Brazilian urban morphology

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The contents of Urban Morphology have been conspicuous for the rarity of contributions from Latin America. However, the sizeable Brazilian presence at ISUF conferences would seem to belie any suggestion that this is a reflection of a lack of urban morphological research and practice in that part of the world. I should like to start the task of making up for the lack of significant contributions to the journal by sketching a few of the more significant features of urban morphological research and practice in Brazil.

There are two cognitive areas that deal with urban morphology in Brazil: human geography on the one hand and architecture and urbanism on the other. It should be borne in mind in this regard that a graduate student from a school of architecture in Brazil is also an urban planner. However, a number of researchers describe their work as ‘urban morphology’ when a more general term such as ‘urban studies’ might be more apposite – a point also made by Vilagrasa Ibarz (1998) in his discussion of the study of urban form in Spain. Nevertheless, the subject has a history in Brazil that extends over some 100 years.

Key researchers

The first studies were related to economic, social and political aspects of Brazilian urban forms, and were undertaken by historians, such as Buarque de Holanda (1995), and sociologists, such as Freire (1933) in the first half of the twentieth century. Morphological studies were particularly developed by architects strongly influenced by French and German architecture: for example by Lúcio Costa, who studied Portuguese influences on Brazilian architecture (Costa, 1995). These studies dealt with building typology in detail, giving attention to characteristics, dimensions, and technological details of the construction of buildings. At this time academics in the School of Architecture in Minas Gerais started to develop research that would nourish one of the strongest traditions – the study of the evolution of urban form and building typologies in the colonial towns of the state of Minas Gerais.

Sylvio de Vasconcellos, who worked with Lúcio Costa in the administrative section of the government heritage department, did especially important work. He presented typologies of the colonial towns in Minas Gerais, contributing to the understanding of both the evolution of the colonial villages of Minas Gerais and building typologies (Vasconcellos, 1956). From his findings conclusions could be drawn about the genesis of colonial urban settlements. His work, as well as Lúcio Costa’s, can be considered as the starting point for a generation of studies that continues today.

Another member of the School of Architecture of Minas Gerais was Bolsthauer, who developed studies on the interpretation of the growth of American towns, emphasizing the role of legislation in the formation and transformation of towns (Bolsthauer, 1968). These, and the previously-mentioned studies, were the basis for the development of courses in the universities of São
Paulo, Bahia, Rio de Janeiro, Pernambuco, Rio Grande do Sul and Minas Gerais.

**Modernism and the vicissitudes of research**

The design of neighbourhoods and towns at the beginning of the twentieth century formed an important phase in the development of Brazilian urban form. It relates in major part to the construction of capitals of states. Garden city models were adopted as the basis for master plans and large residential developments in the main cities. The first decades of the twentieth century were also characterized by the urgent need for infrastructure and renewal projects involving the broadening of streets (Andrade and Magalhães, 1989; Manso, 2001).

The construction of Brasilia was a turning point in attempts to conceive and build towns following models of urban form based on a strong ideology. A modernist model was seen as one of the main intentions of urbanism, but mainly by the government. Those academics who were strongly influenced by the modernist ideology concentrated particularly on housing schemes.

Two main factors contributed to the search for new urban models. The first was the growth of the main cities. This obliged planners to pay attention to problems of providing infrastructure, particularly access to health and housing. The second was related to costs and the realization that for new cities to grow and multiply required large amounts of funding, which was hard to come by.

A crisis occurred in the second half of the 1960s. There was a decline in the amount of urban construction and a ‘dark age’ for researchers and academics in Brazil. The most prominent professors were barred from carrying out research. A few were able to continue teaching, but under strict supervision.

**Urban design courses and their contribution to urban morphology**

The decade of the 1980s brought a new era. Not only did researchers return to the schools of architecture but also courses for postgraduates began. Studies of building typologies recommenced, but new influences were at work. Notable among these were the postgraduate courses in Europe, Asia and the United States. In the United Kingdom, through the course at Oxford Brookes University, Ivor Samuels was a particularly important influence. That influence has in large part been responsible for a new generation of urban morphologists in Brazil. For example, Vicente Del Rio (1995), Humberto Yamack (2003), Romulo Krafta (1986), and Staël Pereira Costa (2003) developed their work using urban morphology either in research or as a basis for design.

Ideas developed in this way began to be discussed in Brasilia University where a series of seminars on urban design was launched (Holanda, 2000; Kohlsdorf, 1986; Turkienicz, 1986). It brought to light what was going on in urban morphology in Brazil. Following the seminars, interesting contributions were made that opened up four different lines of investigation that continue as the main lines of research today.

The most traditional of these is historical studies. These had earlier been associated with the conservation of isolated monuments. But a broader and more urban vision of heritage conservation started in the last decades of the twentieth century (Castriota, 1998; Gunn, 1997; Reis Filho, 2000; Toledo, 1996).

The second group includes detailed analyses of the evolution of the population and the study of functional aspects of cities, mostly viewed in relation to politics and social problems. These considered issues raised by contributions from other disciplines, including sociology and economics (Marx, 1991; Vaz, 2002; Villaça, 1998).

The third research field is associated with the group initially co-ordinated by Carlos Nelson Ferreira dos Santos (1986). This stresses the importance of identifying the original layout of a settlement that has grown spontaneously. It advocates the laying out of streets in relation to topography and man-made features such as routeways. A related line of research concentrates on the effect of spontaneously-developed fabric on urban planning: it culminates in describing some of the most general morphological characteristics of favelas and squatter settlements. Pereira Costa (1986) and others tried to identify existing patterns so as to maintain the characteristics of a settlement so that tenants could continue in their accustomed environments (Bonduki, 1999; Magalhães and Ferraz, 2004).

The fourth line of research is concerned with the patterns of new urban forms, mainly the impact of the land subdivision process in the present landscape. Surveys have been undertaken of the products of urban land subdivision, such as the plots, open green spaces, and public parks. The studies of the ‘landscape’ group (Macedo, 1999) may be distinguished from corresponding analyses...
in Europe, which draw attention to the third dimension, namely the building fabric on the street frontage. Nevertheless, the emphasis has similarities to that in urban morphological studies carried out by members of ISUF.

Conclusion

The Conzenian school of urban morphology (Whitehand, 2001) is not widely referred to in Brazil. Books by Aldo Rossi (1977) and Aymonino (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese. The most frequently referenced work (1981), however, have been translated into Portuguese.

References


Fringe belts and the planning of Russian cities

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Discussion of the fringe-belt concept has hitherto taken place principally in relation to Western cities (see, for example, Conzen, 1960; Whitehand, 1988). Similar thinking about urban fringes and the phenomenon of fringe belts has, however, occurred in relation to Russian cities, and its history merits wider dissemination.

Planning by the Russian state essentially began in the sixteenth century, when Peter the Great founded the first Committee for Building Construction. Under this committee all planning and urban design was taken under state control. Formal planning came to the fore and had important effects on urban form. Indeed, for much of the period since then Russian historians, architects and builders have paid little attention to the principles governing organic city development. Interest has focused much more on individual buildings and the preservation of coherent parts of cities. However, since the 1960s there has been a major change, following the adoption by the state of a ‘historical’ approach to large-scale urban reconstruction. It was argued that all historical cities should be analysed. Perhaps surprisingly, a historical approach was developed in the search for the logical structure of the contemporary large city. Like other countries, Soviet Russia was involved in creating new models for the modern city. In particular, a solution was sought to one of the biggest problems of the twentieth century – preventing urban sprawl. This generated two rather different attitudes towards urban fringes.

The first related to official planning standards, especially concerning ‘green belts’ and the nature of suburban areas (Hauke, 1961). ‘Suburban territories’ in Soviet Planning Standards had two principal functions. The first was to provide a zone for second homes, summer gardens and summer housing for city dwellers, woodlands, areas for sport, open spaces, health centres, and similar uses. The second was to provide a ‘buffer’ zone that would mitigate city influences on natural and rural environments. Such zones had to minimize building density and maximize open space. However, planners are still arguing about the legal aspects of these zones, which actually contain a mixture of land uses and are subject to various ill-controlled development processes. A particular difficulty is establishing the boundaries of urban areas and ‘suburban territories’.

The second attitude towards urban fringes was associated with a growing interest in the ways in which cities are changing their structures (Lavrov, 1966). There was a series of investigations into the morphogenetic and functional aspects of cities. Terms such as ‘urban fabric’, ‘environment’, ‘landscape’, ‘genetic’ and ‘ecosystem’, and others borrowed from the natural sciences, became prominent in urban theory. Researching into, and adopting principles of, biology and geography (including applied landscape geography) became familiar aspects of urban analysis, design and planning. During the 1970s and 1980s ideas relating to landscape unity and heterogeneity, and the nexus of physical, biological and social processes came into urban analysis from the theoretical works of Neef (1967), Solntsev (1960) and Troll (1971). The urban landscape has become of increased interest in the practice of design and building. Town builders understand landscape as a spatial unit – as an integral combination of urban form and landscape form. Issues relating to this were particularly explored in the Central Scientific Institute for City Planning and Urban Design at Moscow State University at the end of the 1970s, and more recently in the work of Tobilevich (1981), Gutsalenko (1984), Kukina (2006) and others.

The mapping of morphological units was part of the historico-morphological and landscape approach to urban structural analysis. Historical successions of forms in the landscape were evidenced in surviving forms. Such investigations in Yekaterinburg, Penza, Barnaul, Lvov and Kaluga reveal concentric zones within the city that mark former urban fringes. They are associated with phases of slow outward city growth, often related to physical obstacles, such as city walls, railways and natural obstacles (for example, steep slopes), and have been leapfrogged during subsequent periods of rapid residential expansion. These zones have clear affinities to the fringe belts investigated by researchers in the English-speaking world. The fact that these affinities exist despite more than 90 years of private property elimination in Russia suggests the need for a closer inspection of the relationships between process and form under different types of governance, especially under the contrasting...
conditions of ‘controlled development’ and genetically ‘natural’ town fabric formation. It is evident that even ‘controlled development’ has not eliminated some fundamental aspects of uncontrolled development.

In the case of the cities of Yekaterinburg, Penza, Barnaul, Lvov, Kaluga and Krasnoyarsk, what in the West would be termed ‘fringe belts’ have been the subject of recommendations to the city authorities for their reconstruction, preservation and development. They were declared to be integral parts of contemporary cities.

References


Revisiting Conzen’s Alnwick data

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As interest in the work of M.R.G. Conzen has broadened (Evenden, 2004; Koster, 2001; Marzot, 2005), stimulated in part by the publication of many of his previously unpublished writings (Conzen, 2004; Samuels, 2005), so have questions arisen about his data and methods of working. Records of the field surveys that Conzen undertook in his classic study of Alnwick are held in the M.R.G. Conzen Collection in the University of Birmingham. Exploration of these, and some reworking of them, has prompted my own reflections on what they reveal.

In addition to the survey undertaken in 1953, in preparation for the publication of the Alnwick monograph (Conzen, 1960), a similar survey was undertaken in 1964. I shall confine my attention here to these two surveys, comprising two field-books.

In each field-book, plot-by-plot data on land use and building fabric are provided in columns. The notation system used consists mainly of two-letter codes in combination of upper- and lower-case characters. To process the data myself I converted them to a database. The structure of this database strongly resembles the tables in the field-books. Columns have been added to link the database to a map in a Geographical Information System (GIS). The handwritten entries in the field-books are not always entirely clear so the process of transferring the data from the field-books to a database could not be automated – everything had to be re-typed.

Conzen developed his own notation. The first key dates from his student days in Berlin in the early 1930s. References to a very basic key can be found in his Staatsexamen dissertation (Conzen, 1932). It is not completely clear how many different keys have been created, but the key Conzen used in the 1953 survey is noted by him as being the fifth. There are also a number of undated keys in the M.R.G. Conzen Collection. Some were clearly designed to be used for educational purposes; some are unfinished. I shall concentrate here on the keys numbered as fifth and sixth. It is known that the sixth key was designed for use in
the survey of Alnwick undertaken in 1964.

I have remapped the two surveys on the Ordnance Survey 1:2500 plan surveyed in 1961, digitizing the plots on this plan by hand. All buildings, other than minor outbuildings, have been included as separate objects. Other features, such as gardens and parks, have been added in a more generalized way. The database has been added to this plan using unique values that link the polygons to the data.

During the process of analysis notations have been grouped based on a system that Conzen used in his keys. In the case of land use, for example, shops were divided into seven groups, of which food, household, clothing and miscellaneous were the main categories. The combinations have been mapped using a GIS, both for 1953 and 1964. Between those two dates there was an increase in the number of shops that Conzen listed as ‘miscellaneous’ and a decrease in the number selling ‘food’. There was also a decrease in the total number of shops – a trend that was probably common in European small towns in the early 1960s.

The maps that Conzen constructed of the various townscape features – for example roofing materials, wall materials and period of construction – were similar to those used by him later as the basis for producing maps of morphological regions in Ludlow (Conzen, 1975). The published maps of Alnwick’s land use and building fabric in the Festschrift for G.H.J. Daysh (Conzen, 1966) are highly generalized, but it is evident from comparison with the GIS based on the data from the field-books that the field survey undertaken in 1964 has been used to produce these maps.

Apart from being able to add his glossary of technical terms to the second edition of the Alnwick study, Conzen was severely limited in the revisions he was able to make in that publication. The survey undertaken in 1964 could not be incorporated.

In 2004 I was able to carry out my own survey of Alnwick, following the rules and guidelines Conzen set out half a century earlier. Alnwick underwent many changes during the intervening period. The results of this third survey are in the course of preparation.

References


Space in the traditional city

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In their overview of British urban fortifications, Creighton and Higham (2005) make a number of important points of relevance to concepts about urban form and structure, and the contribution of open space. Many familiar concepts of Conzenian urban morphology were developed with reference to walled towns (Conzen, 1960, 1962, 2004), and many Conzenian-inspired analyses of English
medieval towns deal with walled, or formerly walled, boroughs (Lilley, 1994; Lilley et al., 2005; Slater, 1989, 1990). However, ‘no more than perhaps one third of boroughs in England, and a little over half in Wales, were fortified in some way at some stage’ (Creighton and Higham, 2005, p. 218). Moreover, Conzen’s influential and often-adopted schema of ‘plan elements’ of streets, plots and buildings (Conzen, 1962) has little to say about ‘space’.

Space in British towns

Yet, when many early representations of British towns are studied, there is an overall impression of open space. Many of Speed’s views (Creighton and Higham use six of them), though little more than thumbnail sketches added to larger maps, suggest large expanses of gardens and other open spaces. Written accounts give similar evidence: in the sixteenth century Leland, for example, notes that the southern part of Chepstow was ‘converted into little medowes and gardens’ and makes similar comments about Hay-on-Wye (p. 97).

Town size is an issue here: ‘very large numbers of British towns were very small indeed’ (p. 215) and hence ‘the synonymity of walls and urban character and density of population was not as clear in Britain as it often was elsewhere’ (p. 216, my emphasis). Norwich, for example, was physically about the same size as London, but had only a quarter of the population ‘due to the open spaces within the enceinte’ (Campbell, 1975, p. 11). Population was, of course, substantially reduced in many places by the Black Death and subsequent plague outbreaks, with recovery being particularly slow (Gottfried, 1983; Hatcher, 1977). Hence ‘the extent of the walled perimeter seems to have marked a medieval high-water mark of development, to be followed by depopulation, retrenchment and the abandonment of intramural plots’ (p. 97, although writing specifically of Welsh towns).

If the representations are accurate, and plague a plausible cause, then are there consequences for the ‘standard’ Conzenian analysis?

Types of spaces

Polyfocal space

In some cases, ‘the ‘town’ was the product of ‘polyfocal’ growth, in which a number of originally separate nuclei coalesced, with or without walls surrounding them’ (pp. 211-12). Examples include Norwich and Coventry. In the early period, spaces existed between these formerly separate nuclei, but this phenomenon has been little investigated.

Intramural space: military access and maintenance

Intramural space, whether as narrow alleys, wider streets or significant spaces, is a common feature from later Anglo-Saxon urban planning onwards (p. 45). ‘A lane representing the original intramural road of Hereford was known as Behindthewalles, being referred to in the grant of a tenement in 1364’ (p. 45, quoting Shoesmith, 1982, p. 17). At Exeter, ‘an open strip of land inside the wall and occupying the approximate width of the late Roman rampart still survived in places until the eighteenth century’ (pp. 43-4, quoting Henderson, 2001, p. 93).

The importance and continued existence of such spaces is reflected in the royal ownership or control of many defences; ‘in the twelfth and thirteenth centuries, the strips of land immediately inside some walls were said to be specifically royal property when threatened with encroachment ... because they had been original features crucial to access to the defences’ (p. 209).

Some of these spaces developed non-military uses. At Northampton, an enquiry following the Carmelites’ request in 1278 to enclose part of the city wall for their precinct was opposed as ‘in summer the sick used the airy wall-walk as a perambulation, and in the winter, it allowed escape from the muddy streets’ (p. 109). In late-medieval Exeter, ‘the use of this intramural strip ... for drying manufactured cloth is well documented’ (p. 46).

In terms of urban form, these spaces were more than mere streets or accesses, particularly in the later medieval period. But what was their relationship to the plots which undoubtedly had access to them? Were they multi-functional from the start, or did their function change over time? Did they act as back lanes, as seen in some plans of unfortified towns and villages? Did they enable plot subdivision, with the creation of new plot frontages facing the walls? Later buildings in such positions can be seen in many places, but when did this process occur? What process permitted the occupation of this sensitive space?

Ecclesiastical and high-status precincts

It is well-known that monasteries, abbeys, friaries
and hospitals tended to occupy extensive urban spaces, sometimes themselves walled. Some of the latecomers – friaries and hospitals especially – had sites on the urban fringe, both intramural and extramural. Their fringe location is an essential part of Conzen’s fringe-belt model. Spaces in these precincts can be large, and could be private or semi-public. But most such precincts appear to pre-date the 1348 plague, and some demonstrate the impermanence of town walls as fixed boundaries: they may be Conzenian fixation lines in many respects, but they could be permeable.

Some high-status occupiers reflected their privileged status ‘through petitioning to create small gates providing private access to the extramural zone in a manner not available to the population at large’ (p. 171). It is important to recognize that precinct spaces could be linked in this way, at some periods, through the barrier of a town wall.

**Markets**

‘Marketplaces may have existed outside the defences of some early medieval burhs, including Hereford, Northampton, Oxford and Stamford, some of which were later embraced in expansions to the walled areas. Others developed in the later or post-medieval periods, such as the commercial focus outside Leicester’s east gate that grew up in the sixteenth century. Certain types of marketing, such as trade in cattle or horse, would tend to lend themselves to extramural locations ... In contrast, the marketplaces of most post-Conquest walled medieval towns lay within the circuit and often near the centre of the town’ (p. 45).

Hence there are distinctions in location and use, with the former being possibly affected by date of town foundation. Conzen’s examples tended to demonstrate markets in widened streets, sometimes at T-junctions (Alnwick, Newcastle). But some towns had extensive ‘market squares’, clearly a type of open space distinct from a street (Northampton).

The piecemeal development on market space (‘market concretion’) is well known, including the substantial encroachment on Ludlow’s hypothesised enormous market space (the core of the High Street plan unit: Conzen, 2004, pp. 128-30). Conzen (2004, Figure 10.3) is only able to suggest that ‘major island and lateral encroach-
ments on [the] street market’ occurred in the late-medieval and early-post-medieval periods. Closer examination of this process might suggest whether this reduction of open space results from pressure on urban space, or solely from increased convenience to market stall-holders: the permanent replacement of temporary market stalls being an often-cited reason.

**Walls and street spaces**

The creation of defences could have indirect impacts on urban spaces. The later wall at Southampton ‘truncated a series of merchants’ houses’ (p. 211) and the remains of one still abut the new wall, notwithstanding the more usual requirement for intramural space and access. Hence, did some walls truncate districts and condemn them to decline (p. 214)? Further, it is suggested that ‘dead end’ side streets that terminated at the wall would tend to be less favoured and were not usually as well developed’ – hence Winchester’s ‘funnelled’ street plans, ‘attributable to the gradual encroachment of buildings onto the street frontage nearer the central spinal street, and the widening out of the street closer to the line of the wall because of less pressure on land’ (pp. 44-5).

But was this type of encroachment a more general urban phenomenon, seen also in non-walled boroughs?

**Comments**

This brief note has no more than suggested that the urban designer’s concept of ‘space’, whether public or private, has been under-regarded in studies of British historical urban form. Common representations may have been misleading. More consideration of types of space, how they were used, by whom, and how and when they changed over time, could add a significant dimension to our understanding of the richness and complexity of medieval and early-modern urban form. Walled towns provided the impetus for this comment, as they have dominated Conzenian plan-analyses and have particular types of and pressures on space with the distinction between intramural and extramural being important. But the nature of space in the unwalled majority of towns should also be subject to investigation.
Note
1. Creighton and Higham (2005) is cited so frequently that, hereafter, only page numbers will be given.

References

Council for European Urbanism: Second International Congress
The Council for European Urbanism (CEU) is holding its second International Congress in Leeds, UK from 9 to 10 November 2006.

The Congress will focus on the theme of sustainable urbanism, considering how sustainable urbanism can be approached holistically in a variety of urban settings in cities, towns and villages both within Europe and beyond. This approach will be explored at a range of scales from the micro-urban to the broadly regional, with an emphasis on examples that reflect the CEU’s vision of humane urbanism.

Further information is available from www.ceunet.org

Approaches in urban morphology
The Proceedings of the New Researchers’ Forum held in Newcastle upon Tyne during the 2004 ISUF Conference were published in 2005. Entitled Approaches in Urban Morphology, the volume of proceedings is edited by Michael Barke and published by Northumbria University, Newcastle upon Tyne (ISBN 18613553294). Aspects covered include GIS and Caniggian ideology; French fringe belts; morphologies of fragmentation and continuity; the delimitation of morphological regions; and alternative approaches to urban conservation. The volume is available from Dr M. Barke, Division of Geography, School of Applied Sciences, University of Northumbria, Newcastle upon Tyne NE1 8ST, UK. The price is £5.00 (plus postage and packing).