



VIEWPOINTS

Discussion of topical issues
in urban morphology

The elusive common denominator in understanding urban form

Michael P. Conzen, Committee on Geographical Studies, University of Chicago, 5828 S. University Avenue, Chicago, IL 60637-1583, USA. Email: m-conzen@uchicago.edu

We are supposedly in an age of interdisciplinary inquiry, and few research domains concerned with the relationship of humans to their habitat call for this more obviously than the nature and dynamics of cities. Yet professional disciplines have not lost their purpose, nor their power, to train researchers in one or another particular approach to the urban environment. After all, we need architects who know how to build buildings, designers and surveyors to lay out streets and public spaces, traffic engineers to speed flows through them, social scientists to understand how residents shape urban forms for social, economic, and political ends, and historians and geographers to make sense of the whole urban fabric as it has been built up and changed so radically over time and so variably across space. And all too often the disciplines talk past each other, appropriating language for abstruse concepts of their own, with words at once ordinary (but narrowed for a specialized purpose) and grandiose (for authoritarian ends).

So Karl Kropf's concern to identify the commonalities that bind these and other disciplines together in a broad investigation of the physical form of cities is not just welcome but highly desirable (Kropf, 2009). So, too, is his interest in isolating those features that provide most common ground among the particular approaches of the several disciplines and sub-disciplines, for in these specialties lie hints also of the often divergent purposes for which they exist. Kropf brings to the

task the careful specifying of terms essential to the philosopher, and with it a special vocabulary that recasts popular objects and methods in each field in a comparative framework using plain words, but words carefully calibrated for their universal meanings to help reveal the commonalities he is seeking to establish. The resulting 'aspects' – such an innocuous term at first glance – fall into four relatively neat groupings, which could be even more succinctly labelled as having to do with content, agency, exchange, and time (Kropf, 2009, Table 1, p. 116). No problem there. The sticking point comes, of course, with what is meant by the content of the term 'built form', because many of the approaches Kropf discusses, and others that he does not, in effect 'cherry-pick' which aspects of physical form they seek to illuminate. Ostensibly, as urban morphologists, our interest should be in all of them.

This response to Kropf's inquiry is concerned less with the internal logic of his argument, with which it is implicitly in broad agreement, than with the contexts of the selected approaches he chooses to consider. To underscore the multidisciplinary context of the discussion is to probe perhaps more fully the limits as well as the benefits to be derived from subscribing to his proposed scheme for increasing unity and complementarity.

Urban morphology is often equated with urban form. Each represents what might be described as a 'big tent' for interest in and understanding of

what is avowedly a vast topic. (As popular usage goes, far greater generality attaches to the term 'urban form' than 'urban morphology': the Internet records anywhere between seven and twelve times more postings for the former than the latter.¹) Any casual sampling of the literature, printed or digital, reveals a cacophony of meanings for both, and some of the inherent ambiguity may arise simply from stylistic preferences among writers for one or the other. The greater general currency of 'urban form' reflects, perhaps, the almost limitless metaphorical uses to which it can be put, physical or otherwise; 'urban morphology', on the other hand, sounds immediately more academic and methodical.

'The problems of morphology are so difficult precisely because of the great demands they make on the personality of the scientist', wrote Elizabeth Wilkinson in 1951 in reflecting on Goethe's conception of form (Wilkinson, 1962, p. 177). Her frame of reference was biology, but without making any concession to the oft-expressed but largely misguided homology of built environment as itself a living organism, she could as well have been referring to the study of constructed urban fabric viewed as form. The concern here is not with individual personality but with primary analytical motivations engendered within and across disciplines. If Kropf's desire for rigorous co-ordination of distinct and sometimes quite disparate approaches in urban morphology is to be realized, much voluntary suppression of inbred preferences and knee-jerk reactions to seemingly contrary outside agendas would need to occur. For all the lip-service paid to interdisciplinary co-operation in the cause of understanding the complexity of urban form, who will sublimate personal predilections in the interest of participating in a larger project that may require venturing into unfamiliar territory and offer mere heuristic value?

Kropf's comparative analysis opens with a questionable salute to the American urban sociologists whose simple diagrams persuaded generations of urbanists that the unencumbered social geography of 1920s Chicago fit vastly more complex cities the world over. For students of the built environment *per se*, there is little guidance there in seeking intriguing research questions. But more broadly, sociologists have generally put social group dynamics first and building characteristics far down on their list of interesting variables, although 'urban landscape' as 'text' has recently attracted attention for its semiotic appeal. For art historians and cultural historians, cultural features in the cityscape often do have analytical interest, but

rarely does this extend beyond individual iconic structures to encompass the spatial character of whole neighbourhoods, let alone the complicated structure of the city as a whole. For such scholars, representational discourse is the object of study.

For a certain class of broad-gauge designers, planners, and visionaries, the condition of the physical morphology of cities – however perceived – is effectively a platform for mounting critiques of the urban process and quality of life at large from some 'normative' vantage point of, say, legibility, sustainability, or 'good' urban form. The morphology of what is usually suffers in comparison to what should be. Here, too, perceptions loom large, and because of the social role of this group prescriptions are the principal stock in trade, particularly so when predicated on the quaint notion that changing the physical environment eliminates social pathologies.

Then there is a school of planners and architects who simplify city space as an abstract structure composed of networks of interaction, for which the analytical tools of mathematical topology are particularly suited. For 'configuralists', discovering centrality and marginality within the communication spaces that connect nodes and portals provides a distinctive view of the spatial composition of the urban fabric, even if it all but ignores the structures that spatially define and functionally justify the corridors of movement. In the elucidation of 'space syntax' the geometrical properties of neighbourhoods and the city as a whole as they constrain movement channels are of central concern, particularly as they can be described by topological measures. The practical significance of this approach lies in certain types of broad-scale urban planning and architectural conceptualization.

The advent of the modern computer brought forth a class of mathematical modellers whose primary interest in the city is as a laboratory for testing ideas about spatial generative processes related to modes of expansion. This interest focuses very much on abstract pattern recognition at various spatial scales, often starting with the local 'cell' and ending with city-wide shapes that have ultimate planning significance. Compared with other approaches to urban morphology, these models are usually highly abstract, and to the extent that social factors figure in them it is largely from the viewpoint of social physics. While the professional backgrounds of researchers in this cluster may be in architecture, geography, planning, or engineering, their skill and animation concentrate clearly in mathematics.

There is yet another type of analyst interested in urban morphology at the grand scale, one we might call the 'meteorological morphologist'. The three-dimensional bulk and spatial layout of the built environment can create microclimates, in which air flow, pollution, and other atmospheric features interact with the configuration of the built environment. The city's morphology is of interest here largely in its aggregate form, though variations in density, porosity, reflectivity, and general shaping are all relevant factors. Modelling the interactions calls for large-scale mapping and 3-dimensional reconstructions of the built environment with a strong emphasis on its surface materials. Relevant, too, is the generation of detailed land-use mappings across often vast areas of metropolitan scale, which involve the interpretation of remote sensing data and other cartographic sources. Most such work draws on experience gained in the physical sciences and engineering, as well as computational cartography, and focuses on current conditions and short-term predictive modelling.

So far, most of the approaches reviewed occasion little essential concern with history. To be sure, time, as an abstract dimension ($t_1, t_2, \dots t_n$), plays a role in quite a few of these perspectives, directly or indirectly, but not in the sense that is connected to the actual changing cultural experience of regions dear to the historian or geographer. Strangely, most mainstream historians do not take much interest in the built environment except for periods of documentary scarcity, concerned as they principally are with the actions and states of mind of people. Without question, architectural historians take an interest in urban morphology, but all too often at the scale of individual buildings.

Lastly for this expanded, but likely not exhaustive, review of stakeholders in the field of urban morphology, there are the two approaches Kropf discusses at some length – the 'typomorphological' school and the 'historico-geographical' approach. It is tempting to see them conceptually linked, as an almost combined 'geo-architectural' approach to the field. Others have been struck by the substantial complementarities between them – the former stressing the typological succession of building art over time, the latter most developed in the realm of 'town-plan analysis'. But both also insist on an essentially morphogenetic view of physical form and on interpreting the intra-urban pattern within a territorial frame. And both, consequently, are strongly committed to detailed and historically deep cartographic analysis (Maffei

2009; Whitehand, 2003). It is curious that this conjunction should have arisen from the separate endeavours of Italian architects and British geographers.

The point behind this quick 'tour' of a wider range of approaches to urban morphology than the four selected by Kropf is that disciplinary origins, methodological enthusiasms, operative goals, and professional commitments loom large in the barriers to the kind of rigorous co-ordination Kropf calls for. Obviously, he recognizes this. So, to complement Kropf's thoughtful effort to establish a conceptually integrated commonality, here follows a suggestion that might truly test the collective interest in following his lead. Practitioners of the various approaches should be invited to study the same real-world places used by the devotees of alternative approaches as the sites for their signature case studies and present their particular findings for direct empirical and theoretical comparison.² Perhaps then we could with more acuity gauge what common ground the various lines of inquiry share, and what cumulative enlightenment they provide.

Notes

1. In March 2009, for example, a Google search for references to "urban form" (with double quotation marks) produced 378,000 hits, while "urban morphology" (with double quotation marks) scored a mere 52,200 hits (a ratio of 7.24:1). By December 2009, the figures were 412,000 and 57,700 respectively (a ratio of 7.14:1). Is morphology, however incrementally, gaining more traction? By contrast, the figures for December in a Yahoo search yielded 1.1 million and 88,100 respectively (a ratio of 12.48:1). Perhaps, relatively speaking, morphology is less of a Yahoo interest.
2. This proposition has already spurred the initiation of one potential cross-methodological comparison: Gian Luigi Maffei and colleagues have contemplated the possibility of executing a typomorphological study of Alnwick, Northumberland, UK. M. R. G. Conzen's test case in town-plan analysis; while the author has begun to apply the historico-geographical methods of town-plan analysis to Como, Italy, the locus of an early typomorphological study by Gianfranco Caniggia (M. P. Conzen, 2010).

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The form-making process and architectural type

Nicola Marzot, Dipartimento di Architettura, Facoltà di Architettura, Università degli Studi di Ferrara, Via Quartieri 8, 44100 Ferrara, Italy. E-mail: studioperforma.marzot@email.it

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