form development by analysing synchronically and diachronically significant historic sections within the dialectic between permanencies and variations.

Building typology is assumed as the main instrumentation to accomplish studies on urban phenomena while needs to be redefined in relation to the research (formal types, functional types) as far as considering the city as a “*whole architecture*” (Aymonino). Typology is the search for the *invariant* of the morphology in a given time context (Canella 1965), and can be subdivided between *singular buildings* and *repeated systems*. By identifying significant historic sections, urban form and



Fig. 7.28 Interpretative mapping of the three structuring components of Nanshijie *composite semantic unit*: the Fushougou track; the primary elements defined by the temples' types and Pagoda; the fishbone fabric defined by the courtyard house types, including part of the Ciguling Street and District on the east (drawn by Pezzetti L.A.)

phenomena are studied by correlating building types to settlement systems, and the latter to the identification of the “city’s parts” (Aymonino). These configure *morphological semantic regions* (Samonà 1979, now in Samonà and De Carlo 1994; Pezzetti 2019) defining “*formally accomplished parts*” (Aymonino, Semerani, Polesello) or potential units (Fig. 7.14). As the typo-morphology approach is design oriented, it considers the type synchronically in its potential architectural “*accomplished form*”, refusing any linear derivation mechanism between historic analysis and design.

While this approach is essential to studying urban form as a whole, primary elements and architectural types as architectures, the studies of Muratori (1960) relating to the type as historically defined, focussed instead on the morphology of ordinary tissues, studied diachronically in their historic processuality. His methodology contributed to enlightening the second component of the Nanshijie block, the courtyard dwellings, which together with the temples and pagoda *specialised buildings*, compose the urban morphology as an interrelated organism.



Fig. 7.29 Typo-morphological interpretative mapping of Nanshi block showing the patterns formed by the building types in 1965 (primary elements, courtyard houses and traditional dwellings) and in 2021 (primary elements, courtyard houses, traditional dwellings and modern linear building) (drawn by Pezzetti L.A.)

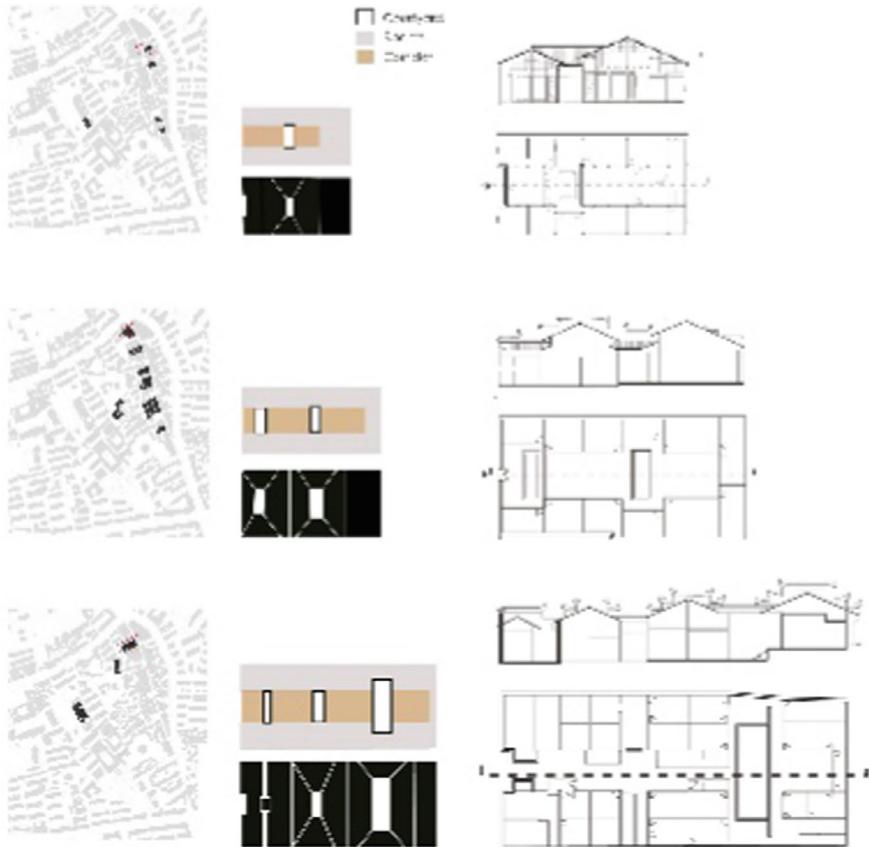


Fig. 7.30 Distribution of the typological variations of the courtyard type in the block (single, double, multiple patio yards) (drawn by the Authors in the Collaborative Class)

These two branches of Italian studies have long been separated and cannot be homologated in terms of either methods or ends. Yet, considering one without the other would be insufficient to read the two components and enlighten the iconic aspect of this specific urban form.

Most morphological studies in China are based on Conzenian and Caniggian methodologies focussing on traditional residential textures. In a design-oriented approach, the role of the plot and its related socio-economic dynamics that have been recognised by both Conzen (1960) and Rossi (1966) need to be studied in terms of architectural typologies within their spatial orders and cultural *mise en forme*.

Moreover, reading the urban composition means reading the *iconology* of the urban form, which is essential in design-oriented research as it provides a bridge between content and form since images disclose the maximum of possible meanings (Samonà 1979, in Samonà and De Carlo 1994). In architecture, unlike language, images are not either conventional or significant while they are always significant.

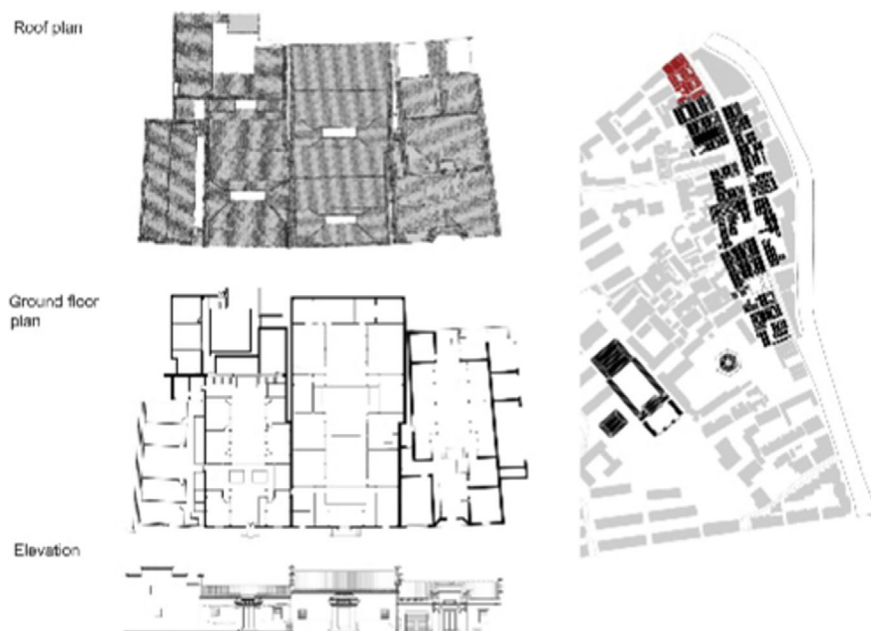


Fig. 7.31 Single and double patio types in the first section of Nanshijie, western side (*idem*)

In the city, images provoke associative processes, as theorised by Lynch (1960). *Legibility* and *imageability*, therefore, are necessary qualities for urban parts to be acknowledged by the people and acquire mnemonic and emotional properties.

In the same years, the typo-morphology inaugurated by Aymonino (1970) and Rossi (1966) specified with higher architectural concreteness, complexity and instrumentation, the nature of *urban facts* by reading them in their architectural-urban types, the *raison d'être* of their forms, their style and history, as well as in the idea of the city and architecture that some specific *urban parts* express.

Whenever the imageability of urban parts is compromised, mutilated or lost, the concept of mere “presentation” of historical sites (ICOMOS 2008) becomes insufficient. Typo-morphology combined with the reading of the historic palimpsest offers a knowledge basis for the *urban project*, tracing the principles for reconstructing a form of readability (i.e. recognisability within a coherent system), identity (recognised in its “separable identity” from other urban facts), structure (clarity of spatial relationships between the object and the observer), meaning (whether practical or emotional) and, finally, interpret and *rewrite* the site in its architectural figuration.

As Aldo Rossi stated, architects should ask themselves “what we expect from morphological research”, the purpose of which is studying the *raison d'être* of urban form and defining principles for development consistent with specific urban physiology.



Fig. 7.32 Elaboration showing the characteristics of courtyard types and typological process in Nanshijie Street: **a** roof types in traditional and historic buildings; **b** plans of typical courtyard types; **c** typological plan of Nanshijie (drawn and arranged after the survey by the Cultural Relic of Guizhou in 2017, and our workshop survey); **d** main typological process in the whole block (drawn by Pezzetti L.A.)

For Rossi, the first issue is to define the investigation field so as to investigate only what is relevant to explain the urban form and its architectural components, avoiding a summation of neutral analysis and issues.

In this research, the reading procedure aims to unveil the *latent urban structure* (Pezzetti 2019, 2020b) concealed under chaotic development. We assume that it provides the links between tangible and intangible forms, material substance and essence, that is, the past, present and future of a long-established palimpsest.

Advancing the typo-morphological approach in a prospect of Layered Morphologies (Pezzetti 2019), also the Chinese city is studied as an already-written text that has been designed and scratched several times. The present time forms this “voluminous text of multiple writings” (Derrida 1986), which are formed by building types and urban structures as well as by fragile topographical signs, absences and even erasures. This meaningful whole is the text that architects need to constantly decode and recode in an *urban project* approach in order to provide cultural continuity and meaning for the present.

Any action of erasure, conservation, enhancement or construction, any reason and method of transformation should relate to the interpretation of this whole according to the site’s formal structure and narrative to be continued by overwriting old and new layers. In this line of thought, also the Chinese City in turn may disclose an unexpected depth of layers of meaning and permanencies that would only be revealed by integrating a careful reading of physical traces, historical analysis of disappeared components together with imbued textual narratives.

To investigate the historic palimpsest, the research confronted topography, underground structures and traditional streets tracing; architectural invariants in their formal and settlement structures; and the typological process at the urban level.

Fabric units identified four morphological periods (1920–46, 1965, 2004, 2020) marking the moments of transformation (Figs. 7.19 and 7.20). Mapping was based on ascertained historical maps, orthophoto and field surveys. Besides, the onsite survey highlighted the fragmentation within the urban block due to the block subdivision in gated compounds (Fig. 7.23).

Mapping considered types together with their land to retain the three-dimensional content of architecture. At the different scales of analysis, *interpretative drawings* were conceived to provide the “language of description” suitable to architectural and urban contents. In the maps, types were studied and described through plans and roof shapes, which are necessary to grasp the features of the enclosed temple type, polarising pagoda and courtyard typology variations.

As a result, the *morphological semantic units* were therefore delineated in relation to the typological orders established by these three traditional building types and related spatial units, rather than land and building utilisation (Figs. 7.14 and 7.20).

Some cultural specificities behind the urban form, such as Fengshui, building codes and cultural characteristics, contributed to innovating the methodological tools and articulating the investigation approach in the context. Therefore, the research took into consideration the foundational geomancy of the site and the geographical landmarks, the historical maps as a knowledge base for interpretative mapping and the

formal structure of both existing and disappeared types (Jingde Temple) according to their polarising or aggregative principles.

Along this line of thought, the methodology of both reading and intervention was based on typo-morphological analysis: morphology is precisely the basis (but not mechanically the design solution) of both the *status quo* and the state of design.

7.4 The Three Latent Orders: The Underground Fushougou, the Bordering Fishbone Texture and the Autonomous Primary Elements

In the present situation, the urban form appears as a text that has become unreadable because of its chaotic development in modern times, the fragmented condition of ancient buildings and the unregulated and miscellaneous additions of different periods and scales.

Yet, by combining a historical-structural investigation methodology together with a typo-morphological analysis, the research work has revealed that this unique settlement structure can be interpreted as the combination of three different orders, latent in the present text. Integrating literature review, historic maps and orthophoto information, as well as mapping analysis with field and drone surveys, a series of analytic and interpretative maps were drawn to assess both the generative matrix and the historic palimpsest.

7.4.1 *Form and Typological Process in the Nanshijie Block*

Due to the lack of information related to the fabric in Chinese historic maps and records, the processual analysis started from the redrawing of the 1942–1946 maps and 1965 orthophoto, which account for the typo-morphological continuity of the Traditional Period in China. Based on ascertained documents, four historic sections (1920–46, 1965, 2004, 2020) were extracted and compared through diachronic and synchronic analysis (Figs. 7.19 and 7.20). First, they show that the form of the block in the Song Dynasty does not coincide with the present one. The eastern boundary was formed by Nanshijie Street had a different southeast corner both modified by the tracing of new thoroughfares around 2000. The Fushougou survey confirms the old track.

In the maps drawn in the 1930s and in the more detailed one in 1946 (Figs. 7.8 and 7.9), the form of the old block is recognisable while its traces are still retained in the topography (Figs. 7.17, 7.18, 7.19 and 7.20). The first map provides information on the form of the block; the second reconfirms it and adds information on the built-up areas and existing inner roads and alleys. The original form of the Song block can be identified up to the 1965 aerial map (Fig. 7.17), which nonetheless clearly shows

both the courtyard types and the now disappeared collecting drainage ponds, as well as the modifications that occurred to the temples' area.

Second, from the historic sections, the analysis of the roads hierarchy and plots patterns was drawn allowing to cognise four old paths along which few disappeared courtyard houses developed within the block (Fig. 7.20a, b). Yet, in the Contemporary Period, the street structure is insufficient to judge the porosity of the fabric. In the Chinese city, the analysis needs to be supplemented with the survey of gated compounds and their accessibility, which shows the poor permeability and high fragmentation in the block (Fig. 7.20b, c). Besides, compounds provide information about the contemporary plots' structure and use, which may not coincide with their morphological period, as the case of the Ciyun Pagoda nowadays enclosed in the school compound exemplifies (Fig. 7.11).

Third, historic sections showed the existence of empty regions (farmland) surrounding the religious area which reinforce the hypothesis of the independence of its types from the block. The sections also clarify the typological process with the progressive infill of the religious area and the substitutions of courtyards with different building types and functions along the block margins: traditional buildings (Republic of China), Cultural Revolution and Planned Economy multi-story linear houses (1965); apartments blocks and gated facilities fragmenting the inner region (educational buildings and hospitals) (2004); and malls and mixed-use buildings on the borders (2020) (Figs. 7.19, 7.20 and 7.32d). The mapping of building heights and of the four roof types (gabled, pitched and flat roofs) completed the identification of historic features and morphological periods (Figs. 7.12, 7.13, 7.15 and 7.16). Moreover, it visualised the increment of buildings' height from the centre to the boundaries, where linear mixed-use residential-commercial buildings have substituted courtyard types, and in correspondence to the hospital compound (Fig. 7.12c). The mapping of functional systems (Fig. 7.11) shows educational and hospital facilities, jointly with residential buildings, progressively occupying all green and agricultural space around the temples' area (Figs. 7.11, 7.19 and 7.20).

In the perspective of Layered Morphologies, the synchronic superposition of past and present status studied in detailed sections permanencies and modifications in the four morphological periods by confronting three layers: inherited elements from previous period, selected historic section and present status (Fig. 7.20).

7.4.2 The Underground Structuring Order of the Fushougou

In Ganzhou, the unique structure of the Song Fushougou underground network corresponds to the first order of latent structures, the infrastructural one. After comparing the Fushougou tracks with the road network, the research posits that the Ganzhou Song City should first be understood through its subterranean layout, which can be interpreted as the foundational scheme for the Song Dynasty's urban expansion plan. Although the Fushougou maps drawn during the Qing Dynasty (Fig. 7.4) are imprecise and sinuous in their tracing, in their attempt to reveal the symbolism of "Fu"

and “Shou” characters, we could relate clearly their Fushougou tracks to the ones represented in the 1990 map (Fig. 7.6). This map, nonetheless, also surveyed some other tracks, which may represent later developments.

This correspondence of Fushougou to the coeval street patterns established in the Song Dynasty’s urban expansion seems quite rational in relation to the ditches’ function and possibility of inspection, being the roads free of constructions. The survey executed in 1990 (Fig. 7.6) by the Ganzhou Urban Construction Bureau shows both operating and decommissioned ditches. Its superposition on the urban map (Fig. 7.7) discloses a clear relationship between roads and underground ditches that reinforces the hypothesis that the new road structure during the Song Dynasty was conceived in accordance with the topography and underground Fushougou tracks. Moreover, in the 1990 map, the southeast corner corresponds to the original boundary of the block before the rectification of the road and demolition of the courtyard houses. In addition, the Map of 1965 shows the existence of many ponds around the southern border, where the ground is lower, which acted as collectors of water connected to the drainage system.

A later inspection carried out in 2015 under the supervision of Prof. Wu (2016) was unfortunately limited to some small sections only, which nonetheless confirmed the joints in the previous map and provided more information about the arched section and ditches’ operation. One of these survey points concerned the small street flanking the temple area and the road sections before and after the southern Houde Road. The road groove is the sign that establishes the continuity of the context.

7.4.3 *The Autonomous Primary Elements: The Temples*

Once ascertained this peculiar relationship between the Fushougou tracks and three sides of the block’s form plus the inner meandering street flanking the temples’ area, the research developed an analysis of the topographical traces and architectures, comparing the onsite data with the cartographic analysis, including the 1965 satellite map.

The typo-morphological analysis of the historic architectures combined with a hermeneutic investigation of fragmentary topographical traces revealed a pre-existing double order: the one established by the religious and cultural buildings in the centre of the block and the one set by residential types on its margins (Figs. 7.28 and 7.29). A first hint of the latent order presiding over the temple’s area is the orientation of the axes structuring the temples’ layout. The parallel axes of the Wen and Wu Temples, and probably of the disappeared Jingde Temple, are directed southwards to the Kongtong Mountain Baogai Peak (Fengshan Mountain), regarded as a “Fengshui Mountain”, and northwards to the Yao Lan Zhai (Sanyang Mountain). For these important religious-cultural buildings in the city, this resonance between urban landscape and environmental landmarks forced the convention of north-to-south axial orientation (Figs. 7.27 and 7.28). Besides, the axes are also parallel to the river (Fig. 7.12d).

Looking closer at the large-scale Confucian Temple, also known as Ganxian County School, we can observe that the original structure of the Wen Temple followed the codified type as clarified by its illustration in Qing Dynasty extracted by the Gan County Chronicles (around 1873, Fig. 7.24), Ganzhou County School Map of Qing Dynasty. Within the enclosed type of the temple, the axis structured the sequence of walls, gates, temples, houses, halls and, again, temple. It was flanked on both sides by narrower enclosures arranged by a sequence of pavilions, gardens or temples, all aligned in parallel axes. This typological arrangement is still recognisable in the 1965 aerial view. The same arrangement is recorded in another map (Ganzhou Fu Zhi) illustrating the Ciyun Confucian Temple in Qing Dynasty, Tonzhi period (1861–75, Fig. 7.25), where a couple of small towers are also inserted into the Temple. Unfortunately, because the iconography focusses only on the single complex, the Ciyun Pagoda and the disappeared Jingde Temple are not represented until the drawing by Han (1992, Fig. 7.25).

If we analyse the temples axes, their width and codified patterns, we can assume that also the disappeared Jingde Temple's symbolic and structuring axis followed this orientation, which may shed some light on the underlying traces still readable in the traditional fabric northward of the Pagoda. The analysis of the morphological structure still readable in the 1965 aerial map, before the fast development caused by the Reform and Open-door Policy and the demolition and chaotic arrangement caused by the new constructions to relocate the school buildings, shows a clear correlation between the temples' dimension, the old pedestrian street behind the temples, the Ciguling Street and the traditional buildings' patterns (Figs. 7.28, 7.30 and 7.31).

The whole core of the block corresponding to the religious-cultural and educational facilities had its own orientation, corresponding to the symbolic Fengshui axis, in the highest part of the terrain. In correspondence to the Wen Temple, the axis extends as far as the road by the ceremonial Pan Pond (with a bridge, a distinctive component of the Confucian temple type), the Lingxing Gate, and a large empty area (Figs. 7.22, 7.23 and 7.24). Besides, by comparing the state of existing buildings with the temples' codified patterns and the traces on the ground in 1965, we can decode four regular patterns (about 40 m) corresponding to the various temples' enclosures which altogether form almost a square into which the figure of the three temples is inscribed. This *latent form* and its four partitions define not only one specific level of the urban order but also the enclosed *urban figure* of the temples' morphology, which is other than the aggregative logic defining the residential and commercial fabric (Fig. 7.28).

The southeastern corner of this figure lays directly in correspondence to the small alley cut out between the Nanshijie courtyard houses, which connects with Ciguling Old Street in the adjacent district (Fig. 7.28). Therefore, the two districts of Ciguling and Zao'erxiang should be considered in strict urban relation with Nanshijie urban form (Figs. 7.12d and 7.21). The independence of the temples' layout from the Nanshi block's form and its autonomy compared to the residential and commercial courtyards' fabric allowed us to read them in terms of "primary elements", as Rossi (1966) defined architectures that act as autonomous and polarising elements of the urban form and structure. This is consistent with the role of the temples and their

frontal area as a form of public space in the Traditional Period and with the urban landmark configured by the high-rise pagoda of Buddhist temples, as the precious view of Ganzhou drawn by Nieuhof (1665) confirms (Fig. 7.26). Therefore, beyond the cultural differences, we can recognise similar principles in both the European and the Chinese blocks.

7.4.4 *The Bordering Fishbone Texture: The Courtyard Type*

If temples and pagoda are *singular buildings* arranged autonomously, the courtyard type is the *invariant* of traditional fabric morphology (although with significant regional variations) and defines the block by aggregation. Its basic configuration is formed by the three Kai system hall-yard-wings around a narrow patio, displaying variations related to its extension in axial series (one, two or three Jin-yard modules) or in parallel, both contained within the “Matouqiang” fire-sealing walls (Figs. 7.30, 7.31 and 7.32). Sky well variations are also connected with the size of the patio and the status of the owner. Their composite style reflects the diversity of cultures attracted by the commercial prosperity of the river port in the past.

The two sides of Nanshijie feature the “half-side-street” phenomenon: the western side, bordering the original block is higher and richer in dwellings while the eastern is lower and simpler, mostly used for shops, workshops and inns. With the decline of the Street and modernisation, the dark buildings fell in a state of abandonment and decay, awaiting for restoration and reuse.

As it was still visible in the USA Military map in 1965 (Fig. 7.17), the fabric formed by the old courtyard houses developed orthogonally along the traffic roads of the time bordering the blocks and forming a fishbone pattern. The courtyard houses were narrow (11–13 m wide), hence followed organically the road tracks, stretching deep into the block (15–40 m long) while keeping at a distance from the temples’ enclosures. This distance determined their possibility of growth from one Jin to three Jin courtyards along Nanshijie while even more along the northern boundary.

We can state that the presence of the temples and pagoda types in the heart of the block produced a notable variation in the urban form, preventing the formation of the typical organic morphology within the block, thus interrupting the bi-univocal relationship between type and morphology.

Despite the construction of some modern linear buildings, this serial associative principle clearly defined the eastern, western and northern borders of the block until 1965. Some late traditional buildings with or without courtyards had already infilled the space between Nanshijie Street and the temple-school area (Figs. 7.19 and 7.20).

The degree of morphological transformation induced by the tumultuous and uncontrolled development can be assessed in the 2001 aerial view and in the mapping between the 1920s and 2020 (Figs. 7.19 and 7.20), where we can observe the widespread transformation of the fabric and the erasure of all bordering courtyards except for Nanshijie and other few isolated cases. The first modern buildings replaced the courtyard type with a multi-storey linear type that bordered mechanically the main

roads in parallel. Yet, as the two analytic and interpretative maps reveal (Fig. 7.29), they continued to build onto old tracks as they kept the footprint and spacing of previous courtyard plots while reversing ninety degrees into a new building type.

As these courtyards disappeared and in the absence of cadastres, those surviving topographical traces enlighten the site matrixes, plot structure, narrative, readability, identity and meaning. Regeneration should take these patterns into due consideration.

Besides, as the western half of the block is compromised by the *tabula rasa*, the conservation boundary needs to be related to the surviving historic space. It should correspond to the composite morphological semantic unit formed by the three traditional building types and determined by overlaying all of the previous analyses: through historical routes, the Nanshijie unit should be in relation to the adjacent blocks' units; the courtyard-type arrangement reflects the shape, the depth and *parti* of the original outer boundary; the inner boundaries are defined by the historic streets and Fushougou jointly and the type of the temple encodes the surviving and inferred topographical traces to be assumed by interpretative design.

7.5 Conclusions

Nanshijie block and its *morphologic semantic unit* is a representative case for studying the urban form of those "city parts" in the Chinese historic city presenting the collision between serial residential fabric and nodal primary elements. Through the reading of the structuring principles of typology and morphology, combined with the hermeneutic work of decoding hidden traces and absences, the research has revealed the site's composite *latent structures* (Pezzetti 2019, 2020b) and hidden orders that still inform the site's readability and potential *rewritability*. The cognition of these composite latent structures and the principles of their assemblage within the block reveal an unusual complexity for the Chinese City, which should not be ignored any longer.

Typo-morphology was confirmed as decisive instrumentation for investigating both tangible and disappeared signs of urban form. Below the modern erasures and chaotic development, the research has uncovered a twofold latent structure that has shaped the block according to two distinct principles and roles: those pertaining to the tissue formed by the local courtyard-type, defining only the block boundary, and those set by the primary elements formed by the temples' enclosures and Pagoda, polarising the centre autonomously. The first aligned to the road system according to a serial fishbone pattern, thus defining the block by aggregation; the second to the relation at a distance with geographical landmarks, producing its own axes and patterns, resulting in a self-defined spatializing square. Their composition resulted in an assemblage of figures and collision of grids, which recall theoretical principles from Villa Adriana to Collage City (Koetter and Rowe 1979) and beyond, quite relevant for the iconology of urban form.

Finally, the Fushougou, underground drainage system, in conjunction with the city's topographical levels, has been recognised as a key to understanding the logic underlying the sinuous planning of blocks in the Song Dynasty.

The interaction among these three essential components and formal orders of urban morphology should be considered as the starting point for any action, be it delineating conservation area boundaries, regeneration or rewriting principles between continuity and variation, suggesting the potential of integrating them into the rewriting of a co-evolutionary urban form.

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