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Dealing with incremental change: An application of urban morphology to design control

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Dealing with Incremental Change: An Application of Urban Morphology to Design Control

A. C. HALL

ABSTRACT *In a recent book, the author has argued that policy statements for design control are inadequate, especially in Britain. He proposed a new approach based on the production of design objectives for small areas through the new device of the design area. It was suggested that this would avoid the limitations of the land-use map and be able to deal with different degrees of controller intervention. This article draws attention to the significance of the incremental nature of urban and regional change and the systems attempting to control it. Drawing upon urban morphology, it describes the theoretical issues which underlie the proposals but which were not covered in the book. They are based largely on the work of Conzen and the synthesis of his ideas with those of Caniggia proposed by Kropf. They can be useful in distinguishing thresholds in the process of incremental change that can be identified with different modes and levels of intervention. An example from the Dacorum BC Residential Character Study is discussed. Pointers to further research are appended.*

Introduction

Design control requires negotiation between several parties of which the planning agency is but one. Its aim should be the benefit of the public at large. Clarity of purpose and the provision of ample information at an early stage should be its watchwords. Unfortunately, neither of these qualities has been much in evidence. In most developed countries, design control is both a sophisticated process and a political necessity. However, although the legal rigour and degree of detail employed may vary from country to country, there is, in general, a paucity of policies that relate design policies to local circumstances. Although there has been some progress over the years towards remedying this deficiency for general design policies, there remains much to be done regarding policies for particular places. The issue is how to make good this deficiency. How can design policies be 'localized'? What forms of procedure, language and media need to be developed and how should they be used? Such procedures must address the incremental nature of urban change. It is this which gives rise to the need for the flexible and detailed local policies. The author (Hall, 1996) has previously proposed a system of *design areas*, each associated with a range of alternative *design objectives*. These can be related to levels of controller intervention and thresholds identified within the incremental process of urban redevelopment. This article relates them to the concepts and language found within *urban morphology*. The purpose of this article is

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not to describe urban morphology, as this is done very competently elsewhere (Whitehand, 1981, 1992; Slater, 1990) but to indicate how its concepts and terms could be more readily absorbed within the design control process.

The Significance of Incremental Change

Rarely, if ever, do individuals have the power to lay out development on large areas of land as they please. Large numbers of development agencies are at work over significant periods of time. It is a commonplace that the appearance of towns, cities and the countryside is the product of underlying and identifiable economic and social forces. These processes are at work at all spatial scales. There is always a context of existing land use, urban structure and land form. Within this continuous process of change it is possible to discern both cycles of redevelopment and thresholds of activity and spatial scale: discontinuities in time and space can be seen to occur. At one end of the scale, the building of whole new cities on green-field sites, such as Canberra and Brasilia, is extremely rare. The creation of new towns and satellite communities is more common but hardly an everyday event. At the other end of the scale, alterations to external appearance and the minor extension of buildings are a very frequent occurrence. The redevelopment of parts of towns and the extension of towns into the countryside represent stages in between. Development at this scale is likely to be influenced by economic trends and subject to cycles of rebuilding and regeneration. Discontinuities over time as well as space will, therefore, be discerned.

Such observations are, in themselves, unsurprising. Their significance here lies in the fact that urban design seeks to influence this situation and design control in its turn seeks to modify the design process. The control process is itself incremental in nature. Inevitably, it has to deal with proposed development on a permission-by-permission basis. Whereas large-scale long-term redevelopment may be predictable (although there has been little evidence of success in recent years in Britain), it is almost impossible to be certain when an application for planning permission will be made at a local level or over a short timescale. Nevertheless, in spite of their incremental nature, both the redevelopment process and the control process produce significant changes to urban form in aggregate. For example, suburban residential areas with gardens may offer the prospect for the replacement of large houses in their grounds with higher density housing, possibly in the form of blocks of flats. Plot amalgamations can take this process even further. A particular example described in detail has been provided by Whitehand (1989). Such changes are a frequent cause of complaint for local residents and can result in pressure for action from the controlling planning agency. There is a need for a system that is proactive rather than reactive and can guide incremental change. The solution is more detailed and responsive design policy. The goals of urban design can only be realized if there are plans with which to guide the process of control and, in turn, the process of redevelopment, as they wend their incremental ways.

The British Experience

It has been argued (Hall, 1996) that in Britain in particular design control is inadequate and that this results in large part from a lack of a readily available language for describing incremental change and identifying cycles and thresholds within it. For large parts of Britain there has been a lack of detailed

and up-to-date local development plans from the mid-1960s through to the late 1980s, if not beyond. However, the development control system had carried on and an assumption that planning could function without plans had developed. Policy existed but, rather than being published, had been retained within the minds of the planning officers. The public, and also local politicians, had little advance knowledge of the detailed basis on which planning officers intervened on design matters. Design guides were used in many places but they were aimed at new residential developments and shopfronts rather than at the incremental process of renewal experienced in existing urban areas. Throughout the late 1980s and early 1990s, more and more local plans incorporating design policies were prepared. However, their handling of design issues was very general, with the treatment of more detailed proposals rarely going beyond land-use allocations. The land-use notations used encouraged thinking in terms of parcels of uniform land use. The detailed complexities of urban form went unrecognized. Land-use boundaries were drawn along roads and rivers rather than treating these as features in their own right. Although much of the change in existing urban areas is of an incremental nature and can cause the quality of the environment in all parts to improve or deteriorate (Whitehand *et al.*, 1992), the long-term effect of incremental change was not specifically addressed. This was particularly so in areas that could not be characterized as either historic or major centres of activity.

The Design Area Approach

To find a solution would mean developing new methods representing in sum a new approach. Design policies in development plans represented general aspirations. They could be strengthened by the inclusion of principles contained in contemporary urban design literature (concerning legibility, permeability, composition, regional character, mix of uses and many others). How, though, could they be "localized"? They clearly should refer to two- and three-dimensional features and convey views about them. These features, although having existence in terms of bricks and mortar, would inevitably have to be perceived and described in the light of the design goals. The policies would need to be expressed in a language capable of handling three-dimensional form.

The author began study of these matters in 1989. A case study of Chelmsford was commenced. The results were published as a number of articles and a short book (Hall, 1990a, 1990b, 1990c, 1992). Further work was then undertaken to develop the methodology more extensively and this was published as a more comprehensive account (Hall, 1996). The starting point was the recognition that urban design was a pluralist activity involving negotiation between many parties, not least the general public. Negotiation was best facilitated by the use of clear objectives rather than rigid rules. The interaction between design goals and local features should be expressed in terms of *design objectives*. The distinction between intentions and outcomes was elaborated into a *four-way split*: the objectives, the criteria for their achievement, material advising on how they might be achieved, and the control procedures leading to their implementation. The problem then addressed was how to generate objectives that would be specific to small areas, reflecting their particular circumstances.

The design objectives should reveal the deliberate policy of the planning authority and should relate to particular localities. The generation of objectives

would be facilitated by the use of the author's new concept, the *design area*. These sub-divisions of the plan area would relate to the objectives rather than to pre-existing concepts such as land-use allocations. Design areas would cover all parts of the plan area. Although an apparently simple idea, the design area was found to have considerable power. Its strength arises primarily from the detaching of design policy from the land-use map. Such maps limit the scope for controlling design by encouraging (whether intentionally or not) uniform land uses rather than the intricate mixes of uses that may already exist or which may be desired. Such maps also take features which should be the subject of design policies, such as streets, as boundaries. The design area could facilitate the specification of mixes of uses for small areas. Public spaces such as roads, squares and parks could be identified as design areas together with the buildings that surround and define them. Design objectives could relate to specific types of urban form in the context of their particular locations. They could specify whether the form should remain the same or should change in the direction of another type and, if so, to what degree. They would also facilitate variation in the intensity of planning control from place to place, something that had been a recurring issue within British planning practice. It was increasingly apparent that level of intervention was a central component of design control and the concepts used to deal with it could be taken from those used to handle incremental change.

Standard forms of objective were identified. These standard types could form a template when preparing design plans and when developing design policy generally. The alternatives were generated first by considering the different levels of intervention and, second, by identifying the different qualities desired within these levels. A possible list, in decreasing order of controller intervention, could be:

• conservation of existing character;
• specific form or style (with or without a design guide);
• personalization with plot;
• restriction to height/bulk envelope;
• minimum intervention.

'Specific form or style' may refer to the retention of aspects of an area's character that are to be retained while not to the degree of detail implied by strict conservation. Alternatively, it may refer to new development on 'green field' sites or on sites where the existing buildings have been completely demolished. It may be the case that pursuit of a particular style is not to be enforced but neither is height and bulk limitation thought a sufficient control. What is being sought is a particular urban form. Examples would be terraced housing form and the case of buildings dominated by landscaping, often known as *arcadian* form, commonly associated with low-density residential developments of detached houses. In addition, a regional style may be required and set out in a design guide.

We can also have an objective which aims at preserving the existing form while encouraging diversity and individual initiative within plots termed here *personalization within plot*. There is a difference between, say, redeveloping an area of houses and gardens as flats and maintaining this form while allowing extensions to houses as residents choose. The same distinction could apply to shops. The redevelopment of a street of small shops as a large supermarket is a

different objective from that of retaining small shops while encouraging choice and variety in shopfronts. Not unexpectedly, there are difficulties with this objective. One is how the existing form is to be defined. Another is friction between neighbours. Many questions of the merits of house (or shop or office) extensions are not so much a concern with wider planning issues as the resolutions of disputes between neighbours. (Resolution of such disputes can, of course, be stated as a planning goal although, interestingly, it rarely is either stated or debated.) A distinction between disputes on the aesthetics of building appearance (for example, colour, materials, shape of roof) and problems such as alleged loss of light or privacy is helpful here. The latter could apply throughout the plan area, derived from the design principle goals, and expressed as regulations within the performance criteria. The aesthetic judgements, including whether to pursue uniformity or diversity, would be left to householders. This objective suggests that the planning agency should not intervene unless there are strong reasons for safeguarding the essential interests of the community other than aesthetic ones. Where such personalization is not permitted the objective would come within the *conservation* category.

The last two types of standard objective (minimum intervention, height-bulk envelope) would not necessarily conserve the existing form and are consistent with redevelopment that aggregates plots and changes street patterns. On the other hand, objectives concerned with urban conservation seek both to preserve the existing plot boundaries and infrastructure and control change within plots. Strict conservation of existing form would imply very little change for all details of the existing townscape.

For readers unfamiliar with the author's previous work one of the examples from the Chelmsford study is illustrated by Figures 1–6. Figure 1 shows the layout of "The Avenues" design area which comprises a largely self-contained estate laid out in the 1930s. It consists mainly of semi-detached houses together with some more recent infill. Some have been substantially modified by their owners. Five possible alternative design objectives were generated by considering the possible degrees of controller intervention. They are arranged in decreasing order of intervention:

(1) strictly conserve the 1930s form and style;
(2) conserve the original 1930s form but not the stylistic detail;
(3) maintain the suburban form but with personalization by residents within their plots;
(4) encourage redevelopment within the precepts of the Essex design guide;
(5) encourage redevelopment with minimal restrictions.

Figure 2 illustrates objective 1, strict conservation with the preservation of most of the original features. Figure 3 shows changes to the view in Figure 2 consistent with objective 2. While the original shapes remain, stone cladding, plastic windows and satellite dishes are in evidence. Figure 4 shows personalization of the same dwellings consistent with objective 3 (even though the mock medieval extension may be somewhat unlikely in practice). Figure 5 shows a view of development in the same road consistent with objective 4. Figure 6 shows redevelopment of the same road consistent with objective 5. The illustration is based on development that has actually occurred elsewhere in Chelmsford since 1970. This development would not come within objective 4 as
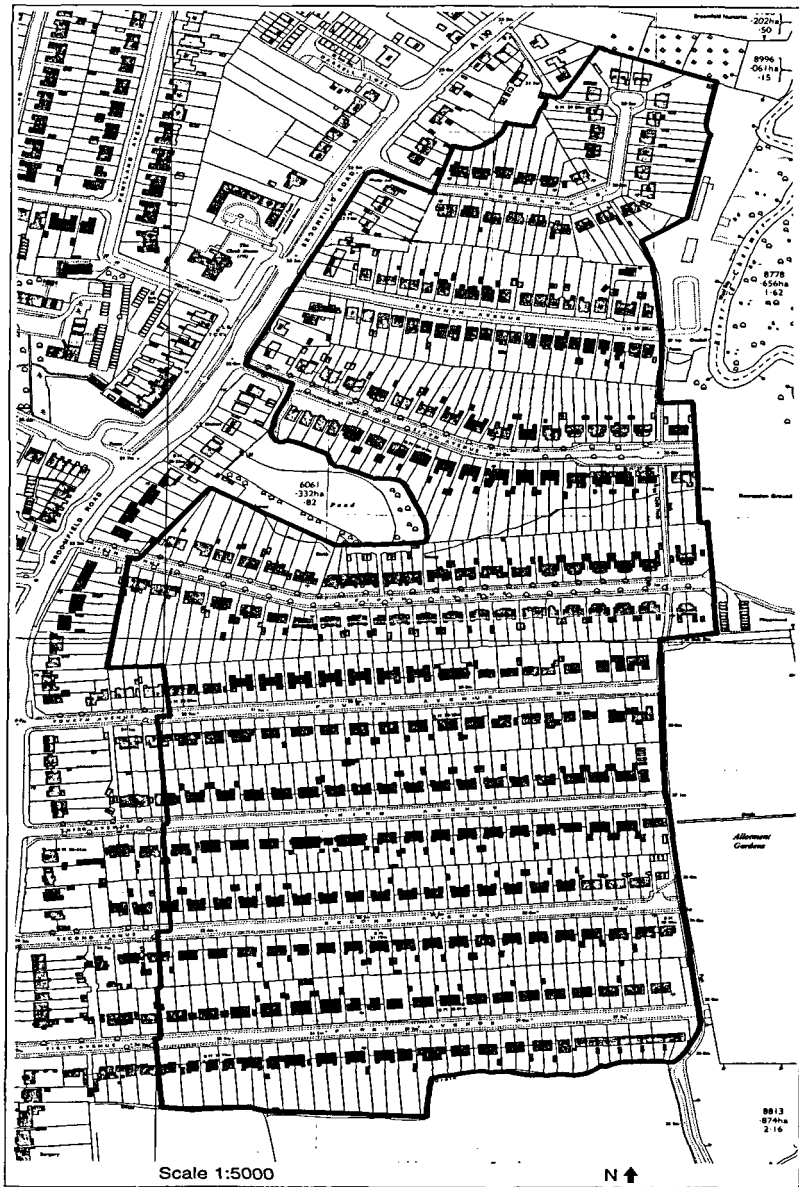
Figure 1. Map of 'The Avenues' design area. © Crown copyright 87867M.

it does not meet the Essex design guide's (Essex CC, 1973) objective that the style should reflect the *regional character*.

The real test of the ideas will be their implementation in practice. One planning authority, Dacorum Borough Council, has utilized the proposals in its *Residential Area Character Study* (Dacorum BC, 1995). At the time of writing the study had completed a programme of public consultation and was awaiting adoption as supplementary planning guidance. It has, therefore, not yet been tested in planning control. Neither does it embrace the full range of proposals

Figure 2. Strict conservation.
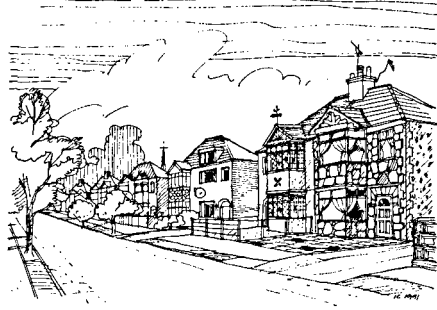
Figure 3. Original form but not stylistic detail.

Figure 4. Maximum personalization.

Figure 5. Redevelopment within design guide.

(Hall, 1996) in that it applies only to residential areas and does not offer alternative objectives for each design area. Nevertheless, it does include complete coverage of design areas within residential districts and, additionally, includes brief character analysis for each design area. An example is the Grove Road area of the small town of Tring. The design areas for Tring are shown in Figure 7, the Grove Road design area plan in Figure 8 and the character analysis and design policies associated with it in Figure 9.
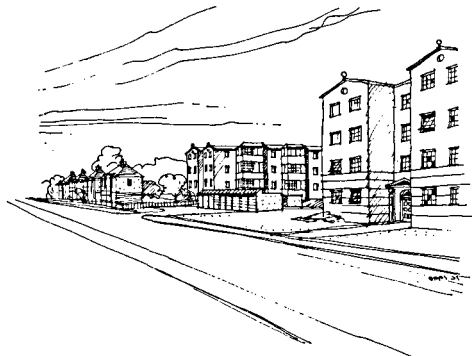
Figure 6. Maximum freedom for redevelopment.

Figure 7. Tring design areas.
Note: TDA12: Grove Road and Cow Lane is shown enlarged by Figure 8. © Crown
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Sources of Language in Urban Morphology

The need for a means of describing urban form in the context of design control
arises from the requirement to specify levels of intervention, the need to address
the incremental nature of urban and rural change more generally and from the
pluralist nature of the development process. All three are interrelated and the
first two can have a degree of equivalence. It is suggested that concepts within
urban morphology enjoy a clear relationship with planning for small areas, for
dealing with incremental change and for managing variations in the degree of
controller intervention. It is the work of Conzen that is pre-eminent and of most
relevance to the argument. Some of his most important papers have been
conveniently collated by Whitehand (1981). Not only did he develop his own
conceptual structure within geography, drawing upon a German tradition going

Figure 8. Tring: design area TDA 12: Grove Road and Cow Lane. © Crown copyright 87867M.

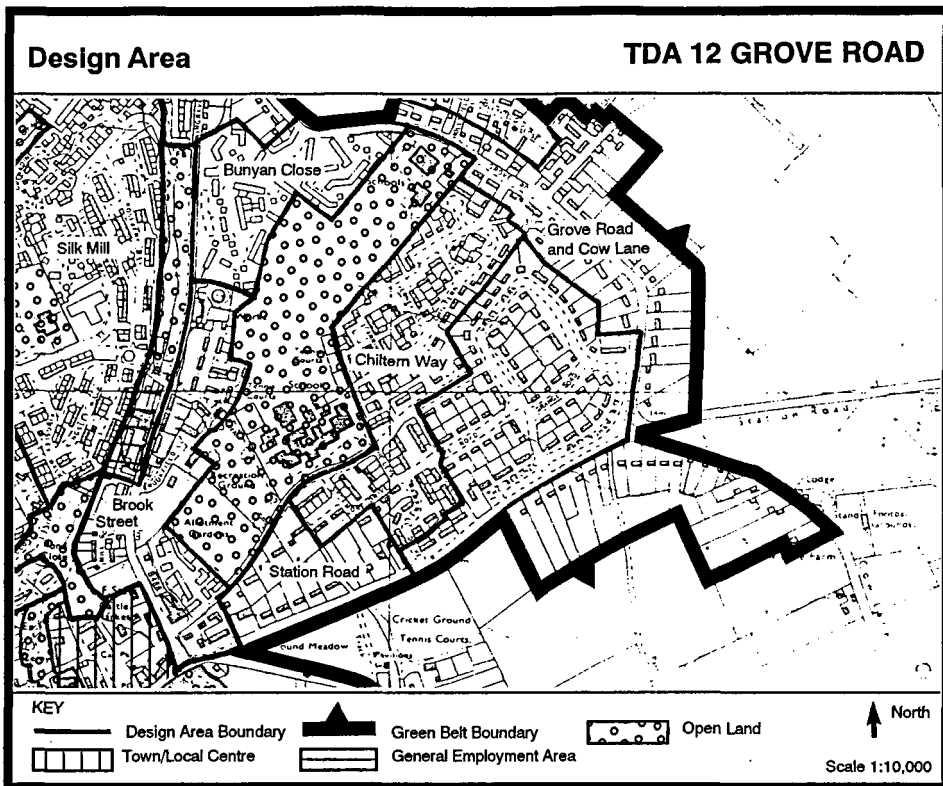back to the latter part of the nineteenth century, but he both carried out academic research on town and country planning and was involved in planning practice. This diverse experience led eventually to his significant study of Alnwick, Northumberland (Conzen, 1960). In this book, Conzen analyses the historic development of the town plan of Alnwick from ancient times through to the mid-twentieth century. His conceptual structure focused upon the block plans of *buildings* in their *plots* and how they were "contained" within *streets* and *blocks*. He observed that the rate of growth outwards from the historic core, or *kernel*, showed discontinuities over time. *Fringe belts* had developed and had subsequently been absorbed into more substantial accretions where the built form displayed a morphological cohesion relating to the mode of origin. Although primarily residential, they could incorporate a variety of land uses. This process had repeated itself over many centuries. His analysis also permitted the recording and understanding of how, over time, types of urban form emerged from within a structure laid down by their predecessors. This process was often accompanied by the persistence of older boundary lines as a result of the constraints of the legal process of conveying land ownership. What concerns us here is that his analysis and subsequent synthesis produced *plan-units* as shown in Figures 10 and 11. By means of a study of Ludlow, Shropshire (Conzen, 1988) he developed his method further to take account of the three-

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DESIGN AREA TDA12: GROVE ROAD AND COW LANE

CHARACTER APPRAISAL	POLICY STATEMENT

CHARACTER APPRAISAL

A very low density area of detached houses in a heavily landscaped semi-rural setting in the eastern edge of the town.

Housing

Age: Mainly dates from the inter-war period with variety in ages onwards.

Design: Considerable variety in design. Most dwellings were either designed individually or in small groups, giving no consistency overall. Common features are projecting front gables, rendering and whitewashing.

Type: Virtually all detached houses except for some semi-detached and terraced houses mainly in Marshcroft Lane.

Height: Up to two storeys.

Size: Generally large dwellings.

Layout: The layout of the area is basically linear, following the gently curving lines of Grove Road, Cow Lane and Station Road, and also along Marshcroft Lane. Although the area's dwellings follow clear building lines, the pattern of development in some places is not readily apparent due to very heavy landscape screening which can dominate the appearance of the street scene. Plots have extensive front and rear garden areas. Spacing is not uniform but falls mainly in the wide (5m–10m) and very wide (Over 10m) ranges.

Density: Very low, at about 7 dwellings/ha.

Amenity

Open Space: Most of the area is directly adjacent to open countryside.

Amenity land: None within the area.

Frong gardens and forecourts: Generally very deep, well planted and enclosed, often with high hedging and tree planting. Consequently houses are set well back from the highway, and are often not readily visible from there. This strengthens the area's landscape dominated appearance.

Landscaping and planting: Extensive private landscaping in front garden areas, together with the adjacency of the area to open countryside creates a well-planted and green appearance. There is a soft, informally landscaped edge to the area where it meets open countryside.

Views and vistas: Numerous public views across open countryside.

Landmarks and focal points: None.

Traffic

On-street parking: Very light.

Off-street parking: Accommodated within individual private domestic curtilages.

Through routes and flows: Flows are generally low, although all the area's roads are through routes.

Non-residential buildings

None.

POLICY STATEMENT

APPROACH

Maintain defined character.

SCOPE FOR RESIDENTIAL DEVELOPMENT

Greenfield development: No opportunities.

Redevelopment: Will not normally be permitted.

Plot amalgamation: Opportunities limited.

Infilling: May be acceptable according to the Development Principles.

DEVELOPMENT PRINCIPLES

Housing

Design: No special requirements.

Type: Detached dwellings are appropriate and are encouraged.

Height: Should not normally exceed two storeys.

Size: Large dwellings are appropriate.

Layout: The existing linear layout of the area should be maintained. The prevalent building line should normally be followed. Spacing should be maintained in the wide range (5m–10m) as a minimum.

Density: Should be within the very low range (less than 15 dwellings/ha).

Amenity

Amenity land: No special requirements.

Front gardens and forecourts: Front garden areas should be provided at a size, shape and depth commensurate with those of nearby and adjacent plots. The enclosure of front areas by planting is strongly encouraged.

Landscaping and planting: Proposals for new development should include measures for additional landscaping and planting to reinforce the heavily landscaped characteristics of the area and, where appropriate, to further soften the landscaped edge of the town with open countryside.

Views and vistas: Public views across open countryside should be maintained.

Landmarks and focal points: No special requirements.

Traffic

On-street parking: No special requirements.

Off-street parking: Should be accommodated within individual private domestic curtilages.

Through routes and flows: No special requirements.

Non-residential buildings No special requirements.

Development within the plot

Extensions: No special requirements.

Detail: No special requirements.

Curtilage buildings: Permission will not normally be given for curtilage buildings to be sited forward of the front wall of the dwelling that fronts the highway, unless it can be demonstrated that the new structure will not be visually intrusive into the street scene.

Means of enclosure: The enclosure of front areas by planting is strongly encouraged.

Private landscaping: Strongly encouraged in front areas, to reinforce the heavily landscaped street scene and in rear areas backing on to open countryside, to reinforce the soft landscaped edge to the town.

Conversion of dwellings into smaller units: May be acceptable.

Figure 9. Tring: design area TDA 12: Grove Road and Cow Lane.

dimensional character of the building fabric and the nature of the land-use pattern. He showed more explicitly how the differential persistence of town plan, building fabric and land use affected their contributions to the hierarchy of *morphological regions*. He summarized his analytic structure as being one in which the *town plan* "contained" the *land-use units* and the *plots* which, in turn, contained the *building fabric*. His synthesis of the distributions of these elements led to the recognition of *townscape cells* which grouped themselves, in turn, into *intra-urban regions*. He went on to argue that variety and prominence of forms inherited from different historico-cultural periods could endow the landscape with what he termed *historicity*. Through this the local combination of townscape cells, units and regions had an impact upon the public and on their experience of a *sense of place*. They would not, of course, have rationalized this concept as he did, but would have taken in the complexities of their surroundings as a whole, in a *gestalt* manner. This process he termed the "objectivation of the spirit".

Conzen's terminology has been subjected to a thorough analysis by Kropf (1993) who has compared Conzen's approach to that of the Italian architect, Caniggia. Starting from a different disciplinary tradition, Caniggia developed his own morphological hierarchy with many terms having an apparent equivalence to those of Conzen. There are both significant differences of emphasis between the two systems and much that they have in common. For example, Caniggia talks in terms of *lots* which have a clear correspondence to Conzen's *plots*. Both Conzen and Caniggia describe buildings in their lots (plots) arranged along *routes* (Caniggia's term) and forming *plot-series*. Caniggia talks of *built routes*, a term which embraces, amongst other types, the familiar concept of the street. The plot-series can be seen as forming blocks. The plot series/blocks in combination with streets form particular *tissues*. Kropf argues that Caniggia's concept of *urban tissue* can be taken as similar to Conzen's *plan-unit* combined with *building fabric*, as employed in his study of Alnwick. Kropf proposes his own morphological hierarchy based on the idea of containment or levels of complexity, each level in the hierarchy being described by a Latin term (Figure 12). Drawing inspiration from Caniggia, Kropf also proposes three useful conceptual tools:

(1) the *outline*, the property of the exterior shape of a component of form;
(2) the *level of resolution* whereby the properties apparent at the desired spatial scale are noted;
(3) the *level of specificity*, whereby the degree of particularity used is defined.

Buildings as entities, that is seen in *outline*, can be taken as representing a particular level of resolution of urban form. They can also exist in many types at different levels of specificity. For example, at a low level of specificity, a house could be detached, semi-detached or terraced. Looking at a higher level, for a terraced house a distinction could be made between a four-storey, a tunnel-back or a two-up two-down house, amongst other types. At a higher level still particular historical styles could be identified. Turning to a lower level of resolution, looking at plots in outline, terraced houses would form the *plot-series* of a continuous row of houses in their lots. The plot-series in their turn would form part of a *block*. At a lower level of resolution still, tissues would be identified. At this level of resolution, distinguishing only streets and blocks, a distinction may be made between, for example, a rectangular grid, square or

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ALNWICK-TYPES OF PLAN-UNITS.

(i) *Medieval High Street Layout, with triangular market* (Alnwick Type).
    1 Deep-Burgage series, Bondgate sub-type.
    2 Deep-Burgage series, Market Street sub-type.
    3 Deep-Burgage series, Fenkle Street sub-type.
    4 Market concretions.
    5 Shallow-Burgage series.

(ii) *Medieval 'Suburbium'.*

(iii) *Simple High Street Layout.*
    6 Deep-Burgage series, Canongate sub-type.

(iv) *Extramural Borough Street, with special siting.*

(v) *Closed Fringe Belt, with consequent ring-road.*
    7 Castle complex (modified pre-urban nucleus).
    8 Castle Grounds.
    9 Intramura.
    10 Extramural with high building coverage.
    11 Extramural with low building coverage.

(vi) *Traditional Arterial Ribbons.*
    12 Traditional plot series, largely unaltered.
    13 Traditional plot series, truncated and residual.
    14 Complex double ribbon on traditional basis.

(vii) *Later Alterations of Old Town.*
    15 Urban fallow (cleared sites).
    16 Adaptive redevelopment.
    17 Augmentative redevelopment.

(viii) *Pre-Victorian Frame Roads.*

(ix) *Late Georgian and Early Victorian Residential Accretions.*
    18 Rudimentary layout, with early cul-de-sac.
    19 Developed rectilinear layout.

(x) *Mid- and Late Victorian Accretions.*
    20 Bye-law layout, with 'through' houses.
    21 Bye-law layout, with 'tunnel-back' houses.
    22 Bye-law layout, with 'tunnel-back' houses and front-gardens.
    23 Bye-law layout, with detached front-gardens.
    24 Bye-law layout, with 'tunnel-backs' on medium-density plots.
    25 Improved terrace layout with low building coverage.
    26 Single and double ribbon with large (detached or semi-detached) houses.
    27 Complementary plot development, with modern completion.

(xi) *Modern Residential Accretions.*
    28 High-density layout, with back-lanes.
    29 High-density layout, with mixed house types.
    30 Old-style layout, with semi-detached houses.
    31 Old-style layout, as repletive development.
    32 Post-war emergency housing estate.
    33 Old-style layout, with staggered building lines.
    34 New-style layout, with mixed house types.
    35 New-style layout, as repletive development.
    36 Double ribbon with uniform building line.
    37 Single ribbon with staggered building line.

(xii) *Composite Ribbons without Traditional Plots.*
    38 Late Georgian and Early Victorian terrace component.
    39 Late Georgian and Early Victorian component with detached houses.
    26 Mid- and Late Victorian component with large houses (see (x) 26).
    40 Mid- and Late Victorian component with medium-sized houses.
    41 Modern component with uniform building line.

(xiii) *Intermediate (a) and Outer (b) Fringe Belts.*
    42 Industries and public utilities.
    43 Public institutions and services.
    44 Residential plots with small or medium-sized houses.
    45 Residential plots with large houses.
    46 Open spaces (including Alnwick Moor).
    47 Allotments and nurseries.
    48 Land reserved for public institutions and services.
    49 Land reserved for industries.

(xiv) *Farmsteads and Other Agricultural Buildings.*

Figure 10. Conzen's types of plan-units for Alnwick.
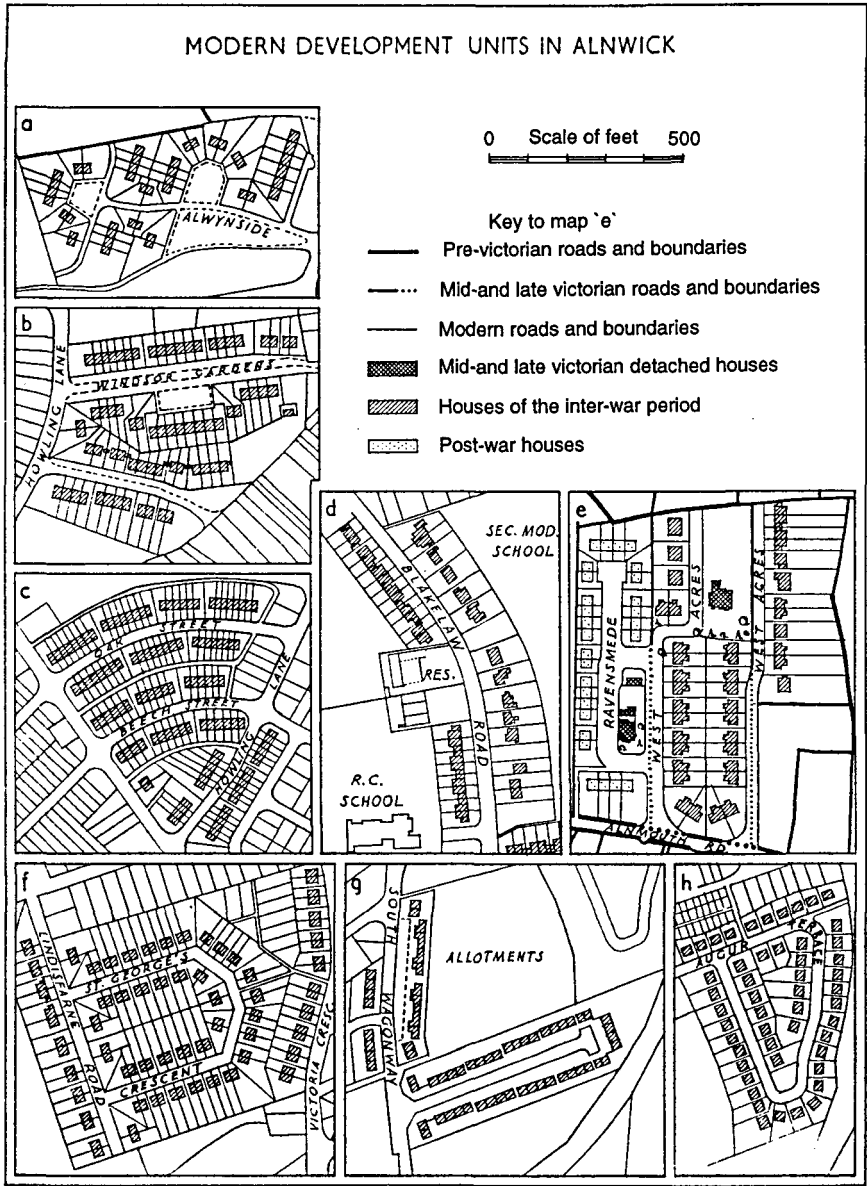
Figure 11. Conzen's plan-units for Alnwick from the mid-twentieth century.

circus. At a higher level of specificity, the additional distinction of, say, Victorian artisans' or regency types may be made. Kropf (1993) uses the Royal Circus in Bath (Figure 13) as an example. It can be seen that it consists of three separate plot-series of terraced house, with one primary building per plot. The whole constitutes one tissue. The example is not only of a general type, the circus, but a very specific type in relation to its historic context in the development of this particular city.

Morphology provides terms for describing built form and its evolution over

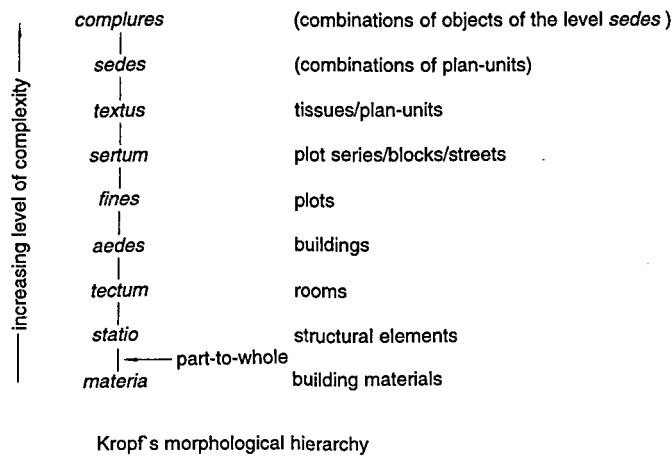|	
complures	(combinations of objects of the level *sedes*)
sedes	(combinations of plan-units)
textus	tissues/plan-units
sertum	plot series/blocks/streets
fines	plots
aedes	buildings
tectum	rooms
statio	structural elements
materia	building materials

increasing level of complexity

part-to-whole

Kropf's morphological hierarchy

Figure 12. Kropf's morphological hierarchy.

time but not for analysing the reactions of its users. Conzen touched on this matter with his "objectivation of the spirit" but it is a subject normally associated with townscape studies emanating from the disciplines of architecture and town planning and exemplified by the classic works of Lynch (1960) and Cullen (1961). Lynch's method was based on interviews with lay people and on sketch maps that they were asked to draw unaided, thus giving their own perception of their neighbourhood. He developed from this his own rationalization of people's perception of their surroundings into the components of *districts, paths, nodes, edges* and *landmarks*. These are not, and were not intended to be, the same
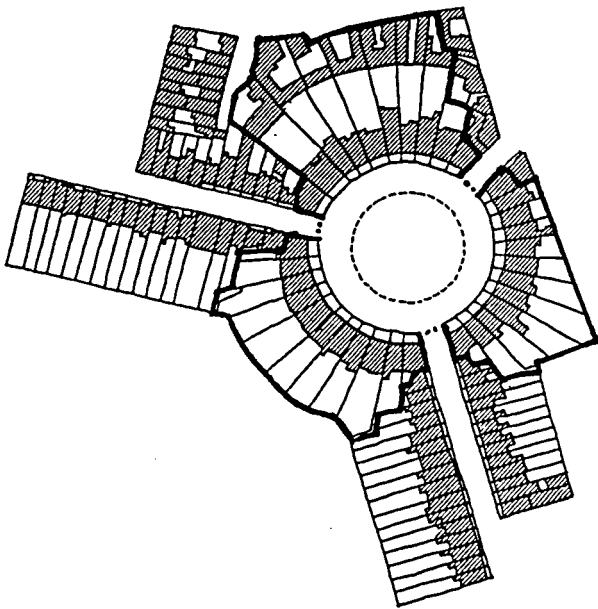

Figure 13. The Royal Circus in Bath (after Kropf).

as the morphological terms discussed previously but there must, nevertheless, be linkages because it is the built form that is experienced. *District* has a connotation in terms of perceived identity. It is reasonable to suggest that in most cases this identity will correspond to a particular morphological region. *Paths* reflect people's experience of finding their way through the urban fabric. There is a resonance here with Caniggia's *routes*. *Edges*, however, are quite different from the boundaries of most morphological components, often referring to elements that are themselves components. For example, rivers and railway embankments may be experienced as strong edges in townscape terms but have their own boundaries and own outlines. Cullen (1961) added further terms. His full vocabulary of terms was very large and space does not permit its reproduction here. However, what he was aiming at was an analysis of the experience of sense of place for an observer moving through the town (although it was clearly static 'places' that were being appraised). He became known for his term for this concept, *serial vision*, and for how the *genius loci* resulted from the interaction of built fabric and human feelings. However, he attracted controversy because of his promotion of particular, some would say idiosyncratic, values (Bandini, 1992). This need not be a handicap here. On the contrary, it could be argued that the strength of Cullen's work is its correspondence to consideration of matters of value and, therefore, of public policy. It is a method for producing statements of policy that is the central concern of this article. The limitation of Cullen's work is its somewhat historically static view of urban form, in contrast with the evolutionary concern of morphological analysis. For example, the value of a historic building lies not only in the aesthetic qualities of its surfaces, alignment in the street, proportions, enclosing of space and so on, but its context, both in history and in contemporary use.

Relating Morphological Concepts to the Design Area Approach

Returning to the discussion of the proposed methods of design control, an initial reaction might be that there is a direct equivalence between the design area concept and the *morphological region* of Conzen (Caniggia's *tissue*) and, possibly, the *district* of Lynch. However, this is not necessarily the case. The design area is a policy-driven concept. The determination of the boundary of a particular design area would result from an analysis of the interaction between the design goals and the existing form. Where form is to be conserved we would expect a large degree of coincidence between a region (tissue) and design area. For example, if there was a general design goal calling for the retention of nineteenth-century terrace housing, significant agglomerations of these features would become design areas. In the absence of such a goal, they might be absorbed into other larger design areas where they could be subject to objectives allowing redevelopment. To approximate to Lynch's *districts* they would need to possess, in addition, a certain size and perceived social cohesion. (It is worth noting in passing that Lynch's districts did not have precise boundaries.) A more interesting case is that of the street as a separate design area. The delineation of the exact section of road would relate to a *plot-series* along a *built route* (Conzen and Caniggia). This route may lie along a path as conceived by Lynch. The properties that may cause it to be valued in terms of the overall design goals may be those that can be described by the terms popularized by Cullen's townscape analyses.

The terms *level of resolution* and *level of specificity*, as set out by Kropf, are useful in identifying the thresholds that occur when one type of form changes to another. These thresholds within the process of redevelopment which can thus be identified with concepts of morphological change are consistent with distinctions between design objectives. In search of them, a standard level of resolution could be adopted, say the plot series or the tissue, and the level of specificity varied. At higher levels of specificity a greater variety of types emerges. This can be clarified by taking as examples the standard forms of objective identified earlier. Strict conservation of the existing character implies a high level of specificity at all levels of resolution save for the internal rooms. Not only is the overall tissue to be retained but also matters such as materials. Specific form and style covered two situations. Where existing form was being retained but not stylistic detail we would expect a medium level of specificity at all levels of resolution. Where the objective refers to a new development, degrees of specificity would be the same except where a design guide applied. A guide would have the effect of narrowing the range at higher but not lower levels of resolution.

This argument can be illustrated by referring to the examples from the Chelmsford and Dacorum studies described earlier. A comparative analysis is shown by Table 1. Objective 1 for The Avenues design area is strict conservation of its 1930s style. The buildings and plot boundaries would be retained and, perforce, the plot-series and tissues. Rooms are not involved and elements and materials could be replaced only within a narrow range, i.e. high specificity. For 'maintaining suburban character', the plot structure would be retained but a wider variation in building design allowed. Detailed matters would not be specified at the higher levels of resolution. For redevelopment within the Essex guide (Essex CC, 1973) the tissue, including its plots and plot-series, would be replaced within the range of types consistent with the guide. The goal of 'pursuit of regional character' would require the range of choice of elements and materials to be restricted. The building types may vary over a wide range (houses, flats, terraces, semi-detached and shops) for control on style comes at the other levels of resolution. 'Maximum freedom for redevelopment' would speak for itself.

Pointers to Further Research

As the argument of this article represents the early stages of what may prove to be a much longer term project, it is reasonable to provide pointers to the next stages of the research. There is a need for more worked examples. The Chelmsford and Dacorum examples have been the only full-scale tests of the method and even these have not, as yet, been implemented. The experience of real-world problems can prove both a harsh examination and an intellectual stimulus not available by other means. The Chelmsford case study was not intended for implementation but the progress of the Dacorum BC *Residential Area Character Study* (1995) will be closely monitored. It is hoped that, following more extensive publication, more planning agencies will follow the path set by Dacorum BC. There is a parallel lack of examples within urban morphology, remarked on by Kropf (1993). There are few comprehensive case studies beyond those cited in this article and the analysis of additional urban areas would be valuable.

Table 1. Levels of resolution and specificity for The Avenues and Grove Road design areas

| | Design areas and objectives | | | | | |
| | The Avenues, Chelmsford | | | | | Grove Road, Tring |
Level of resolution	Strict conservation	Maintain suburban character	Maximum personalization	Redevelopment within guide	Maximum freedom for redevelopment	Maintain defined character
Tissue	Retain	Retain	Retain	Replace within Essex range	Replace within wide range	Retain
Plot-series	Retain	Retain	Retain	Replace within Essex range	Replace within wide range	Retain
Plots	Retain	Retain	Retain	Replace within Essex range	Not specified	Very small variations may be permitted
Buildings	Retain	Replace within suburban types	Replace within wide range	Replace within wide range	Replace within wide range	Large detached two-storey only
Rooms	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
Elements	Replace within 1930s styles	Replace within suburban types	Not specified	Replace within narrow range	Not specified	Not specified
Materials	Replace within 1930s styles	Replace within suburban types	Not specified	Replace within Essex styles	Not specified	Not specified

However, there are some examples from practice that illustrate selected aspects of the argument and that could be examined further. Examples include the Edinburgh Old Town *Action Plan* (Edinburgh Old Town Renewal Trust, 1995) and the Countryside Commission's (1994) experimental *countryside design summaries* and *village design statements*. In addition to the British experience of design control, there are examples of relevance in the practice of countries in Western Europe and North America. Samuels (1993) has described the 1991 plan for the French community of Asnières sur Oise. This built upon an earlier plan from 1987 and embodied a prescriptive approach to design control based on zoning by building form using morphological criteria. A similar example at Mennecy in France has been described by Kropf (1996). Punter (1996) has drawn attention to the significant progress in design review in the USA made by the cities of Portland, Seattle, San Francisco and Irvine. Not only would these cases repay further research but there will doubtless be many more to come to light in the near future.

In addition to the general need for more examples and a more extensive range of enquiry, there is one particular theoretical point that would merit a thorough investigation. Use has been made in this article of Kropf's comparison of the work of Conzen and Caniggia. A similar study of the relationship between the work of Conzen and Lynch could be fruitful. For example, how does Conzen's objectivation of the spirit relate to Lynch's rationalization of lay people's perception of their surroundings? How does Lynch's structure of districts, paths nodes and landmarks relate to Conzen's morphological hierarchy?

Conclusions

The problem that has been addressed has been the deficiency in policy for design control. The diagnosis has been a lack of a method for producing such guidance. It has been argued that a cure would take the form of a concentration on design objectives used in conjunction with design areas. This would facilitate an objective-driven process that could facilitate the description of degrees of intervention by controlling agencies. This has been held to correspond to degrees of incremental change in urban form and thus to be susceptible to description by urban morphology. The work of Conzen, Caniggia and Kropf has been particularly relevant, especially the notions of level of resolution and level of specificity. There were limitations to the work of all these authors and they make no claims to have brought about a universal language of form. Neither could this article. The question that was being addressed was how urban morphology could be brought to bear on the issues and then taken in the direction of developing a method for expressing detailed design policies. It is held that the utility of such a synthesis has been demonstrated.

It is clear that there is a gap that needs to be filled in the control of design. Policy statements, ultimately design plans, are needed that will reveal the full intentions of planning authorities towards the design of the physical environment and convey them to the public in a form that is intelligible to lay parties. A way of developing such plans has been proposed and the examples described have demonstrated that it would be possible to produce them in practice. What is needed now is not only further debate on these proposals but also for them to be tested in practice and taken to a higher degree of sophistication.

Acknowledgement

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