

# Drawing lines on maps: morphological regions and planning practices

Peter J. Larkham and Nick Morton

School of Property, Construction and Planning, Birmingham City University,  
City Centre Campus, Millennium Point, Birmingham, B4 7XG, UK.

E-mail: peter.larkham@bcu.ac.uk, nick.morton@bcu.ac.uk

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**Abstract.** *The delimitation of morphological regions is a fundamental research activity, particularly for those urban morphologists with geographical backgrounds. Delimitations reflect the origin, development and modification of the urban forms being considered and the different methods of delimitation employed. Clear rationales for the decisions on precisely where to draw boundary lines are sometimes lacking. This paper explores regions and boundaries, drawing upon evidence from a range of studies using detailed measurements derived from digital mapping to assist discussion of differences within and between areas. It also reviews applications of such boundary-drawing processes to contemporary planning issues, including 'character areas' and conservation, using work undertaken for local planning authorities in the English Midlands.*

*Key Words:* boundaries, borders, regions, character, conservation, GIS measurement

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For geographical urban morphologists in particular, and for planners and many other urban managers, the issue of boundaries is of particular significance, as Whitehand's recent examination of regions and boundaries demonstrates (Whitehand, 2009). Boundaries delimit areas of study, areas of particular characteristics (of origin, form and so on), and areas wherein specific policies may operate. Often a measure of homogeneity is sought within a defined area, clearly implying a measurable distinction between such an area and its neighbours (see Barke's discussion of such areas, termed by him 'urban landscape areas', in Antequera, Spain: Barke, 2003).

Fundamental to any consideration of how such borders are drawn are considerations of the nature of the boundary, the purpose for which it is drawn, by whom is it drawn, and how the precise boundary is delimited. A particular issue in terms of the last question is

whether there is any distinction between boundary identification following detailed study, including accurate measurement, of morphological features, and boundaries drawn perhaps more rapidly by relying on professional experience, familiarity with an area, and what planning officers have described to the authors as 'instinct'.<sup>1</sup> This paper extends Whitehand's study to present an exploration of the application of these questions, and the process of drawing boundaries, with particular reference to conservation area boundaries in English planning. These areas, defined for purposes of protecting or enhancing the character or appearance of the designated areas,<sup>2</sup> are almost always drawn with explicit reference to characteristics of physical landscape form (usually urban landscapes), albeit usually without explicit consideration of morphological concepts of boundary-drawing. The

nature of urban form change is also a consideration, for example when these policy boundaries are reviewed and revised. The policy and legal issues of boundary identification are not explored, although it should be noted that the rigorous testing of boundary location decisions, for example at judicial review or planning appeal, can demand detailed information on the rationale for the precise location of a line on a map.

The types of boundaries that we review in this paper differ from almost all of those discussed in the voluminous literature on boundaries in geography and planning. There is the problem too of the distinction between 'boundary' and 'border'. As Sennett (2006) suggests,

'there are two different kinds of edges that divide cities up. One ... is a border ... it's like a porous membrane, that is, it is something in which things move between across the edge ... The other, a boundary, is a sealed edge, an edge across which things don't move. The boundary tends to be a deadening edge, and the border tends to be a living edge'.

In Sennett's terms, any 'edge' drawn on an urban map by academics and practitioners is likely to be permeable; in the sense that people and goods move across it, often in ignorance of whether an edge has been drawn, or what its significance might be, and to whom. However, many may equally be sealed boundaries, demarcating an area within which a particular policy applies, perhaps within which grants may be available. Moreover, given the fact that policies and the physical structures of areas are both subject to change (indeed, English local authorities are required from time to time to review their conservation areas and amend boundaries as appropriate), these boundaries can only be seen as 'snapshots'. Hence the need to revisit, and question, boundary definition is an ongoing issue for many practitioners.

The areas and boundaries discussed in this paper are drawn from the authors' engagement with a range of research and consultancy projects. They are selected to represent a range of common problematic issues in

planning and conservation to which morphological analysis could contribute. The use of precise measurement derived from digital mapping may be a response to pressures for precise explanation and justification, for example at planning appeals; the exact location of a boundary is often a matter of great concern if only to local residents; and the examples allow discussion of more academic concerns such as whether boundaries should follow streets or other borders: is the street itself – the space bounded by buildings – a morphological region or area of conservation-worthy character?

### Morphological regions

This paper explores the delineation of what have been variously termed 'morphological regions', 'townscape units', 'urban landscape units' and related terms, principally by geographical urban morphologists as one of their primary activities. Unfortunately, there still seems to be some confusion between the various terms and whether – and to what extent – they reflect different concepts, and how such areas can be delimited.<sup>3</sup> Some users, most notably M. R. G. Conzen in his work on Ludlow (1975), show a hierarchy of regions; the levels of the hierarchy reflecting different origins and processes of change through time. Whitehand *et al.* (2011), embedded in the Conzenian tradition, identify three different levels of boundary in Guangzhou. Others, however, do not use the hierarchical approach, perhaps because they are unaware of the explanations of the derivation of the different levels (cf. Zhang, 2003) or because they seek to use a particular level in a hierarchy, as Cannock Chase District Council (Staffordshire) is currently doing in character studies for its emerging design guidance. Baker and Slater (1992) provide guidance on identifying plan units (that is, based on the ground plan rather than urban form as a whole), but their level of detail in explaining this technique is unusual, and the use of plan units in their historical research does not produce the complex hierarchy used by Conzen.

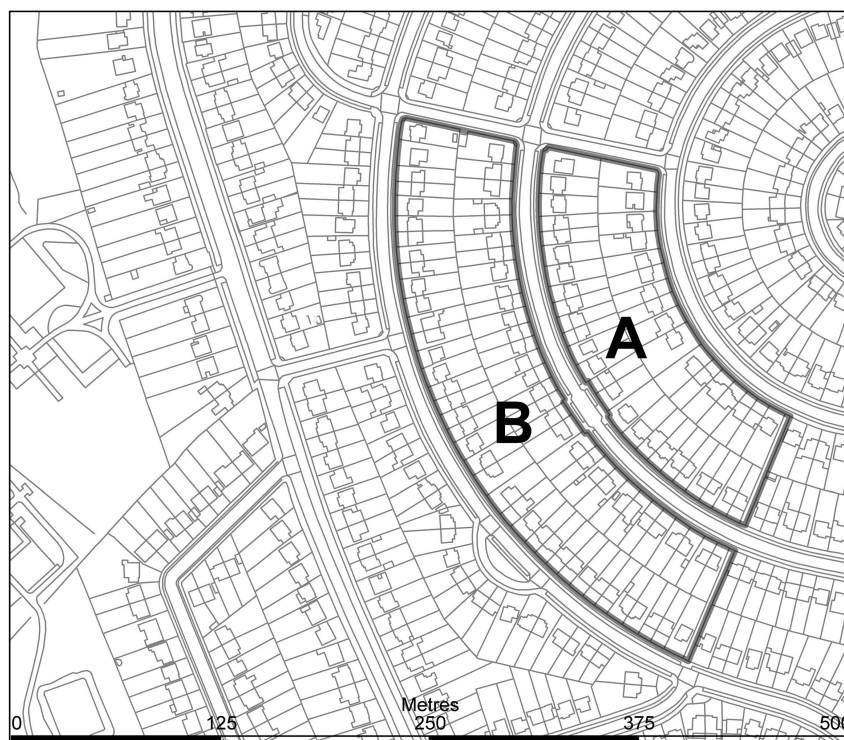
Likewise, area delimitation and boundary-drawing are fundamental activities of planners and related professionals, for example to specify areas within which particular policies apply. One area of policy and management in which area delineation is vital is the identification of areal character. This has a strong link with urban conservation in England, for 'character and appearance' are terms that recur in legislation and official guidance, albeit undefined. Yet it has been observed that the approaches of the academic and practitioner are rather different, and are likely to result in boundary delimitation at different scales. For example, in the English historic town of Ludlow, morphologically studied in great detail by Conzen, a 5-level hierarchy of 'plan type areas', 'building type areas', 'land utilisation areas' and, as an amalgam of these, 'morphological regions' is depicted (Conzen, 1975, Fig. 1). The local planning authority, however, delineated a conservation area encompassing a district larger than that studied by Conzen, but including only three policy-related sub-areas (Larkham, 1990, Fig. 16.3).

Practitioners appear often to be identifying boundaries by a variety of quick approaches including personal knowledge, rapid reconnaissance, and superficial cartographic convenience: in short, 'by eye'. It is clear that English Heritage and other policymakers are not using Conzenian concepts of region and delimitation (Morton, 2002). One reason for this may be the common suggestion that such detailed academic research is too costly and labour-intensive (Samuels, 1985). However, this has led to some very odd boundaries becoming embedded in planning policy. Robinson (1982) showed the example of the conservation area in Chipping Norton (Oxfordshire), where a boundary ran across a series of medieval plots between the rear of the buildings and the rear boundary of the plot series. Ross (1991) noted a conservation area boundary separating a house from its garden. Some early conservation designations in Wolverhampton (West Midlands) specifically excluded some parts of areas not felt to be of sufficient quality, thus resulting in 'doughnut-shaped' designations (Larkham, 1997, p. 28).

More recently, in Alsager (Cheshire) a boundary designated in November 2004 ran across a series of gardens, aligning with a slight change in direction of one boundary fence, but contrary to the area's character appraisal which explicitly mentioned the gardens all running down to meet the Mere (Congleton Borough Council, 2004): since their original designation, it has been recognized that some of these boundaries are indeed illogical and they have been amended. Occasionally decisions are made entirely without basis in urban form or history: on one occasion known to the authors, a local authority conservation officer recommending a boundary for a proposed conservation area in a major city was instructed to omit two derelict but Listed properties as they were owned by the local authority, which feared that inclusion in the designated area might prejudice plans for redevelopment.

A similar approach to area definition affected our appraisal of residential areas in Stratford-upon-Avon (Warwickshire) with a view to developing policy and reviewing potential conservation-worthiness (Larkham *et al.*, 2005). The areas were originally clearly demarcated for us by planning officers, although there was intended to be an element of public involvement in the setting-up and management of this review. We immediately raised our unease at study area boundaries following the centre-lines of major roads, dissecting what were, to us, clearly-identifiable morphological units. However the decision-makers, commissioners of this study, stuck to their boundaries as 'this is how the project had been commissioned'.

This raises a key issue to be explored in this paper: the extent to which morphological regions, at least at the higher levels of any hierarchy, can accurately be delineated by field observation and map study. To what extent might more detailed morphological measurement and analysis add any significant accuracy to the process of area identification and boundary location? Can the identification of morphological characteristics and area character benefit from the precision of such data derived from digital mapping?



**Figure 1. The Edgware 500 m x 500 m study area. (© Crown Copyright / database right 2011. An Ordnance Survey / EDINA supplied service.)**

### **Suburban examples in London**

Relevant information can be drawn from sample areas in London examined as part of the International Urban Form Study sponsored by the Seoul Development Institute and undertaken by ISUF members (Kim, 2003). A series of 500 m x 500 m areas were selected as representative of development forms at particular points in each city's development. Accurate measurements can be taken from Ordnance Survey digital mapping for the London areas.

#### *Edgware*

Edgware is part of the inter-war suburban sprawl of north London. The area was poor-quality agricultural land, purchased for development in 1919 (Jackson, 1973, p. 250).

Development had spread north along Edgwarebury Lane by 1927-30, but the bulk of the district was not built up until immediately before the Second World War when the speculative housebuilding companies Laing, Taylor Woodrow and others 'had firmly established a new district north of the Bypass' (Jackson, 1973, pp. 270-1). The Edgware sample square (Figure 1) represents part of a single large estate, built in a form typical of the time by a single developer in what is conventionally usually seen as one morphological period. The historical layering, so important in Conzen's approach and his hierarchy, would seem at first sight to be of little relevance here. Moreover, the same planning laws, regulations and policies are in operation across this development. There is very little architectural variation, although a limited 'palette' of details (bays, gables, neo-Tudor woodwork, tile hanging etc.) is used



**Table 1. Characteristics of two street-blocks of the Edgware study area**

Block	Area (m <sup>2</sup> )	Plot area (m <sup>2</sup> )	Building footprint (m <sup>2</sup> )	Number of dwellings	Original dwelling types
A	10 277	Max 402	106	42	detached 16
		Av 311	52		(38%)
		Min 106	38		semi-detached 26
		Range 296	68		(62%)
B	20 360	Max 514	95	68	detached 54
		Av 328	62		(79%)
		Min 110	46		semi-detached 14
		Range 404	49		(21%)

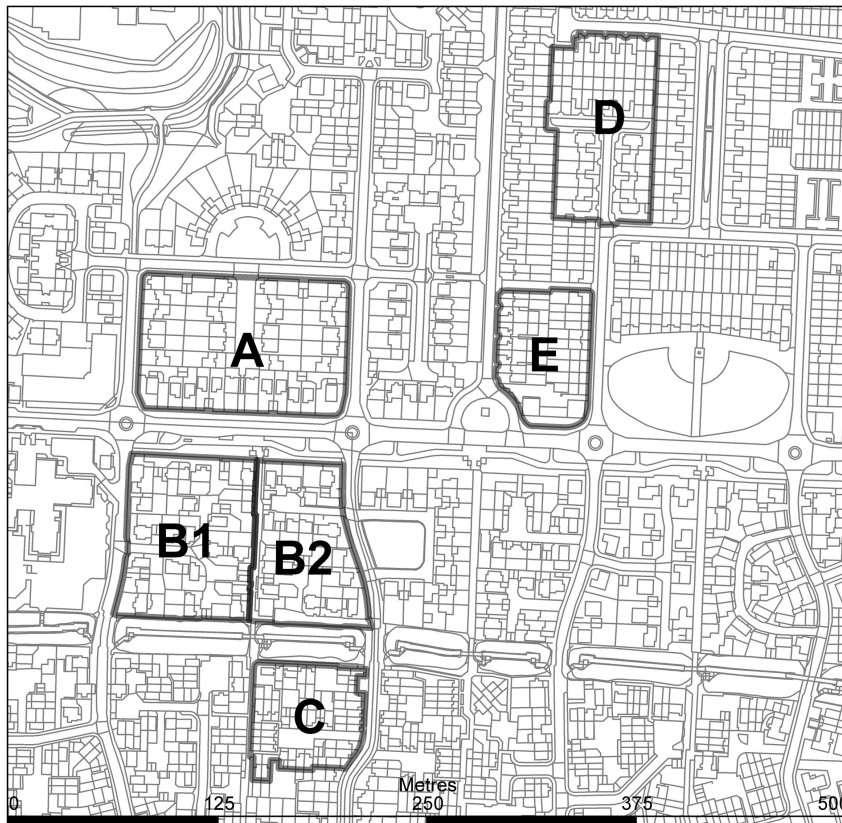
across the estate. Building form varies, with a mixture of detached and semi-detached houses. Subsequent alterations and extensions have led to some significant changes, again spread across the area, including the formation of terraces where house extensions have joined neighbouring, formerly separate, houses (cf. Whitehand, 2001, Fig. 11). Excluding the public park to the west, it could be argued that this sample square, indeed this entire estate development, is a single morphological region. But, on closer inspection, there are internal differences.

Two sample blocks have been delineated, using the common approach of roads as boundaries. Block A has a slightly smaller average plot area, significantly smaller range of plot areas, and higher proportion of originally detached houses (Table 1). It also has both larger and smaller building footprints. Block B has a significantly higher area range. The key question is whether these are sufficient to constitute distinct morphological regions. After all, the visual characteristics of the streets are very similar: grass verges, street trees, and the visual dominance of on-street parking. Some dimensions such as street and pavement widths are identical, being set by national planning standards. The differences are not readily apparent from visual inspection alone. So perhaps clearly-measurable differences at this scale are neither sufficiently significant to inform morphological region

identification nor significant components of character.

### *London Docklands*

The sample square representing a residential development of the 1980s that was part of the regeneration of the formerly industrial London Docklands (Figure 2) is part of an area of clearance and redevelopment for which a masterplan was drawn up by the Richard Rogers Partnership for the developers Rosehaugh Stanhope in 1988. Parts were built to this plan, but much of it was abandoned in 1993 (Williamson and Pevsner, 1998, pp. 177-81). The built areas were deliberately developed to give different and distinct characters: this arose from the initial masterplan but the detailed character differences result from the different times and agents (designers and developers) involved. Across the area there were 'notable differences largely determined by the play of market forces rather than social need' (Williamson and Pevsner, 1998, p. 78). 'The local authority's housing of the late 1970s is in the quiet neo-vernacular style of that period, rather sombre in colour ... the homes built [for the London Docklands Development Corporation] from the mid 1980s are more varied, ranging from the twee and nostalgic to the crisp and colourful' (Williamson and Pevsner, 1998, p. 80).



**Figure 2. The Docklands 500 m x 500 m study area. (© Crown Copyright / database right 2011. An Ordnance Survey / EDINA supplied service.)**

Generally speaking, this area was also developed during a single morphological period. Is this therefore a single morphological region (with the exception, perhaps, of the small industrial area in the north-west corner and the school on the west side, south of the main road)? Even a quick visual evaluation can discern a series of areal differences, made evident by different street, plot and building footprint patterns. These represent the different phases of construction in the area in which, as Williamson and Pevsner (1998) suggest, different designers and developers had become involved. Do these phases result in physical characteristics sufficiently distinct as to represent separate morphological regions?

The building types are virtually uniform across the area. Almost all buildings are two-storey single-family houses, although there are a few four-storey apartment blocks, often used

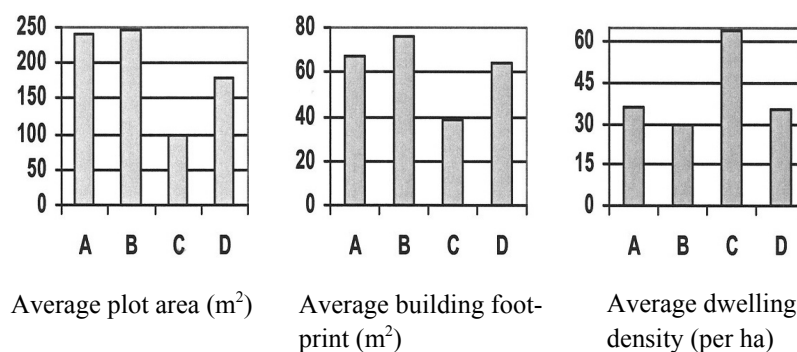
as an urban design tactic to give a visual emphasis at key points such as street corners, and some single-storey garage blocks. Nevertheless there are also differences in building styles and materials. A series of standard house types is used in various combinations across the area, sometimes given additional variety by positioning on the plot especially in relation to boundary walls and garages.

In the example of the Docklands area, differences between the areas identified from visual inspection for the original study (Kim, 2003) in order to demonstrate clearly-distinct areas can be tested through accurate measurements of four sample areas, A-D (Table 2, Figure 3). There are, again, significant physical differences in plan form between these areas. The contrasts between B and C are particularly marked. However, B is bisected by a north-south road, giving two 'mini-blocks' each with a pattern of unadopted

**Table 2. Characteristics of four areas in the London Docklands study area**

Block	Area (m <sup>2</sup> )	Plot area (m <sup>2</sup> )	Building footprint (m <sup>2</sup> )	Dwelling density (per ha)
A	9973	Max 346	99	36
		Av 241	67	
		Min 116	47	
		Range 180	52	
B	13 458	Max 407	140	30
		Av 246	76	
		Min 139	39	
		Range 268	101	
C	4533*	Max 182	61	64
		Av 100	39	
		Min 68	32	
		Range 114	29	
D	5767*	Max 294	85	35
		Av 180	64	
		Min 103	53	
		Range 191	32	

\* area excludes 'unadopted'<sup>4</sup> roads/parking areas within the block. Other measures of density could be radically different if these areas, plus streets, grass verges and other public areas, were to be included.



**Figure 3. Comparative characteristics for blocks A, B, C and D, Docklands study area, 2002.**

culs-de-sac and semi-private parking spaces (Table 3). There are measurable differences between the two potential morphological regions. Plots in B1 are noticeably larger than in B2, and the minimum building footprint is significantly smaller in B1 than B2. However,

examination of other morphological features – the building footprints and the buildings themselves – suggests significant continuity. Is area B, therefore, one continuous morphological region, albeit with some differences within it; or two sub-regions, in Conzen's

**Table 3. Areas B1 and B2, London Docklands study area**

Block	Plot area (m <sup>2</sup> )	Building footprint (m <sup>2</sup> )
B1	Max 374	107
	Av 237	74
	Min 139	39
	Range 235	68
B2	Max 407	109
	Av 263	78
	23in 176	57
	Range 231	52

These figures exclude several blocks of garages.

terms second-order regions, distinguished by a 'plan seam'?

#### *Boundaries and roads*

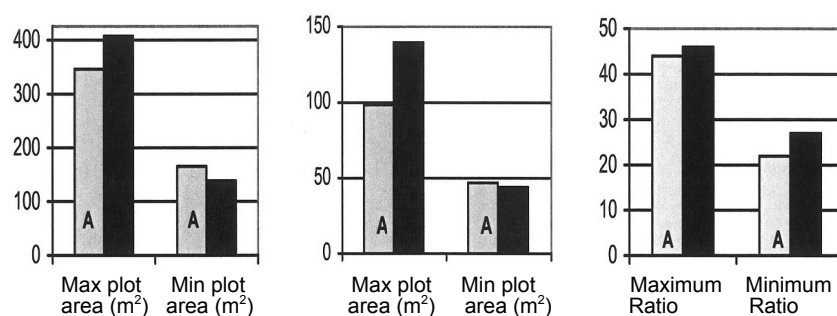
A further important question about regional boundaries is raised by Hall (1996) and Guy (2005). They argue, for a range of reasons including urban design and user perception, that boundaries should not be drawn down the middle of roads. Hall and Guy suggest that it is the street – usually a linear space framed by buildings – that forms a primary 'unit', and therefore that boundaries should follow the rear of the buildings or plots lining the street. However, using streets for boundaries has been common in the past especially for regions delineated by local planning authorities. Likewise plan-seams following streets ('street-block seams') have been identified in a number of morphological studies (see, for example, Whitehand, 2009, Fig. 2); although Baker and Slater's Worcester plan units (1992) have streets as boundaries in perhaps one-third of cases, and Conzen's (1975) mapping of morphological regions in Ludlow shows virtually no use of roads as boundaries for higher-order regions.

Of course, streets themselves may form significant spaces, sometimes lined with substantial grassed areas or parking spaces. In the Docklands study area, streets and such

allied spaces comprised 29 per cent of the 250 000 m<sup>2</sup> area, compared to residential building plots at 52 per cent. A further complexity in this particular area is an east-west former railway line, now a public footpath (visible towards the southern edge of Figure 2). Should these significant amounts of communication space, forming an important part of the morphological frame of the area, be considered as some form of morphological region in their own right? No previous study has given serious consideration to such spaces as separate 'regions' in their own right.

Comparison of the approach used by Hall, Guy and Conzen with that commonly used by local planning authorities, focusing on roads as boundaries, can be made in the main Docklands area east-west road, with its roundabouts and extensive grass verges. The southern line of houses in area A, and the northern line in area B, fronting the road, can be examined in detail (Table 4, Figure 4). The two areas are clearly quite distinct in their measurable characteristics and architectural details. Considering them as one region does significantly even out these differences, and ignores the fact that the two rows of houses are separated by a substantial highway, pavements and planted verges. Other differences are diminished by measuring only building plots: there are 12 such plots in the northern row, of which 4 have vehicular access direct to the main road; but only 8 in the southern one, of which none have direct access to the main road and the plot layout is very different.

This idea can be explored further in area E (Figure 2). Here there are two rows of houses, belonging to different developments, which form part of the same street block but face different streets. For this area, the three southernmost buildings are omitted as they form part of a quite different planning/design composition: they are two four-storey apartment blocks separated by a single-storey garage block. The two rows are characterized by repetitions of different house types, with four on the eastern row but only two on the western one (Table 5). Once more, there are clear differences between the east and west rows, which are lost if treated as one region.



**Figure 4. Comparative characteristics for area A (south row) and area B (north row), Docklands study area, 2002**

**Table 4. Areas A and B facing the main street in the Docklands study area.**

Block	Plot area (m <sup>2</sup> )	Building footprint (m <sup>2</sup> )
Area A	Max 346	99
south	Av 223	63
row*	Min 166	47
	Range 180	52
Area B	Max 407	140
north	Av 242	83
row**	Min 139	44
	Range 268	96
Treated as single area	Max 407	140
	Av 263	71
	Min 176	44
	Range 231	96

\* excluding 4 garage blocks that cannot with certainty be assigned to specific houses/plots.

\*\* excluding 1 garage block and 2 access roads.

The different development process resulted in the use of different house types and plot patterns, and there is a clear 'plan seam' running north-south along the straight line of rear garden fences.

#### *Mapping and boundaries in London examples*

To what extent does the precise positioning of

**Table 5. Area E, Docklands study area.**

Block E	Plot area (m <sup>2</sup> )	Building footprint (m <sup>2</sup> )
East row	Max 221	53
	Av 155	46
	Min 130	40
	Range 91	13
West row	Max 254	69
	Av 220	58
	Min 185	47
	Range 69	22
Treated as single area	Max 254	69
	Av 184	51
	Min 130	40
	Range 124	29

boundaries need to be informed by the level of measurement – of plot dimensions, building footprints, and other measurable components of built-form character – achievable through GIS and digital mapping? The Edgware case suggests that these data are unnecessary. The Docklands case suggests that such data can identify lower-order regions, although these are rarely used in academic study or professional planning practice. Perhaps the major issue raised here is that of whether roads have meaning as area boundaries.



**Figure 5. Eachelhurst Road, Birmingham, after the development of 'The Fairways'. (© Crown Copyright / database right 2011. An Ordnance Survey / EDINA supplied service.)**

### **Change over time: a Birmingham example**

The point made earlier about such studies being time-constrained is reinforced when the nature and rate of change in such areas are considered. The areas so far examined have been developed principally in one period. When the effects of subsequent modifications are examined, there may be change to the original patterns of layout and morphological regions. This is constrained by national and local planning policies, and by the nature of the areas as originally built: relatively dense areas have little scope for intensification, while low-density 'mature residential areas' are more susceptible to such change (Morton and Larkham, 2008; Whitehand *et al.*, 1992;). We also need to consider the residents and their changing motives for initiating change over time: in some areas, ageing populations produce very little change, but newcomers

tend to adapt buildings to their different requirements, and there can also be a 'domino' or 'neighbour effect' influenced by fashion or neighbour competition – if one household makes a change, others tend to follow (Whitehand and Carr, 2001, pp. 165-71). In the Docklands area there is relatively little scope for adding dwellings: field observation reveals numerous conservatory extensions but few others. However, these were not evident on the then-current Ordnance Survey digital maps used in this study, perhaps because their incremental development had not yet triggered a re-survey.

Since 2000, national policy in England has encouraged the more intensive development of previously-developed sites, and this has been interpreted as including the gardens of existing suburban areas. Policy through the past decade has encouraged new development at densities of 30-50 dwellings per hectare, for

**Table 6. Original characteristics of plots to the west of Eachelhurst Road, Birmingham.**

House no.	Plot area (m <sup>2</sup> )	Building area (m <sup>2</sup> )	Plot length (m)	Distance from house to front boundary (m)	Plot frontage (m)	Building area as % of plot area
246	1522.8	73.2	83.1	11.4	7.9	4.7
248	952.4	78.0	82.2	12.5	9.8	8.2
250	975.8	77.5	81.5	13.5	9.6	7.9
252	940.5	74.1	81.3	14.6	9.5	7.9
254	958.5	77.1	81.5	15.1	8.9	8.0
256	976.9	76.8	82.0	14.3	9.7	7.9
258	936.2	79.2	82.2	13.7	9.5	8.5
260	850.5	79.2	81.4	13.4	9.9	9.3
262	798.1	79.6	80.9	13.4	10.1	10.0
264	780.1	73.4	80.2	13.3	9.3	9.4
Mean	969.2	76.7	81.6	13.5	9.4	8.2
St dev	207.6	2.6	0.8	1.0	0.6	1.4

reasons of efficiency and sustainability (Office of the Deputy Prime Minister, 2000 – see also subsequent amendments). In one area of Birmingham (West Midlands) that has been studied on behalf of the local planning authority, a development proposal had been received for the demolition of a single house in a uniform row of inter-war detached houses on long garden plots (Figure 5, north-west corner). Parts of neighbouring gardens were to be purchased and amalgamated, and a new cul-de-sac inserted (Figure 5, 'The Fairways'). The measurable morphological characteristics of the first phase of 1930s development were quite uniform, and this was plainly a single morphological region (Table 6). The original developer was adjusting the plot boundaries, and hence the plot areas, to allow a usable access to the street but also to account for the curvature of the street and the orientation of an existing access to land at the rear.

The proposed development was evidently of a quite different character: it also resulted in a significantly-different plot pattern for the remaining first-phase houses, and produced a clearly-identifiable new morphological region. This would truncate original plots to a

substantial degree: in most cases only about 20 per cent of the original plot would remain with the original house (Table 7). The total footprint of the proposed new buildings is approximately 1095 m<sup>2</sup>. The average building footprint coverage of the original plot series was some 9 per cent, and of these particular plots, 8 per cent. The proposal would therefore increase the building footprint on these plots by some 132 per cent. Additional features of the proposal are the additional areas of hard surfacing: the access road, private and shared driveways, and pavements (Table 8). These features therefore cover approximately 1504 m<sup>2</sup>. In total, therefore, the proposal would increase the hard surface within what were mature planted gardens by a total of approximately 2600 m<sup>2</sup>. The significance of this in terms of areal character is shown by the concerns of bodies such as the Royal Horticultural Society (n.d.) and the recent changes to the General Permitted Development Order regulating the paving of front gardens (Department of Communities and Local Government, 2008). It should, therefore, have some impact in decisions on the boundaries of areas.

**Table 7. Truncation of plots proposed at Eachelhurst Road (measured along northern plot boundary and scaled from architect's drawing).**

Plot no.	% original plot remaining
246	35.5
248	20.7
250	22.5
252	house demolished
254	20.2
256	19.3
258	20.0
260	19.8
262	20.0
264	39.9

Although there are minor differences in plot areas and the amount of plot covered by the main building, the proposal would reduce the amount of rear garden of six of the plots to a minimum (the resulting rear gardens would be smaller than the front gardens, little larger than the footprint of the houses, and shorter than the average rear garden length of many of the proposed new houses). A question arising from this measured example is whether the new region is a lower-order region; and whether it should include the remnants of the original region. Interestingly, at a planning appeal, the Planning Inspector took the view that the character of original and proposed development did not differ significantly, and the proposal was allowed (Planning Inspectorate, 2004).

#### **Drawing conservation area boundaries: a Birmingham example**

The problems inherent in drawing boundaries can be further explored in the case of Selly Park, Birmingham, a mature residential area being considered for conservation area status in 2008-9. A boundary suggested by the local planning authority (Figure 6) was subject to a public consultation process, which resulted

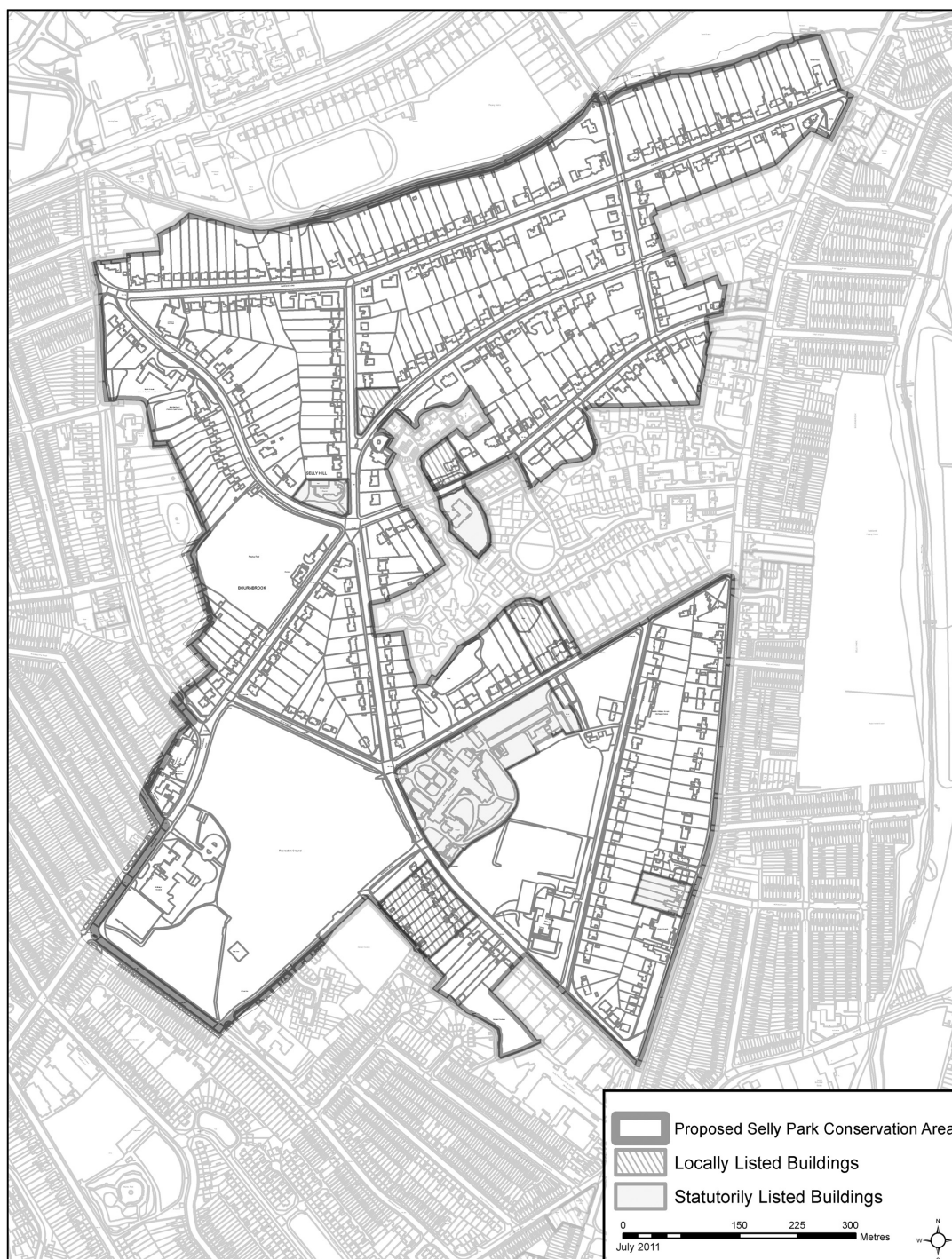
**Table 8. Additional hard surfacing of proposed development, 'The Fairways' (measured from architect's drawing).**

Hard surfacing type	Area (m <sup>2</sup> )
Access road	475
Pavements	215
Private driveways	457
Shared driveways and parking area	357

in a range of suggestions, usually for increasing the area to be included (Figure 7). Residents' boundary suggestions mostly followed convenient major roads (Pershore Road to the west, Bournbrook Road to the east) and thus their areas included more recent infill culs-de-sac comprising speculative development of indifferent design quality and character, which the planning officer sought to exclude. A later survey of 40 residents showed that 30 were satisfied or very satisfied with the boundary, and only 4 were dissatisfied. Given the opportunity to amend the boundaries, one-third did so. This included all of those dissatisfied, all of whom again sought to extend the area initially suggested. In making these suggestions, participants were referring to the characteristics outlined in English Heritage guidance (2005), including architectural quality, urban morphology, trees, hedges and open spaces, and did not understand why the additional areas being suggested had not been included.

In addition, nine experienced City Council planning officers were interviewed and their views of the area boundary sought.<sup>5</sup> Five, including the two Principal Conservation Officers, expressed no objection to the conservation area boundary and recommended no amendments. One failed to understand the rationale for excluding two small areas and suggested their inclusion. In contrast another officer reduced the area, and omitted one side of a street from the middle of the area, suggesting a form of 'donut' designation. More significantly, the city's then Head of

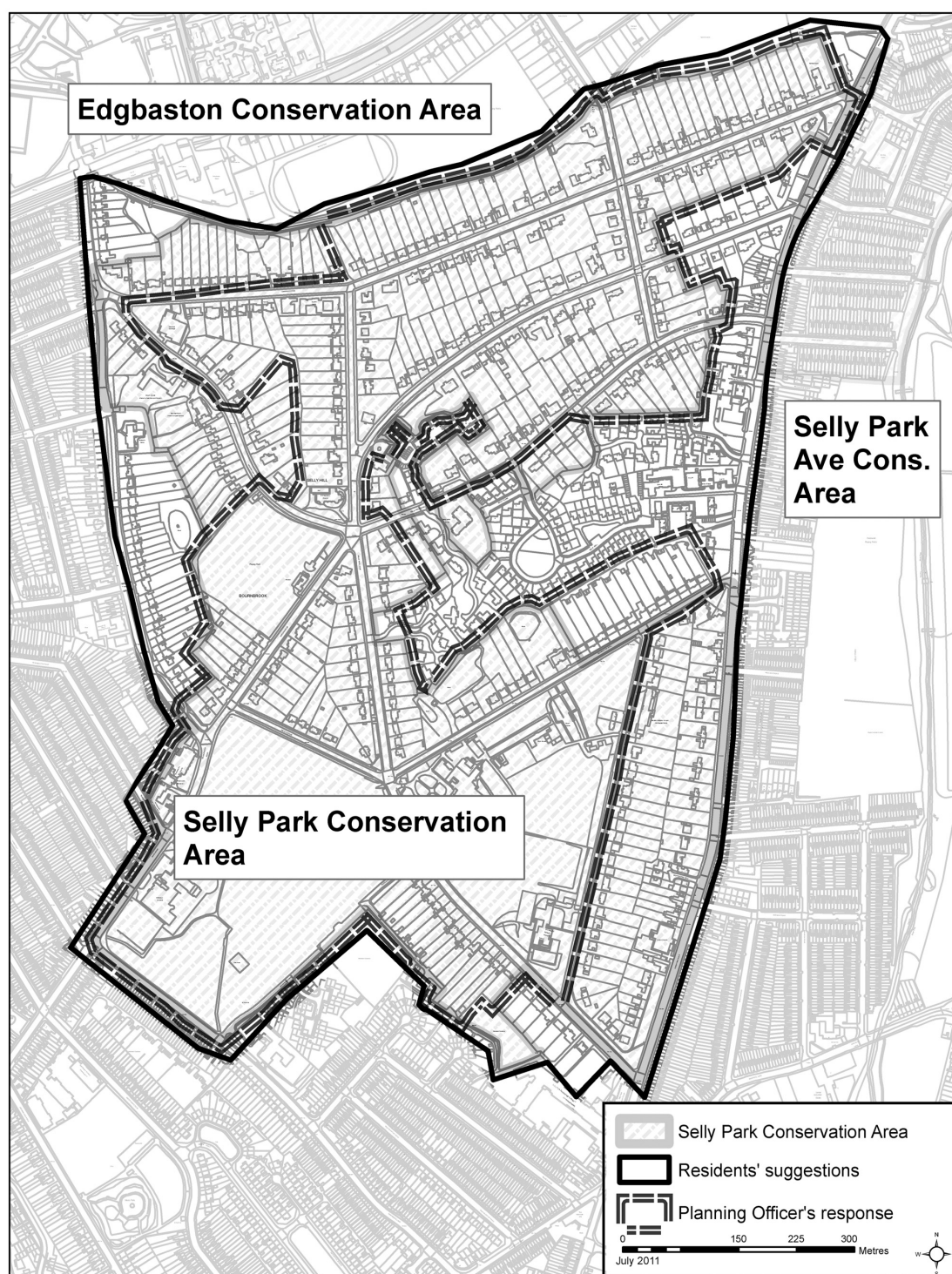




**Figure 6. Initial proposal for boundary of Selly Park conservation area (Birmingham City Council; base map © Crown Copyright/database right 2011. An Ordnance Survey/EDINA supplied service).**

Conservation amended the boundary to include Upland Road in its entirety and the section of Bournbrook Road adjacent to the

Bristol Road, both because of the architectural character of their buildings in comparison to the areas already included, and playing fields



**Figure 7. Selly Park conservation area as designated, showing adjoining designated areas, residents' suggestions and planning officer's response (Christopher Plevy; base map © Crown Copyright/database right 2011. An Ordnance Survey/EDINA supplied service).**

to the north of the area. He also stated that there were still issues regarding logical and defensible boundaries, asking why only one side of Kensington Road was included in the original designation proposal, and amending the boundary to include the houses lining both sides of the road to reflect his comments. This is in accordance with guidance suggested by Hall (1996) and Guy (2005). His inclusion of further open spaces is consistent with comments made by the general public when surveyed about the boundaries – where trees, hedges and open space were the principal considerations.

The Principal Planning Officer responsible for drawing the original boundary had used an original estate layout plan almost as a template for the area. She felt that although the new culs-de-sac benefited from attractive mature trees, open spaces and hedges, their relatively new and poorer architectural style outweighed this, and therefore this area was not included. The properties towards the north of the area were considered to have been altered in such an unsympathetic manner that they could not be included within the boundary. She felt frustrated about the consultation stage and its impact on the delineation of the conservation area boundary. Public pressure on the extent of the boundary led to significant changes. She suggested when interviewed that, ultimately, in terms of conservation and the principal objectives involved in terms of safeguarding the area, this was a ‘disaster’ and the boundary – meaning the inclusion of specific properties and areas – was not defensible.

The crucial point about this example is that virtually all of those involved in the participation exercise, and interviewed, had differing views about the area boundary. Few were able to articulate these with reference to morphological concepts, although features identified in English Heritage guidance – principally trees, hedges and open spaces – were used. Such features can be major contributors to current character and have conservation value, but do change, sometimes rapidly. The built form of streets, plots and buildings was, surprisingly, often a secondary

consideration especially amongst the public. In contrast, the reason given by the Principal Planning Officer for exclusion was, overwhelmingly, the lack of architectural quality of buildings, especially in new culs-de-sac. Roads were often used as convenient boundaries by the public, resulting in half of a road’s inclusion but the exclusion of often identical property on the other side of the road.

## Discussion

This paper has sought to reconsider aspects of the problem of defining morphological regions particularly for purposes of conservation planning (including consideration of aspects of areal character), with the assistance of detailed measurements of morphological characteristics derived from digital mapping using GIS/CAD software and a study of area designation. Amassing a considerable number of detailed measurements for individual plots and buildings is time-consuming, even if use of GIS now simplifies and speeds up the process. However, such data do not appear to add significantly to a more intuitive process of drawing boundaries, at least in the areas studied here. Such measurements can, however, help to establish characteristics of delimited areas, which in turn could permit greater precision in determining policies concerning the amount or extent of change that might be permissible before the character of an area is compromised (cf. Larkham *et al.*, 2005).

The Docklands cases resulted in a single layer of regions, without the hierarchy developed by Conzen (1975). However, although developed in clear phases, this is a development carried out in a single morphological period and under a single masterplan. Some of the differences between regions result from the use of different developers, whose standard house plans differ from company to company, and who are, in this instance, likely to be responding to planning policy pressures to generate individuality and ‘character’.

The Docklands study area is also largely a

single land-use area, and the range of building materials is limited. The regions being identified are simultaneously morphological regions *and* plan units. The question of whether streets should form boundaries, as often preferred by local authorities but rejected by urban designers such as Hall (1996) and Guy (2005), is not easy to address by this form of analysis. We have shown in this example that considering the street and the buildings lining it as a unit may hide significant variations in physical form, and this may be magnified in other areas of greater diversity in historical development, architectural style and materials, and land uses. On the other hand, Docklands block E shows exactly the same problem if a street-block is considered as the unit. This conflict may only be resolved by a more detailed consideration of the purposes for which areas are being delineated. Different approaches to boundary identification may be appropriate for the sometimes rather different policy approaches of urban design and conservation.

Few linear street-based regions are recognized in studies that adopt a Conzenian approach. Yet the amount of the Docklands study square comprising streets is large; and the 'unadopted' vehicular movement spaces within some street blocks render measurement analysis difficult. This is, of course, related to the previous point: is the street space part of a region? Or, in some circumstances, might it be a region in itself? The latter might be more readily arguable if a hierarchy of regions was being recognized: for example, shared vehicular movement (and perhaps parking) space within a residential block could readily be seen as a lower-order morphological region. The Docklands main east-west road, and the former railway line, might be considered to form regions in their own right, especially since no houses front on to these spaces. The issue of whether the street should be considered as a morphological region in its own right, in some situations at least, is worthy of further debate.

The question of streets was also explored through discussion of whether boundaries logically follow streets or other plan-seams.

While it is possible for each side of a street to have a wholly distinct morphological character, in many ways it is the street (space and buildings lining it) that logically form the 'unit'. Whitehand *et al.* (2011, p. 176), studying conservation and character in China, note that

'Where units meet at a street, the determining factor in the precise placement of the boundary has been the relationship between the street and the plots that front it. Where only the plots on one side of the street have been created as an entity with the street, the boundary between the units has been drawn so that those plots and the street are within the same unit. Otherwise, the boundary has been drawn along the centre of the street'.

Clearly this, too, is an issue meriting further investigation; as also is the implication that those drawing boundaries for different purposes and with different backgrounds (planners or morphologists, for example) might produce different results (Birkhamshaw and Whitehand, 2011).

The issue of hierarchy was explored in the first Birmingham example. The insertion of a new urban form – albeit of the same land use – within a clearly-identifiable existing morphological region leads to its identification as a separate region (formed at a different time, with very different physical characteristics). Original plots to either side were unchanged, and so retain their original regional identity. The original plots that have been truncated could be regarded as 'metamorphosed' in Conzen's terms. They might form a separate region in which the metamorphosed originals, and the new development, form separate lower-order regions. But the original morphological region is changed only by the insertion, which can be seen as a lower-order morphological region.

The problem of boundary definition for policy purposes was examined, with specific reference to conservation, in the final example. Here, a key issue is the range of views held by the participants, including highly educated and experienced professional planners and conservation officers. It is difficult to

reconcile these different suggested morphological boundaries as they often derive from the different policy-related aims of the professionals. They may also reflect a desire to be included in a perceived higher-status area on the part of residents (cf. Larkham, 2004). It is a matter of concern that the relevant Principal Conservation Officer should feel that this process of boundary delineation has resulted in an area that was 'not defensible' and could not be safeguarded.

This final example adds further weight to Whitehand's conclusion that 'it would be unrealistic to expect ... patterns of urban landscape units to be precisely replicated by different researchers or practitioners ... even in thoroughly researched urban areas well-endowed with records there are inevitably differences between the delimitations of different researchers' (Whitehand, 2009, p. 24). Yet some of the differences revealed here seem to reflect fundamental differences of value and opinion, especially when members of the public become involved, and it cannot but be a concern when a senior officer feels that the process resulted in a disastrous and indefensible boundary. These delimitations represent important applications of policy, and surely there should be confidence that they are appropriate and defensible, if not replicable in detail by everyone.

Boundary delimitation will continue to be a major activity of geographical urban morphologists and urban landscape managers. It remains complex and problematical. What we have shown is that accurate measurement, made more rapid by current software, does not provide an easy solution; that a more intuitive, less quantitative approach can result in equally acceptable results; and that a clear conception of the reason for boundary delimitation, and of the types of boundary being sought, is plainly necessary in each case. Moreover, since urban areas undergo continuing change, boundaries will require revision. Boundaries need to be flexible (because in effect they are 'edges', permeable, in Sennett's terms). Boundaries of morphological regions and policy designations such as conservation areas are not the same, although often similar and often confused.

The debate between academic and practice-based approaches to boundary delimitation is far from settled.

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### Notes

1. 'An analytical approach ... grounded in ... historico-geographical development has practically no place in the conservation process' (Whitehand *et al.*, 2011, p. 176); although written of China this was certainly true in England in the early 1980s when Larkham (1986) interviewed planners, and was told that for one Midlands county a junior planner was sent out with map and pencil and told to come back with some conservation areas! (Anonymity was guaranteed to respondents making this, and some other points critical of specific local authorities used in this paper.)
2. A conservation area, in England, is one of 'special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance' (1967 Civic Amenities Act, as amended); and within which the local planning authority must pay special attention to development proposals and formulate enhancement plans. Every English planning authority has at least one.
3. We are indebted to Hiske Bienstman for developing some of these ideas, principally in unpublished seminar papers to the Urban Morphology Research Group, University of Birmingham.
4. Roads that are built to suitable specifications, usually nationally-derived, are 'adopted' for maintenance purposes by the local authority and are regarded as 'public highways'. Roads that are not adopted, perhaps because they do not meet these standards or because, as here, they are part of an internal and private block layout, are known as 'unadopted' or 'private', and access is often restricted. Nevertheless, un-

adopted roads and shared driveways – popular in developments at some points in the post-war period – cannot readily be assigned to specific plots for this type of measurement and analysis.

5. The Birmingham City Council officers interviewed by Plevy (2009) were the then Head of Conservation, two Principal Conservation Officers, a District Planning Officer, a Householder Planning Officer, a Commercial Planning Officer, the South Area Planning Manager and two senior planning assistants, all of whom deal specifically with the Selly Oak constituency within which this conservation area is located.

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## Cities and societies in comparative perspective

The Eleventh International Conference on Urban History has the theme of 'Cities and societies in comparative perspective'. It will take place in Charles University, Prague, Czech Republic, from 29 August to 1 September 2012. Among the many topics on which sessions are planned are the following:

1. Shrinking cities
2. Cities and rivers: long-term development of socio-natural sites
3. Triumphal arches and urban entries
4. Gardens and agriculture in cities
5. Institutional landowners, rental clusters, urban plans and urban society
6. Users and uses of green spaces in cities, 1800-

2000

7. Urban development of Mediterranean island resort cities in the nineteenth and twentieth centuries
8. The post-war European suburb
9. Transnational networks of urban planning expertise in African cities from a comparative perspective
10. Coming to terms with the built heritage of the post-colonial city

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The Eighth International Space Syntax Symposium will be held at the Pontificia Universidad Católica de Chile in Santiago de Chile from 3 to 6 January 2012. Among the themes on which papers are anticipated are the following:

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and history; the second sub-theme, 'catastrophes', is in response to recent urban events, allowing reflection on the complex history and planning of cities and their environment. For more detail see [www.uhphconference2012.com](http://www.uhphconference2012.com)

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