

# A Model for Producing Reliable Urban Design Guidelines

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Within the public realm, urban design guidelines are one set of a range of instruments used to control or influence public and private works so as to optimise the production of reliably 'good' built environments. They address the public domain of our cities as well as private domain impacts on the public domain. Guidelines are public documents, which to be successful their basis must be accessible for critical review. This is necessary so that guidelines can reflect shared community values and be accountable. The model in this paper describes 'good practice' procedures for the preparation of guidelines that are based in theory and practice. It includes discussion on substantive matters that are relevant to built environments. It seeks to establish high quality decisions as well as high quality information upon which decisions are made. Both the information and decisions are intended to be transparent and thereby accountable. The model is grounded in critical study of existing urban design guidelines in Australia and overseas as well as in theories and methods derived from the literature. It is structured to reflect a managed problem-solving approach under the headings of: intentions; preparation; implementation; performance. A further heading, 'substantive content' parallels the other headings and addresses the subject matter of guidelines with cross reference to underpinning theory texts and to analysis techniques. The model is not a sequential action checklist, but rather is a heuristic one wherein each step may inform previous steps and thereby potentially modify the conclusions of that step, and in turn the outcome, which may be tested. However such 'reflection-test' processes cannot proceed indefinitely and informed decisions are expected to be made within time and budget constraints. It brings theoretical and practice knowledge together to help produce better functioning built environments within which aesthetics and symbolism are considered as functions, in the Lang sense (1994) of human concerns being a function, together with physical, ecological and economic aspects.

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## INTRODUCTION

The 'urban design guidelines' subject of this paper developed out of research into urban design practice initiated during the late 1980's and maintained to the present. An on-going research theme is the search for the use of theory in urban design practice, which is found to be mostly tacit rather than explicit thereby posing difficulties for verification and rigour (Holden, 1996; 2011).

As a key part of good urban planning, urban design guidelines may be regarded as the public's design brief (or program) for the making of functional, appropriate and beautiful public places, for the holistic experience of users. As expressed by March (2011) "Good urban and regional planning depends on it being a system – a series of connected and inter-related components that together achieve things. Each component such as transport, jobs, housing, natural places, and recreation are complementary and in concert produce shared benefits now and into the future". Being a design brief, guidelines need to embrace all pertaining issues and consequently they may act as co-ordinating mechanisms and/or as a support mechanism to address aspects of other broader planning instruments which are in the public interest.

Public urban design guidelines in use in Australia have been found to fall short of their full potential because of inadequacies in the methods of their production and administration, which derive from deficiencies in the theoretical base for practice related to both procedural and substantive matters (Holden, 1996).

Procedural problems with urban design guidelines have been revealed through legal judgements. Guidelines have been challenged in the courts if they were not developed through community consultation processes and if they are not explicitly based in accepted theory. Urban design guidelines are planning instruments within a political and social process and as such the analytical and evaluative methods in their production must be rigorous and transparent (Ryan, 1987; Baily and Slyfield, 2008).

Substantive problems relate to two aspects of the content of guidelines. One is the extent of the subjects being addressed; the other is that the subject matter may be challenged in the courts if not based on supportable evidence. Also some guidelines emphasise aesthetic matters, possibly at the expense of functional ones, and thereby misrepresent the nature of human function and design in the built environment (Lang, 1994). In providing solutions to problems, design holistically embraces practical, functional, aesthetic and symbolic subjects. Many guidelines provide little by way of a researched and verified basis for these aspects and when guidelines are attempted to be defended in the courts by unsubstantiated assertions and possibly the judgement of experts, especially if they do not reflect community values, some have failed to be upheld. The courts are seeking grounded empirical methods in arriving at what are acceptable arguments in support of aims that are presented as being for the benefit of public interest. Objectivity, facts and adequate criteria are needed (Giroux, 1994; Cooke, 2012; Baily and Slyfield, 2008).

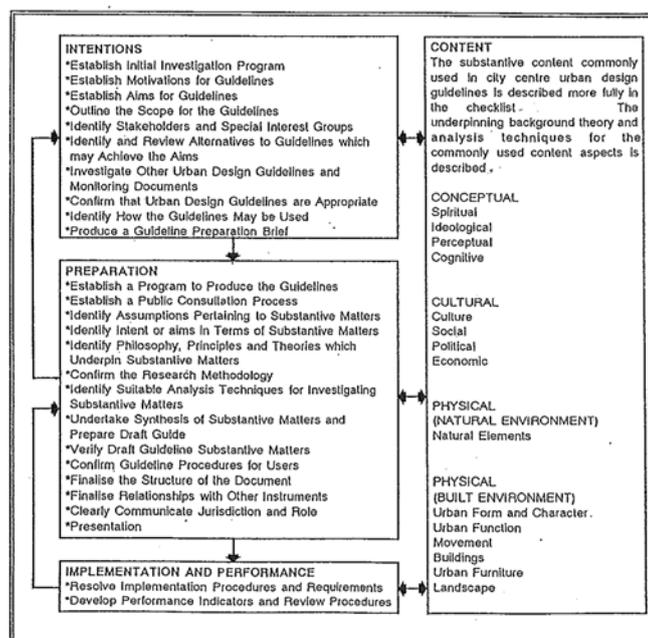
Theories can be discussed in the two categories of empirical and normative, both of which may address procedural and substantive matters. This paper discusses why it is highly desirable for the theoretical basis for every guideline to be demonstrated within the document. While the main test of both empirical and normative theory is in the success of the physical outcome in response to the guideline, unfortunately post-construction evaluation is rarely undertaken as part of the monitoring of performance of guidelines, thus not enabling the theoretical basis to be tested. As expressed by Cuthbert, generally "their collective outcomes are not evaluated" (Cuthbert, 2007: 8).

This model emphasises theoretical underpinning of guidelines and is the main point of departure from other publications that offer guidance for preparing urban design guidelines, such as 'Urban Design Guidance' (Cowan, 2002). While the Cowan and similar documents (eg: Hall, 1996; Punter & Carmona, 1997) provide much useful practical information including case-study examples, they are categorised here as tending toward the 'professional activity' end of understanding urban design, which ranges across 'professional activity'-'professional field'-'academic discipline' (see: Lang 2005 and Cuthbert 2006).

It is argued that for urban design guidelines to achieve their 'good built environments' purpose of producing functional, appropriate and beautiful public places, for the holistic experience of users they need to: reflect community values through participatory/consultative processes; be based on explicit theory, either empirical or normative; use verifiable analysis and synthesis methods; and, incorporate structured evaluation and review techniques. Through grounding in theory it is intended that urban design activity in general and guidelines in particular will contribute to urban design achieving academic discipline recognition.

The model shown in Table 1 and discussed here shows 'good practice' procedures for the preparation of guidelines based in theory. It seeks to explicitly establish high quality decisions as well as high quality information upon which the decisions are made (Hall, 1990; King-Cullen, 1993). Both the information and the decisions are intended to be transparent and thereby accountable. The model is structured to reflect a managed problem-solving approach under the headings: Intentions; Preparation; Implementation and Performance. A fourth section 'Content' parallels the other headings and lists possible subject matter for urban design guidelines.

**Table 1. Diagram of a Model for producing Workable and Reliable Urban Design Guidelines**



Source: (Holden, 1996: 348)

## URBAN DESIGN THEORY

Before engaging further with the content of the Model shown in Table 1, it would be helpful for contextual appreciation to expand a little on the large topic of urban design theory. Theory for and of public urban design is considered by several influential writers to be vexed with questions of purpose and focus that derives from an inadequate theoretical underpinning (see for example: Scott-Brown, 2006; Cuthbert, 2007; Schurch, 2007). But this view is not fully shared. For example, Castell, as reported in Cuthbert (2007), about three decades ago brought a hierarchical clarity to the subject by grounding urban design within socio-spatial concepts: urban meaning – structural performance of conflictive processes between historical actors in a given society; urban function – system of organisational means to perform the goals assigned by urban meaning; urban form – symbolic expression of urban meaning; urban change – the redefinition of urban meaning; urban planning – the negotiated adaption of urban functions to a shared urban meaning; urban design – the symbolic attempt to express an accepted urban meaning in certain urban forms (Castell, 1983: 303-304).

Cuthbert interprets Castell's work as "the first serious attempt to incorporate urban design and urban planning within a unified coherent definition, linked to a significant body of social theory based on the morphing of political economy into the dimensions of urban space and form" (Cuthbert, 2007: 15). Cuthbert discusses the wide range of theories in urban design literature, many of which are identified later in this paper, but he asks if mainstream urban design has collapsed around its own limitations. He recognises the capacity of urban design practice to successfully design engaging places but he emphasises the need "to understand the socio-spatial, political, cultural and economic environment of the problem to be solved" (Cuthbert, 2007: 55). The essence of this paper is positioned within this framework.

While maintaining an overarching socio-economic perspective informed by Castell and developed by Cuthbert, from a range of approaches available three categories for considering theory are used here when addressing urban design guidelines in the public domain. The first adopts an 'inquiry' approach to focused elements or aspects of the built environment, based on empirical methods. This approach is well discussed by Moudon (1992) and the principles are also common to other noted researchers including Hack (1984), Zube and Moore (1987; 1989; 1991) and Lang (1987, 1994).

The second approach is well summarised by the Urban Design Group (1990, 2012), but is also common to other researchers including Lynch (1981), Bentley (1985), and Alexander (1977). It adopts a set of 'ideal' objectives for urban design to attain, generally expressed in the form of describing attributes and characteristics of a 'good-city'. These objectives are mostly presented as normative criteria, based on empirically supported humanist values. The third is also normative but the approach is expressed as conjectural positions or concepts in a more formal way than as for the 'good-city'. Urban design concepts have been well discussed by Gosling and Maitland (1984) and Broadbent (1990).

The above three approaches may be more simply categorised into two, with the first 'inquiry' standing alone and the second 'good-city' joining with 'conjectures'. These two categories are described by Moudon (1992), similarly to Lang (1994), as *substantive-descriptive*, which seeks to know what is and why, and secondly *normative-prescriptive*, which describes what should be. Moudon clarifies further by referring to these categories as *understanding cities* and *designing cities*. Moudon sensibly argues that both are essential because it is "necessary to understand the city in order to develop concepts to design the city" (Moudon 1992: 332). Substantive knowledge from empirical research provides the foundation for normative theory in assisting design, thus demonstrating a continuum across the descriptive-prescriptive domain. This need for there to be conceptual inseparability of empirically based understanding and actual design is also explained by others including Lang (1987) and Moughtin (1992).

Theory in urban design guidelines must underpin both analysis and design in order to achieve confident outcomes.

## INTENTIONS of URBAN DESIGN GUIDELINES

A distinction needs to be made between urban design guidelines for private and public domains. Private urban design guidelines are those that are prepared for the purpose of directing the planning and design of private developments, which could be precincts, entire neighbourhoods, or townships. Private urban design guidelines have in common that they are generally highly deterministic, derived from normative interpretation of what constitutes a good place, driven by a single-minded vision of how the urban environment should be designed for people's use, notwithstanding what users actually think, and they are imposed by centralised development controls. They are a "template for practice" rather than theoretical (Cuthbert, 2007: 43) and they are non-democratic in terms of the community's capacity to influence outcomes. People can choose to live in the environment created or not. Examples are 'Seaside' Florida, 'Poundbury' UK, within 'New Urbanism', as well as gated communities familiar in Australia and New Zealand

Urban design guidelines in the public domain relate to the democratic process of generally at a local government level, elected representatives approving the adoption of guidelines prepared by officials and consultants to influence the form and function of the built environment, with input from the community as to its desired outcomes. This process is part of the "material production of social space" and can be shown to be underpinned by socio-spatial theory (Cuthbert, 2007: 55).

Case studies of public urban design guidelines show that the predominant reasons for their initiation are to enhance the image, character, coherence, workability, environmental liveability and economic success of a place by giving direction to development (Holden, 1996). Within this every guideline needs explicit intent. The intentions stage in the model relates mainly to identifying the administrative, legal and political processes and to the general nature of motivations and aims necessary to determine if a full commitment to preparing guidelines will be made. For the first stage to proceed, the potential subject matter must be investigated to some degree. Key administrative aspects of an investigation are as follows: Establish the scope of investigation in terms of the physical area, topics and tasks; Identify expertise and personnel required; Establish methodology and time-lines for tasks; and, Estimate cost.

Urban design guidelines are predominately motivated by one or a combination of intentions to improve liveability and economic sustainability. Common intentions include: to enhance public amenity, physiological comfort and the convenience of users (liveable, comfortable, convenient); to enhance the attractiveness and user understanding of the city in terms of psychological satisfaction (beautiful, coherence, legible); to manage the built environment in times of fast change so as to respect the built heritage and not lose its sense of place (cohesive, contextual); to manage the changes to the built environment so as to achieve high vitality, functional efficiency and high benefit for cost (vital, functional, economic); and, to establish a preferred image and character for the city rather than allow it to be the result of developer decisions (planned and designed). The initial identification and scope for guidelines may be assisted through public perception surveys, through 'expert' and 'community' workshops and through theoretical analysis, of the 'good' city. In order to establish the basis for guidelines, the essence of the scope to be addressed and their motivation should be succinctly expressed.

Stakeholder, special interest groups, beneficiaries and potential losers need to be identified. Common ways to achieve involvement are through surveys, reference committees, steering groups, exhibitions and review bodies (Dick, 1990). The major beneficiaries of urban design guidelines are the public, both residents and visitors, through better functioning and more attractive environments. Developers may also benefit through greater certainty of planning and design requirements allowing them to expeditiously optimise projects. Property values may improve because of their location within a higher quality environment and the administrative process of development control may benefit through there being a more explicit basis for decisions providing credible, consistent and quicker results. On the other hand, developers may consider that guidelines reduce their ability to respond to the marketplace and designers of buildings may view guidelines as inhibiting the design freedom to interpret the 'brief' and to architecturally express the culture within which the building or place sits. Clearly the quality of process and substance of guidelines is paramount (Beer, 1983; Booth, 1993).

Alternatives to guidelines that achieve the intentions and objectives should be explored before committing to guidelines. Five administrative processes are identified, which are not mutually exclusive, however if more than one process is adopted it is necessary to cross reference them: Revise or establish a statutory town plan; Revise normal town planning development control processes; Produce a specific development control plan, Establish a special authority; and, activate and focus the authority's works program. Critical reviews that identify strengths and weaknesses of selected other urban design guidelines and their monitoring processes are also desirable (Southworth, 1989).

It is desirable to confirm early that urban design guidelines are the most appropriate mechanism to address the situation and achieve the objectives. It is also important to establish the intended relationship of the guidelines to other instruments, such steps are needed to inform the preparation stage as to the scope, suitable language and format of the document.

There are two distinct aspects to the use of guidelines: expectations of developers and designers in their response to the guidelines; and, the role of assessing officers in considering submitted design proposals based on the guidelines. Desirably both activities should interact either formally or informally. Preliminary meetings between developer, designer and authority officer will assist interpretation. The guidelines should be clear as to how the interaction is intended to proceed and with what consequences. For example the Newcastle Urban Design Guidelines state "Designers of proposals to redevelop or alter sites within the Newcastle CBD will be expected to consider carefully the context of their proposal, identify those Urban Design Guidelines which apply to it, and then if they wish to depart from any of them, present arguments based on the particular circumstance of their site as to why specific Guidelines should be relaxed" (Newcastle Urban Design Guidelines, 1993: 1).

The conclusion of the 'Intentions' phase is the production of a guidelines preparation brief for either internal (within the authority) or external (consultants) use, or both. This brief would not be expected to provide a comprehensive content, because the detail research, analysis and synthesis have not yet been undertaken. However a draft set of aims, strategies, and content will assist the briefing process by identifying topics that will require further investigation, without constraining additional topics.

The scope of expertise to undertake the work, timelines and anticipated costs need to be estimated if the work is to be undertaken internal to the authority. However under contemporary consultancy protocols these matters are largely the responsibility of consultants to present their credentials, methods, expertise and costs. Indeed, it is often the case that consultants are required to describe how they would go about the project, the methodology, with what resources, timeline and for what remuneration.

## PREPARATION OF GUIDELINES

International and Australian case studies reveal that there is no generally accepted 'standard' model for the preparation of urban design guidelines (King-Cullen, 1993; Holden, 1996). This paper attempts to remedy this by focusing on developing a good practice model for urban design guidelines based on theory. Models either derive from theory as symbolic expressions of it, or they abstract or structure reality into symbols, thus forming theory "models are either theory-based or theory-laden" (Kilbridge, 1970). Kilbridge identifies the basic elements of a model to be: subject – what is the model about?; function – what does the model do?; theory – on what theory is the model based?; and, method – how does the model use its theory?. Kilbridge's conceptual framework is imbedded in this paper by providing a model that makes theory explicit.

While process matters of administrative, legal and political aspects remain important, the predominant work of this stage relates to in-depth investigation of the substantive content of guidelines. Early in the preparation is the need to confirm the scope, expertise needed, time-lines and cost. Confirmation of the public consultation/participation process also needs attention at this stage.

Before proceeding to thorough analysis and synthesis of substantive matters, the assumptions and premises upon which decisions are made must be clarified. These may in the form of normative (conjectural or based on standards) or empirical theories. In all cases the up-front establishment of the premise of the guidelines provides essential criteria for later testing and monitoring. Over time the reliability of the underpinning theory should improve by this process, both during preparation and later through reviewing implementation and performance.

The urban design guideline content checklists shown in Tables 2 and 3 provide individual substantive elements of potential relevance, however the unique characteristics and intent or aims of each case will influence how the elements are related to each other and how the guideline is best organised for succinct communication. The most time intensive phase of the model is in identifying and analysing the substantive content within an explicit theoretical environment. This may typically involve archival research, field work, case studies, survey etc, which will contribute to conclusions or synthesis. The research methodology and theoretical underpinning should be communicated to all contributors during the preparation of guidelines as well as being succinctly described in public presentations and in the final document, possibly as an appendix. This is required in order to maintain transparency. An explicit methodology and theoretical founding will also assist performance review, by providing the basis for assessment of design proposals and will give weight to the guidelines in potential legal challenges, by providing the basis for objective critical evaluation.

Synthesis of substantive matters is not a process of simple induction, but is rather one of making grounded conclusions and identifying clear relationships between elements and the underpinning theory. The process of verifying the validity and workability of the guidelines is not singularly the next step in the model, as synthesis will include preliminary verification. Tests may use various techniques including digital and physical modelling embracing several aspects such as human comfort conditions, space allocation and location, access, functions, symbolism and aesthetics. Tests may also involve workshops of community reference groups, external experts, developers. Another form of test is to theoretically extrapolate the application of the guidelines in accelerated-time-frames to enable long-term consequences to be explored. Feedbacks from tests are used to refine the guidelines and while the refinements may be further tested such 'reflective-test' process cannot proceed indefinitely and informed decisions are expected to be made within time and budget constraints.

Guidelines may be used by a wide range of users and consequently should be user-friendly in terms of structure, layout, style, and language in the communication of intent, principles, theories, methods and performance indicators. In finalising the document its jurisdictional relationship with other instrument of the authority and wider legislation and policies need to be incorporated.

## SUBSTANTIVE CONTENT of GUIDELINES

In order to advance a methodology for considering the content of urban design guidelines, a composite checklist model was developed which is the result of three parallel research activities (Holden, 1996). The first being, that a number of actual guidelines were interrogated for key-word concepts that reflect substantive content. The word-concepts were then structured into like sub-categories, and these into like generic categories. The second parallel activity involved detailed content analysis review of selected urban design literature to identify theories which commonly apply and to also express this through key-word concepts (Marshall and Rossman, 1989). The third activity involved reviewing ontological literature in order to establish potential descriptive categories for organising the subjects. The key-words (concepts) were rationalised into a content checklist having a three-tiered structure: generic; sub-category; and, specific element. This work is expressed in table form as a not definitive checklist of approximately one-hundred common specific elements with key literature identified (refer to Tables 2 and 3). Other specific elements may be incorporated that address the particular circumstances of cases. The potential exists for an additional column to be added to the tables (on the right), to accommodate reference to the theory-underpinned analysis method applicable to the specific element. An example of the development of such cross-reference for the analysis of 'edges', is shown in the Analysis Guide in Table 4.

It is an axiom that 'checklists are a worry', mainly because of the potential implication that there is a completeness that may restrict thinking about aspects not on the list. The origin of the checklist here is that it derives from a review of the content subject matter of numerous public urban design guidelines used in practice in Australia, New Zealand, the UK and the USA, as well as from wide urban design literature. This is not to suggest definitiveness but rather to identify key elements that are central to any discussion about urban design. The elements may have priority ranking for different applications but it is considered that all are potentially relevant.

Other methodological aids for urban design that are readily available mostly adopt a 'demonstration of tools' approach which is helpful but does not necessarily position the tool within a coherent theoretical framework (see for example: Ministry for the Environment, 2009; Transport for London, 2012). The proposal here incorporates organising principles and imbeds them in explicit socio-spatial theory (top-down) as well as incorporating the theory-underpinned methods used (tools) to analyse the specific element (bottom-up). This is a composite model that more comprehensively and more explicitly expresses theory contained in urban design guidelines and as such addresses the challenge presented by this paper.

**Table 2. Urban Design Guideline Content Checklist (Part A)**

Generic Category	Sub Category	Specific Element-Aspect	Key Literature (by Author)
CONCEPTUAL	Spiritual	Symbolic	Lynch(1981)
	Ideological	Sacred	Norberg-Schulz(1980)
		Concepts	Lynch(1981) Gosling etal(1984) Broadbent(1990)
	Perceptual	Theories	Broadbent(1990) Lang(1994) Krier(1978)
		Aesthetic	Cullen(1961) Berlyne(1971) Nasar(1988)
		Form Space	Scruton(1979) Kaplan(1982)
		Relationship	Holgate(1992) Bacon(1975)
		Proportion	Krier(1979) Hillier & Hanson(1984)
		Scale	Rapoport(1977)
		OtherSenses	Arnheim(1977) Hartshom(1980)
CULTURAL	Cognitive	Sense	Jakle(1987) Kaplan(1982) Sennett(1990)
		Legibility	Clay(1973) Douglas(1982)
	Culture	Image	Bentley(1985) Garling(1986)
		Knowing	Lynch(1960) Prak(1977) Aragones(1985)
		Meaning	Lynch(1960) Gimblett(1990)
		Values	Moore etal(1976) Farbstein(1978)
		Place	Rapoport(1982) Lynch(1972)
		Character	Relph(1987) Altman etal(1989)
		Heritage	Canter(1977) Steele(1981) Tuan(1974,77)
		History	Norberg-Schulz(1980,85) Relph(1976)
Social	Vitality	Lynch(1972) Gamham(1985)	
	Behaviour/	Jackson(1980,84) Marquis Kyle (1992)	
	Order	Mumford (1961) Morris(1972) Kostof (1991)	
	Equity	Rapoport(1977)	
	Choice	Open University(1970) Whyte(1980) Zeisel (1981) Kaplan (1978) Zube & Moore(1987/91)	
	Health	Tseng-yu Lai(1988)	
	Welfare	Robinette(1985)	
	Education	Davies etal(1993) Levine(1988)	
	Community	Bell(1990) Freudenburg(1986)	
	Political	Privacy	O'Riordan(1976)
Safety		Suttles(1972) Brill(1989)	
Organisat'ns		Newman(1972)	
Participation		Wekerle(1995)	
Information		Barnett(1974)	
Justice		Burke(1979) Sanoff(1978) Dick(1990)	
Law		Castells(1991)	
Economic		Cost/Benefit	Newman(1972) Bell(1994)
		Efficiency	Gifford(1987)
		Investment	Simmie(1987) Brand(1994) Johnson(1989)
	Employment	Jacobs(1969)	

Source: (Holden, 1996: 228)

Overall the structure accommodates both a top-down, organising principles approach, which provides coherence, and is referred to by Rowe as a propositional model, together with a bottom-up elemental approach. In Rowe's terms the bottom-up aspects may be independent of organising propositions, but they give focus "from the onset by breaking down 'decomposing' the problem as given and understood into its most fundamental components" (Rowe, 1987: 71).

The desirability of providing well explained underpinning principles and theory, and of inclusion of analysis and synthesis information as mentioned earlier is well founded. The inclusion of background information serves the practical purpose of allowing users to better understand the basis of the guidelines, thereby potentially engaging the guideline intent in creative ways, rather than following prescriptions. The guidelines also gain credibility for their coherence, clarity and transparency. Also, good theory calls for the explicit treatment of content, so as to encourage rigorous and accountable underpinning and an explicit basis for assessment and performance review.

**Table 3. Urban Design Guideline Content Checklist (Part B)**

PHYSICAL Natural Environment	Natural Elements	Sun	Phillips(1975) Robinette(1972)		
		Light/glare	Julian(1975) Greenland(1991)		
		Climate/micro	Givoni(1976) Bitan(1991) Chandler(1976)		
		Wind	Oke(1987) Melbourne(1978) Sommers(1976)		
		Temperature	Olgay(1963) Bernatzky(1966)		
		Air Quality	Galpin(1978) Freeman(1982) Evans(1982)		
		Rain	Simonds(1978)		
		Water quality	Rothenberg(1974)		
		Noise	Moore(1966) Crocker(1987) Griffiths(1987)		
		Topography	Spim(1984)		
		Geology	Leveson(1980)		
		Vegetation	Laurie(1979) Tandy(1970)		
		Wildlife	Spim(1984) Eltringham(1984)		
		Aesthetics	Smardon(1986) Appleton(1984) Goakes(1987)		
PHYSICAL Built Environment	Urban Form & Character	Ecology	McHarg(1969) Hough(1984) Blowers(1993)		
		Form/Structure	Alexander(1966/77/87) Krier(1978)		
		Space/Place	French(1978) Whyte(1980) Greenbie(1981)		
		Paths/Linkage	Trancik(1986) Lynch(1960) Weisman(1979)		
		Views/vistas	Ashahara(1983) Cullen(1961) Jakle (1987)		
		Skyline	Attoe(1981) Lim(1995)		
		Edge	Lynch(1960)		
		District	Lynch(1960) Siksna(1991)		
		Landmark	Lynch(1960) Smith(1984)		
		Node	Lynch(1960)		
		Gateway	Spim(1988)		
		Land use	Bentley(1985) Anderson(1978) Frieden(1989)		
		Permeability/access	Gehl(1987) Jacobs(1961) Gosling (1984)		
		Robust/convenient	Bentley(1985) Whyte(1980) Rutledge(1980)		
PHYSICAL Built Environment	Urban Function	Safety	Wekerle(1995) Cooper Marcus(1990)		
		Workability	Krampen(1979) Cadman(1978)		
		Services	Kirwan(1991) Lang(1991b)		
		Transport(pub/priv)	Engwicht(1992) Newman (1992) Paraoh(1989)		
		Bicycles	Moudon(1991) Callhorpe(1989)		
		Pedestrian	Lowe(1989) Ying(1987) Moudon(1987)		
		Disabled	Hopfl(1984)		
		Type	Rossi(1982) Franck(1994)		
		Use	Brand(1994) Zeldier(1983)		
		Age	Jackson(1980)		
		Repair	Brand(1994)		
		Form/character	Slater(1990) Schimbeck(1987) Prak(1977)		
		Height	Amheim(1977) Blair(1986) Brolin(1980)		
		Alignment	Ashihara(1983)		
PHYSICAL Built Environment	Movement	Orientation	Greenland(1991) Phillips(1975)		
		Bulk	Barnett(1974)(1982)		
		Fenestration	Collins(1975)		
		Entries	Ching(1979)		
		Scale	Amheim(1977)		
		Materials	Ashihara(1983)		
		Details	Lerup (1977) Boudon(1972) Alexander(1977)		
		Colour	Birren(1982) Bell (1990) Duttman(1981)		
		Context	Brolin(1980) Katz(1994) Tugnett(1993)		
		Style	Crook(1991)		
		Signs	Arthur(1990)		
		Lighting	Carr(1972) Watson(1990)		
		Pavements	Moudon(1987)		
		Shelter	Olgay(1963)		
PHYSICAL Built Environment	Urban Furniture	Seats/bins	Malt(1970)		
		Amenities	Joselit(1990) Gehl(1987) McNulty(1988)		
		Art/Sculpture	Wolff(1983)		
		Fountains	Cullen(1978)		
		PHYSICAL Built Environment	Landscape	Elements	Gove(1983) Jackl(1987)

Source: (Holden, 1996: 229)

Public urban design guidelines are the means for disseminating more widely what otherwise would be specialised knowledge, in order to assist better informed decisions by all parties involved in urban design. In most urban design activity, because the community at large is the client, the designer cannot be briefed by specific users. Purposefully prepared urban design guidelines overcome this problem by providing an underpinning based on empirical research of the particularities coupled with the best normative theory and participation of the community of users in deciding on what environment is required.

The analysis guides are proposed to provide summary information relating to theory-underpinned urban design methods of analysis, rather than an exhaustive explanation. They incorporate aspects of the 'toolkit' approach typified by the MfE Urban Design Toolkit (Ministry for the Environment, 2009). They are intended as quick reference guides giving access to principles which may be investigated further through references. Each guide is arranged in two parts. The first gives a brief background to the subject in discussion, its underpinning theory, common links with other analysis techniques and key references for further study. The second provides a brief description of the analysis method together with a graphic illustration of the method in practice. The guide shown in Table 4 is a pilot, of approximately one hundred intended such guides to reasonably comprehensively cover the 'normal' scope of urban design guideline detail subject matters.

**Table 4. Typical Analysis Guide**

E.02. EDGES	
Background	Edges are one of five elements, identified by Kevin Lynch from his studies of several North American cities, which help structure one's image of a built environment. According to Lynch edges are linear elements not considered as paths, although paths can act as edges. An edge is a boundary between two kinds of areas. It can act in either of two ways, as a barrier or as a seam. The strongest edges are barriers which are visually prominent, continuous in form and impenetrable to crossing. Features such as walls, rivers, shorelines and enclosures are good examples. Edges act as seams when two contrasting areas meet and are joined together by open interaction. A street of mixed use activities may join a residential and a commercial neighbourhood together. Edges can be visually strengthened by the use of planting and contrasting building materials.
Underpinning Theory	The empirical theorists value environments which are perceptually coherent. Kevin Lynch believed that such environments, by being distinctive and legible, offer the user not only security but also a heightened depth and intensity of human experience. He was concerned with the mental image of the environment. Edges are identified as one of the key elements in creating imageability. Lynch emphasised that his conclusions regarding the importance of edges derives from empirical research. Whilst this theory may have wide application and may be a useful starting point, each case should be studied to determine the local situation. The relative importance of each of the elements identified will vary depending on the influence of history, geography and culture on the city's structure.
Common links	The other 'Lynch' elements are paths, nodes, districts and landmarks.
Further reading	Lynch (1960) "The Image of the City" MIT Press; Banerjee (1990) "City Sense and City Design" MIT Press Smarand (1986) "Foundations for Visual Project Analysis" John Wiley Bentley (1985) "Responsive Environments" Architectural Press Trancik (1986) "Finding Lost Space" Van Nostrand Reinhold Garham (1985) "Maintaining the Spirit of Place" PDA Publishers Corp.
Analysis method	Bentley suggested that analysis should start with identifying the potential of the study area and its surroundings, by marking a plan or map with a symbolic code. Edges may be recorded by noting distinct limits to areas with different patterns of use or visual character, and by noting physical barriers. These characteristics need to be studied in the field as well as through 'desk' and computer study. The method is essentially one of qualitatively recording physical attributes, within the context of the 'positive' approach of identifying opportunities and constraints.
Illustration Bentley (1985) p.47	

Source (Holden, 1996: 241)

## IMPLEMENTATION and PERFORMANCE of GUIDELINES

Implementation procedures and requirements are closely related to use procedures and to matters of jurisdiction and linkages with other instruments used by the authority. In addition to guiding private development, guidelines may also be used for public works to 'set the scene' for urban design improvements, expected to be followed.

In order to complete 'good-practice' approaches to guidelines, performance indicators and review procedures for both procedural and substantive matters are required. Procedural performance indicators may include but not be restricted to matters of: clarity of communication; reliability of self-assessment; and, promptness and coherence of response to submissions by the authority. Progressively collected and reviewed data from submissions and inquiries will assist in identifying aspects in need of reflection and possible improvement.

Substantive content improvement indicators should derive from the aims of the guidelines as developed through the detail items. Because of the uniqueness of each city, guidelines indicators will vary and may include both qualitative and quantitative aspects. The frequency of reporting different aspects may also vary.

The monitoring of performance of urban plans has been in place for many years, for example since 1985 in San Francisco (San Francisco Planning Department, 2011). Generally such processes are initiatives of the city authority in question and the matters evaluated against goals are predominantly quantitative. For San Francisco these include commercial space provision, the number of historic rated buildings, the amount of open space created. More recent monitoring developments in the UK however, have been centrally driven under the powers of the national 'Planning and Compulsory Purchase Act 2004' which requires authorities to report on the extent to which the policies in local plans are being implemented. Here, the measurable aspects are tabulated and reported but design quality aspects are proving to be more difficult to quantify. Resident level of satisfaction survey questionnaires that focus on the look and function of buildings and public space are being used and no doubt these are helpful in understanding performance. But what remains is the challenge to evaluate the strength of the relationship of the design of the built environment to the theorised intent. Only through greater attention to the testing and verification of theory is it likely that theory will improve and become more a robust and reliable to underpin future application. Developed and reliable evaluation methods are needed (Kalay, 1992).

## CONCLUSION

Despite reservations expressed by Scott-Brown (2006) and Schurch (2007) about the extent and depth of existing urban design theory, a considerable urban design epistemology can be shown to have been developed over the past fifty years (see; Moudon, 1992; Holden, 1996; Cuthbert, 2011) and this is available to support and strengthen urban design guidelines. However the studies by King Cullen (1993) and Holden (1996) show that guidelines in use generally do not communicate their theoretical and methodological underpinnings very well. Mostly the theoretical bases for guidelines are ad-hoc and implicit rather than explicit and this provides potential problems in terms of interpretation consistency and defend-ability (Holden, 2011).

The model discussed here is intended to address the existing shortfalls of reliability and accountability in public urban design guidelines by basing them on theoretically supported and rigorously analysed substantive subject matter and by preparing and reviewing them through sound procedures.

The production of public urban design guidelines does not take place in a political vacuum. For guidelines even to be advanced by an authority there must be a political commitment. For them to be effective in the long term such commitment needs to not only embrace elected representatives but also the wider community, city officers, consultant professionals, the development industry and business leaders.

The model here describes good-practice procedures based in theory and practice. It is submitted that the model is an explicit, robust, complete and accountable methodology for public urban design guideline preparation.

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NOTE: With revisions and updating, the subject matter of this paper is mainly derived from chapters seven and eleven in the author's PhD thesis: *The Epistemology of City Centre Urban Design Guidelines*, University of Newcastle (1996).

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