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The form-making process and architectural type

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The traditional distinction between natural sciences and social sciences is of fundamental importance. In the natural sciences different phenomena can be compared and common characteristics identified independently of historical constraints and the activities of human beings: analysis can yield 'laws'. In the social sciences valid comparison requires an agreed ideological perspective: under these conditions principles of behaviour may be derived.

Urban morphology clearly belongs to the social sciences: comparison can be made between methods of interpreting the processes of urban form construction and transformation if those methods share the same aims and capabilities. This implies that to compare different built phenomena by means of their common formal characteristics, or 'registration markers', to use Karl Kropf's term (Kropf, 2009), it is necessary to 'deconstruct' them. This means recognizing both the theories and the purposes according to which these phenomena have been produced and specifying their author's ideology.

Architecture is an open system, in that it is not autonomous, self-sufficient or independent of external factors: energy has to be provided from outside to enable an architectural form to be created. This form is an objectification of the process through which architecture has been conceived, produced, transformed and even abandoned according to both individual and collective aims.

If we trace architecture back to its original 'ideological' meaning, this kind of activity is concerned with interrelating 'matter' and the 'individual', the equivalent Ancient Greek terms being φύσις (*fysis*) and λόγος (*logos*). We can term it τέχνη (*tecne*), which can be translated as 'craft' or 'instrument'.

The Ancient Greek word τύπος (*typos*), i.e. type, clearly expresses the presence and permanence of this activity in morphology through the complementary meanings of 'sign' and 'imprint'. Sign in linguistics means 'what continues to be in the same condition for someone or something under a particular relational system'. Imprint is the evidence of a way of 'acting'**.**

This definition of type accords with the principles of consistency, specificity, generality, comprehension and coherence in the field of architecture. Kropf (2009) reminds us that this is a truly scientific approach and provides a basis for comparing phenomena that are compatible in terms of their underlying ideologies. Because the interpretation of type is a historical matter, 'architectural typology', in the sense of 'thinking about type'**,** varies over space and time.

To explore this perspective it is useful to refer to three major authors: Aldo Rossi, Oswald Mathias Ungers and Gianfranco Caniggia. They can be fruitfully compared because they share the same perspective or 'ideological background': they are all both theoreticians and architects; they focus on morphological transformation as a subject of central importance; they clearly address a common criticism of Modern architecture and its ingenuous 'functionalism'**,** blaming its concern with a causal relationship between 'form' and 'function'.

Rossi, reflecting on his original aims in his major theoretical opus (Rossi, 1966), admitted later that he was looking for 'the permanent laws of a timeless typology' (Rossi, 1981, pp. 21-2). He

focuses on urban facts (*fatti urbani*), or the city in its historicity, to derive schemes whose validity is independent of history. To this end Ferdinand De Saussure's linguistic approach seemed to him to be very fruitful.

Rossi identifies as *elementi primari* those objects that preserve their own formal configuration notwithstanding use changes over time, in contrast to *aree residenza* that have ceased to exist or been deformed by processes of transformation. *Elementi primari* and *aree residenza* combine in a figure-background relationship (Rowe and Koetter, 1978): in other words outstanding monuments are viewed in relation to informal residential areas. Forms of intermediate scale are not recognized.

In accord with his theoretical interest in *elementi primari*, Rossi's practical work was dominated by recurrent images: for example, the relation between the 'skeleton' and the 'body' was seen as parallel to that between 'permanence' and 'variation' in urban architecture.

In describing Rossi's aim in typology it is fundamental to recognize two concepts deriving from his urban morphological research: the c*ittà per parti* and the *città analoga*. The *città per parti* is a specific kind of relational system, which describes urban development as a collage-like process evident in several historical periods. It is pursued by assembling fragments of different cultures. 'Analogy', from the Ancient Greek ἀναλογία (*analogia*), which means 'proportion', is a relational quality among different phenomena. Rossi formally translates an analogy into a diagram, a 'scheme' (σχήμα) or 'structure', which describes the degree to which a single component coheres with its context. This scheme is independent of the concept of scale and is related to De Saussure's idea of the *langue* as opposed to the *parole*. Furthermore, type becomes the connecting factor between a site and the society that transforms it, producing a locus unique in its characteristics.

Because of Rossi's interest in the idea of structure, which assumes a fixed relation between a single component and totality, his idea of type identifies with the iconic sign (Peirce, 1958), from the Ancient Greek εἰκων (*eikon*).

According to Ungers (1982, p. 9) 'the thematic core and content of architecture can only be architecture itself'. He identifies design strategies (themes): these are transformation, assemblage, incorporation, assimilation and imagination. His aim is to make these visible by means of architectural language. Each theme is derived from urban morphological analysis. The strategies, even when occurring by chance, can provide principles

of design method.

Because of Ungers's systematic use of the rhetorical technique of synecdoche (*pars pro toto*) and its conventional meaning, his type interpretation identifies with the 'symbolic' sign (Peirce, 1958), from the Ancient Greek σύμβολον (*symbolon*).

Caniggia rejects functionalism to the extent that it derives form from function (see Caniggia and Maffei, 1979) and interrupted the form-making process. He is eager to rehabilitate and renovate that pre-industrial process. Taking us back to traditional crafts, he demonstrates that every object is derived from a previous one, by a process of continuous adjustments to incorporate new requirements. In a very direct way history becomes the substance of the design process itself.

Caniggia analyses rules of morphological derivation. He describes derivation syntax both in private and public building. This leads him into a discussion of the typological process. This process corresponds to a sort of architectural *genome*, from the Ancient Greek verb γίγνομαι (*gignomai*), meaning 'to derive'. Similarly to the genome inherited from seminal cells by specialized ones, the simpler building which is still recognizable within the more complex one preserves its evolutionary information needed for it to develop further.

A further aspect of Caniggia's thinking is his syntactical analysis according to which the different morphological components relate to each other in a spatial arrangement. From this he describes 'coexistence principles'. Every object is seen to be at an intersection between space and time in an endless process. Similarly, every object is at an intersection between a collective and an individual work, again in an endless process.

Because of its direct reference to the real form-making process, Caniggia's type definition identifies with the 'indexical sign' (Peirce, 1958), from the Ancient Greek σημαντικός (*semantikos*).

These standpoints suggest that in urban morphology a comparative approach is fruitful if referred to a common ideology. Such an approach has a key role in understanding the uniqueness of the form-making process.

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A new lens to illuminate and elucidate urban form?

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The Sixteenth International Seminar on Urban Form in Guangzhou brought to the fore numerous matters associated with comprehending urbanization and urban morphology within a country, China, which is experiencing rapid economic and cultural change. Presentations on contemporary Chinese urbanism revealed two points of fundamental interest to morphologists. First, China was shown to be a nation that in less than 30 years has fabricated means to rewrite fundamentally its urban design rules. What now comprises 'good' urban form in China differs from just a few decades ago. Evidence for this was shown by numerous scholars highlighting the multiplicity of design forms now employed for particular building types, the visual contrast between modern Chinese settlements and how they once appeared, and the rejection of historical architectural and spatial forms. Secondly, of note was the deepening intellectual consciousness amongst seminar participants surrounding the status of Chinese cities as sites that best articulate urban conditions typical of our age. With this awareness arose discussion as to how best to clarify present-day urban expressions in China and rapidly-transforming cities elsewhere in the world given the nature of urban morphological theories and methodologies.

Papers offered in Guangzhou and site visits to cities such as Beijing, Hong Kong, Shanghai and Shenzhen demonstrated that cities produced under the forces of globalization are striking to the eye and hugely impressive in terms of their scale and sense of modernity. Yet for researchers interested in the configuration and transformation of spaces and buildings within modern-age settlements, rapid urban growth in China has provoked a number of deep-seated questions about the arrangement and meaning of urban environments, the cultures entrenched within them, and the influences acting upon their forms. Accordingly it might be pertinent to ask whether post-reform China, in light of its economic, cultural and urban restructuring since the 1970s, offers an excellent platform upon which to explore, both empirically and theoretically, questions regarding the design of contemporary urban form, its meaning and the agents shaping it.

A multitude of recent urban studies on China have recognized such factors as ideological changes and the actions of public authorities in physically remodelling cities post-1978 – the date of Deng Xiaoping's momentous 'four modernizations' decree. However, historians such as David Buck (1987) have argued that a more open analytical approach is needed to appreciate fully modern city development owing to the plethora and complexity of influences moulding settlements. Indeed, as debate at the Guangzhou seminar revealed, fundamental differences exist in the standpoints of those engaged in Chinese urban form investigations, reflecting differences of training, technical skills and personal interests. Some scholars, such as those with an architectural education, were inclined to adopt the shortest of chronological perspectives to explain why the Chinese metropolis is currently formed in the way that it is. In contrast, those trained in the field of history employed not only a lengthier chronological approach but were more engaged with social, economic and cultural dynamics in order to illuminate the character of the Chinese urban fabric.

Whilst the existence of dissonance amongst ISUF members led to healthy debate and respect for what scholars from different backgrounds bring to the intellectual entrepôt that is the field of urban morphology, it is imperative not to neglect the fact that these differences and the tensions that come with them can impinge on our 'reading' of urban developments. In turn this may, for example, shape our students' conceptual grasp of how cities should