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Morphological design control for large-scale city development - a new proposal

Abstract

Whereas many good examples can be found of the study of urban morphology informing the design of new residential areas in Europe, it is much more difficult to find examples relating to other land uses and outside of Europe. This paper addresses a particular issue, the control and coordination of large and complex development schemes within cities, and, in doing so, considers commercial and mixed-use schemes outside of Europe. It is argued that urban morphology has much to offer for both the design of such development and its implementation over time. Firstly, lessons are drawn from the work of Krier and Rossi in Berlin, the form-based guidance developed in Chelmsford, UK, and the redesign and coordination of the Melrose Arch project in Johannesburg, SA. A recent development at Boggo Road in Brisbane, Australia, is then subjected to a more detailed examination. It is argued that the scheme has been unsatisfactory in terms of both design and implementation. An alternative framework based on historical morphological studies is proposed that would overcome these deficiencies. It is proposed that this points the way to a general approach that could be incorporated within the planning process internationally.

Introduction and Background

One of the remarkable properties of contemporary ideas within both urban morphology and urban design is the way there is a convergence of design outcomes. Different schools within urban morphology and different approaches to urban design, such as townscape, responsive environments, defensible space, lead to a form which is human in scale and reflects traditional forms. The outcomes do not necessarily replicate the older forms but they do learn from them. The success of the older forms can best be appreciated by studying the quality of life now to be found in most European cities, one that appeals to residents and visitors alike. The problem is that such qualities are not always realised in new large-scale development. This is especially the case outside of Europe. The challenge is one for both the planning system and the way that major developments are implemented. What procedures can be introduced that will ensure that the new buildings and urban spaces embody the desired outcomes?

There have been a number of examples within Europe of the application of form-specific planning controls that have resulted in built outcomes that have reflected traditional form and contemporary urban design principles. In England, there has been the long history of the Essex design guide (Essex County Council, 1973, 2005) and its implementation (Hall, 2007), the implementation of Poundbury (Hardy, 2006) and the implementation of the Upton extension to Northampton (EDAW and Alan Baxter, 2005, 2006). The Netherlands has seen

the provision of new houses within traditional plot and height dimensions as employed in the redevelopment of the Amsterdam docklands (Koster, 1995, CABE, nd), which has had uneven success (Russell, 2001), and the more recent Vathorst scheme in Amersfoort (Falk, 2008) which has recreated traditional form more explicitly. Further examples could be cited from these and other countries.

However, all these examples are medium density residential. It is much more difficult to find successful examples of the control of the form of higher-density, mixed-use schemes within city centres and inner-city areas. It is even more difficult to find good examples, residential or non-residential, central or suburban, outside of Europe. Whatever the degree of success or failure within Europe, the problems found in other parts of the world can be stark. In North America and Australasia, there is generally no shortage of legally enforceable regulations, at least within the major urban areas. Nevertheless, the quality of both buildings and the public realm can be dire. It will be suggested in this paper that this is due, at least in good part, to a lack of policy instruments that embody a morphological understanding. Even where there are appropriate objectives and macro-level quantitative controls, such as height and density, they fail to address directly the issue of form.

The problem is most apparent where the scope of projects extends beyond the scale of the general building unit as is the case with infill building, block consolidation and the like. It is where architects, and other professionals, are challenged with a 'super sized' project that the shortcomings in their urban propensity become most apparent. The inability to comprehend the complexities that engender a city's urban quality is all too common. There will not only be a number of professions contributing to the design process but individual buildings within the scheme as a whole may be designed by different people and constructed at different times.

How then is the overall process of design from conception to implementation to be controlled over time? There is the issue of who is to do the controlling and by what means. Ideally, the controlling should be done by a democratically accountable local planning authority. Failing this, the responsibility falls upon the developers and their professional advisors. However, whoever does it, it will be sterile and unlikely to succeed unless it based on the pursuit of coherent design objectives and that these objectives can be communicated in an explicit and comprehensible manner. What we are talking about here is the intellectual dimension which should be followed by contributors to the overall development. It will be argued that urban morphology has the means to provide it.

The importance of synthesising advanced understandings of local primary morphological generators with principles of good urban design within large and complex schemes has been consistently overlooked; it is from this observation that the authors' proposal arises. Where morphological and urban design principles coincide, a consistency in urban design outcomes may become more widely evident. Not only this, but morphological research, evidencing

details of local urban characteristics, is a dimension that can impact into the process of implementation of large-scale urban projects. In other words, what the authors are suggesting is that urban morphology provides not just better outcomes when measured against contemporary urban design principles but also frameworks for managing the implementation of large mixed-use schemes over time. This is because the content of urban morphology is focussed on forms that can have evolved, and can continue to evolve, incrementally over time.

Structure of the Paper

This paper employs an analysis of a series of examples in order to draw out a number of general lessons. Firstly, examples of the work of Rossi and Krier in Berlin are examined in order to establish what should be looked for in deciding whether morphological ideas have been expressed in the resultant form of a large-scale city-centre development. Moving on to the planning instruments that might be employed to achieve these results, examples of planning briefs based on the prescription of urban form used in Chelmsford, UK (Hall, 2007, 2008a, 2008b) are reviewed. To move the analysis outside of the European domain, the next example is taken from South Africa. The comparative success, given the general difficulties in achieving a quality outcome in this country, of one scheme, the Melrose Arch project in Johannesburg, where individual architects worked within a master-plan agreed with the planning authority, is explained in some detail (Sanders, 2001).

The substantive worked example is taken from Australia. Regrettably, successful implemented examples from a morphological standpoint are hard to come by and so a problematic scheme, the Boggo Road Gaol redevelopment in Brisbane, is analysed so that lessons can be drawn and recommendations made. The weaknesses of the scheme, and the light that they shed on the general limitations of the planning and implementation procedures, are drawn out. An alternative scheme reflecting the morphological history of the surrounding area is proposed not just as an alternative outcome but also as an alternative framework that could have been used to manage the incremental development of the site over time. Following on from this, more general recommendations for the planning process are made.

Why should urban morphology be able to provide the intellectual content?

One reason why urban morphology should be able to provide the intellectual content for the control of large schemes is that it emphasises the permanence of form. It is elements of physical form that persist over time rather than land use. This was made clear by Conzen in his study of Ludlow (Conzen, 1988). He pointed out that the “town plan” persisted over many centuries and the building fabric could remain for at least one or two hundred years. On the other hand, land use showed minimal persistence. His observation is not confined to the historic environment. Modern buildings can be designed to last for at least 60 years and

many can easily be expected to survive for centuries if not in perpetuity. Major roads may be widened but still follow the old alignment. Unfortunately, the standard paradigm for development plans, and much design guidance, throughout most of the world has often been one of land-use allocations in two dimensions. It is necessary to replace it with one based on urban form (Hall, 2000).

Regrettably, Conzen's approach at the scale of the town plan and land plot utilization has yet to be applied to the building fabric itself, the third of the form complexes within his theoretical basis; whereby the building fabric is the three dimensional and architectural component of the built environment. 'Conzenian research describes, analyses and explains how urban form is made... and is not concerned directly with the future city and its design' (Moudon 1994). As such, there is opportunity to apply Conzenian research methods as a tool to be articulated in specific guidelines for future urban forms.

This is of practical as well as theoretical significance. Conzen's observations also reflect practical utility and inform contemporary urban design principles. While different uses can move and change within a variety of structures and locations, alterations to buildings, roads and other urban infrastructure can be difficult and expensive. If urban form can be designed with "robustness" (Bentley et al, 1985) then it would be able to accommodate in three dimensions a range of uses, and their change over time, with a minimum of retrofitting, thus saving both inconvenience and expense. It would also reinforce another urban design principle, the mixing of uses (Bentley et al, 1985). There is thus a convergence of morphological and design concepts.

Another important contribution that urban morphology can make to the process is the provision of more precise language. The emphasis of the Italian school, notably Caniggia, on the constituent elements of form (Kropf, 1996) can provide a terminology that not only aids technical precision but can also enable the prescription of different degrees of intervention within planning regulations (Hall, 1997, 2000). Muratori and Caniggia understood the urban district as a process over space and time operating at four different scales; the region (territory), town/ city, aggregate (group of buildings/ tissue) and building. Their search for permanence, persistence and continuity within the urban evolutionary process accounted for an interpretation of urban form through the classification of building types. They were concerned with principles from which modern architecture is created that connect with the traditional way of building in the traditional city (Maffei 2009; Moudon 1994). Muratori and Caniggia as architects, both applied their theory to practice; their projects developed a direct correlation between morphogenetic analysis and the design of new urban forms (Cataldi et al. 2002).

Similarly, the urban theory and practice of both Aldo Rossi and Rob Krier made little distinction between the importance of one building over another within the overall city fabric,

while maintaining the essential relationship that exists between monumental and ordinary buildings in the legibility of the city (Dunster 1995). These conditions are understood as the urban grain or tissue, and are very important in the understanding the characteristics of local urban forms to which new proposals need to be intrinsically routed. This is the premise that determines the relationship between the analytical methods of urban morphology and the application of urban design, which will be implied in the context of the Boggo Road Case study.

This approach can also be used to stitch in and integrate development into its surroundings by virtue of its analytic tools for this analysis and the provision of a language. While for Rossi the characteristics of past forms recur analogically in his design projects, Krier is concerned with continuities of existing scales and geometric patterns of construction, bearing the rules by which historic cities are formed. These principles that survive through time, include building scale, form and a building's disposition in the landscape (Dunster 1995).

For the development of tools for design guidance based on building typology and urban grain, there are, fortunately, some international exemplars of architectural practice that have successfully confronted this condition, and are available as a point of reference for adoption.

The Berlin Examples

A notable starting point for scrutiny is the series of urban renewal projects in Berlin from the 1970s; the urban renewal and reconstruction of vast areas through the International Building Exhibition (IBA) competitions.

In developing a plan for the housing project for Schinkelplatz and Ritterstrasse in 1977, Rob Krier sought to modulate the bulk of the buildings, and intensity of the facades, by inviting several architects to design within the overall scheme, as illustrated by figure 1. The individual design resolutions evoked the diversity that exists in the traditional urban grain of Berlin. Through a historically- derived framework Krier imposed a common purpose of building height, shape and materiality (Dunster 1995). Indeed, within the 'traditional' elevational composition of the project is a section recalling the façade of a house designed by Karl Friedrich Schinkel that had previously stood on the site (Krier 1982). The outcome is an integrated precinct that has subtle surprises in the urban form, foregrounds a sense of place and facilitates orientation (Krier, 2003); and suggests a blueprint of how to break the scale of large development into consonant parts.

Precise architectural expression can vary enormously once a framework of types of buildings, their positions and overall scale has been established by a master plan. In this way a monotonous architecture.... is avoided (Dunster 1995, 340)

Aldo Rossi, developed his own thinking along the lines of sub-division of the urban block to approximate the scale of historical architectural urban forms; this can be observed in the

contrast of two of his building projects in Berlin. Firstly the building project for the IBA at Koch-Friedrichstrasse Block 10 in 1981, where the design objective was the reinstatement of the perimeter block.

The principle of the perimeter building of a fairly regular height intermittently interrupted by visible greenery was considered a sufficient framework within which the designs of individual commissioned architects would create a varied but coherent district. (Andrews 1985, 252)

Despite the intention to vary the perimeter block with individual buildings, the overall project lacks the intended architectural diversity. The result is an unrelenting and repetitive building form, an extrusion of an urban form around the perimeter of the city block.

In contrast, some fifteen years later, Rossi undertook the design for the Quartier Schutzenstrasse, Berlin Mitte (1995-97). This project also covers an entire urban block, this time with a patchwork of many fragmented building parts. Here Rossi modulates the building form with striking variation in that each component, somewhat idiosyncratically (from the hand of one designer), differs in manner to the other; but nevertheless demonstrates at the same time the imperative of an integrative approach to the architecture.

Buildings completing the perimeter of the block have the traditional Berlin eaves height and two roof or mansard storeys. The project follows the principle of architectural collage and takes up the theme of the earlier lot structure of the block. It is not intended as a mere re-enactment of the historic town, but rather seeks a lively variety of building types and different uses (Berg 1995, 55).

The Quartier Schutzenstrasse project therefore resembles Krier's Ritterstrasse insofar as both attempt to redefine a scale for individual buildings within the urban fabric of the city block.

The Chelmsford Example

For examples of how a local planning authority can provide an overall design framework for larger urban projects based upon principles of urban form we can turn to Chelmsford in England. With a population of 150000, the town is situated 50 km northeast of London in the centre of the County of Essex. Its significance for the argument of this paper stems from a turnaround that took place in the late 1990s (Hall, 2007). What had been an average and unprepossessing town had become one that was liveable and sophisticated. A substantive and continuing urban renaissance had begun. High standards of design had become the norm across the Borough and this was recognised by the award of Beacon Status for the Quality of the Built Environment by the UK government in 2003 and also in studies by the Commission for Architecture and the Built Environment, including their Housing Audit (CABE, 2004).

The experience in Chelmsford showed how the gradual increase over time of the quantity of published planning policy, and its degree of prescription of urban form, resulted in better quality of architecture and a more vibrant public realm. In 1996, a new political administration started the process. The first significant changes to planning policies came in 1997 with the adoption of the revised Essex Design Guide (Essex County Council, 2005). New spatial policy included provisions to make physical implications explicit. The rate of production of detailed site-specific briefs increased, as did the degree of prescription and delineation of desired physical structure within them (Hall, 2007, 2008a, 2008b). By 2000, the position had been reached whereby every development was expected to achieve the required high standards.

It is not novel to propose that site-specific guidance should be used to specify location, linkages, uses, densities and the context for the design of buildings. In Chelmsford's case, the distinctive aspect was the lengths the Council went to address the physical structure of the desired development. Design frameworks addressed large and complex areas which could be developed in different segments at different times. Planning briefs were used for smaller sites where development could be expected in the near future. They all included diagrams of the desired physical structure, blocks, frontages, access and uses and guidance on issues relating to implementation. Perimeter blocks, active frontages and location of open space were all normally shown in outline. As perimeter blocks tend to have certain standard sizes with limited variation (Hall, 2000), the constraints on most sites were such that there was often only one, perhaps two, ways of fitting them in if proper frontages were to be maintained.

An example of a development framework was the guidance provided for land to the east of the High Street (Hall, 2008b). This land had been viewed in previous planning policy as an opportunity for the expansion of large-scale retailing and multi-storey car parks. This development never took place and, by 2000, planning thinking had moved on. Multi-storey car parks were no longer being promoted and the attitude to retailing was much finer grain. A new development framework (Chelmsford Borough Council, 2002a) was prepared that set out an intricate pattern of blocks influenced by the pattern of building and plot boundaries that reflected the High Street's mediaeval origins. This pattern also guided the provision of new pedestrian routes between blocks with active frontages that would connect the existing shopping centre with an opened up riverbank. Diagrams spelt out explicitly the requirements for pedestrian access and how combinations of residential and different types of retail use, and number of storeys, are indicated within the block structure as shown by figure 2. Axonometric sketches indicated the height and bulk in three dimensions. A combination of residential and retail uses, active frontage to the blocks and a lively pedestrian space had been achieved.

Another example of the control of higher density mixed-use development was Capital Square, on the northern edge of the town centre (Hall, 2008b). This was a key site for regeneration and was the subject of a planning brief (Chelmsford Borough Council, 2002b). The intention was to restore the patterns of blocks and frontages that reflected the original street pattern. Part of the site was acquired by a developer for a mixed-use scheme of shops fronting the street with flats both above them and in a block behind. The completed project showed how a mixed-use scheme at a residential density of 120 dph could be successfully integrated into the urban townscape.

These examples show how far a form-based approach for site-specific guidance by a public authority can be taken. They also demonstrate that such an approach can be successful in improving the standard of design in the development as built. It is important to draw out from the process exactly how a morphologically-based approach does this. It brings discussion of physical form not just earlier but right to the beginning of the process. All participants, developers, their architects, planning officers and local councillors can see what is being sought and what the issues are. Moreover, they see them at an early date. This contrasts with a more common situation where the physical outcomes are dealt with only at the end of the process when it is much more difficult to resolve issues they may present. Although this approach may initially be seen as requiring more work, this is not the case when assessed over the process taken as a whole, from inception to completion.

The Melrose Arch example

What of examples outside of Europe? An example of the coordination of a large project on morphological lines is available in Johannesburg, South Africa. In contrast to the Chelmsford example, there was very little intervention by the City council as local planning authority. The initiative fell to the developers and their design team.

The scheme for the 18-hectare development within the city at Melrose Arch was originally destined to be another ubiquitous shopping mall. However, following the appointment of Paul Murrain in association with local urban designers, the project was transformed into a precinct defined by a series of perimeter urban blocks, creating a high street and integrating two urban squares. It was a case of urban morphology informing urban design through the transposition of a European morphological model into a post-colonial city situation.

A number of architectural firms were engaged to design the various buildings that would connect together to form the perimeter blocks, recalling the approach of Rob Krier described earlier whereby the importance of one building over another is resisted in preference for a integrated assemblage of buildings. These blocks were subdivided to achieve a series of land parcels of appropriate scope to accommodate buildings of urban scale as can be judged from the model of the proposed development shown in figure 3. What is most significant here is

the controlled process that enabled architects to collaborate in resolving the formal junctions between buildings; resulting in a high level of variety, yet consistency and cohesion. The architects designed in strict accordance with a well-defined, form-based code document; aspects of compliance included the percentage of façade setback and protrusion, general building height, maximum pedestrian entrance into building tenancies and facilities from the street. Articulation of the overall urban strategy also emphasised points of special interest within the precinct (Sanders 2001).

In the mixed-use blocks the distribution of tenancies delivered retail at ground floor, office accommodation at first and second, with one or two further stories of residential apartments above. A maximum limit on building depth of 12m was encouraged in order to afford the opportunity for cross ventilation and access to natural light throughout.

A particular success of the design development phases at Melrose Arch was the interaction of architects working on adjoining buildings; the willingness in most cases to coordinate design decisions that had affect beyond the individual building resulted in the refined built outcome. This process demonstrates how a large-scale city project can be divided into multiple 'land parcels', appropriately sized to enable architectural responses that are aided by clear urban form guideline definitions.

This is not to say that the development was successful in all respects. Melrose Arch was set within the context of rapid urban change in South Africa, and suffered from the perplexing dichotomies that pervade that society. Aspects of the facilities management and operational services had been secessioned from the Johannesburg Municipality in an attempt to relieve the overburdened local authority. Security was an issue that, unfortunately, resulted in restrictions of access into the precinct. Furthermore, the overarching model was Euro-centric, the common building heights that were strictly adhered to are not a morphological characteristic of the city of Johannesburg; these shortcomings also pervade the following example from Brisbane, Australia.

The Boggo Road Example

The principal example explored in this paper is that of the redevelopment of the 9.5 hectares of land surrounding the Boggo Road Gaol in Brisbane, Australia. The site is situated 2 km to the south of the city centre and is bounded to the east by the main railway line, as shown by figure 4. The planning authority is Brisbane City Council. The gaol was the city's first and dates from 1883. It is now disused and the redundant buildings are heritage listed. The land is entirely owned by the Queensland State Government. Since 1999 it had sought to redevelop the site in a comprehensive and intensive manner in order to incorporate both residential and office uses including a substantial amount of commercial floor space. The

predominant end-user was to be an “Eco-science” complex for Queensland Health. Other smaller sites within the scheme were to be sold off to other users

As with the Melrose Arch example, but unlike Chelmsford, there was no strong intervention by the City council as local planning authority. However, as the site is owned by another public authority, the State Government, there has been ample opportunity for the overall control and coordination of the development process and no impediment to the pursuit of overall design goals.

The process was handled predominantly within the Queensland government civil service. They commissioned consultants to produce master plans and other supporting planning documents that were used for informal public consultation but were not published as official planning instruments. Together, they formed a set of documents that could be submitted to the City Council in pursuit of planning approval. The Brisbane City Plan (Brisbane City Council, 2000) did not make any specific reference to the development of the site. The documentation contained codes that, when approved by the Council, could be used to control the parameters of development, such as building height. Different plots within the overall scheme could then be sold off and developed within the provisions of these codes.

The process began promisingly with a draft master plan produced by consultants in 2003. The original, shown by figure 5a, is, unfortunately no longer publicly available. These initial urban proposals for the precinct envisaged a rich mix of building types and scales that were aligned to a street grid system as can be judged from the figure-ground analysis carried out by the authors and reproduced as figure 5b. The urban form was sensitive to site edge conditions, as well as capitalising on the opportunity for increased building heights at the centre. Importantly, the master-plan upheld the urban design principles of a grid street pattern with active street edges, creating a town centre with urban form responses to the hill top location, taking advantage of significant views and vistas.

Unfortunately, the Queensland government reconsidered their approach to the scheme entirely during 2006 (Queensland Government, 2006). Different consultants were engaged who produce a completely different master plan. The layout is shown by figure 6a. It was noticeably lacking in the qualities of the earlier urban strategy. The significant changes in the urban design principles were the shift from:

- a large number of narrower streets to a small number of wider streets;
- a larger number of smaller lots to a smaller number of larger lots.

The fundamental impact of the changes can be judged from the authors’ figure-ground diagram of the proposals shown in figure 6b. A photograph of part of the completed development is shown by figure 7. The changes have led to limited connections to the existing street system, resulting in a closed loop system of detached development plots. The

loss of connectivity between proposed buildings and the resultant loss of continuity of urban form with their surroundings ensures that the project will never achieve an urban form that can be associated with the building of coherent towns or cities. The opportunity missed is startling, especially considering the urban design principles that had been applied in the original 2003 master plan. What is clear is that a methodology for achieving cohesive urban form in planned urban renewal developments has not been established.

How could it have been done?

As an exercise to explore the potential for morphologically-based design control, the authors have explored a different approach based upon studies of the local urban form. In Australia, a coherent body of morphological research is yet to emerge, 'the study of urban form in Australia is a relatively recent, undeveloped field and consists mainly of uncoordinated efforts undertaken by individual researchers' (Siksna 2006, 96). While there are relatively extensive published accounts of Australian planning history, little direct focus on urban form or morphology has occurred. Nevertheless, Arnis Siksna's comparative analysis of block size of several Australian and American city block formations (Siksna 1997) shows what could be achieved. His study revealed that the relationship of block size and form have predictable effects on subsequent evolutionary patterns (Siksna 1997, 24).

More recently, students of architecture, planning and landscape architecture at Queensland University of Technology have been engaged in data collection and mapping process that has resulted in the establishment of a significant archive that contains evidence of the urban growth of Brisbane from settlement to the present. This work has required the participants to access the archives of various sources across government and local council collections to amalgamate information as a basis for further scrutiny and focused inquiry.

One reading of this morphological data reveals for example, the settlement block characteristics confirmed in McKellar's official Map of Brisbane & Suburbs 1895, where blocks of 200 x 90m formed the city grid with twenty lots of approximately 20 x 40m laid out on each block (Sanders & Schroeder 2008) as shown by figures 8a and 8b. This is clearly evident in the establishment of the towns of both North and South Brisbane, characterised by the dominant grid of perimeter blocks from central to inner city residential areas (figure 4). Studies revealed an initial period of sub-division of lots produced a high intensity of buildings of more substantial construction replacing temporary structures of early settlement. However from 1910 onwards the change in the number of lots per block varied greatly and became unevenly distributed, particularly as a result of subsequent plot amalgamation (Sanders & Schroeder 2008, 4).

The design method linked the analysis of the sampled block and street patterns, and applies the characteristics of these studies to establish a cogent urban layout (figure 9). By adopting

the explicit characteristics drawn from the morphological mapping, the resultant urban form integrates into the whole by making multiple connections to the existing fabric. The demonstration project describes two potential phases. Firstly one that is designed within the current project site boundary and significantly improves on the morphological ‘stitch’ with surrounding urban form (figure 9a), through the adoption of a perimeter grid and block subdivision. The second design phase achieves a cohesive greater urban precinct, by suggesting the scope of the development should extend over the rail reserve and existing station (figure 9b); eight new street connections are possible in this proposal (6 more than in the approved project).

The new perimeter blocks allow for a range of building types to contribute to a diverse yet homogenous precinct; which achieves consistency with the bulk space requirements of the 2006 master plan. The finer details of the urban form can be adjusted to suit the scale at the edge conditions of the site; connecting to, and sensitive to, the existing surrounding fabric. Higher scale and higher density buildings can be located centrally and to the railway edges to maximise the development opportunities and benefit from the hilltop setting, capitalising on the desirable aspects, as illustrated by the perspective drawing in figure 10. The street grid allows for flexibility in the neighbourhood planning, the example shown below illustrates how a park could occupy a central block, thereby enhancing the ecological and recreational value of the precinct. Furthermore it would be possible to engage multiple architectural practices in the design of the urban blocks, as described earlier in the Berlin and Melrose Arch examples.

What has been demonstrated here is a systematic approach to incorporating analysis of morphological samples of urban form in the vicinity of a development precinct that can generate specific guiding principles of urban design that bind new urban forms into the fabric of the existing. It aims to enhance the intuitive good urban design proposals such as those presented above in the first Boggo Road Draft master plan 2003; furthermore, it aims to avoid the complete arbitrariness of urban design practice as revealed in the subsequent Boggo Road master plan of 2006.

General Implications for the Planning Process

What then would be the general implications for the control of development through the planning system? In the Boggo Road example, the Queensland State government had almost total control through the ownership of the land and many of the existing activities upon it. The direct application elsewhere is, therefore, rather limited, although redevelopment and regeneration or large portions of inner-urban land in public ownership is by no means unknown throughout the world. What is of greater interest here is the indirect application. What the examples demonstrate is that a method for generating patterns of urban form based on consistent principles is available. This provides a means of coordinating the design of

development on different components of a larger scheme over a long time period. In particular, it provides a way of stitching new schemes into the existing urban fabric. Moreover, it is the pattern of form that persists over time. Far from being left mainly to developers to decide, urban form can, and should, be specified in some detail by the publicly accountable planning authority, as in the Chelmsford example.

It might be objected here that there are considerable differences in planning systems throughout the world. The British system referred to above is not the same as those in other European countries. Europe is different in its turn from the regulatory procedures of North America, South Africa and Australasia. Furthermore, the individual countries in these regions of the world all have important difference between them. Space does not permit a discussion here of this fascinating subject but, nevertheless, some important remarks can be made about those elements of what has been discussed that could have utility in all these planning systems. Where development plans and site-specific guidance are used they can be given content in terms of physical form. Where zoning regulations and development codes are used both the elements controlled and the quantities specified can be determined using the generated form as a template. Aside from all this, the experience in Chelmsford (Hall, 2007) has shown that a lot can be achieved prior to the application of planning controls. If the physical form of development is set out a sufficiently long time in advance, especially before land is bought and sold, then much can be achieved through negotiation and voluntary agreement between the parties.

Conclusions

The analysis of past patterns of urban form is important for the planning and development process for two principal reasons. Firstly, it is physical form rather than urban activities that persist over time. Secondly, the normative lessons that can be learnt from it coincide with the prescriptions of contemporary urban design. The examples examined in this paper show that not only is this applicable to residential development, where some success can already be demonstrated in practice, but it is also applicable to large-scale, mixed-use schemes in central areas.

Furthermore, the introduction of morphological studies into the design of such schemes from the outset would not only provide beneficial outcomes but improve the way that large developments are organised and implemented. More specifically, patterns of urban form could be incorporated into planning guidance and can also be used as a template within which more detailed design and construction takes place. This approach could be worked into a standard method that could be incorporated within planning systems. It would allow progress to be made in many parts of the world and would be especially helpful within those parts of North America, South Africa and Australasia where, even though modern planning systems may be in place, the general quality of the built environment remains poor.

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