VIEWPOINTS

Discussion of topical issues in urban morphology

Typomorphology and the crisis of Chinese cities

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Chinese cities are at serious risk of becoming placeless and losing their cultural identity in a wave of urbanization and globalization. At present, Chinese urban morphological approaches lack an adequate theoretical basis to deal with the problem. However, Western-derived typomorphology, though lacking a widely acknowledged definition hitherto, is attracting increasing interest in China and offers a solution. The treating of existing urban artefacts as 'operative history' and the establishment of a solid information database for the trans-formation of urban forms over time are approaches that Chinese scholars can learn from their Western counterparts. The merits of typomorphology, which is based largely on the typological theory of the Italian School and the urban morphological theory of the British Conzenian School, relate particularly to three aspects: cultural representation and symbolism, morphological references or design language, and effective communication.

A type is usually defined as the structural principle of a form (see, for example, Krier, 1998, p. 42). It allows a form to express meanings that are understood by and favourable to local people, because the structural rules of forms are closely related to local topography, ecology, technology, building resources, lifestyle and aesthetic preferences. Cultural conventions are, of course, constantly changing: types and forms in each period of time are modified to accommodate such changes, and form a typological process. In addition, new types are invented when dramatic changes occur. The image of a form embodies people's personal and social identity (Watson and Bentley, 2007, p. 4). Unfortunately typology has become devalued: rather than being a basis for resisting commoditized architecture and urbanism, it has become subservient to the dictates of the market. This can be observed in America (Goode, 1992) and China.

Converting a type into a physical form, in order to represent local cultural and social value, leads to the second advantage of typomorphology – the morphological reference or design language. Typomorphological design can produce a socially acceptable, suitable form to fit into the existing urban fabric through coding a relevant type. The application of such design codes makes it easier for designers to 'develop and maintain successful practices because they will be less likely to make idiosyncratic, frivolous, or simply unworkable design choices' (Francescato, 1994, p. 269). However, a type merely provides a design framework rather than a detailed design. It allows flexibility and diversity within constraints. Examples of practical design can be found in the design projects of the Krier brothers, the New Urbanists and the followers of the Muratorian School.

The communicative merit of typomorphology in China lies in the unconscious typological thinking among both domestic designers and common people. Traditional Chinese architectural form and urban setting were fundamentally influenced by Chinese cosmology and social hierarchy, which were embodied in the well-known Confucianism, Daoism and *fengshui*. These can be thought of as

'typological thinking'. They maintained the continuity of Chinese urban architecture over a great many generations. For instance, a courtyard house type exists in the spontaneous consciousness of every Chinese. The common understanding of Chinese traditional types, represented by appropriate terminology, facilitates communication between designers, clients and the general public, and also benefits Chinese architectural education.

Typomorphological study of Chinese urban architecture is largely absent in the current literature, even though typological and morphological theories have been introduced into China since the late 1980s (see for example, Gu, 2001; Shen, 1988). However, typological design and morphological study of Chinese urban form have been conducted by both Chinese and foreign scholars during the last two decades. One of the earliest design projects using typology was the regeneration of Ju'er Hutong in Beijing between 1987 and the late 1990s (Ghirardo, 1996; Su, 2004). The chief designer, Wu Liangyong, employed the traditional courtyard house type, but with modern amenities, as a model for house design. The relationships between courtyard houses and *hutongs* (neighbourhood alleys) were also distilled and formed the basis for new designs. However, the design project fell victim to the superficialities of the 'culture industry': this led to gentrification because the new houses merely followed the unchanged historical courtyard house type rather than the updated type that had gone through a typological process. The latter was adapted to the increases that had taken place in land value, which required a much denser form than the historical type. It is therefore important to consider the typological process of traditional houses and undertake morphological analysis of the surrounding urban form.

Another example is the Xin Tian Di project in Shanghai. Here a traditional neighbourhood has been converted into an up-market commercial and entertainment region based on preserved traditional houses. The project achieved great success in terms of profit-earning, but the houses became divorced from history and the culture from which they originated: the dictates of international capitalism prevailed (Qian, 2006). The social network in the neighbourhood was completely erased. Similar projects labelled as 'tradition renaissance', but in fact lacking awareness of the original social complexity have been widely adopted in China: the 'Nanjing 1912' project is an example (Qi and Yang, 2006).

Attempts to apply urban morphological theory to Chinese urban form are also occurring: the morphological analysis of the city of Pingyao is an example (Whitehand and Gu, 2007). Such explorations are evidence of a more satisfying Chinese urban morphology. But they are only a beginning. What is needed in China is an integrated typomorphology, grounded in both Italian typology and British Conzenian morphology. This needs to be explored so that it provides a future for Chinese urban development based on cultural continuity. Such an exploration – of the Chinese cities of Nanjing and Suzhou – is being undertaken by the author. It aims first, to enrich the typomorphological study of specific Chinese cities; and secondly, provide practical prescriptions for domestic urban design.

Acknowledgement

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M. R. G. Conzen and Japanese castle towns

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My only meeting with M. R. G. Conzen was at the ISUF conference in Birmingham, UK in 1997. He listened to my paper on Japanese castle towns and afterwards eagerly discussed it with me, especially the significance of a geographical approach. He also presented me with a copy of the second edition of his book on the English castle town of Alnwick (Conzen, 1969). Following the conference, I spent a fortnight visiting castle towns in England and Scotland, and was very conscious of some of their similarities to Japanese castle towns that Conzen had drawn to my attention at the conference. Some years later, after Conzen's death, I was intrigued to read a paper, written by him in 1980, that compared Japanese and British castle towns. My reflections that follow here were stimulated by that paper, which was part of a collection of his posthumously published writings (Conzen, 2004).

Conzen's remarkable insights into Japanese castle towns are founded on highly perceptive field study, an exceptional collection of maps and plans acquired during his travels in Japan, and his ability to view Japanese history and society both in terms of their commonalities with other parts of the world and their distinctive features. In light of his comparison of British and Japanese castle towns, I should like to add a few thoughts of my own.

British castle towns were constructed during the Middle Ages: they have undergone a long process of transformation, and each town contains vestiges of development, if not planning, that has taken place in various periods. Japanese castle towns, in contrast, were established within a short time span, between the late-sixteenth and early-seventeenth century. This was the beginning of the 'early modern' or 'Edo' period, which lasted until the mid-nineteenth century, when a centralized government was established in Japan and the process of industrialization began.

The model of the early modern castle town in Japan was developed under strong rulers, Nobunaga Oda and Hideyoshi Toyotomi, who had played an important role in the unification of the country in the late-sixteenth century. In the Edo period, castle towns were constructed by feudal lords as centres for their land governance. During this period, a number of rulers, such as Kiyomasa Kato, Cagetora Todo and Enshu Kobori, built fine castles and undertook the successful planning of towns. Sometimes they were ordered by Shogun Tokugawa to help construct other castle towns. Thus the practice of castle town construction spread through-out Japan within a short span of time. The head of each castle town, delegated by Tokugawa, was the sovereign of his territory as well as the governor. He was in charge of the administration of the castle town and its neighbouring areas during the peaceful period of the 'Pax Tokugawa' from the beginning of the seventeenth century to the middle of the nineteenth century.

Japanese castle towns are symbols of regional integration: they were designed in relation to the surrounding topography. They embody rationality, functionality, and aesthetic sensibility. The whole town was made up of a grid pattern of street blocks. The land zoning based on social class that accompanied the feudal system in Japan also served as a means of functional zoning. This zoning system was restored during the modernization period after the nineteenth century. Most of the former samurai areas were maintained as residential areas, and the former *machiya* areas (townhouses with shops and storehouses) remained as commercial areas. Most of these planning arrange-ments and associated building styles continued at least until about 1960, unless there was a major fire or other disaster.

Conzen understood the similarities and

differences between British and Japanese castle towns. He analysed them in relation to a number of aspects. British

> towns with castles can have plans belonging to any historical period from Anglo-Saxon times to the fourteenth century, including the survival of Roman plan features. Also, persistence of towns on the same site throughout their historical life is the rule rather than the exception. Thus, towns with considerable growth during the Middle Ages have plans composed of parts belonging to different periods and therefore displaying different period styles of town planning. Their plans show historical layering or period compoundedness. Moreover, each period may produce a number of different regional plan styles (Conzen, 2004, p. 171).

In contrast, Japanese castle towns are based on a common conceptualization and methodology. Before the period of castle town building, the commercial area, the warriors' area and the temple area were physically separated. When the new castle town was constructed, it was a requirement that these areas were relocated within the new town but laid out according to the principles and methods used previously. In short, such towns may be referred to as 'assembled towns'. A well-defined system of functional and social-class zoning was implemented. Nevertheless, the towns were designed by adapting to the complex topography of mountains, valleys and rivers, and this gave each in detail a unique spatial form. Moreover, the design had provision for the effective utilization of underground water and was conceptualized with the aim of beautifying the landscape by ensuring scenic views and vistas.

Though Japanese castle towns follow common planning principles, there is no consolidated historical document on this subject. This contrasts with Japanese gardening, for which there is a formal textbook. However, Japanese castle towns were depicted in many picture maps as being worlds that were integrated with their surrounding areas, and these picture maps are valued as works of art. In a sense, Japanese castle towns can be thought of as products of designed diversification: common planning principles were followed but the outcome was diversity that reflected adaptation to topography. In contrast, the diversified form of British castle towns is more a product of a succession of historical 'layers', each of which reflects the fashions of the time when it was created.

According to Conzen (2004, p. 171), 'during most of the earlier and much of the high Middle Ages in Europe, geometrically conceived plan ideas commonly tended to lose their geometric rigidity in actual application to a site'. Put simply, curved streets and non-parallel grids were developed in Europe. This was done for two reasons: first, there was no overriding religious or geomantic prescript for town layouts; and second, a practical approach to town layouts was adopted, in that plan ideas were adapted to the existing morphological framework. The morphological diversification of British castle towns arose from this adaptive method rather than the prescriptive method of laying out towns.

Japanese castle towns were also laid out 'adaptively' according to topographical and climatic constraints with regard to matters such as the maintenance and quality control of the water supply and sewerage systems, and the planning of land use for water resource management. Landscape planning with regard to seasonal winds was also followed for the location of religious precincts. The early picture map of the town of Shinjö was drawn as a prescriptive model of the castle town, but in reality the town has a more diversified urban form, reflecting the application of the adaptive method, which involved the consideration of factors such as topography, river flow, and a vista towards Mt Chokai.

In western Japan the layout of the peripheral parts of castle towns, such as Himeji, was based on the *jôri* system, which is an ancient system for agricultural land management. The *jôri* system involves adapting to topography: for instance, grids were laid out based on this system. A warped grid was developed in which the layout of streets was influenced by the vista of the castle, main turrets, and mountains.

Morphological diversification of castle towns in Europe arose from the social system. Conzen (2004, p.172) states that

> the medieval European town was corporate in character, enjoying the freedom and measure of self-government bestowed by a town charter and thus a somewhat privileged position in feudal society. It involved a number of functional requirements of a communal character ... With the passage of time and town growth, the accommodation of these elements in the town plan gave rise to a great number of individualized solutions.

The layouts of castle towns in Japan were well preserved because the towns were constructed

based on the feudal social-class system, and changes of form were influenced by this. However, in the period after the mid-eighteenth century, owing to the development of a market economy, townsmen rose in status and their communal power increased. In many instances a type of building complex (known as *machiya*), comprising retail space, housing for the owner's family and workers, warehouses and a courtyard garden, was enlarged. A physical transformation process occurred that was related to changes in civil society and the development of a market economy. However, even in the townsmen's quarters, changes in layout were not permitted, and the amalgamation of plots and the reconstruction of buildings were restricted. Indeed, in the warriors' quarters such activities were strictly forbidden. Most of the *samurai* were provided with very restricted accommodation.

Conzen refers to Yamori's research on the transformation of castle towns, and analyses the characteristics of the fringe belt in Japanese castle towns. He points out that the religious buildings and residences of the lower *samurai,* such as the *ashigaru* (common foot soldiers), were laid out along the fringe belts of castle towns. He focussed on the fact that these areas linked the town to its peripheral areas and gave rise to a fixation line. The functional structure in these fringe areas was weak and lacked a clear spatial planning pattern.

In the early stages of Japanese castle town construction, the plan of a town included a surrounding moat. Gradually, the plan was transformed and the line of demarcation between the castle town and its peripheral areas became blurred. This can be interpreted in several ways. One factor was the feudal practice of not providing any protection, such as a moat, to townsmen's quarters and lower samurai quarters. During the Pax Tokugawa (after the fall of Toyotomi in 1630), protective fortifications such as moats and castle walls posed hindrances to the enlargement of castle towns. Thereafter, the fringe belt was designed to serve as a strategic spatial defence system by locating townsmen's quarters, lower samurai quarters and religious premises in these areas. At the time of the expansion of a castle town, surrounding villages were incorporated within the urban area but retained their original layout. This was done in order to maintain water supply throughout the town and villages and to ensure the supply of vegetables by the lower samurai living in fringe areas.

Conzen suggested a number of reasons why the functional structure of British castle towns is not as clearly evident morphologically as in the case of Japanese castle towns. In Britain, as elsewhere in Europe, all classes were normally accommodated on the strip-plot and row-house principle. This tended to 'soften' class distinctions as represented in the town plan. Greater mobility between social classes within the mechanisms provided by European corporate town life tended to blur the social pattern in the plan still further (Conzen, 2004. p.177).

In Japan the residences of successful tradesmen and the upper samurai displayed their occupants social class. Residential buildings varied widely in architectural style. *Machiya* had varied styles of buildings that enabled their residents to live and work on the same site. In the samurai area, the building types ranged from row houses to upper-class samurai residences surrounded by large gardens. These spatial patterns of architectural styles, developed according to the social class of the residents and their income and wealth, were morphologically striking.

Conzen has opened up an important field of cross-cultural comparison. It is to be hoped that both British and Japanese researchers will build on his work.

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Urban morphology and urban design

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There has recently been a flurry of discussion in this journal about the relationship between urban morphological research and practice (Hall, 2008; Samuels, 2008; Whitehand, 2007). As a practising architect and planner, I have frequently applied the concepts of typology and morphology in my design work. I have used neighbourhood morphology to develop a successful architectural *parti* that married a new type to an older pattern: I have used the morphological narrative of a dying small downtown to develop its urban plans and guidelines for its recovery (Scheer and Scheer, 1998). I have re-scaled old patterns for new uses, to draw a cultural line from the past into a new, progressive future. I have identified critical urban design issues, and thus solutions, that could only be revealed through a close reading of a region's morphology. So why does the translation of morphological ideas to practice seem so treacherous?

Until the whole movement degenerated into a thematic cut and paste routine, many architectural theorists explored notions of typology and urban form as a pointed response to the universality of modernism (Krier, 1982; Moneo, 1978). Anthony Vidler (1977) went so far as to propose that the city (its building types, its customary form and meaning) is the *third typology*, by which he meant that designers could use the city as an autonomous reference (instead of *nature* or *machine*, which were Vidler's first two references). Ultimately discredited by association with post modernism's historical pastiche, remnants of these ideas surface everywhere in architecture, frequently as a rich form of contextualism that is more whispered than proclaimed (Goode, 1992).

Urban morphology, as a source for urban design, suffers from the same unpopularity and misreading among architectural critics. Its association with small-scale, traditional urban environments (townscape and New Urbanism) has made it suspect for applications in respected, high image architecture. World architecture glorifies large, multi-user, complex urban projects: it is an urbanism of slickness, sculptural shape and show-off design, symbolic of large corporations and overriding control, totally conflicting with the old-fashioned regulating plans, lots, blocks, and small typologies now associated with morphology. As Ivor Samuels

(2008) points out, this architecture and urban design is more likely to be judged and driven by sustainability paradigms, although of the 'green gadgetry' type. Morphology's legitimate green strategies of conservation, adaptability and 'loose fit' are less in vogue.

Only in small-scale contexts has urban morphology made inroads in urban design. In the US, this has surfaced primarily in the revolution in planning known as form-based codes (FBC). These codes are intended to supplant or supplement traditional land-use restrictive zoning (Walters (2007) provides a lucid and intelligent background). The methodology, promoted by New Urbanists, bases the development of codes on formulaic analyses of existing or desired urban form, public space and some architectural elements (see Parolek *et al*. (2008) for the official handbook). While some of the language of typomorphology is used in the analytical formulae (types, lots, blocks), the rigid FBC methodologists seem unaware of the key theories and ideas that could deepen their understanding of this enterprise. Two examples will suffice: the idea of *resolution* has eluded FBC analysis, with all the coding focused on the neighbourhood scale or on the particulars of street design and house front (what we might call the tissue level) and none on the region or city scale.

The other aspect that the FBC method misses, which is key to urban design, is the historical evolution of places over time. The understanding of urban change and evolution, and the conceptual framework for designing for change, are without doubt the most powerful legacies of urban morphology. The cultural and social context that can be read in the evolution of the historical fabric eludes these designers. Their static analysis leads to a static vision. To be fair, most urban designers are stuck in this 'master planner' mode. In FBC methods, this problem is slightly eased because the code assumes further building over time, and offers a regulating plan that might control change. How much more elegant such plans would be if they went a few steps further to demonstrate the continuity of change from deep past to unpredictable future.

The literature of New Urbanists rarely recognizes recent precedent outside the writings of

the acolytes of the movement itself; a bad habit to be sure. So the basic and foundational urban morphological concepts are not drawn upon as such: form-based code prescriptive methods seemingly have been almost independently derived rather than benefiting from urban morphology's depth and theory.

As in most applications of morphology for urban design, form-based codes are directed at residential scales and small supporting commercial and institutional uses. These are satisfying scales for the application to lots, blocks and types, but problematic in their very limited applicably to most of the American urban landscape. The New Urbanists' realistic goal is to apply these codes to about 5 per cent of the developed city, leaving the vast areas driven by larger-scale forces – shopping malls, municipal centres, theme parks, airports, large open spaces, highways, large-lot housing subdivisions, industrial parks – untouched by coding, and thus by urban design based on morphology.

Urban morphologists themselves have been much preoccupied with the scale of townscape and traditional or historic urban form, with very few researchers and practitioners exploring the much more problematic scale of the contemporary, expanded metropolitan landscape. This is a huge opportunity, as research in these large-scale areas by American morphologists suggests that seemingly formless spaces can also yield to a useful morphological reading (see, for example, Moudon and Hess, 2000; Scheer and Petkov, 1998; Stanilov and Scheer, 2004; Tatom, 2006). The work of the landscape urbanists (Waldheim, 2006) suggests a tantalizing connection to be made for designers concerned with the process of urbanization and change at scales larger than the residential neighbourhood. There is much work to be done to bring the methods of typomorphology to bear on metropolitan-scale problems.

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