REVIEW ARTICLE

Form-based planning and liveable urban environments

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Stephen Marshall (ed.) (2012) *Urban coding and planning* (Routledge, Abingdon, UK, 272pp. ISBN 978-0-415-44126-1).
Emily Talen (2012) *City rules: how regulations affect urban form* (Island Press, Washington, DC, USA, 254pp. ISBN 978-1-59726-691-8).
Richard Tomlinson (ed.) (2012) *Australia's unintended cities: the impact of housing on urban development* (CSIRO Publishing, Collingwood, Australia, 194pp. ISBN 9780643103771).

The history of the city has been written and rewritten many times: the seminal works of Benevolo (1980) and Mumford (1989) reconstruct how settlements, particularly their urban form, have changed over centuries. Rowe and Koetter (1978), Kostof (1991, 1992), Krier (2003), and Rossi and Eisenmann (1982) address instead the components that shape the urban environment: the architect can aggregate and manipulate squares, streets, parks and public buildings to control urban design. Generally these studies aim to reveal the secret of the traditional city in contra-position to the contemporary townscape characterized by planning and zoning, which are generally regarded as problematic and sterile (Woodward, 2013). The 'secret rules' that have shaped our cities have a bearing on the relationship of spaces, mixed uses, public environments and walkability (Walters, 2011).

Urban form is understood as the product of complex processes, including social, economic and environmental influences (Rangwala, 2012). In the current debate about moving from traditional zoning to form-based development, the literature identifies problems attributable to conventional planning which separates function and car-based design. Recurring issues of sprawl, environmental issues, social problems and segregation, congestion and lack of public spaces populate debates about modern suburbia, while traditional cities are presented as a model to replicate given their prioritization of form rather than function (Ben-Joseph, 2009). Since the 1980s, New Urbanism has suggested an approach to city design based on design codes, which are a set of rules that guide designers in shaping the form and appearance of the urban environment by highlighting specific principles for different areas of the built environment (Zukin, 2009). More than providing ratios and quantities, codes offer design tools for balancing order and variety to achieve a strong sense of place and controlled urban form (Donald *et al*., 2012, p. 69).

Codes in geographical perspective

Codes are not a contemporary invention. They are often discussed in terms of design outcomes sourcing examples from the so-called Western world or the northern hemisphere. In *Urban coding and planning* Stephen Marshall edits an extensive review of codes from different cultures and geographical areas. The essays present varied case studies, including from regions not traditionally discussed, such as Eastern Asia and Africa. Marshall's anthology explores the relationship between diversity and order in different cultural contexts. He recognizes criticisms of form-based coding, particularly its restrictive

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and formulaic approach, simplified design based on templates, and limited range of typologies or styles. However, he argues that planning and coding – or better zoning and coding – have always been interwoven even if not in evident ways. The layout of the city plan in pre-modern times was generally guided by a set of rules to articulate the built form. These rules might have been written or implicit, spatial or dimensional, shared or imposed.

The ten chapters comprising Marshall's book illustrate varied regional approaches. London and Edinburgh are the first two examples considered. In London, codes mainly aimed to improve health and safety, preserve public space through the instigation of uniform building lines, and encourage new master-planned suburban developments intended to provide 'proper' dwellings for the upper classes. While the codes mainly dealt with road width and building heights, in the new suburb attention is also paid to open space provision and building styles. Urban form in London was the result of constant dialogue between private and public interests rather than the imposition of fixed codes. In Edinburgh's new towns, codes initially addressed the suburb's appearance and detailed environmental elements such as roof pitch and building materials as well as specified dimensions and sizes. The aim of new development was a landscape for a new orderly society and the new suburbs were considered successful from an economic perspective. Consequently, similar developments were implemented in other Scottish centres, including Glasgow, Perth and Aberdeen. In the Scottish context the plan of the suburbs was the starting point and central aspect of structuring urban form and codes were based on a hierarchy of design elements reflecting the local social structure.

A similar situation is identified in South America where built form was precisely prescribed by the *Law of the Indies*. A very different approach is then presented in the Indian subcontinent where codes dealt more with traditional theoretical elements than clear physical requirements. The Vastu Purasha Mandala, in particular, is a diagram based on rules of specific proportions that can be applied to an entire city or design details such as windows or decoration. While the Indian codes do not explicitly provide building typologies, uses or materials, they provide a flexible and variable set of principles to address every aspect of design, drawing on philosophical principles adapted to the natural environment. The relationship between urban form and natural landscape is strong in the Indian tradition and it has been somewhat challenged by modern planning, in particular Le Corbusier's work. Traditional Indian codes provided a method of design that engaged with differing aspects of space, including social and economic factors. Consequently, a key element of Indian settlements is multiple uses for every space: not only in terms of urban spaces, but also the domestic environment.

A similar approach is traced in traditional Chinese planning, which was based on a modular design. Standard building typologies were connected to standard construction methods; specific dwelling types were also related to clear social strata. Uniform distributions of plots informed the general layout of the city and its urban form. However, in capital cities symbolic elements were also central in informing the layout and morphology of the settlement. Beijing, for example, was designed through a modular distribution of space that directly reflected social order, oriented by the strong axes through the imperial palace. By contrast, in Kyoto, the former Japanese capital, community-based codes meant communities shaped their own neighbourhoods. The codes addressed the physical aspect of space, while also informing social and interpersonal uses of the built environment. Although Kyoto was initially planned on a grid, the rise of strong local communities has resulted in a clustered urban form based on modularized typologies.

The discussion about Adelaide, the capital of South Australia, also deals with the interweaving of planning and social issues. Adelaide's colonial planning ideal has been contested over time and proposals for modern development have sought to break the rigid

grid of the city centre. This has spurred the community to debate the identity and character of the city as well as the role of codes in preservation. Another example of codes used to inform development and manage historic centres is sourced from France. Kropf illustrates how typomorphology has been applied to inform specific plans. He notes that traditional zoning is often applied with form-based coding, and the form of the consolidated city is generally controlled by focusing on specific streets rather than blocks or entire suburbs. Kropf proposes that learning from the repository that is the built environment can inform the balance between order and variation in a flexible way.

In Chapter 10, Steyn initiates a reflection on a geographical area often ignored by urban design: Africa. Here the shanty town is introduced as an example of bottom-up coding. On the outskirts of the main sub-Saharan cities, the morphological unit of the village is replicated as part of the process of urbanization and rural migration. Communities tend to reproduce traditional dwellings and spatial practices, particularly the courtyard. This type of settlement reflects a social structure in which people collaborate in the production of space and, more importantly, in establishing a community that is self-sufficient in several aspects. Rather than regard shanty towns as unplanned disorganized settlements, they are recognized as the product of implied codes, based on the archetype of traditional dwellings articulated in 'superblocks'. African shanty towns demonstrate both a complex heterogeneous morphology and social harmony. To some extent other more structured contexts are similar and in the United States current traditional zoning does not allow physical urban form outcomes to be precisely predicted due to the extreme variability of individual developments and their interpretation of zoning rules.

Marshall's conclusion reflects on learnings from the case studies. In particular he advocates a new professional, the *code writer*, who should bridge between the quantitative prescription of the town planner and the qualitative vision of the urban designer. Marshall also offers fundamental principles to inform codes, such as connection between public spaces, street frontage and typology articulation. Having presented diverse regional examples and an overview of different approaches to urban form through implicit or explicit codes, Marshall is supportive of a new approach to urban design informed by traditional experiences and principles.

Codes in relation to pattern, use and form

Emily Talen's *City rules* presents a more objective approach to planning and investigates in detail the cause and effect of multiple planning strategies. She discusses the use of codes and their role in informing a good urban environment. She also reconstructs a detailed history and evolution of zoning with particular attention to its outcomes in the United States. Talen appreciates that zoning was initially intended to produce healthier cities, prescribing the segregation of activities that could have negative impact on the quality of dwelling, such as heavy industries. The large-scale strict separation of function has in time achieved the unintended outcome of an unsustainable and unhealthy settlement pattern. While Talen does not criticize zoning per se, she articulates the unintended consequences of the sterile application of planning tools. She also recognizes that planners and designers do not exert total control on urban form which is subject to the forces of other drivers, such as financing rules, processes within the building industry and government funding.

Talen's discussion of codes and their application is elaborated through three concepts: pattern, use and form. In terms of pattern, Talen stresses that urban sprawls and formless suburbia owe their layout to an anti-density ideology that emerged from historical social conditions. In the twentieth century many of the problems faced by traditional cities, such as congestion, overpopulation and unsanitary situations, were perceived to result from density rather than other urban social and economic circumstances: the proposed solution

was new suburbs with wide roads and generous open space provision. The limitations imposed on height and building types in suburban residential zones have generated a form characterized by extreme landscape homogeneity. Subdivisions, platting logics, setbacks and minimum open space at the rear of the block are prescribed, and there tend to be few building types. While zoning was intended to produce a better city with an ordered layout, the result is a set of rules that discourage density and walkability and generate a chaotic and fragmented pattern.

Use is introduced in terms of proximity – the spatial distribution and connection of uses. Through this concept, Talen starts evaluating zoning. Initially zoning regulated segregation and the distribution of activities rather than building types. Noxious uses were to be isolated to protect the broader community. However, the unintended outcome of the extensive use of zoning has been both segregation of functions and people. Zoning has resulted in the deconstruction of the traditional socially-mixed city to orient different social strata towards separate areas. Lot sizes, accessibility, restriction of building typology and other zoning provisions have indirectly affected the distribution of people and the demographics of modern suburbs. The result is an unstable and socially damaging environment. Restriction on uses has also induced a car dependent urban form in which neighbourhood shops and services are detached from residential areas and where access to facilities is predicated on wealth. Lack of public transport further isolates marginal communities and protects the way of life of the more affluent.

Form is discussed by Talen as three-dimensional character and as a product of rules about setbacks, lot coverage, street width, building height or building type. Form is also affected by functional elements, like fire regulations or parking provision: elements intended to create safer more rational cities. Early prescriptions of street width, building heights and frontage were meant to generate an aesthetically pleasant urban environment founded on the implementation of rules based on ratios and quantities. These replaced rules based on form and design and have generated a dysfunctional landscape where prevention of car accidents informed the pattern of new suburbs, and where easy access and egress became more relevant than proximity and social connections. Talen points out that zoning focuses on the scientific provision of standards and seems incapable of providing a controlled urban form. Clearly, the good intentions of the principles do not guarantee, and have not provided, what could be called quality urban design. In order to achieve better cities, Talen suggests an approach to the planning of cities based on flexibility, walkability, liveability, and, significantly, on greater predictability of outcomes. She clearly debates how the outcomes of rules and standards are often not predicted. Further, actions intending to solve specific issues have generated other problems on seemingly unrelated fronts. She proposes the implementation of smart codes as a solution whereby control of urban form is the driving principle: health, safety and functionality are resolved within a clear urban landscape, recognized as important elements of the city, but not as a starting point for its design. Far from being prescriptive, the implementation of form-based codes is discussed as a way to limit unexpected outcomes.

Planning and unintended outcomes

A similar discussion about unintended or unplanned influences on built form is presented by Richard Tomlinson in the Australian housing context. Tomlinson edits a series of ten essays aiming to provide a detailed understanding of the rationale and structure of Australian cities with a specific focus on housing. The book clearly explains how Commonwealth policies aspiring to liveable, sustainable and 'fair' cities through support of affordable housing often conflict with other policies and strategies not directly intended to influence the housing market or urban governance, but which have an unintended impact on urban form. Commencing

with a discussion of the Australian planning system, the book also outlines the contraposition between the vision at state level and outcomes at a local scale. Australian major cities are generally not managed as metropolitan areas with a single administering body, with the exception of Brisbane. Plans are developed by local governments and major changes to urban form are negotiated or co-ordinated with the State, which establishes statutory planning provisions. Generally plans co-ordinate release of new land for development, while planning and construction is then managed by private developers who are also required to provide services and infrastructure to new suburbs.

Risks of development are transferred to the private sector and often to the final buyer. Developer incentives, tax regimes and mortgage structure are important elements driving the form of Australian cities because they directly influence the choice of residential types and locations. In the Australian context, the historical and cultural narrative of the traditional settlement pattern based on detached single-storey dwellings emphasizes privacy, independence and a psychological heritage from colonial times when a quick and extensive appropriation of the land was promoted. The urban form resulting from this logic is that of a dense core almost immediately surrounded by low-rise, low-density suburbs. The expansion following this pattern has generated problems of access, as new neighbourhoods follow a car-based logic, as well as environmental and social problems. Australia's suburbs can demonstrate varied demographic profiles that indicate unintended social segregation. The drivers of urban form are not codes or plans, but risk-averse market logics and the commodification of housing. This results in the construction of housing for potential market return rather than to meet residents' immediate needs. While the 'dysfunctionalities' of Australian suburbs are discussed in terms of impact on the environment, the innovative aspect of the analysis addresses the impact on the economy. The dispersion of dwellings and the concentration of jobs in a few locations generate accessibility and efficiency problems. Rawnsley and Spiller in Chapter 9 argue that density, proximity and other elements of urban form ultimately impact on the accessibility, productivity and efficiency of cities. Tomlinson addresses possible solutions. He indicates that the structure of Australian suburbia is primarily an issue of governance, having resulted from a lack of co-ordination and planning. Although infill developments are increasingly common in Australian cities, there are criticisms that these result in ineffective outcomes due to their location and timing: 'wrong place at the wrong time'. Tomlinson's overview recognizes that urban form is not merely a matter of plans and design, but that more complex drivers from the economy, social values and lifestyle can override the good intentions of designers, planners and administrators.

The potential and problems of form-based planning

The three books reviewed here all provide insight in an area that is increasingly suggested as a response to the current problems of developed cities. The authors argue that the lack of character, density and liveable environments could be remedied or prevented through smart codes or form-based planning. This approach is not innovative per se: it has deep roots in the history of the city. Talen argues that while the policies that have shaped our cities were initially motivated by good intentions and a will to achieve better cities, the sterile and stereotypical application of the tools that has informed urban design has produced generic unsustainable cities. Control of urban form cannot be achieved with a simplistic approach as unintended outcomes are always possible. As Tomlinson points out, cities are not just the product of plans, but of complex social and economic dynamics that may not always hold an evident or explicit relationship to urban form. Talen concludes her book by challenging planners to manage and foresee the possible effects of plans, codes and the many complex drivers that are shaping

our cities by recalling how this challenge, in the past, has been faced.

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Planning for sustainable urban form

With the aim of shedding light on the processes of planning, urban form and sustainable urban development, the Swedish School of Planning at the Blekinge Institute of Technology in Karlskrona, Sweden is holding an international seminar on 12-14 November, 2014. The seminar is organized jointly with the Nordic Network of Urban Morphology, which was established in 2006 to promote research and practice in the fields of urban studies, urban planning and design. International experts in the fields of planning, urban form and sustainable development will give invited lectures. There will also be submitted papers.

Keynote speakers include: Albena Yaneva, University of Manchester, UK; Tore Sager, Norwegian University of Science and Technology; Jeremy Whitehand, University of Birmingham, UK; Simin Davoudi, University of Newcastle upon Tyne, UK; Elena Cogato Lanza, Ecole Polytechnique Fédérale de Lausanne, Switzerland; and Heng Chye Kiang, National University of Singapore.

The two principal sub-themes of the seminar are:

1. Planning processes in changing governance networks;
2. Urban form, agency and sustainable development.

The number of places at the seminar is limited.

Karlskrona is located in south-east Sweden and is a UNESCO World Heritage city of approximately 65 000 inhabitants. It is accessible by direct train from Copenhagen/Malmö/Lund, and by plane from Stockholm and ferry from Gdansk, Poland.

Further information is available from Professor Abdellah Abarkan (Abdellah.abarkan@bth.se).