

The structure of urban landscapes: strengthening research and practice

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Revised version received 12 January 2009

Abstract. *Methods of articulating the historico-geographical structure of urban landscapes are fundamental to urban morphology and have considerable, but insufficiently recognized, potential in planning. M. R. G. Conzen made a major contribution to their development, notably between the late 1950s and the late 1980s. He demonstrated in traditional British towns and cities how the way in which the urban landscape is historically stratified, reflecting the distinctive residues of past periods, gives rise to a hierarchy of morphological regions or urban landscape units. In the past 20 years, there have been applications and adaptations of Conzen's methods, and demonstrations of their potential in conservation and heritage planning, in other types of urban areas and other parts of the world, including the Far East. However, it is essential that urban morphological regionalization is grounded in sensitivity to the dynamics of the urban landscape and, especially in comparisons of different urban areas, that there is awareness of the level of resolution at which urban landscape units are delimited. Carefully applied, this method can make an important contribution to meeting a major challenge facing urban morphology today: the provision of sound bases for comparative research and its application in planning practice.*

Key Words: urban landscape unit, morphological region, historical urban landscape, Conzen, fringe belt, urban conservation

Despite the quantity of research in urban morphology, much remains to be done to clarify the basic constituents of the object of investigation in this field of knowledge: the physical form of urban areas. In the course of the history of this field, the focus of research has been frequently referred to as the urban landscape or *Stadtlandschaft* (Passarge, 1930). During the middle decades of the twentieth century, M. R. G. Conzen (1958, 1960) made major contributions, for example in the recognition and investigation of the 'form complexes' (ground plan, building form, and land and building utilization) of which the

urban landscape is composed. He built most effectively on the earlier, pioneering studies of such scholars as Fritz (1894) and Schlüter (1899a, 1899b). However, in spite of Conzen's contribution and that of subsequent researchers (see, for example, Kropf (1993) for an extended treatise on major parts of Conzen's work), widely acknowledged principles pertaining to the composition of urban form and the processes that underlie it have been slow to become established, not least within historical branches of the field. Attempts at comparative research often have to contend with a plethora of case studies using

different or unspecified definitions. This is not only an obstacle to conceptual thinking, but also creates difficulties when urban morphology is applied in planning.

An important aspect in which greater rigour is needed is in mapping the structure of urban landscapes. Though the recognition and delimitation of areas of morphological distinctiveness have been important in urban morphology since its beginnings as a systematic field of study (Fritz, 1894), the full potential of this type of work has yet to be realized in research. Where it is needed in planning practice, it is often absent or used in ways ill-informed by relevant research.

Practically all urban morphologists with a training in geography would probably acknowledge that the geographical structure of an urban landscape may be interpreted as a kind of mosaic of units of varying degrees of distinctiveness. However, there is a need for much greater clarity in the methods of characterizing and delimiting these units, and for wider appreciation of their role in planning. This paper is a step towards rectifying these shortcomings. It describes and reflects on research and practice concerned with this topic in a number of different parts of the world, drawing on published studies and previously unpublished work by the author and others. The principal concern is with Conzen's method of regionalization and developments of it in the past 20 years.

In setting this theme in context it is helpful to note three of the numerous factors that have for long been acknowledged to play a part in the geographical differentiation of urban landscapes. First, the different functions of sites within an urban area tend to be differentiated by physical form and location: for example, certain commercial activities tend to congregate and have forms distinctive from those of residential areas. Secondly, the existing physical and socio-economic character of the areas within which urban development and change take place provides a framework that influences the form of what is added or changed – units of property ownership, for example, are significant influences on the extent and form of development (Ward, 1962).

Thirdly, additions to the urban area, and internal changes, have attributes that reflect the 'morphological periods' into which the history of urban development is divided (Conzen, 1960, pp. 7-9; 1969, p. 127). These morphological periods are accentuated on the ground by the tendency for outward extensions of the built-up area to be made up of a succession of periods of rapid residential growth each having particular physical characteristics, such as architectural styles: the periods of rapid growth are separated by periods of slow growth or stagnation associated with either a physical limitation on growth – a fixation line (Conzen, 1960, p. 40; 1969, p. 125) – or a slump in housebuilding or both. During stagnation or slow growth, predominantly extensive non-residential land use tends to form a fringe belt around the edge of the built-up area (Conzen, 1960, p. 58; 1969, p. 125). The formation of this often discontinuous belt is followed by the formation of a further zone of distinctive residential accretion farther out during the next period of rapid growth. The creation in this way of a series of roughly concentric belts and the influence of these on subsequent changes to landscapes now embedded in the urban area have been widely recognized (M. P. Conzen, 2009).

The urban landscape is the product of the combination of these and many other forces. The geographical units that have been recognized in articulating the historico-geographical character and process of formation of this product have been described by various terms. Among the more frequently occurring, and having virtually identical meanings, are morphological region, morphogenetic region, urban landscape unit, townscape region and townscape unit. For most purposes these units will be referred to here as urban landscape units and the process of identifying and mapping them will be termed 'morphological regionalization'. Occasionally equivalent terms employed by other authors will be used when citing their work. The recognition, character and delimitation of such units, or regions, are not only central to geographical urban morphology but also important in its application in planning.

Maps and plans figure prominently in urban morphologists' representations of urban form. Indeed they are often inherent both in explanations of urban form and in planning proposals, not least those in conservation planning, which to varying degree have their basis in understanding that form. However, though many aspects of urban form lend themselves well to cartographic expression – the ground plan is an obvious case – others are less readily represented in this way. For example, street scenes, each of which may be viewed from a multitude of angles, are virtually impossible to capture in a succinct manner cartographically.

Further complexity is introduced if to variations in the physical position of the viewer of an urban landscape are added variations between groups and individuals in their appreciation of what is observed. These issues relating to the physical and cultural standpoints of those viewing urban landscapes are not addressed in this paper, though they are the subjects of continuing research (see, for example, Birkhamshaw, 2005).

The focus of attention in the present paper is the objects – structures and spaces – that can be directly observed on the ground. It is in relation to these traditional objects of investigation in urban morphology that the contents and delimitation of areas will be considered. For researchers, it is principally to aid understanding of spatial variations between areas that boundaries are recognized. For planners, boundaries are a major means of distinguishing areas to which different policies apply: ideally policies and the boundaries that relate to them follow from understanding, though in reality all too often they fail to do that.

The foundations of morphological regionalization

In the course of the first half of the twentieth century there were numerous attempts, mainly in Europe and the United States, to recognize, depict and delimit observable patterns in the physical contents of landscapes. It was evident

that there were highly complex inter- and intra-urban variations in these patterns. Early attempts, mainly within German-speaking Europe, tended to be grounded in historical and historico-geographical research. However, there followed a period in the 1920s when elaborate classification schemes became overstretched in scope relative to the available sources of information about the historical processes and functions underlying urban form. Descriptive classifications of forms multiplied without an adequate explanatory basis to the phenomena being examined. The tendency to be preoccupied by descriptive morphography, in contrast to explanatory morphology, was the subject of much criticism, notably by Bobek (1927). Despite this, it remained a weakness, not least in the English-speaking world, long after the Second World War.

By far the most important advance was Conzen's study of the English market town of Alnwick (Conzen, 1960). Widely acknowledged as ground-breaking within the field of plan analysis, it was, *inter alia*, a remarkable demonstration of how the historical development of a major aspect of urban form could be expressed in great detail cartographically (Conzen, 1960, Fig. 20). Particularly striking is the detailed attention given to the plot structure of the ground plan of the town in uncovering its historical development: Conzen's delimitations of plan units, or distinctive areas of ground-plan type, expressed the historical 'grain' of the town. Most important of all is the way this was accomplished by developing a method and concepts of wide significance in the historico-geographical development of towns and cities: the areas and boundaries that were mapped depict a historical geography of urban form that has relevance far beyond the confines of this individual market town.

Conzen reaffirms in the first paragraph of the first chapter of the Alnwick study that the plan, or two-dimensional layout, of an urban area is but one of three components (or 'form complexes') of its morphological character, the other two being building form and pattern of land and building utilization. All of these

components he had examined earlier elsewhere: plan and building form in the Havel towns, near Berlin (Conzen, 1932) and building form and land and building utilization in the English port town of Whitby (Conzen, 1958). All three components he examined in combination in a subsequent study in which he brought together and mapped the results of earlier field surveys of several British towns (Conzen, 1966). This study, its later development (Conzen, 1975), and a more detailed study of the Anglo-Welsh border town of Ludlow (Conzen, 1988) comprised the core of Conzen's published thinking about the components of the urban landscape, the manner in which they combined, and the significance of this combination for society and conservation planning. After Conzen's death, the discovery in his study of numerous unpublished manuscripts, written at various dates up to the late 1980s, allowed publication of a collection of essays (Conzen, 2004) which widened the geographical purview, clarified fundamental arguments and included amplifications of points of methodological detail. Further sources of information on Conzen's thinking are his manuscript notes and hand-drawn working maps and plans, which are archived in the M. R. G. Conzen Collection in the University of Birmingham.

It is a remarkable aspect of the development of conceptual and methodological thinking in urban morphology that this body of work, over two decades since its completion, and over half a century since it was begun, should still be a basic starting point for a discussion of urban landscape units. Within historical urban morphology it is to Conzen that we largely owe not only the basic method of regionalization but also the conceptual framework that underpins it.

The Conzenian basis of morphological regionalization

The significance of morphological regionalization for Conzen relates to a wide view of the cultural landscape, both urban and rural, in which the landscape is a continuously

developing record of human activity: the earlier the activity, the less complete the record, as new activities adapt or replace the products of old ones. In this way the landscape becomes an 'objectivation of the spirit' of a society in a particular locale, and in time develops its specific *genius loci*. This reflects not only the endeavours of the society occupying the landscape at present but also those of its predecessors. For Conzen morphological regionalizations are, like the landscape itself, a cumulative record, albeit an incomplete one, of the succession of these endeavours as they have developed in a particular place (Conzen, 1966, pp. 58-9).

In practical terms the starting point for such a regionalization is the historico-geographical structuring of the landscape. There are patterns in this structuring that express the histories of the various parts of the landscape. It is these that morphological regionalization seeks to capture. To understand these geographical patterns within an urban area it is necessary to appreciate how the various urban landscape components relate to both the underlying agencies and activities and to one another. The ground plan provides the framework for the building forms and pattern of land utilization, and the buildings contain the covered part of the land utilization. All these components derive their character from the historical and cultural context at the time of their creation and adaptation. The historical context itself exhibits regularities: there are periods during which large numbers of similar forms are reproduced, separated by shorter intervals when new types are introduced. These new types in turn become the dominant types over a subsequent morphological period. For example, a transition from one morphological period to another occurred widely, especially in the Western world, just before, during and immediately following the First World War: in particular the garden-suburb movement became a major influence, manifest most notably over the next two to three decades, on the form of cities. Morphological periods reflect socio-economic and political changes linked in varying degrees to the introduction and spread of a vast number of

artistic, technical and other innovations (Whitehand, 1977). They are a major feature not only of the way in which new forms are added at the edges of cities but also of internal changes to, and replacements of, existing forms.

In general, the ground plan is the component most resistant to change, reflecting a major capital investment, particularly in the case of the street plan. Building form also tends to persist for a lengthy time span, but is more susceptible than the street plan to destruction by fire and war, and to adaptation and replacement related to change of ownership and function. The pattern of land and building utilization is the most subject to change, at least in and around urban cores – here new functional impulses and fashions are prevalent and change is often facilitated by the more limited tenure of the occupiers of buildings.

These differences among the three components in their change over time, combined with the distinctiveness of morphological periods, are evident in the way in which the urban landscape is historically stratified. This stratification, reflecting the distinctive residues of past periods, varies from one part of an urban area to another, giving rise to morphological regions or spatial groupings of form ensembles. As demonstrated by Conzen (1975, 1988) in Ludlow, an urban area is divided into a mosaic of such regions, in which distinct small-scale relatively homogeneous units exist within larger units of more heterogeneous but coherent general character, defined by the commonalities of the constituent units. There is therefore a nested hierarchy of units. The ground plan generally determines the major units of the hierarchy. The smallest units, or morphotopes, are generally determined by the form of the buildings. In a paper written in 1985 but not submitted by Conzen himself for publication, though published posthumously in his name (Conzen, 2004, pp. 60-77), it is stated (p. 73) that land and building utilization plays a ‘muted role’ in defining the various levels of region within traditional areas of towns because of its broad conformability to the ground plan. However, writing at much the

same time Conzen (1988, p. 261) points to the contribution of the pattern of land and building utilization to the intermediate ranks in the Old Town of Ludlow.

In relation to Old Towns more generally, Conzen (2004, p. 73) envisages a four-tier nested hierarchy of regions consisting of the Old Town as a whole; town quarters (units determined by the ground plan); street units and precinctual units (forming ‘neighbourhood units’); and morphotopes, or the smallest building groups of distinctive period mixture or period dominance (sometimes referred to as townscape cells). These observations relate essentially to the core areas of towns, which were the main focus of Conzen’s attention. The outer areas are generally simpler, and this is reflected in a reduced hierarchy of units.

Reflections on Conzen’s method and its origins

The basis for the working out of this method is twofold. First, there was a lifetime’s work observing and seeking to understand urban landscapes, or townscapes as Conzen more often termed them, particularly in relation to their historical development. This included many detailed plot-by-plot surveys, recorded meticulously in field notebooks. Secondly, there was work undertaken by other researchers, especially German geographers, on landscapes more generally, including natural landscapes.

The first of these foundations has been discussed in a sizeable body of published work (for example, Slater, 1990; Whitehand, 1981). The grounding that the second provides for urban morphological regionalization is less well known. It has its antecedence in extensive discussions among German-speaking geographers on the theory of regionalization, though not specifically concerned with the internal morphological divisions of urban areas. Conzen’s method of deriving a hierarchy of morphological divisions from the combination of maps showing unitary areas of the three basic form complexes of the urban landscape is similar in principle to that

employed by Granö (1929) in his work on a much larger regional scale. However, the end product in Granö's investigation was many small regions, sometimes with wide boundary zones between them that did not nest into a hierarchy. Conzen's method, in contrast, exhibited the sharpness of boundaries that is inherent in the very nature of the urban landscape and produced a hierarchy of boundaries that reflected the historical development of the urban area.

This aspect of Granö's and Conzen's thinking should be viewed in relation to the large body of work by German geographers on *Landschaft* (see, for example, Neef, 1967; Schlüter, 1899b; and the commentary by Arntz, 1999). With its origins well back in the nineteenth century, this research, which was reviewed by Hartshorne just before the Second World War (Hartshorne, 1939, pp. 149-74), was a fundamental part of the intellectual environment in which Conzen was beginning to develop his ideas on urban morphology in the late 1920s and early 1930s. Though the geographical scale at which these geographers were regionalizing landscapes was generally much larger than that of internal urban divisions, the concepts involved bear a family resemblance to those formulated by Conzen. Significant antecedents of Conzen's conception of a hierarchy of regions or units are to be found in this body of literature: these have been reviewed by Bienstman (2007, pp. 112-16) in her recent discussion of Conzen's approach to urban morphological regionalization. The philosophical concept of the 'objectivation of the spirit' also has its origins in Germany. In geography it appears first in the work of Schwind (1951). However, it originated much earlier in studies of the philosophy of culture; for example, by the German philosophers Freyer (1934) and Spranger (1936).

Though the groundwork that Conzen undertook during the middle decades of the twentieth century was fundamental, the method as it is known today was mainly worked out between the early 1960s and the mid-1970s. Changes in his own application of it between the mid-1970s and mid-1980s are evident if

comparison is made of his maps of Ludlow published in 1975 with those published in 1988 (Conzen, 1975, p. 99; 1988, p. 258). As far as is known, essentially the same data were used on each occasion, but Conzen's knowledge of Ludlow had increased as a result of further work between the dates when the two maps were produced. The extent to which the changes in the maps are attributable to this increased knowledge rather than refinements in the method is not known. The closest there is to a set of rules to be followed in the delimitation of boundaries was published in 1988 (Conzen, 1988, pp. 254-61, esp. 260-1; see also Conzen, 2004, pp. 60-77). This, however, clearly leaves scope for differences of interpretation by different researchers. It is evident that application of this type of morphological regionalization requires considerable knowledge of both the development of the particular urban landscape to which the method is being applied and general principles of urban morphology. Differences in delimitations are therefore likely to result when different researchers apply the method to the same urban area. One is left to conclude that the nature of the urban landscape, especially its complexity, is such that it is not practicable to formulate a set of generally applicable rules that covers all circumstances.

Other regionalizations of traditional urban cores

While Conzen was undertaking his research on Alnwick during the 1950s, approaches to urban morphology by other researchers tended to be quite descriptive and rarely gave attention to the importance of plot patterns. Though work on historical explanations of urban form continued in central Europe (see, for example, Keyser, 1958), in the English-speaking world less detailed, more descriptive studies, albeit often to some extent historical, prevailed (for example, Stedman, 1958; Thurston, 1953). During the two decades following publication of the study of Alnwick, direct successors of Conzen's work were few. Morphological regionalizations of the type that



Figure 1. Urban landscape units in part of central Birmingham, England in 1970.
Based on Barrett, 1996, Figs 4.16, 4.18, 4.23 and 4.25.

Conzen developed in Ludlow began to be undertaken in the English-speaking world in the late 1980s and grew in number thereafter.

Two studies that came close to replicating Conzen's method in urban cores were those by Barrett (1996) and Bienstman (2007). Barrett investigated sizeable parts of the core areas of two major British cities – Birmingham and Bristol. As in Conzen's (1988) study of Ludlow, the principles on which the delimitations of urban landscape units were based, and examples of actual units thereby derived, are tabulated (Barrett, 1996, pp. 175-6). Figure 1 is based on Barrett's maps of part of Birmingham's city centre showing plan units, building form units, land use units and, the product of the combination of these three maps, urban landscape (or townscape) units. In accord with Conzen's principles the

highest-ranking urban landscape units, delimited by first-order boundaries, correspond to the major plan units. These reflect the main stages in the historical development of the street plan and plot pattern. This succession of formative periods essentially begins, in this area of the city, in the late-seventeenth century. By the late-eighteenth century most of the area had been transformed from rural to urban. Second- and third-order boundaries reflect plan changes within first-order plan units caused by subsequent redevelopments and changes to existing plots, particularly from the mid-nineteenth century onwards. They also reflect the boundaries of land-use units and major building form units. The regions of lowest rank (morphotopes), delimited by fourth-order boundaries, take into account variations of building form and also minor

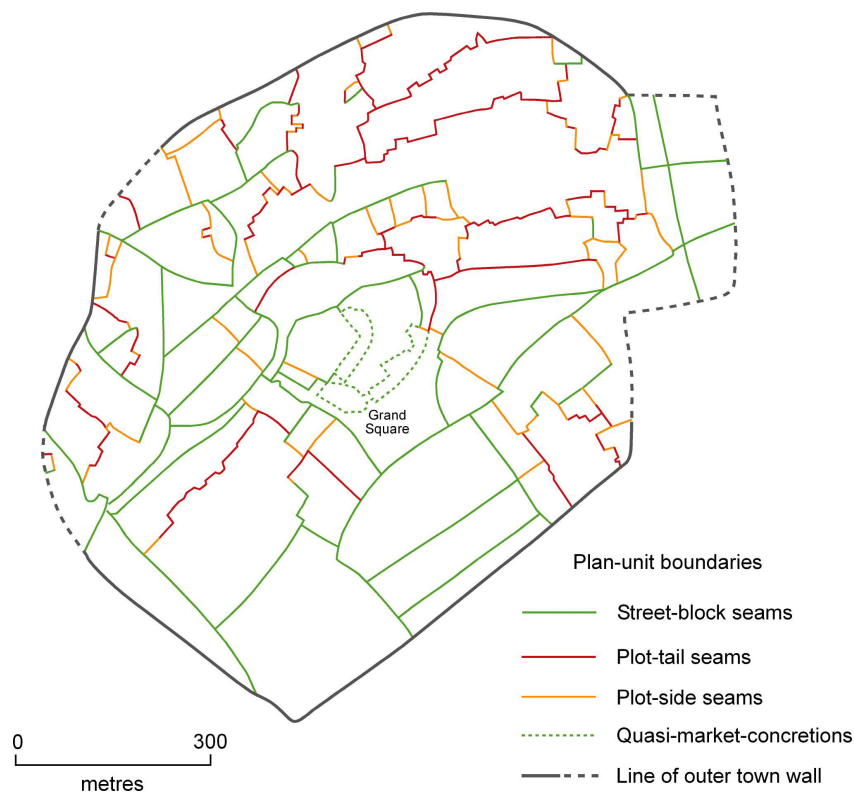


Figure 2. Plan-unit boundaries in central Sibiu, Romania in 1999.
Principal sources: author's field survey and a plan at the scale of
1:2500 accompanying the nomination of the historic centre of
Sibiu for inscription on the World Heritage List.

differentiations of plan.

The urban development and transformation of most of the area of Birmingham examined by Barrett spans less than 300 years. Even so, the pattern of units she reveals is complex. Studies of substantial medieval town and city cores since Conzen's study of Ludlow have underlined some of the complexity that his regionalization procedures can help to reveal, even if attention is restricted to plan units. In the core of the medieval English city of Worcester, Baker and Slater (1992) provide evidence for interpreting some plan units as planned extensions created within a short period and others as products of piecemeal development. As in Alnwick and Ludlow, some plan-unit boundaries follow street lines whereas others follow plot boundaries internal to street blocks.

The recent delimitation of plan units in Sibiu, Romania has served to highlight the

way in which the recognition of types of plan units, and especially types of plan-unit boundaries, can articulate fundamental structural areal variations in historical development. Within the Old Town of Sibiu (inside the outer town wall), the intricate pattern of plan units is far from random (Figure 2). There is a distinction between the less regular, on average smaller, units to the north and north-west (the petit bourgeois and plebeian Lower Town) and the more regular, on average larger, units in the wealthier Upper Town to the south and south-east. In the Lower Town, streets tend to be less regular than in the Upper Town and plots are, on average, both smaller and less regular: these characteristics reflect both the incorporation of small existing settlements as the Lower Town grew and the relative paucity of extensive planned layouts in that growth (see, for example, Figure 3A). The Upper Town, in



Figure 3. Plans of parts of central Sibiu, Romania in 1999. (A) Part of the Lower Town. (B) Part of the Upper Town. Based on a plan at the scale of 1:2500 accompanying the nomination of the historic centre of Sibiu for inscription on the World Heritage List.

contrast, largely grew by a series of planned additions (see, for example, Figure 3B): here plots much more often extend from a main street to a back street, whereas in the Lower Town there are more often series of plots backing on to one another with rear plot boundaries internal to the street block.

Three different types of plan-unit boundaries, or seams (Conzen, 1969, p. 128), have been mapped in Figure 2: street-block seams (following the lines of streets), plot-tail seams and plot-side seams. Their distributions broadly match the contrasts already noted between Upper Town and Lower Town, with plan units in the Upper Town being bounded predominantly by street-block (or street-frontage) seams and those in the Lower Town being more varied but having predominantly boundaries that follow plot-tail seams and plot-side seams. Though comparable surveys of building form and land utilization have yet to be completed in Sibiu, it is clear that the ground plan is both a powerful articulation of

the city's long-term historical development and, consistent with the principles set out by Conzen, a fundamental framework for the pattern of urban landscape units.

Suburban areas

Although Conzen's plan analysis of Alnwick covered the entire urban area, including the urban fringe of the time, the suburban residential areas were of quite limited extent and delimitations of morphological regions were not part of the study. The first suburban regionalization founded on Conzenian principles was of a London dormitory area largely developed in the twentieth century, though incorporating existing rural buildings (Whitehand, 1989, pp. 12-13). In contrast to the complex interrelationship of plan, building form and land utilization in traditional urban cores, in this small area these three form complexes had essentially the same distri-

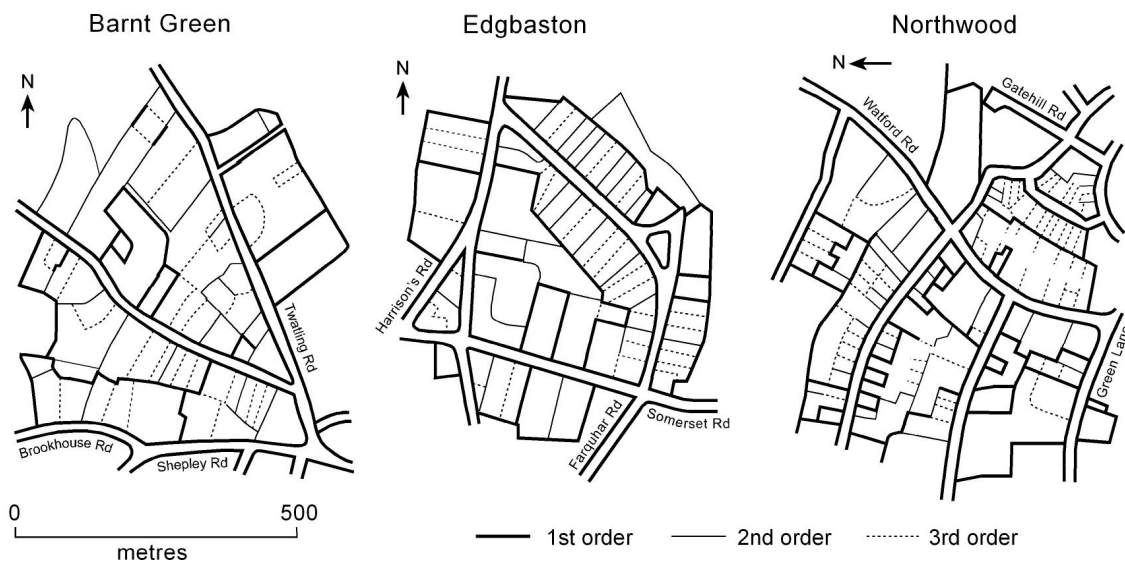


Figure 4. Urban landscape units in parts of suburban Birmingham and London, England in 1987. Based on Jones, 1991, Fig. 9.8.

butions. A hierarchy of units was not identified.

In somewhat more complex suburban areas characterized by more varied patterns of streets and plots and a larger variety of types of detached houses, Jones (1991, pp. 524-47) recognized a hierarchy of boundaries between units based on the degree of correspondence between a series of maps showing different aspects of the historical development of ground plan and building fabric. The main features represented in the maps were plot boundary changes, antecedent forms, dwelling type and building age. The greater the degree of correspondence between the boundaries on the different maps, the stronger is the boundary on the composite map (Figure 4).

The complexity of a map of urban landscape units, notably the density of units and the number of tiers in the hierarchy, is a product of not only the intricacy of the area mapped but also the level of resolution at which the landscape is examined. The high density of units on Jones's maps reflects the high degree to which the suburban areas he studied were subject to change, in particular the subdivision of large garden plots for the insertion of additional houses. However, it also reflects the extent to which he was taking into account detailed aspects of urban form –

for example, the various characteristics of individual plots and buildings.

The nature and diversity of functions and the degree of historical stratification have a major bearing on the number of tiers in the hierarchy of units. Younger and smaller settlements tend to have fewer tiers than older and larger ones. However, even relatively small, quite youthful settlements may have sufficiently complex developments for a number of tiers of units to have developed. The suburban area of Barnt Green on the southern fringe of Birmingham, England began to develop significantly only in the last two decades of the nineteenth century but a multi-tiered hierarchical structure developed. It has been mapped as a hierarchy of 'character areas' in Figure 5, since the map was designed for a parish plan public consultation and this term was thought to be more readily understood than 'urban landscape units' by the general public – for the same reason the description 'community spaces and utilities' was used instead of 'fringe belt', which would have been the correct term for a research readership (Whitehand, 2007, p. ii-07). The hierarchical pattern of character areas (units) reflects a number of factors, including the presence of both purpose-built suburban roads and adapted rural lanes, and the subdivision

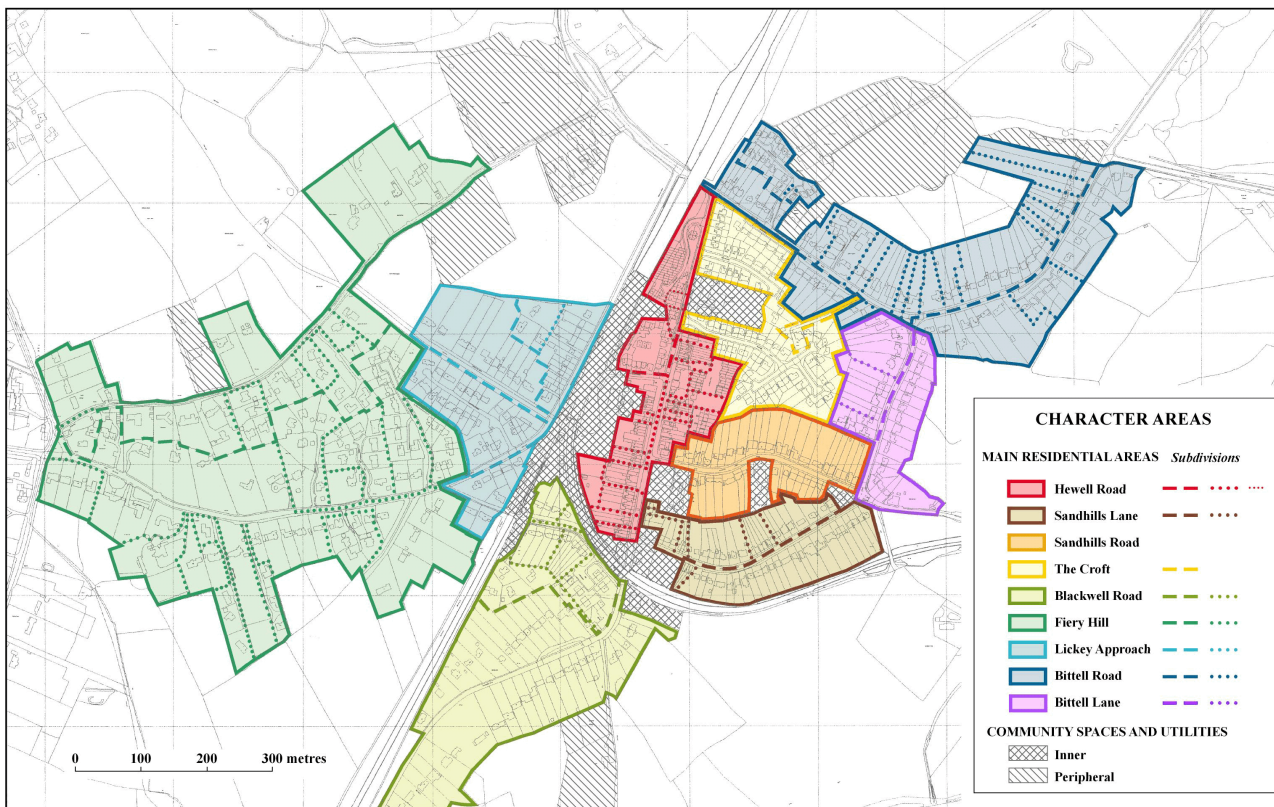


Figure 5. The character areas of Barnt Green, near Birmingham, England in 2005. Principal sources: field survey by the author and S. M. Whitehand, and Ordnance Survey plans at the scale of 1:2500 (surveyed in 1885 and 1886; revised in 1902-3, 1925 and 1969). © Crown copyright Ordnance Survey. All rights reserved.

of very large individual house plots to create culs-de-sac of higher density detached houses. In this suburban regionalization vegetation has been taken into consideration in addition to the three components of urban form concentrated on by Conzen in his investigations of urban cores.

Comparisons between areas

For meaningful comparisons to be made between areas it is important that boundaries are drawn at the same level of resolution in each area. This has been done for two essentially suburban areas, both largely products of the twentieth century, in Figure 6: one for part of Lantzville, Vancouver Island, Canada and the other for part of Upplands Väsby, just north of Stockholm, Sweden. In

each case the area shown is the main part of the settlement, with the principal shopping centre centrally located.

The contrast between the density of units in the two areas is most evident in the residential areas, those of Upplands Väsby having a much higher density. This reflects different growth processes. In Lantzville very extensive areas were divided into plots which were acquired by individual households that constructed houses in them. Although a similar process occurred in Upplands Väsby until the middle of the twentieth century, what had until then been largely areas of detached houses subsequently became both added to and transformed to form patchworks of small distinct residential units. These new units were largely homogeneous small 'estates' of terraced or detached houses or series of blocks of flats: some were products of the redevelop-

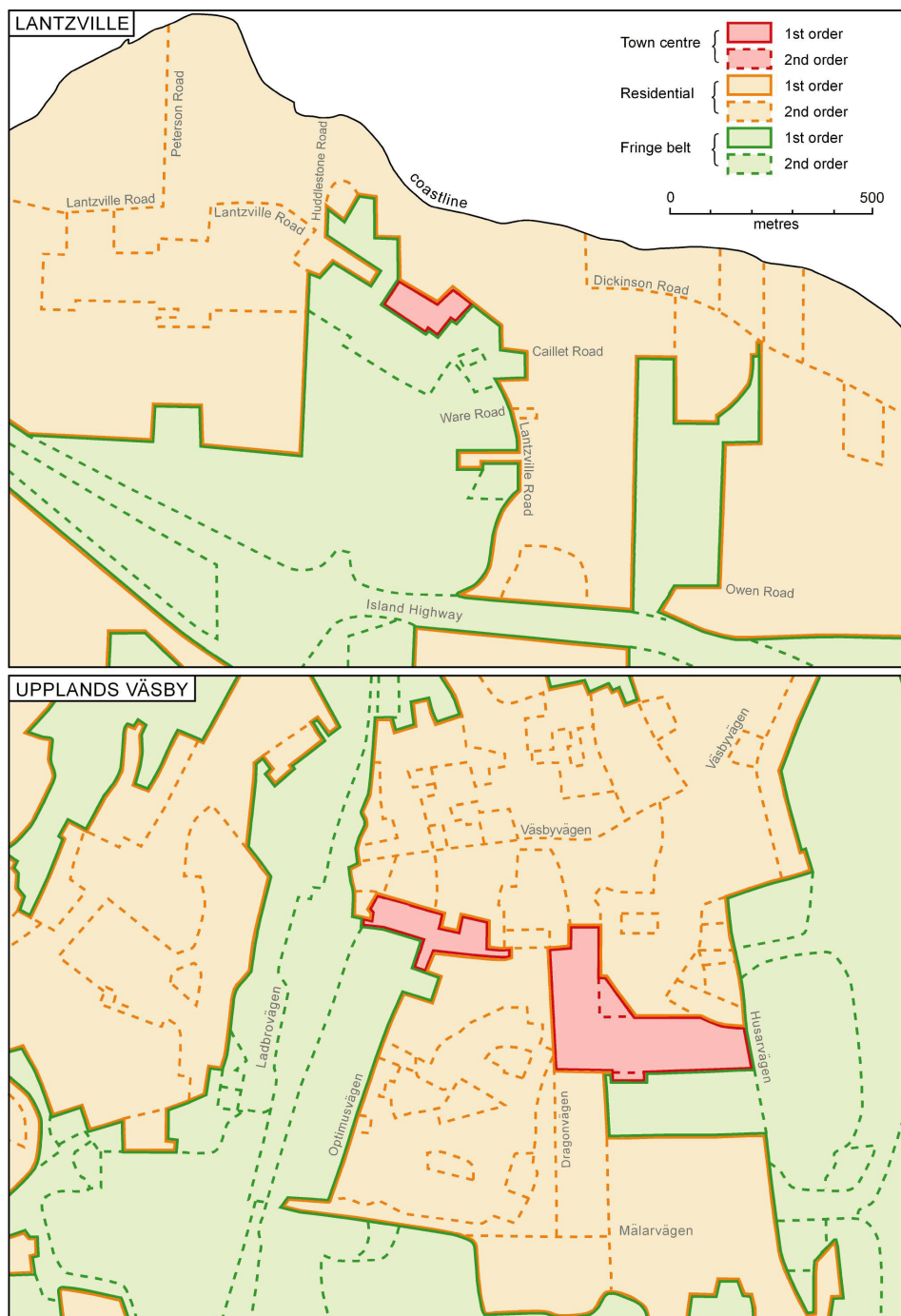


Figure 6. First- and second-order urban landscape units in Lantzville, Vancouver Island, Canada in 2005 and Upplands Väsby, Sweden in 2008. Principal sources: author's field surveys; photographic image of Lantzville (with superimposed plot boundaries), dated 2004, at the scale of 1:5000, provided by the Regional District of Nanaimo; digital orthophoto of Upplands Väsby by Lantmäteriet, 2005; and map of Upplands Väsby (with plot boundaries) at the scale of 1:10 000 (reconnaissance 1979) by Lantmäteriet.

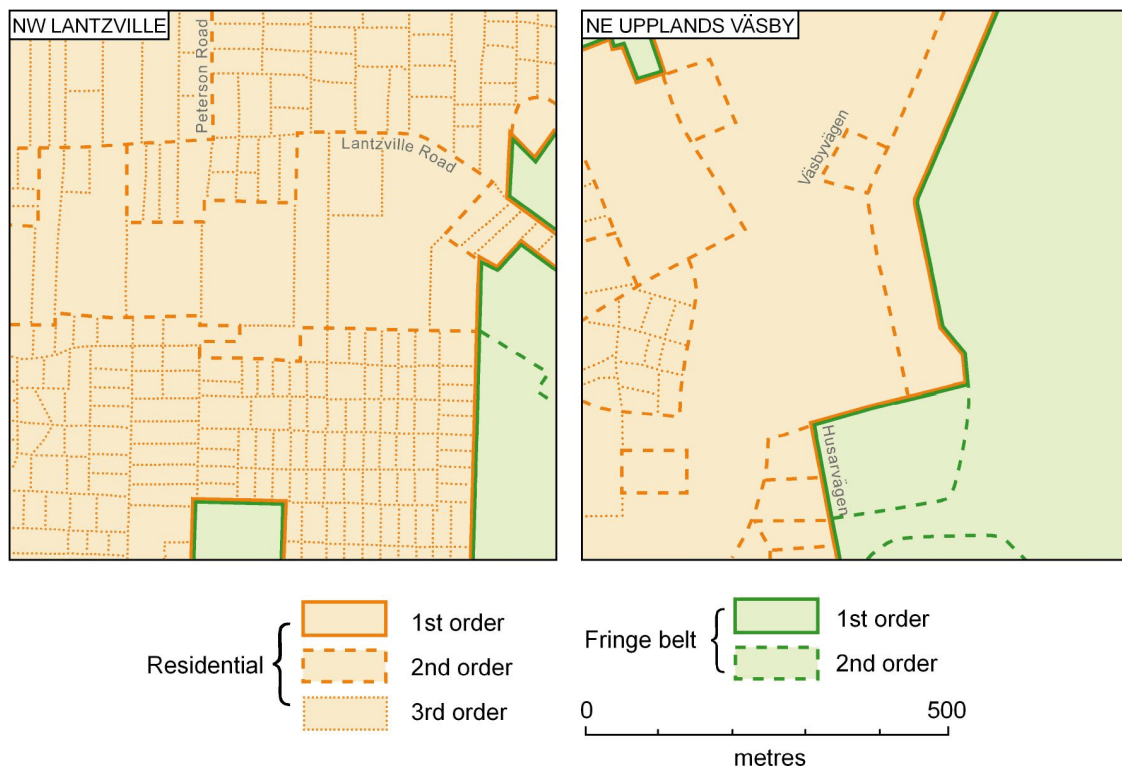


Figure 7. First- second- and third-order urban landscape units in north-west Lantzville, Vancouver Island, Canada in 2005 and north-east Upplands Väsby, Sweden in 2008.

Sources: see Figure 6.

opment and infilling of existing residential areas; others were created as extensions to the existing built-up area.

In contrast, the fringe belts in these two places were quite similar in both their densities of units and their association with railways and limited-access roads, both of which were constraints on movement across them and formed significant fixation lines.

Parts of these areas are regionalized at a higher level of resolution in Figure 7, taking account of variations within second-order units in the external forms (architectural styles, building types, block plans and building materials) of individual dwellings. In the residential areas of Lantzville there are a great many third-order units since practically all individual plots are distinct units at this level, reflecting the overwhelmingly dominant influence of individual owner-occupiers. In Upplands Väsby, second-order units vary greatly in the extent to which they contain within them third-order units: this is mainly a

product of the admixture of earlier landscapes created by building activities predominantly by individuals and later, much more homogeneous, corporate multiple-dwelling schemes.

While detailed regionalizations are necessary for many purposes, maps showing only the highest tier in the hierarchy can be effective means of articulating gross comparisons. Figure 8, based on the study by Bienstman (2007) of the Dutch town of Alkmaar and the English town of Bromsgrove, reveals striking contrasts between these towns in the configurations of both their cores and inner fringe belts.

Alkmaar has a continuous inner fringe belt closely associated with the town's Renaissance fortifications. This narrow, homogeneous belt is dominated by public open spaces and water. Its history has been powerfully influenced by two almost parallel fixation lines – a town wall and, a short distance farther out, a circum-scribing canal (Figure 8). The relatively large core of the town (the Old Town), surrounded

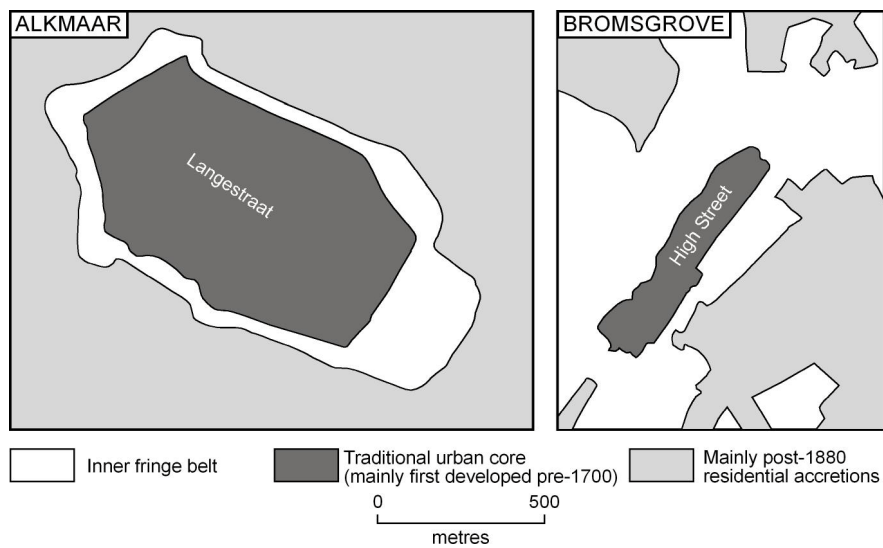


Figure 8. First-order urban landscape units in the central areas of Alkmaar, The Netherlands and Bromsgrove, England in 2005. Based on Bienstman, 2007, Figs 5.11 and 5.21.

by the fringe belt, is mainly medieval in its lineaments. The residential accretions immediately beyond the fringe belt are largely a product of the industrial era. In comparison with the Old Town, the plots here are squatter and more regular, and the seams that separate series of plots backing on to one another are much straighter. In plan, building forms and land use, the fringe belt differs markedly from the residential accretions and traditional urban core which it separates.

In contrast Bromsgrove, which is also of medieval origin, has a far more spacious inner fringe belt – much larger than its commercial core (Figure 8). Unlike in Alkmaar, there was little demand for housebuilding land outside the medieval core until well into the twentieth century. This made it relatively easy, in the nineteenth century and even later, for land on the then edge of the town, just outside the medieval core, to be acquired for space-consuming land use, such as schools, sports and recreation grounds, utilities, a cattle market, a cemetery and a hospital. As in Alkmaar, the inner fringe belt contrasts markedly with both the traditional urban core that it surrounds and the extensive residential accretions beyond it.

The basis for fringe-belt comparisons is as yet largely limited to Europe and North America. However, studies in progress are widening the geographical scope (M. P. Conzen, 2009; Gu, 2008). Preliminary research on Lusaka, Zambia illustrates the part that British colonial influences have played since that city's beginnings in the early-twentieth century, including a continuing legacy since Zambia became independent in 1964. The fringe belt that separates the more central areas of the city from its eastern suburbs was in part recognized, though not in name, in the British government's plan of 1933 (Collins, 1986, pp. 95-106). Compared with twentieth-century fringe belts that have been investigated within Europe (see, for example, Ducom, 2005; Whitehand and Morton, 2003) this stretch of fringe belt (Figure 9) contains an even higher proportion of extensive open spaces. This reflects its position within the part of the city that was, until Zambia's independence, occupied by the minority population of colonists. It is dominated by spacious recreational, educational and governmental land use, and contains several utilities and the original city airport.

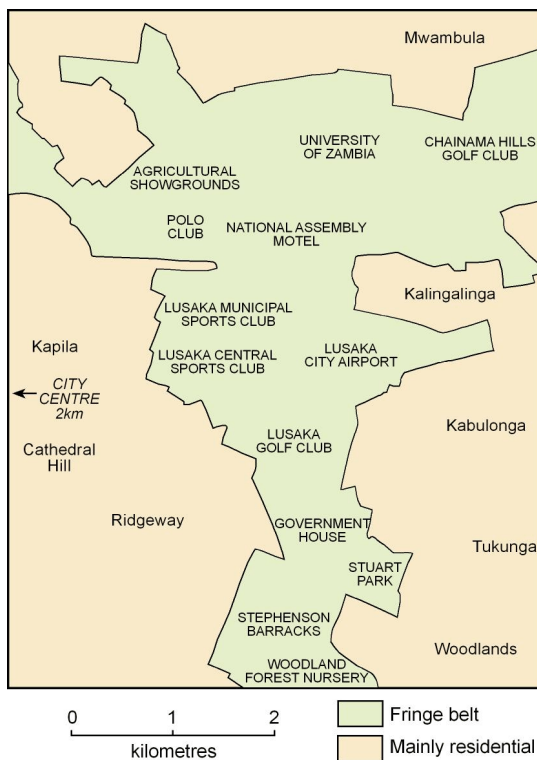


Figure 9. Eastern section of the middle fringe belt of Lusaka, Zambia in 1993, separating the inner areas of the city from the eastern suburbs. Principal sources: author's field survey and street plan of the City of Lusaka at the scale of 1:20 000 prepared by the Survey Department, Lusaka, 1983/4.

Cross-cultural applications

Until recently the approach to morphological regionalization discussed here has been almost entirely limited in its application to Western cultural environments. However, within the last few years the same approach has been adopted in the very different cultural environment of Eastern Asia, and it is appropriate to reflect here on some of the results.

It is evident from analysis of the ground plan of the ancient Chinese city of Pingyao that the types of studies undertaken by Conzen and his followers can also be illuminating in this very different cultural environment. Analysis of the triad of plan elements (streets, plots and building block plans) allows the principal developmental characteristics of the city's plan to be articulated (Whitehand and

Gu, 2007a). This is despite the fact that historical sources are poor in comparison with those available in the West, though this does mean that conjecture plays a greater part in reconstructing how the urban landscape has developed.

A study of a small area near Beijing's Forbidden City has demonstrated the applicability of a full morphological regionalization in that area (Whitehand and Gu, 2007b), and its effectiveness in articulating the present urban landscape as a product of centuries of development. A two-tier hierarchy of major and minor urban landscape units has been recognized (Figure 10). Most of the lower-order units are subdivisions of the major, predominantly residential unit that extends over much of the core of the area. This is an intricate landscape in comparison with the suburban landscapes considered previously, but also very different in the character of its individual units from the complex traditional European landscapes to which this method of regionalization was first applied.

Urban morphological regionalization and conservation planning

The fact that urban morphological regionalization is a broadly encompassing approach to urban form makes it unsurprising that in some respects it has resemblances to other methods of articulating urban landscapes and, in particular, mapping their structure. Indices and mappings of the degree to which similar building types are grouped together (see, for example, Whitehand, 1965, pp. 293-8; Whitehand and Carr, 1999, pp. 76-8) and applications of the concept of tissue (see, for example, Caniggia and Maffei, 2001, pp. 118-61; Kropf, 1996a) are examples of methods based on not dissimilar principles. They too are relevant to what is perhaps the aspect of urban morphological regionalization that is most relevant in urban planning: the basis it provides for conservation. Many of the studies already referred to include consideration of conservation, and it is to applications of morphological regionalization to this aspect of

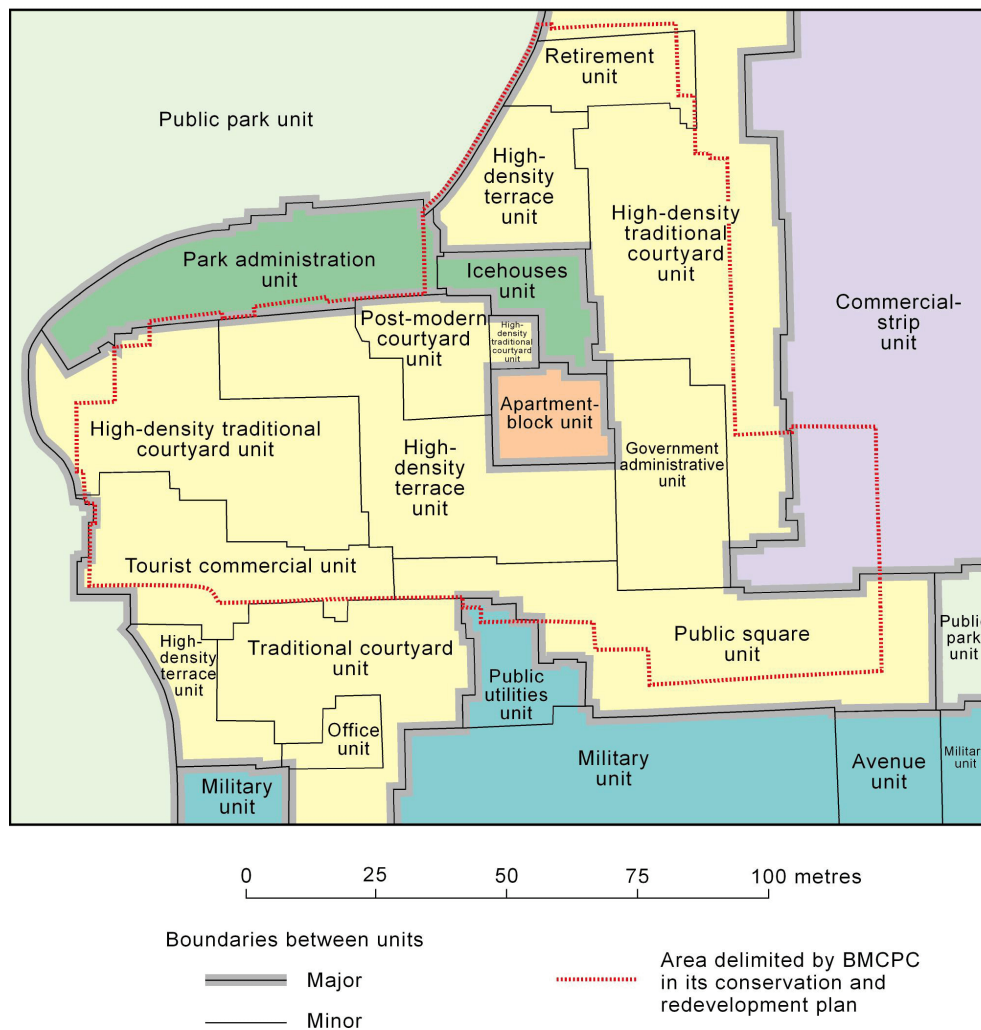


Figure 10. Urban landscape units in the Zhishanmen area, Beijing in 2006.
Based on Whitehand and Gu, 2007b, Fig. 7.

planning that the remainder of the paper is devoted.

Among the applications of types of urban morphological regionalization in planning are those that have been employed in zoning and regulation plans within Plans d'Occupation des Sols (Land-use Plans) in France (Kropf, 1996b), in Planes Especiales (Special Plans) in Spain (Barke, 2003), and in the delimitation of 'design areas' in the UK (Hall, 1997). The first of these has the closest similarity to the examples of regionalizations that have been considered in this paper. However, more generally the striking aspect of areal delimitations by governmental bodies for the purposes of urban conservation and urban

heritage management is their weak grounding in research on urban form and the widespread absence of a systematic method of characterizing and delimiting the areas to be conserved and protected. This weakness was long ago drawn attention to in the case of conservation areas in the UK (see, for example, Samuels, 1990, p. 415).

Belatedly, there has been some recognition by planning authorities in recent years that the delimitation of conservation areas and 'heritage protection zones' needs to be put on a sounder footing. It would seem self-evident in attempts to conserve the physical-historical character of urban areas that specifying that character and the area over which it exists is

essential. A well-grounded delimitation is fundamental. Anything less is liable to be challenged by developers seeking to undertake developments out of keeping with what it is that is being conserved or protected.

Greater awareness of the need for a more rational basis for delimiting areas for conservation and heritage purposes reflects not least a growing concern about actual and threatened incompatible developments within or near these areas. English Heritage, the principal countrywide body responsible for the protection of such areas within England, is engaged in a long-term programme of 'character area' surveys (Thomas, 2006). Internationally too there are changes afoot. Having for long focussed its attention on sites and monuments, UNESCO World Heritage Centre is now engaged in lengthy discussions on historic urban landscapes more broadly (Bandarin, 2006).

In only a tiny minority of cases is it possible to establish the criteria that have been used by governmental bodies in delimiting areas that have been deemed to be significant for conservation, heritage protection or a related planning purpose. Exceptions at the lowest level of the planning hierarchy are the tissues recognized as part of the zoning and regulation plan for Mennecey, just south of Paris, France (Kropf, 1996b) and the character areas in the Barnt Green parish plan referred to previously (Figure 5). In each case urban morphologists were engaged by the local authority that was responsible for preparing the plan.

In a very few cases, urban morphological regionalizations of the type developed by Conzen have been undertaken in conservation areas and heritage protection areas and compared with the areal delimitations produced for those areas by local authorities. The work of Barrett (1996) is an example in the case of conservation areas. Such a comparison has also been undertaken by Bienstman (2007) in Alkmaar. Here the City Council engaged an urban design consultancy to prepare a plan of the 'spatial quality' of the Old Town. It was intended that the recognition of 'character areas' should guide the Council in planning decisions and in particular

provide a basis for improving the quality of the urban landscape. However, Bienstman (2007, pp. 195-6) points out that the criteria upon which the delimitations are based are not made clear by the local authority and that the differences between their boundaries and those based on her regionalization employing Conzen's method are substantial (Figure 11).

A similarly poor correlation between boundaries has been demonstrated in the very different cultural environment of Beijing. In the area studied by Whitehand and Gu (2007b, pp. 654-65), much of the boundary delineated by Beijing Municipal City Planning Commission in its conservation and redevelopment plan bore no relation to the boundaries of urban landscape units based upon the application of Conzen's method (Figure 10).

These examples reinforce, in contrasting cultural environments, the point that Larkham (1990, pp. 354-7) emphasized, in a British context, about the weak relationship between local authority delimitations based on inadequate research and those founded on systematic investigation of the actual character of the landscapes to which special significance had been ascribed. In the large majority of cases the landscapes concerned are of little more than local significance. However, similar problems arise in the case of areas whose landscapes are of national or international significance. The boundaries of World Heritage Sites are an example.

As with boundaries of lesser importance, those of sites inscribed on the World Heritage List may remain largely unquestioned until a controversial development is proposed that affects the designated area. A case in point is the city of St Petersburg in Russia. In 2006, an office building almost 400m high was proposed within a short distance of the eastern boundary of the World Heritage Site. That site, some 30 km² in extent, is renowned for its eighteenth- and nineteenth-century landscapes. The fact that even today few of its structures rise above 5 storeys is a key aspect. The character and physical extent of St Petersburg's historical landscapes are self-evidently germane to the debate concerning the appropriateness of changes to those

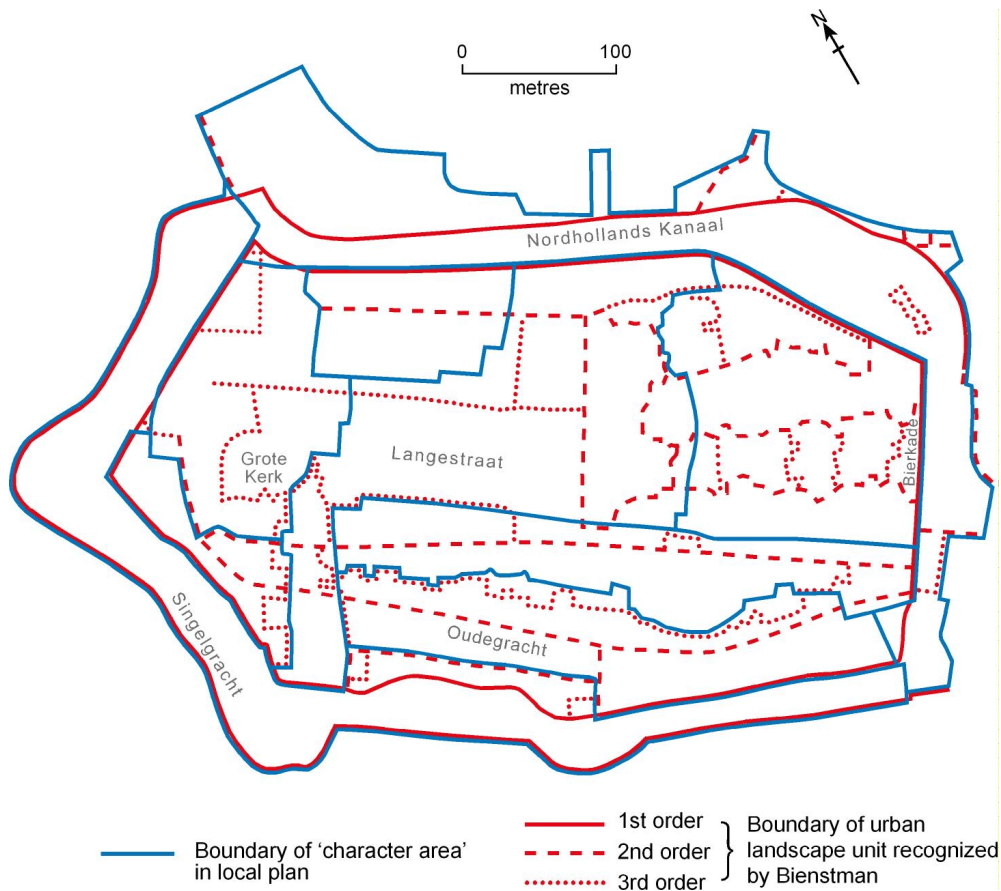


Figure 11. Local authority character areas in 1999 (in blue) and urban landscape units recognized by Bienstman in 2005 (in red) in central Alkmaar, The Netherlands. Based on Bienstman, 2007, Figs 5.11 and 6.2.

landscapes. Since the site's inscription in 1990 there have been various changes to its boundary. Figure 12 shows the boundary proposed in 2005. It also shows the inner edge of the city's middle fringe belt, which essentially follows the edge of the built-up area of the city as it existed at the end of the First World War. This fringe belt marks a major hiatus in the growth of the city at this time. Its character also reflects the many preceding years of the city's slow outward physical growth (in contrast to its considerable internal increases in population density) during which extensive land uses accumulated at the then urban fringe. The inner edge of the fringe belt is still, over much of its length, a strong marker of the edge of the eighteenth- and nineteenth-century city as a built-up entity. Such a marker merits due acknowledgement in

urban landscape delimitations. The boundary of the World Heritage Site, in contrast, excludes many areas inside that boundary but includes many outside it. Those outside it are particularly occupied by institutions on large sites acquired close to the city's built-up area in the nineteenth century or even earlier. This pattern of extensive fringe sites contrasting with the generally densely built-up area is clearly depicted on the map of the city in 1834 (Davies, 1834), when the outer edge of the built-up area had already assumed much of the configuration that it retained some 80 years later.

This pattern of historico-geographical development in which a compact built-up area is succeeded outward by an extensive fringe belt is an important aspect of the form of St Petersburg. It needs to be recognized as such

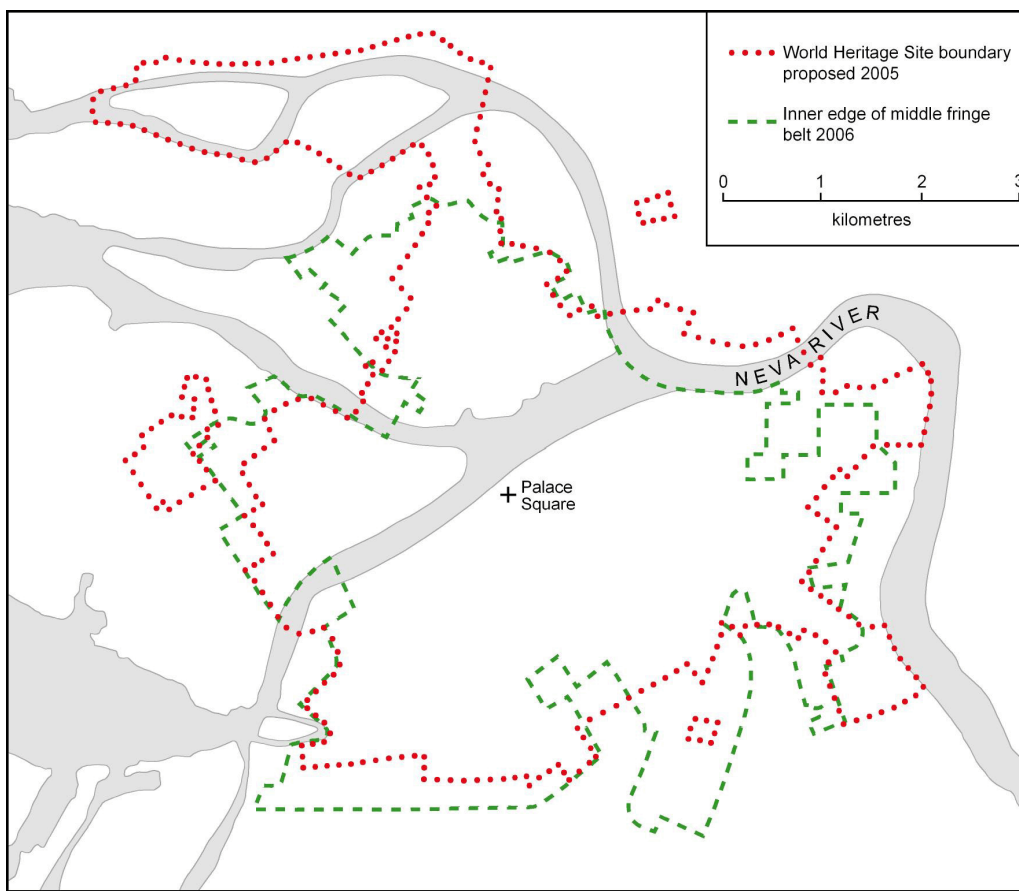


Figure 12. World Heritage Site boundary (in red) and inner edge of middle fringe belt (in green), St Petersburg, Russia. Principal sources: information provided by the Committee for the State Inspection and Protection of Historic Monuments, City of St Petersburg; author's field survey; and Google Earth imagery.

in deciding which areas should be included within the World Heritage Site. It provides a basis for heritage protection that is grounded in the historico-geographical unity of what is being protected. Historic sites scattered farther out than the inner edge of the fringe belt could be separately identified. Incorporating within the inscribed area the very extensive fringe belt in its entirety would not be appropriate since much of it is of comparatively little historical significance.

Conclusion

One of the principal challenges facing urban morphology today is the provision of sound

bases for comparative research and its effective application in planning practice. Though the uncovering of the multiplicity of factors that influence the internal differentiation of urban form has a long history, systematic methods of articulating the areas of distinctive form that arise have been slow to receive appraisal in widely available publications. This has contributed to uncertainties in the application of these methods and exacerbated the use of crude substitutes, particularly in planning. Urban morphological regionalization on the lines explored by Conzen merits wider examination and dissemination. The origins and development of the method, its utilization in a number of variants, its application in different types of urban area and different parts of the world, and

its potential in conservation planning have been described briefly in this paper.

Although the method has impeccable antecedents, particularly in German geography, its development within urban morphology between the 1960s and the 1980s attracted little attention outside this immediate field. This reflected, among other things, its fairly slight coverage in prominent publications and the lack of renderings of it that were sufficiently simple to facilitate its understanding beyond the cognoscenti.

Variants of the method that have been developed subsequently, several of them largely unpublished, have been summarized in this paper. The way in which the different components of urban form can be separately mapped and then provide the basis for a composite map depicting a hierarchy of urban landscape units has been exemplified and reviewed. Convincing results have been obtained in areas of markedly different physical and cultural characteristics. However, the method needs to be used in conjunction with concepts of wide significance in the study of not only processes of growth and change but also their embodiment in the historical grain of the urban landscape: the fringe-belt concept is a prime example. As far as comparisons between areas are concerned, it is important that regionalizations are at the same level of resolution in each area.

The recognition of urban landscape units is not amenable to the application of a set of mechanistically-applied rules: the urban landscape is far too complex for this. Conzen has provided a widely applicable method. But it would be unrealistic to expect this to be developed to the point of allowing patterns of urban landscape units to be precisely replicated by different researchers or practitioners working independently in the same area. Even in thoroughly researched urban areas well-endowed with records there are inevitably differences between the delimitations of different researchers. Most obviously, in deciding whether a boundary should be delineated in one way or another there are cases in which the arguments are finely balanced.

It is critical for researchers, and important for practitioners too, that urban morphological regionalization is understood both in relation to the history of the urban landscape, including the underlying decision making, and as part of a wider urban morphological research perspective.

Historically, the physical forms of towns and cities are influenced in several ways. One of them that has been emphasized in this paper, is through the environment provided by existing forms, especially their layout. A second, scarcely considered here, is by the way in which forms, most obviously buildings, though embodying the innovations of their period of construction, also embody characteristics 'inherited' from previous generations of forms. In addition, to understand the process of creating and transforming the mosaic of urban landscape units it is necessary to consider not only the physical sequences of which the mosaic is a product but also the underlying activities, planned and spontaneous, that it reflects.

It is in this light that appreciation of the wider context of urban morphological regionalization can be seen to be so important. Two points in particular need to be borne in mind. First, urban morphological regionalization depends for much of its effectiveness on historico-geographical and other knowledge of the area to which it is applied. As Conzen has shown, this knowledge arises, and is demonstrable, by means additional to the essentially cartographic methods employed in this paper. Secondly, there are limits to the extent to which complex urban dynamics can be mapped. Regionalizations are a device for articulating urban structure, but there is always more to that structure than can be encapsulated in this way.

Since urban morphological regionalization provides such an effective means of uncovering and representing the characteristics of the very features to which a sizeable part of urban conservation and heritage protection is directed, its conspicuous underuse in these fields of planning is a major failing. This defect, stemming partly, perhaps largely, from a combination of limited dissemination

through mainstream publications, poor communication between relevant disciplines, and weak links between research and practice, needs to be rectified urgently.

With respect to research, the scope for the wider application of urban morphological regionalization is plain. The individual studies that have been considered in this paper reveal graphically, at various scales, key aspects of the historico-geographical structure of urban landscapes. More importantly, considered together, they indicate the scope that urban morphological regionalization provides for both intra- and inter-urban comparisons and for cross-cultural study. This last aspect is particularly important at the present stage in the international development of urban morphology. Though the details of the method, and how it should be applied in particular circumstances, are likely to continue to be a matter of discussion for some time to come, these are far less important than appreciation of its utility in the current development of urban morphology as an organized field of knowledge.

Acknowledgements

For assistance in the field and in obtaining information for individual areas the author is grateful to Len Evenden; Tom Sohler, GIS Coordinator, Regional District of Nanaimo; T.Hakuyu, Planning Department, City of Lusaka; Robert Pim, CIDA; Vera Dementyeva, Chair, Committee for the State Inspection and Protection of Historic Monuments, City of St Petersburg; Margaret Pim; Dennis Rodwell; Richard Whitehand and Susan Whitehand. Michael Conzen, Heather Barrett and Hiske Bienstman provided valuable comments on a draft of the paper. The illustrations were prepared for publication by Anne Ankcorn.

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Sixteenth International Seminar on Urban Form

The Sixteenth International Seminar on Urban Form will take place in Guangzhou, China from Friday 4 September to Monday 7 September 2009. The theme of the conference is 'Urban morphology and urban transformation'. Topics to be covered include: urban morphological theory; urban morphology, planning and design; urban form in Asia; traditional urban form; urban heritage and change; and, geospatial technology in urban morphology.

Enquiries concerning the conference should be addressed to Professor Yinsheng Tian (E-mail: ISUF2009@scut.edu.cn) or Dr Kai Gu (E-mail: k.gu@auckland.ac.nz). Further information is available at www.urbanform.org. The last date for registration for the conference is 15 June 2009. The registration fee of 210 GBP (126 GBP for students and those who are retired) must be paid by that date. There is a fee of 30 GBP for accompanying persons who wish to have conference meals. Payment must be made in GBP

(pounds sterling) by one of two methods: (1) bank draft payable to 'International Seminar on Urban Form' and sent to Dr Michael Barke, Division of Geography, University of Northumbria, Newcastle upon Tyne, NE1 8ST, UK, (enclosing name, title and postal address of participant); (2) bank transfer to Barclays Bank plc, Haymarket, Newcastle upon Tyne, NE1 8ST, UK (IBAN GB30BARC 20594240479780), BIC(SWIFT) code BARCGB22 – when the bank transfer has been made, this should be confirmed by e-mail to michael.barke@northumbria.ac.uk giving name, title and postal address. Conference accommodation is being provided in the Xihuyuan Hotel (www.gzxihuhotel.net/index1e.asp) and the Ramada Plaza Hotel (www.ramadaplazagz.com/en/introduce.aspx). Hotel reservations must be made by those attending the conference.

The conference will be followed by excursions in Beijing, Shanghai and Hong Kong on 8 and 9 September (see p. 28).
