Curtin University Sustainability Policy (CUSP) Institute

Rediscovering Urban Design through Walkability:

An Assessment of the Contribution of Jan Gehl.

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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ABSTRACT

Urban design is being rediscovered. For most of the past 50 years it has lacked the concrete theory necessary to guide praxis. As a field it has related only sporadically and selectively to experiential knowledge and was essentially still entrenched within formulistic Modernist approaches. This has limited urban design as practiced to a design profession focused on aesthetics and individual projects without being part of the mainstream city-shaping process. The vacuum in city politics has been filled by modernist traffic engineering and car-based planning. This has limited urban design's ability as a field to respond to the need for sustainable, vibrant and inclusive urban environments. In particular, it has failed to address the force and power of car-based planning. However, there is scope for a profession of urban design that considers a city holistically and is an advocate for the needs of pedestrians. In particular, there is scope for an urban design practice that is able to challenge the pre-eminence of the auto-focused shaping of cities. These determinations necessitate a different approach to designing our cities. Through work in over 40 cities, Danish urban designer Jan Gehl has begun to demonstrate a new theory and practice of urban design that rediscovers it potency through an emphasis on walkability.

This study considers the theory and practice of urban design from a walkability perspective in order to facilitate a more effective, sustainable, humanistic and responsive approach, developing an evaluation framework based on Jon Lang's (1994) call for a more encompassing urban design approach. This framework is then applied to the work of Gehl, as a case study of an urban designer who has constantly focused on the needs of people within city design, asking what is the significance of Gehl's work and theory to urban design?

Fundamentally urban design is concluded to be about creating cities, or improving existing ones, to be vibrant and sustainable places that relate to people's use and needs—especially pedestrians—using the skills and theories of various disciplines and depending to a large degree on the public and political process to define the values and priorities. It is about creating hopeful resilient places that are able to

adapt and respond to varying social, environmental and economic needs and about creating positive changes in urban environments. The study concludes that there is scope for urban design to move beyond its current limitations to work from a base of experiential knowledge about the city and its use that is focused on a reflective and experiential approach, building on solid practice based theory and on planning for pedestrians.

Gehl's work, both in theory and practice, is explicitly humanist, offering normative urban design theories based on substantive research, is part of organic urban theory and is embedded in ideas of pedestrian based transport planning. As a practitioner, Gehl's methods enable experiential knowledge to come to the forefront of urban design concerns. Building from Gehl's focus on the need to overcome formulistic and automobile-dominated urban planning would enable urban design's aesthetic and prescriptive based theories to have a new and deeper meaning: sustainable urban design is at its heart planning and designing for walkability. This thesis determines that a core component of urban design theory and practice is advocating for the needs of pedestrians.

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City walking is the necessary key to urban quality, vitality and pleasure.
The basis and the beginning for everything.
Vadare necesse est—walking is essential
(Gehl & Gemzøe, 2000, p.257)

CHAPTER 1: INTRODUCTION

Chapter 1: Introduction

1.1 Preface

The way we travel through a city affects our views, understanding and commitment to its spaces. At high speeds, we can distinguish glimpses and general impressions of the landscape; we see large signs, buildings and the road. At slower speeds, we perceive the details of the buildings; we see merchandise in shop windows, the cracks in the walls and the pavement—the intimate elements—but we might not see whole buildings or the whole spaces. Our understanding of city centres is, in part, determined by how we move through and around them.

This dissertation is motivated by the need to address a fundamental problem in the design and development of many modern and in particular western cities: that of a built environment that does not relate to the people using the space. I argue that people's use of cities—the reason why cities exist in the first place—has been sidelined primarily because of increased mobility and increased levels of individualism. This concern with economy, mobility and consumption has resulted in the creation of unfriendly cities that revolve around enclosed, isolated and inward-looking buildings and depend heavily on automobiles. The new forms of cities have increased isolation, within populations leading to environmental and health problems, as well as social and economic ones. Informal public space, that of streets and footpaths, has become viewed only as movement space surrounded by enclosed spaces that we use for 'living'. Yet streets have been the heart of cities throughout the history of urban development. In addition, much formal public space is created without consideration of how these spaces will be used. This dissertation hopes to contribute to the body of knowledge addressing new ways of design for the public spaces of cities.

Urban design theory and practice is a fluid term, used to describe many and varying projects. However, urban design is essentially about public spaces and, to reference Jan Gehl, it is about the 'life between buildings'. From its formation, urban design

has been about bringing people's use of streets[1] and city spaces to the forefront of urban concerns. Urban design is about the creation and enhancement of stimulating, robust and accessible urban environments and is a process towards a healthier city. However, despite its long history and its establishment as a profession, urban design lacks adequate theory and definition. In addition, urban design itself has tended to lose this humanistic perspective, with urban design concerns becoming more about the simplistic visual elements than the use of public space: it has become more about individual small projects, the production of guidelines and formulistic solutions than the dynamics of the whole city. It has largely lost its people focus, reducing its ability to evolve as a field.

The work and theories of Jan Gehl,[2] the Danish academic, architect and urban designer, return to the very core of urban design as design of cities to maximise the diversity of exchange, while minimising travel needs, continually bringing people to the forefront. Gehl is one of the most internationally recognised urban designers with substantial contributions in over 40 cities around the world (see Chapters 5 and 6, and Appendix E). This dissertation attempts, by examining Gehl's theories and his body of work (particularly his Public Spaces Public Life surveys), not only to acknowledge the significance of Gehl's work to urban design theory and practice, but also to explore how the practice of urban design can be more effective, sustainable, humanistic and responsive. It also aims to address some of urban design's failings.

The focus of this dissertation is on democratic, 'modern', 'western' cities, particularly city centres, which have become dominated by automobiles and have lost the heart and soul of their public spaces and streets. This focus is due in part to the city centre's ability to accommodate varying transportation choices and to

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[1] Through this dissertation, I use the terminology 'street' as a general term to include all the various surface streets in city and urban centres. This generally includes the footpath, unless otherwise specified. This includes all the other various guises such as boulevards and avenues. When I am referring to a specific type of street, such as a freeway or a highway, the specific terminology will be used. Road is used to designate just the carriageway.
[2] This also includes the work and theory of others employed at, and associated with Gehl Architects, an urban design firm established in 2000 by Gehl and Helle Søholt, and includes the work of his long-term colleague and collaborator Lars Gemzøe (also a senior consultant and Associate Partner at Gehl Architects).

provide the impetus for changes elsewhere. The potential application to developing and emerging cities is examined briefly at the end.

1.2 Background to urban changes

Changing transport technology and architectural and city planning paradigms have affected the shape, function and use of cities. Much research has found that the physical characteristics of cities have a significant impact on travel behaviour, economic sustainability, social equity and environmental sustainability (Bambrick, Capon, Barnett, Beaty & Burton, 2011; Brown, Dixon & Gillham, 2009; Litman & Brenman, 2011; Newman & Kenworthy, 1999). Transportation infrastructure choices are the major structuring elements in cities (Newman, Beatley & Boyer, 2009; Newman & Jennings, 2008; Newman & Kenworthy, 1999, 2006) and therefore, locational choices for homes, shops, services and other infrastructure are important (Webster, 2010). Transport planning theory has been largely mechanical based on the notion of Marchetti (1994) that there is a fixed time travel budget of around one hour that shapes cities.

The walking city

Walking, until the popularity of motorised transport, had been the dominant form of transport in cities since urban settlements began (Crawford, 2002; Kostof, 1992; Newman, 2003; Newman & Kenworthy, 1999) and cities have traditionally developed around walking ("the slow pedestrian") as the dominant mode of transport (Burchard, 1957, p.112). Within in this city type, all goods and services needed for daily life had to be within a walkable area, and, therefore, cities developed in quite dense and compact ways (generally over 100 people per hectare) (Crawford, 2002; Kostof, 1992; Newman, 2003; Newman & Kenworthy, 1999), accommodating land uses within an average half-hour of walking, approximately 5 km wide, or 'one hour wide'—the Marchetti constant (Marchetti, 1994; Newman and Jennings, 2008). These centres have become the focus of Gehl's work as they try to reclaim their role as a walking city.

The transit city

As the transport technologies have changed, the form and shape of cities have also changed. From the middle of the nineteenth century, motorised transport has progressively rebuilt our industrialised (or western) cities so that in half an hour of travel, people could go by tram or train (steam and electric) a distance of ten to twenty kilometres. The 'transit city' developed part as a reaction to the industrial revolution when the density and form of traditional cities became no longer appropriate for the number of workers and residents needed. These transit cities were generally medium-density (50 to 70 people per hectare), with development concentrated out along transit lines leading from a dense centralised core, often the traditional walking city. These areas were mixed use and had a grid-based form (Newman, 2003; Newman & Kenworthy, 1999). Until the 1950s, these suburban developments around the transit lines was still essentially walkable designed along similar lines as the walking cities following the transit lines. The transit city was driven by the public health movement, the increased speed of transit technology (trams and trains) and, in the United Kingdom (UK) in particular, the Garden City town planning movement (Newman, 2003). Photographic evidence from cities from 1880 to 1920 show a plethora of movement vehicles but in most cities centres and sub-centres, walking was still dominant (Davidson, 1978; Reece, 1983). These centres are also part of the focus of designers like Gehl who can ascertain their inherent walking character.

The automobile city

From the 1940s onwards, use of automobiles in western cities became progressively more widespread and facilitated the outward expansion of the city. People could now travel much further within the same time budget of one hour and accessibility was no longer tied to a walkable catchment or a fixed transit line, allowing densities to decrease (to fewer than 20 persons per hectare). Land uses became segregated into sectors with the swift uptake of zoning within city planning, building from the health concerns related to the industrial city (discussed in the next Chapter). Automobiles and the modern city and suburbs enabled by

them, became associated with post-war freedom (Condon, 2010). Social movements such as post-war housing resettlement (such as the Levittowns) and the anti-crime and desegregation movements in the United States (US), helped facilitate the sprawling car-dependent cities we see today (Newman, 2003). Newman argues,"[cars were] not a technology that was necessary to solve a major urban problem (as transit was) but the car's popularity in creating new freedom over space and time became a momentum for urban change" (Newman, 2003, p.52), resulting in the increased spread of cities and fundamentally changing the way cities were viewed, planned, lived in and used. The overwhelming success of the car meant that all walkable space became crowded out because of the need to provide space for vehicles (both movement and parking). The appropriate distribution of such space, based on ideas of use and reclaiming space from traffic, has become a new urban design practice.

Modernist planning movement

The Modernist planning movement, popular in the first half of the twentieth century, emerged from a reaction to the urban conditions—crowding, pollution, health concerns and the mixing of undesirable land uses—of the Industrial Revolution. Modernism aimed to increase human comfort and health through the separation of land uses and embraced new technologies, including transport, construction and communication, and new design paradigms. To achieve this, Modernism reversed long-standing relationships among movement, space and form. It separated land uses into zones of similar functions, separating built forms from each other (particularly roadways and buildings) and separating professions and professional concerns (S. Marshall, 2005). This separation is particularly evident in the separation of motor traffic, pedestrians and social activities (Hamilton-Baillie, 2008). Modernism's focus on the principles of the rational model, scientific frameworks, function and separation gained momentum during the mid-twentieth century, particularly in the US, Australia and the UK, and continued to guide land use policies in western cities for most of the second half of the twentieth century (Hamilton-Baillie, 2008).

Although much of the Modernist movement's ideas emerged from a concern for people's health, the Modernist movement discarded many existing considerations and ways of organising, planning and designing built environments, which in part, resulted in a completely new set of urban problems. The result was a design-centric vacuum when it came to addressing issues, such as social problems and transportation, focusing on separation, leading to a loss of any real perspective on how to manage city centres, as mobility became the primary concern and the automobile began to take over existing space (Litman & Brenman, 2011). Of relevance to this discussion, particularly focusing on the cities of the US and Australia, is the creation of lifeless, dull and mono-functional city centres surrounded by a dominant built form that does not relate to people and that promotes urban sprawl and dependence on automobiles, creating an unhealthy urban environment (Frumkin, Frank, & Jackson, 2004; Newman, Beatley, & Boyer, 2009; Newman & Kenworthy, 1999). In addition, the separation of the built environment professions facilitated the creation of institutional silos (or areas of concern), impeding the ability to plan, design and care for the whole urban environment as a collective and unified unit. Hamilton-Baillie maintains that bringing together these separate professions "to combine an understanding of the multiple purposes of streets and public space is thus essential to integrating the complex functions" of a city (2008, p.133).

Beginning with the social upheavals of the 1960s, particularly in the US but also in Europe, Australia, New Zealand and Canada, criticism of Modernist planning, design and architecture became a feature of built environment debate and discussion (Mumford 2009b). Modernism was criticised for not accounting properly for complexities or social systems, for not adequately consulting with those planned for, for not understanding social questions or conditions and for basing theories on ideas of physical determinism (see, for example: Lang, 1994; Fainstein, 2005; Fishman, 1982; Scott Brown, 2009). These criticisms led to an historic evaluation of practices in urban planning and architecture, including the development of the field of urban design. Jan Gehl was part of this process.

1.3 Sustainable urban design

Progressively, the problems created by modern car-dependent cities are becoming more apparent in cities' escalating environmental and social problems. All of these problems are characteristic of what are often called 'wicked' problems—problems that are resistant to resolution through linear analytical approaches and have a basis in deeper problems (Rittel & Webber, 1973). Achieving sustained transitions and solutions to these problems is extremely difficult by traditional approaches alone (regulations, taxes and subsidies to name a few). Rather, wicked problems require complex, collaborative, flexible and holistic responses; particularly, they expose the deeper need for ethical and cultural change.

The negative effects of much development, sprawl and automobile dependence are now widely accepted, as revealed by research in a wide range of fields.[3] In addition, trends reveal that limits, both environmentally and socially, are being reached and citizens and planners are seeking alternatives and adaption solutions to problems of urban form and transport (Bambrick et al., 2011; Brown, 2008). A survey of vehicle miles travelled (VMT) in the US showed a decline in car use, predating the 2007 increased cost of petrol (Brookings Institution Metropolitan Program, 2008, p.1). In addition, Newman and Kenworthy (2011; summarised in Table 1.1), expanding on the Brookings report, determine that we have now reached peak car use in developed cities and are, in fact, witnessing the demise of automobile dependence in cities. These reports illustrate that limits are being reached and citizens are seeking other alternatives, including a cultural shift to more urban locations and less car-dependent lifestyles (Newman & Newman, 2006). These shifts will have profound impacts on how we have to plan cities and transportation. As Newman and Kenworthy point out, urban design will have to "become a much more critical factor in urban development" particularly in urban redevelopment (2011, p.10).

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[3] For more information, see Peter Newman's work, Paul Downton (2009), Congress for New Urbanism literature, environmental literature, public heath literature, Peak Oil literature, amongst many others.

Peak car use
Looking at cities in the US, Australia and in Europe, Newman and Kenworthy (2011) verify that there has been a plateau and in some cases a decline in car use, particularly in private vehicle use. Data from Australian and US cities show car use per capita peaking around 2004 and then trending down.
They attribute this peak to eight intertwined and interdependent causes: **Marchetti constant has been reached**. The Marchetti (1994) 'one hour time travel budget' has been reached in many of the cities studied with road developments not able to adequately deliver within these constraints, thus Newman and Kenworthy determine that there has been a shift from providing high speed and capacity roads to providing high speed and capacity public transport on traffic-filled corridors and in inner urban locations. This shift has happened in combination with changing urban planning policies that are more enabling of redevelopment of underutilised urban areas and of increasing densities in the suburbs, in existing urban centres and around transportation nodes. **Growth in public transport.** The growth in public transport use and development has been determined in the cities surveys. This is particularly noticeable in the development of new rail based transport in US and Australian cities. From 1995 to 2005 transit boarding's per capita grew by 12 percent in the ten US cities surveyed, by 8 percent in five Canadian cities, by 6 percent in four Australian capital cities and by 18 percent in four major European cities. The crucial significance of a growth in public transport usage is the 'transit leverage effect', that is that the relationship between increases in public transport use and declines in car use decline are exponential—a small increase in transit use results in a larger decline in car use than the individual boarding figures would suggest. **Reversal in urban sprawl development.** Density in many cities, particularly in US, Australian and Canadian cities, is increasing. As with transit, the relationship between density and car use is exponential, with even small increases in density resulting in greater declines of car use than expected. In addition, density increases the efficiency of walking, cycling and public transport. **The aging populations in cities.** The populations of developed cities are getting older and are therefore likely to drive less as they tend to move to more urban locations (below). However the authors suggest that this is probably not a large component of peak car use with 'young' cities also showing a peak in car use. **The growth of a culture of urbanism.** There has been a marked structural and cultural change towards people (both elderly and young professionals) seeking more urban environments. **A rise in fuel prices.** With increases in fuel prices, such as those recently seen, those living in auto dependant suburban and urban fringe developments have a higher transport cost burden leading to reduced car use (if possible). These factors are clearly interrelated and dependent on each other and together these factors result in greater effects than each would individually.
Newman and Kenworthy conclude that we are now witnessing the demise of automobile dependence in cities.

Table 1.1: Peak car use in developed cities. Source: Summarised by the author from Newman & Kenworthy (2011). 'Peak car use': Understanding the demise of automobile dependence.

Parallel to these cultural changes has been the rise of a creative city movement, as Grogan, Mercer and Engwicht contend:

> If a society is to survive and prosper, it must adapt to changing conditions. Adaption requires creativity, the act of bringing previously unconnected elements into a new relationship…The design of public places and the way people live in and use their cities and towns can inhibit or encourage spontaneous exchanges of information and the debate of new ideas. It is no accident that some cities and towns have stronger traditions of innovation and creativity. Over the years they have cultivated their 'creative wealth'. (1995, p.17)

These movements have come together under the rubric of sustainable cities. To be economically, socially and environmentally sustainable, cities have ultimately to reduce their inefficiencies and consumption of finite resources (see, for example: Commission for Architecture and the Built Environment [CABE], 2009; Newman & Kenworthy; Newman, Beatley & Boyer, 2009; Newman & Jennings; Stern Review, 2006; Wheeler & Beatley, 2004).

The sustainable cities movement emphasises the need to examine what we want our cities to be and to provide context-specific solutions. Sustainable urban design has thus emerged as a major feature of urban design theory and practice.

Sustainability essentially is the capacity to endure. It is long-term well-being and is dependent on the well-being of the natural world along with human well-being. In practical terms: "Sustainability is meeting the needs of current and future generations through an integration of environmental protection, social advancement and economic prosperity" (Government of Western Australia; 2003; Newman & Jennings, 2008). This idea of sustainability requires synergies among economic development, community well-being and social justice, environmental protection and good governance and leadership. Sustainability is a long-term process—it is not a fixed process—and as a field, it is constantly evolving, requiring multi-disciplinary responses recognising the integrated nature of human activities. Sustainable cities require adaptive and hopeful solutions, recognising local contexts (Newman & Jennings, 2008). For planning, therefore, objectives, impacts and actions need to be coordinated and integrated at varying scales and across disciplines, expanding the traditional role of urban and transport planners (Litman,

2011). The joining together of the movement for more human-oriented urban design and the need for more sustainable cities has been a feature of recent urban design development in which Jan Gehl has played a fundamental role.

1.4 Introduction to urban design

Alexander Cuthbert argues that cities have always been subject to urban design as an act; they have always "been subject to human intervention" (2007b, p.177). However, the terminology and field of urban design is relativity new, gaining momentum in the middle of the last century. The impetus was a need to reintroduce people, and their interests to the forefront of planning and architecture and to reunite the two professions within an overarching paradigm. Conversely, given urban design's long history and its recognition as a professional activity, it still lacks a clear definition and still has no distinct theory. Rather, urban design borrows and shares theory with other disciplines, primarily architecture, urban planning, urban geography, sociology, psychology, history, anthropology and landscape architecture. The result is twofold: urban design has the ability to unite and cross different disciplines but also, as a profession, lacks the theory necessary for praxis and will therefore remain an ambiguous field, open to many varying definitions, interpretations and practice and relating only sporadically to substantive theory (discussed further in Chapters 2 and 3; see Cuthbert, 2005; Krieger & Saunders, 2009; Lang, 1994, 2005; Moudon, 1992).

Although urban design emerged to bring people to the forefront of planning and architecture and as a way to view the city holistically, it has often been sidelined to a prescriptive field, the design side, with a focus on designing projects and is criticised for formulistic solutions. As Robert Sommer articulates: "urban design should be more than what it so often now is: a stale advertising campaign for an already well-commoditized idea of the city" (2009, p.135). In the light of changing needs, the scope of urban design must be expanded along with developing a more responsive field. The urban designer must, according to Richard Marshall, "advocate sustainable development and high-quality urban places", ask challenging

questions addressing wicked problems, and enable solutions that enhance urban environments focused on well-being (2009, pp.55-56).

An improved physical urban environment is a necessary component of improving the quality of public life in cities. Sustainability in urban design means giving consideration to society, economy and the environment and assumes, as Emily Talen argues: "cities should be designed for diversity—a mix of people, uses, and functions…cities should be scaled to the walking human body rather than to the fast-moving vehicle" and a preference for infill, rather than greenfield developments (2009b, p.4). Jon Lang, through his research on urban design in the US, urges the establishment of a 'more encompassing approach' to urban design that addresses some of the failings and shortcomings of the discipline, addressing values, changing urban conditions and based in experiential knowledge. Lang determines furthermore that to meet these needs, urban design "will have to draw on both Rationalist and Empiricist thinking while firmly rooted in the latter approach" (1994, p.127). This dissertation seeks to position Jan Gehl within this set of traditions and perspectives to help provide a more coherant and useful urban design theory and practice.

1.5 Introduction to Jan Gehl

Among urban designers, Danish architect and urban designer Jan Gehl represents a people-oriented, experiential approach to urban design. His work includes a remarkable suite of studies, applied in some of the world's most high-profile cities, including New York, San Francisco, London, Copenhagen, Bogota, Melbourne and Sydney. Gehl's theory centres on a *people first, then space, then buildings* approach to designing cities and involves systematic evaluations of the use of public spaces (Chapter 5 and 6). This dissertation provides a comprehensive overview of Gehl's work, along with an evaluation that can be applied to developing a more humanistic, sustainable and responsive field of urban design theory and practice.

1.6 The need for this research

Planning theory has been addressing the deficiencies of the modern city for some decades. As Fainstein argues, the "principal question of planning theory is the analysis of the possibility for attaining a better quality of human life within the context of a global capitalist political economy" (2000, p470). David Harvey reminds us that urban production is one of the functions of modern cities:

> ...we collectively produce our cities, so we collectively produce ourselves. Projects concerning what we want our cities to be are, therefore, projects concerning human possibilities, who we want, or, perhaps even more pertinently, who we do not want to become. (2000, p.159)

Perhaps we can collectively restyle our cities. Nannup believes this is so: "We cannot change the past but we can direct the future. We are responsible for the future. This gives us the one thing we need to carry on—hope" (Nannup, 2010). As Peter Newman and colleagues have convincingly argued for many years, hope provides the possibility to change, adapt and respond to changing social, economic and environmental needs. Hope enables new ways of delivering cities with infrastructural responses that enable people to be able to enjoy their city and access their daily needs easily, readily and efficiently (Newman & Rowe, 2003; Newman, Beatley & Boyer, 2009; Newman, Duxbury & Neville, 1986).

While planning and design must be collaborative and just, we also need a greater emphasis on the quality of the results and on what we hope to achieve. In relation to planning theory, Fainstein argues that planning theory "needs to consider under what conditions conscious human activity can produce a better city (region/nation/world) for all its citizens" (2005, p.127). Therefore planning theory requires "investigating the nature of this better city, relative to its particular history, stage of development, and context; the strategies by which it can be achieved; and the obstacles to reaching it" (Fainstein, 2005, p.127). I argue that these considerations apply equally to urban design theory, particularly around issues of accessibility, which within some current urban design thinking is equated with 'good' urban design and is fundamental to a sustainable city (Webster, 2010). Planning for pedestrians and an exploration of "walking as a design

method…[which] can inform the theory and practice of place-design" needs to be better understood within urban design (Wunderlich, 2008, p.138).

Many critics contend that current urban design practice pays inadequate attention to theory (Krieger, 2009; Sommer, 2009). In fact, Childs states: "…we are engaged in a rethinking of urban design…much of this debate focuses on what constitutes good (or achievable) city form. However, there is a lack of clarity about the nature of the profession" and so he asks, "how should we organize [urban design] practice and scholarship to gather a body of knowledge, and to provide a clear set of public purposes?" (Childs, 2010, p.3). This debate usually revolves around deliberations of urban design as being a unique discipline, separate from urban planning or architecture, or alternatively as urban design as a 'frame of mind' shared by practitioners from varying disciplines (expanded on in Chapter 3) (Robbins and El-Khoury, 2004). Scott-Brown agrees, arguing that urban design "lacks a penumbra of scholarship, theory and principles, a set of generally recognized working methods, an institutional setting, and a mass of practitioners. These constitute a 'discipline'. Lacking them, urban designers tend to borrow precepts, methods, and concepts…" (2009, p.82). Sustainability is fundamentally a hopeful approach to the future so it may offer some hope in this regard: perhaps it can provide an overarching perspective that has been missing in urban design. The context of this dissertation is the need for hope in our cities, requiring both an urban design theory and practice that can help to generate such hope. This is what is meant by references in this dissertation to the need for more sustainable urban design.

1.7 Research questions and objectives

The objective of my dissertation is to assist progression of sustainable urban design theory in order to help discover a more effective, sustainable, humanistic and responsive approach to our cities. This is done through a synthesis of an urban design evaluative framework and through the description and assessment of the contribution of Jan Gehl to urban design theory and practice.

The core research questions are:

1.   How can urban design theory and practice be more responsive?

2. What is the significance of Gehl's work to urban design theory and practice?

To answer these questions, the dissertation is divided into six parts:

1. What is urban design?

2. What is urban design concerned with in practice (requirements of people in public spaces, pedestrians,[4] urban design practice and methods)?

3. What is Gehl's contribution to urban design theory?

4. What is Gehl's contribution to urban design practice?

5. How can Gehl's work, and ultimately all urban design work, be evaluated?

6. What is the connection between Gehl's outcomes both in theory and practice and a more responsive urban design?

1.8 Research design and methods

These questions are examined through an assessment of the historical and current work of urban design theory and practice and the work of Jan Gehl. The dissertation uses a mixed-method, layer montage approach, combining literature analysis, active participation, participatory observation, interviews with participants and theory development based within a practice-based interpretive research paradigm (see next section: Research framework). The rationale behind the methodology aligns with the views of Thorne: "careful and rigorous description, expanding or extending upon what is already 'known'" (2008, p.43). The approach aims to enhance our ability to understand successful phenomena in practice and theory within sustainable urban design.

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[4] A common definition of a pedestrian is people walking and includes "wheeled conveyances used by people with disabilities, and also users of roller-boards, roller-skates and roller-blades" (Government of Western Australia, Department of Transport, 1999). Sometimes, including cyclists, pedestrians are referred to as 'vulnerable road users.' However, it usually does not include bicyclists (except in a 'body on the street sense') unless they are walking their bike. I am using this definition of pedestrian but also using it as a general term to include people on the street in a vitality sense, i.e. also those staying and using public places, not just those walking through, using the idea of the "pedestrian as a social being" revealing that "they are context-sensible: they are affected by the cultural, economic, social and eventually environmental contexts" (Porta, 2003, p. 107).

The research framework and timeline is provided in Figure 1.1. This illustrates the framework and timeframe of data collection and analysis, illustrating the iterative process, and that the collection, interpretation and analysis of the data is simultaneous, requiring constant reflection and analysis, with relationships, new insights, queries and responses built into further data collection.

The literature review that provides a context for the analysis enables my research:

- To be placed within current urban design thought and thus establish the basis for analysis;
- To formulate the research goals and objectives;
- To introduce the primary issues and social theories relevant to sustainable urban design;
- To discuss different opinions and ideas within the discipline; and
- To complement other research methods such as the case study and interviews used.

From a literature review of urban design, I synthesise the discussion to provide a number of urban design concerns and develop an evaluation framework that can be used to assess urban design work. This framework recognises the complexity and varied nature of urban design work and is multi-faceted and flexible, allowing modification over time and for varying contexts. The framework avoids positivist measureable indicators; rather, it is about process and facilitating an emerging practice within urban design theory and work.

As this is a dissertation based in a qualitative methodology, I conducted semi-structured interviews (Bryman, 2008), based on previously agreed open-ended questions with various participants of Gehl's PSPL surveys, particularly those in the Australian capital cities of Perth, Adelaide and Melbourne. The interviews conducted followed the interview guide approach, with participants given interview questions prior to the interview (Kithcin & Tate, 2000). This method is considered more efficient than surveys or undisclosed interview questions for both participants and the interviewer, as it allows for questions to be discarded if they are not appropriate and for the interviewer to move on (Kithcin & Tate, 2000, p.215).
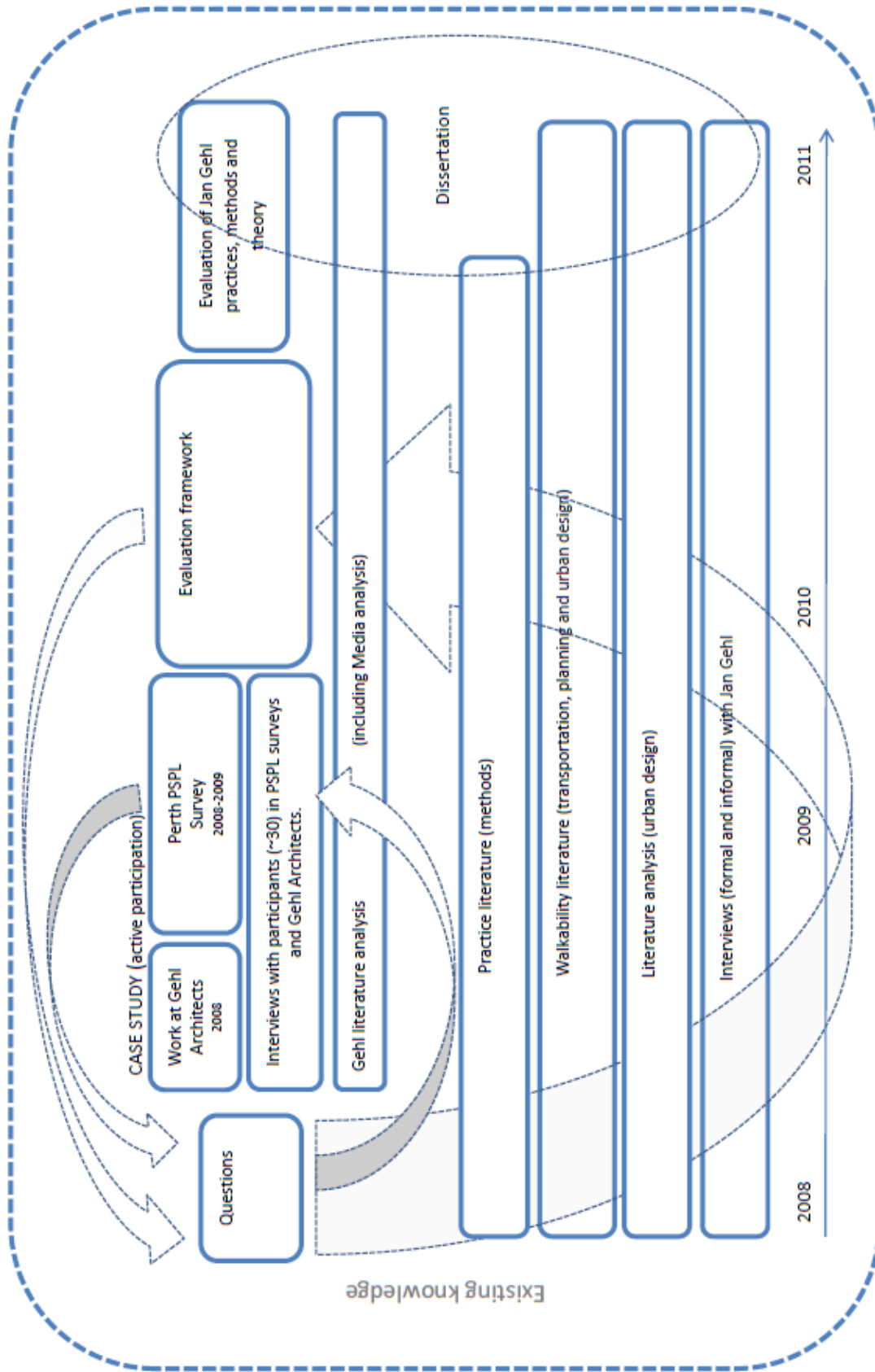
Figure 1.1: The research framework, process and timeline. Source: Author

The interviews focused on the thoughts and perceptions of the interviewees: their 'point of view'; encouraged rambling; were flexible allowing for follow up questions; for questions to be discarded depending on the situation and encouraged detailed answers (Bryman, 2008, p.437). The respondents were from all levels professionally and varied in their involvement in the PSPL surveys. The participant interviews (Appendix F) were coded into the following categories:

- Public Spaces Public Life methodology (Gehl Architects, 2010b);

- Attributes of the methodology;

- Concerns with the methodology;

- Additional surveys;

- Additional information;

- Leadership; and

- Other comments.

This research received Ethics A clearance from the Human Research Ethics Committee (HREC) at Curtin University on the basis that interviews were voluntary, could be cancelled at any time, including after the interview if the participant felt at all uncomfortable. All participants were consenting adults and no one withdrew their comments. All interviews are referred to by a code.

In accordance with the theoretical framework of this research, statistical analysis was not the primary concern of conducting the interviews; rather, they were conducted to establish a range of insights and understandings and to provide further questions to the research (see Theoretical Framework below). Findings from these interviews and discussions were shared with participants to allow a dialogue to emerge and to ascertain the extent to which the concepts and ideas were accurate both in terms of content and intent (see Theoretical Framework). The responses from the interviews were also placed in a word diagram (word cloud). Appendix F provides the interviews and a description of the word diagrams.

Stories form an integral part of this research,[5] both the stories emerging from the literature and those informed by living experience. A large component of the research was interviews and discussions with Jan Gehl, both formal and informal, exploring Jan Gehl's 'story'. The formal interviews were semi-structured to respond to specific questions and were recorded and transcribed. Informal interviews were conducted later in the research to reflect new insights and focus (also discussed within Theoretical Framework below) and to allow for more personal insights and narratives to emerge. These informal interviews were recorded either using memos and notes or with a recording device, and were often attended by colleagues of Gehl.

In addition, a major part of the research was conducted through active participatory observation, particularly in two primary instances:

- A three-month period spent at Gehl Architects in Copenhagen working with Jan Gehl and his team; and

- Involvement with the Perth Public Spaces Public Life Survey conducted from 2008-2009 by Jan Gehl and his team (see Chapter 6).

In addition, a number of smaller incidences of active participatory observation occurred including a number of smaller PSPL surveys.

Participatory observation entails immersing oneself in a group and observing actions, listening to what is said and asking questions (Bryman, 2008). Typically, this type of research will be furthered through interviews, the collection of relevant documents and through field notes (including digital documentation) (Bryman, 2008). The observation in this research ranged from purely observational to active participation at various stages of the research (Sarantakos, 1998) and enabled in-depth understanding of how Gehl's theories have been adapted into practice. According to Sarantakos, this type of analysis enables an:

> open and flexible approach, using an unstructured and unstandardised design and a close
> relationship between the observer and the observed, a perception of reality as constructed
> in interaction and interpreted by participants, free of structural constraints…and a high

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[5] "Story connects you to place, it gives you knowledge, it grounds you" (Nannup, personal communication, August 13, 2010).

degree of closeness to the everyday life of the participants and the nature of the situation. (1998, p.322)

Analysis from this type of research is directed towards establishing concepts (Sarantakos, 1998).

The dissertation also reviews Jan Gehl's body of work and theory as presented through his reports, books, other publications, speeches, lectures, workshops and through interviews with, and observations of, Jan Gehl. The research draws together data on some of the cities that Gehl has examined, focusing on the Public Space Public Life Surveys (PSPL) conducted in Melbourne, Copenhagen, Perth and New York (Chapter 6). PSPL surveys provide qualitative and quantitative information about a city by measuring the levels of activity within the city and the attractiveness of the city's public spaces. From these results, Jan Gehl and his colleagues have provided solutions for the city to improve their public space and people's use of the city. The surveys involve quantitative pedestrian counts, activity counts (use of spaces) and qualitative analysis of the city infrastructure and pedestrian environment. Together, these analyses provide experiential knowledge from which it is possible to establish new solutions.

Therefore, underpinning the story developed by this dissertation is analysis of observational methodologies that study walkability, and human-urban environment interactions. These methods are presented in Appendix C as a three-part toolbox. This review focuses on methodologies, approaches and solutions that compare with, and influence, Gehl's methodologies, such as those from the US from the 1960's onwards, influenced by the social movements of the time and as a reaction against Modernism, all of which have a similar people-first focus.

1.9 Research framework

This is a dissertation located within the interpretive research paradigm using descriptive methods. Peter Bosselmann argues, with respect to built environment research students, that:

…sometimes too many variables are lumped together in an attempt to represent the complex relationships that exist in physical space. But that is part of the reality

> when students engage in this type of research. They like to study phenomena in a context similar in complexity to the one they observe in reality. Stripping away variables would increase the robustness of their findings, but their studies would lose relevance for them. (2008, p.144)

Qualitative methodologies result in a huge amount of information and data, rich in detail, which can nevertheless be difficult to analyse. According to Bryman, qualitative analysis has yet to develop a "widely accepted set of rules" (2008, p.538), and this is part of its appeal for this type of narrative research.

This research uses a theoretical framework to structure information from various sources, reflecting the multi-disciplinary nature of built environment and sustainability studies. Primarily, the research approach is located within an interpretive research paradigm, which maintains that research "is not objective" it is "internally experienced" and is "socially constructed" and interpreted (Sarantakos, 1998, p.36).[6] Primarily it draws on an interpretive and inductive qualitative analytic approach developed within the field of health called Interpretive Description and sustainable effective leadership theory (both are discussed below).

In addition, because of the nature of urban design, the research acknowledges tones of positivism and physical determinism—"the view that the physical environment determines human behaviour" (Rapoport, 1977, p.2)—which is embedded in much urban design literature. These ideas are expanded on in Chapter 3.

Interpretive Description

Interpretive Description (ID) is a non-categorical qualitative research methodology aligned with a constructivist and naturalistic orientation to inquiry developed primarily for practice based research within applied health by Sally Thorne, Sheryl

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[6] This is an important point to be made about all urban design theory, practice and evaluation but it is particularly apt when applied to this dissertation where a person's contribution to urban design is being evaluated. The research approach chosen is not trying to be 'unobjective' but it is not possible to gain the necessary information and knowledge about a person, in this case Jan Gehl, without working with them, interviewing and observing them and getting to know them personally. This is pursued further under Interpretive Description.

Reimer Kirkham and Janet MacDonald-Emes in 1997. Table 1.2 provides a description of ID. ID aims to provide "grounding for the conceptual linkages" (Thorne, Reimer Kirkham, & O'Flynn-Magee, 2004, p.3) and is applicable to practice-oriented research.

Interpretive Description (ID) theory	
What	Interpretive Description (ID) is a non-categorical qualitative research methodology aligned with a constructivist and naturalistic orientation to inquiry developed primarily for practice based research involved with applied health practitioners. ID was developed by Thorne, Reimer Kirkham and MacDonald-Emes in 1997 as a way "to develop methods more responsive to the experience-based questions of interest to a practice-based discipline" (Thorne, Reimer Kirkham, & O'Flynn-Magee, 2004, p.1), to provide "grounding for the conceptual linkages (Thorne et al., 2004, p.3).
Application	ID is applicable to practice-oriented research into other applied disciplines, as it acknowledges the complex issues involved in applied research and "extends qualitative description into 'the realm of interpretation and explanation in the context of qualitative credibility criteria'" (Hunt, 2009, p.1285). ID intends to "create a qualitative description that can be characteri[s]ed as interpretive" however, "although [it] has an interpretive orientation, it is not intended to yield new theory or high-order abstractions" (Hunt, 2009, p.1290). ID encourages researchers to "engage in both the ethereal abstractions of theorizing and the earthbound concrete realities of the practice context in order to produce sound and useable knowledge" (Thorne et al., 1997, p.175). Research within ID must be based in the pre-existing knowledge. ID suggests that "what is known, whether by virtue of formal research or" from practice "should be considered foundational forestructure to a new inquiry" (Thorne et al., 1997, p.173). This is in contrast with 'traditional' descriptive research, which would require a formal conceptual framework (Thorne et al., 1997).
Foundation	Referring to nursing, Thorne, Reimer Kirkham and MacDonald-Emes contend that "...today's nursing science seeks as its 'truths' a set of ideas that have application potential, but remain amenable to reconsideration in the light of varying contexts, new concepts, new ways of understanding, and new meanings" (1997. p.172). ID is based in the assumption that with empirical research absolute and objective knowledge is not possible, rather realities are experientially based co-constructed and reciprocal (Hunt, 2009; Thorne et al., 1997). The theoretical (or philosophical) "underpinnings" for ID are based firmly within naturalistic inquiry. These are based on the work of Lincoln and Guba (1985) are: • There are multiple constructed realities that can be studied only holistically. Thus, reality is complex, contextual, constructed, and ultimately subjective. • The inquirer and the "object" of inquiry interact to influence one another; indeed, the knower and known are inseparable. • No a priori theory could possibly encompass the multiple realities that are likely to be encountered; rather, theory must emerge or be grounded in the data. (Thorne et al., 2004, p.5)

Interpretive Description (ID) theory	
Methods	The methods used within ID borrow heavily from grounded theory, naturalistic inquiry and ethnography. In using ID, Thorne et al. emphasise that "regardless of the explicit sequence of steps that might be employed, it is important to recognize that the researcher, not the recipe, is driving the interpretation" (2004, p.11). ID focuses on small-scale qualitative investigations, using "relatively small samples" (Thorne et al., 2004, p.5). With ID the primary forms of data collection are interviews with participants (primarily in depth, semi-structured with open-ended questions), focus groups, participant observation and collateral (or secondary) documentation, including memos, media, narratives, guidelines etc. (Hunt, 2009; Thorne et al., 2004). The judicial use of a range of data sources, not normally considered in 'academic' research is encouraged by ID. Thorne et al. determine that "a range of data sources can add considerable strength to the usual data sources [within qualitative research] of interviews and observations for the purpose of generating practice knowledge…" (1997, p.174). This allows for the use of practice-based literature. Rather than being confined to statistical analysis, data collection, within the methodological framework of ID, is adequate when the researcher ascertains that further data would not necessarily or significantly contribute to a deeper understanding of the phenomenon. As part of this flexibility, an ID methodological framework discourages the over analysis or 'coding' of data, rather ID encourages data and research to be looked at from a broader, epistemological perspective. Poetically, Thorne et al., assert: "staying overlong in the microscopic view of the trees has a tendency to blur one's perspective on the forest, and so it becomes important to move in and out of the detail" (2004, p.14). Analysis needs to "trigger your innate curiosity, and to follow the many lines of fascinating inquiry that your inductive processes illuminate" (Thorne, 2008, p.155). Therefore, data analysis within ID is experiential: through immersion and intimate knowledge of the data and through constant reflection on the data and the redeveloping of responses to reflect new insights, or "heuristic 'ahah!'"(Thorne et al., 2004, p.13).
Findings	Findings from ID represent a co-constructed "tentative truth claim" about the phenomenon that is intended to articulate an accessible narrative of knowledge, capture themes and patterns and generate an interpretive description but most importantly be applicable and practical, creating a "sense-making structure for the eccentricities and variations that inevitably occur in the real world" (Hunt, 2009, p.1286; Thorne et al., 2004, p.7). The findings from projects using an ID framework allow for inductive reasoning and are expected to be emergent (Thorne et al., 1997). Findings are not intended to be entirely original or new truths rather to provide "a coherent conceptual description that taps thematic patterns and commonalities" and provide heuristic solutions (Thorne et al., 2004, p.7).
Limitations	The primary limitation of ID is that it is a very new theoretical framework, although many of the methods encouraged by it are not and have been used in many other theories, particularly development theory, community development theory and much anthropology theory. ID has been applied to only limited research, with essentially only a few sources of reference in which to provide guidance to research (three primary texts, not including Hunt's analysis of ID: Thorne, 2008; Thorne et al., 1997; Thorne et al., 2004). However there is much literature on the methods used by ID. In order to overcome the possible limits of analysis within ID framework, Hunt suggests that "ID researchers should pursue interpretation to the degree that will yield useful insight to guide…practice" (2009, p.1290).

Table 1.2: An explanation of Interpretive Description (ID) theory, based primarily on the work of Sally Thorne, Sheryl Reimer Kirkham and Janet MacDonald-Emes (1997). Source: Author.

ID developed out of the health sciences, particularly nursing. This is of interest as urban designers are in many ways similar as they try to improve the health of the city. It is not possible to do this without a mixture of theory and practice

underpinned by a substantial emphasis on the day-to-day application. Importantly, ID acknowledges the complex issues involved in applied research, such as the complex didactic and dialectic relationships between theory and practice and, particularly in urban design's case, between research and design, and provides a framework to enable theoretical and practice-based knowledge, particularly that determined through qualitative description to be more interpretive and to produce usable knowledge.

In addition, important for this research based primarily on a case study of an urban design practitioner, ID is based in the assumption that through ID research, it is not possible to achieve absolute and objective knowledge. Rather, realities are experientially based co-constructed and reciprocal, determining that research must be based in pre-existing knowledge. A large goal of ID is to enable researchers to question disciplinary biases and for a recognition in both the design of the research and in the interpretation of findings of the prior knowledge, experiences and assumptions of the researcher (Hunt, 2009). This is important within this research, particularly as the beginning point was not a clean slate. Rather, the desire to conduct research on the topic was developed from and informed by prior research and work experience in planning and urban design, particularly research conducted as part of an honours dissertation (Matan, 2007) and through working between the different confines of government and education institutions, where in one place you are taught that leadership and change (for the better) is possible and in the other that change is limited and constrained by strict parameters. It also builds on the experience of working with Gehl and Associates that enabled broad experience of their design theory and practice.

ID, although not prescriptive, enables the establishment of a framework for research from which various exploration and analytical methods can be used. This dissertation adapts these methods to fit sustainability and built environment research, using an information collection process that is iterative. This means that the collection and analysis of the data are rhythmic, intertwined and repetitive, and the interpretation is inductive. The basic framework for this research can thus be illustrated as:

- Establish existing knowledge (literature review and recognition of researchers prior knowledge and experiences);
- Establish broad questions;
- Establish an early framework for data collection, based on that knowledge;
- Collect, comprehend and analyse data iteratively—simultaneously, constantly reflecting, analysing data, relationships and research questions with new insights, queries and responses built into further data collection; and
- Recontextualise the data and information into findings.

The epistemological foundation of ID research allows for the use of various established qualitative techniques for data collection and analysis (Thorne, 2008), described previously in section 1.8 Reseach design and methods. Rather than being confined to statistical analysis, data collection, within the methodological framework of ID, is adequate when the researcher ascertains that further data or information would not necessarily or significantly contribute to a deeper understanding of the phenomenon. This is particularly important in areas of research, such as this one, that have a proliferation of research literature from varying disciplines and are part of a continuously evolving discourse and, most importantly, are researching active practice based events (such as the work of Jan Gehl) which is constantly being undertaken currently, and adjusting and changing to reflect current needs.

The findings within an ID framework are not intended to be entirely original or new truths. Rather, they aim to provide "a coherent conceptual description that taps thematic patterns and commonalities" and to provide heuristic solutions (Thorne et al., 2004, p.7). This idea holds true for the development of research within sustainable urban design—theories or findings produced from research must be flexible and adaptable to varying contexts (different cities, countries, applications, and so forth), must be able to incorporate and adapt to new findings and research, adapt to new ways of understanding issues, and be able to reflect varying understandings of place. Above all, research and findings from that research have to be firmly based in practice and be able to be implemented.

The findings from this research following the ID theoretical framework are intended to demonstrate a co-constructed 'tentative truth claim' about urban design phenomenon and trends that is intended to articulate an accessible narrative of knowledge, to encapsulate some of the current urban themes and patterns and generate an interpretive description of those themes and phenomena. Most importantly, however, the findings of this research are intended to be emergent, responsive to current urban themes, applicable and practical, thus creating an accessible narrative of the variations and eccentricities that certainly occur within urban design practice and literature (Hunt, 2009; Thorne et al., 2004).

For this research, the primary limitation of the ID theoretical framework is that it must be adjusted from a health profession focus to a built environment focus. This is only of limited concern, however, as mentioned above there are overlaps in intention and the requirements of practice. In addition, sustainability research is such a new area and demands a new kind of methodology that can account for greater degrees of complexity and context rather than a reductionist theory and practice. It supports the understanding that the changes necessary to create sustainable transport in cities will require new ways of researching cities.

Sustainable leadership theory

In addition to the ID framework described above and in Table 1.2, this analysis is based within effective leadership theory (as used within sustainability), based on Taylor, Cocklin and Brown's definition of leadership as *a process of influence* (2008, drawing on work from Rost, 1993, and Kotter, 1998). Leadership within this framework is linked to creativity and process and is based within complexity theory (including chaos theory), innovation theory (based on the waves of innovation developed by Freeman and Louçã, 2001) and leadership theory. This type of leadership requires 'second road' thinking (using Aristotle's first and second road thinking), using rhetoric, creative responses, and dialogue to solve complex 'wicked' problems. Sustainable leadership theory is integral to the development of an urban design evaluation framework and a more effective, sustainable,

humanistic and adaptive field. Effective leadership theory is described in Table 4A.1 in Chapter 4, Part A.

1.10 The research assumptions and explanations

A number of assumptions underpin this work:

- That an urban environment or landscape is more than its built components and how it is built and formed does—not necessarily determines—but *does* affect how people can relate to their environments, and therefore, ultimately how environments are used. Most people worldwide now live in urban environments; hence, the urban design of these places has a profound impact on their lives.

- That we *can* design our cities better and that we *can* create vibrant and sustainable places. There are examples of places that come close. This dissertation is both hopeful and urgent. There is a sense of urgency, despair, naivety and primarily hopefulness throughout the dissertation. Hopefulness is largely a choice and hence influences the kind of material chosen to write about. I have tried to remain open to other interpretations, reporting findings as deemed important, but sometimes these less hopeful elements creep in. I try to be non-judgemental but remain committed to these values about cities potentially being able to shape our lives for the better.

The concept of theory is used here and in the next Chapters to mean an explanatory supposition that includes some element of "prescription so as to guide action" using Allmendinger's definition (2002, p.1). Allmendinger contends that theory contains "a number of elements; *it abstracts from reality a set of general or specific principles to be used as a basis for explaining and acting with the theory being tested and refined if necessary*" (2002, p.1, original emphasis). Further, it is important to recognise that within the built environment field theories are not objective. Rather, as Allmendinger argues, they "can be regarded as part of a discourse formation" (2002, p.2). It is also important for our purposes to explain that the theories discussed within this context are not trying to discover or describe a law or truth. Rather, they provide a set of general principles to be implemented,

tested and refined, and primarily, based on the nature of the discipline, are prescriptive.

The humanistic perspective for urban design is defined here as urban design centred on the human experience. It is a phenomenological view of the city focused on the experience of the user and is responsive to user needs. Fundamentally, humanistic urban design focuses on the creation and enhancement of meaningful places concentrated on human connections both to places and to each other. This focus is on tangible and intangible elements, on liveability, well-being (human and nature) and connection, recognising that people are motivated by more than just economic and survival needs; that they require psychological fulfilment, connections with people and with nature, are part of the environment and are responsible for city building (see, for example: Alexander, Neis, Anninou & King, 1987; Appleyard et al., 1982; Beatley, 2004; Gehl, 1987; A. Jacobs & Appleyard, 1987; J. Jacobs, 1961; Lynch, 1981; Newman, & Jennings, 2008; Sternberg, 2000; Whyte, 1980).

From this humanistic urban design perspective, how people experience and use the city, here termed *walkability,* becomes the focus. Walking is a mode of transport, a way of moving through and around places, however, importantly it is how people experience place. It is a fundamental human trait needed for psychological and physical health. This humanistic walkability focus alters the traditional idea of the 'pedestrian' within city planning, transport planning and city design to include all people within the public space and makes the structuring focus on people and their needs, rather than cars or mobility. This definition of walkability is expanded in Chapter 4.

Issues addressed and not addressed by this dissertation

Because of the broad scope of work within the built environment fields and its multi-disciplinary nature, this dissertation focuses on 'urban design classics' (see Chapters 2, 3 and 4 for more detail) and on discussions with urban designers and academics, taking a humanistic approach, rather than an abstract design approach.

Therefore, because of the focus of this dissertation (and issues of space), it does not provide a comprehensive urban *design* review.

A literature review within urban design must have strict limits. Otherwise, one could argue that all literature pertaining to the urban environment and people's use, enjoyment and perception of it would need to be included. While trying to be expansive and cover all aspects of urban form and human environment behaviours, pedestrian requirements and urban design history and theory, limits must be set. Thus, the dissertation will not include material from urban literary traditions nor some of the historical urban design and architecture texts and will provide only a brief overview of planning theories such as Modernism, New Urbanism and Place Making (the latter two are discussed in Appendix B). In addition, the review focuses on literature pertaining to western cities and texts primarily written in (or translated into) the English language.[7]

In addition, while this dissertation is clearly based within the political and economic systems of western cities, it does not attempt to address economic or political issues, nor issues of globalisation. Rather, the dissertation acknowledges the reality of these systems in urban design practice and attempts to bring these issues out into the realm of recognition.

1.11 Structure of the dissertation

The dissertation is divided into seven main Chapters derived from the six research questions (from 1.7 Research questions and objectives):

1. What is urban design?
2. What is urban design concerned with in practice?
3. What is Gehl's contribution to urban design theory?
4. What is Gehl's contribution to urban design practice?
5. How can Gehl's work, and ultimately all urban design work, be evaluated?

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[7] Some Danish texts have been translated; primarily texts by the City of Copenhagen pertaining to bicycle use (Chapter 6). This is done using online translation sites and through seeking advice and guidance from Danish speakers.

6. What is the connection between Gehl's outcomes both in theory and practice and a more responsive urban design?

The seven main Chapters are:

CHAPTER 2: URBAN DESIGN THEORY: BRIEF HISTORY OF URBAN DESIGN AS A RESPONSE TO MODERNISM. This Chapter provides a brief overview of the history of urban design predominantly as it evolved as a response to Modernist urban planning theories and practices and from the social movements of the 1960s onwards. The Chapter introduces Modernism, the Harvard University Urban Design Conferences, and then discusses the adoption of environment and behaviour studies and research methods into urban design research and practice. It introduces some of the major academics and practitioners that were part of this school of built environment studies.

CHAPTER 3: URBAN DESIGN THEORY: WHAT IS URBAN DESIGN? This Chapter discusses existing urban design theory, concentrating primarily on the 'classic' built environment texts and theories. It provides definitions of urban design and a discussion of some of the current arguments and conversations prevalent in urban design today. It also establishes the primary principles and concerns of urban design.

CHAPTER 4: URBAN DESIGN PRACTICE: WHAT DOES URBAN DESIGN DO? Chapter 4 discusses what urban design actually does, both in academic practice and professional practice and discusses the primary concerns of urban design when looked at from the requirements of people in public spaces (particularly pedestrians). This Chapter is broken into three parts: 1. urban design practice, 2. walkability and 3. urban design concerns.

CHAPTER 5: JAN GEHL'S URBAN DESIGN THEORY. Chapter 5 introduces Jan Gehl and his theories. It provides brief biographical information, followed by a discussion of Jan Gehl's primary works, influences and theories regarding urban design, public space and use.

CHAPTER 6: JAN GEHL'S URBAN DESIGN PRACTICE. Chapter 6 provides a discussion of the practical side of Jan Gehl's work, focusing on his PSPL surveys and an overview of four PSPL surveys: Copenhagen, Melbourne, New York and Perth.

CHAPTER 7: URBAN DESIGN EVALUATION CRITERIA AND APPLICATION TO JAN GEHL'S THEORY AND PRACTICE. Chapter 7 describes a set of evaluation criteria for urban design theory and practice based on the reviewed literature and then applies these criteria to Gehl's work.

CHAPTER 8: CONCLUSIONS AND SUGGESTED FUTURE RESEARCH. Chapter 8 provides conclusions, discusses the limitations of the research and suggests some future research directions.

In addition to the main Chapters, the dissertation is supported by a number of appendices:

Appendix A: Classic urban design texts. Appendix A contains a table of classic urban design texts, many of which are referenced in the literature review.

Appendix B: Current urban design theory and practice: New Urbanism, Place Making and Shared Space. Appendix B provides an overview and discussion of three current urban design theories, namely New Urbanism, Place Making and Shared Space. This discussion underpins the ideas in Chapter 3 and 4.

Appendix C: Toolbox. Appendix C is a 'toolbox' of methods to study human and built environment interactions, divided into three parts:

Appendix C.1. Toolbox 1: Walkability questions. This toolbox provides a number of questions that need to be addressed when looking at a place from a walkability perspective. The questions are designed to help planners and designers think of a place from a human first perspective.

Appendix C.2. Toolbox 2: Methods to study human and built environment interactions. This toolbox provides an overview and assessment of methods to study human and built environment interactions. The methods have been classified into three primary categories: observational, interview and infrastructure based methods. The methods discussed include:

- Observational methods (including behavioural mapping and pedestrian flow counts);
- Tracking (including through the use of geographical information systems);
- Interview methods;
- Self-reporting methods (including travel/behavioural diaries);
- Pedestrian modelling methods;
- Space Syntax;
- Environment and walkability audits; and
- Urban design context analysis.

Appendix C.3. Toolbox 3: Jan Gehl's methods. This toolbox provides an overview of the methods used by Jan Gehl as part of his PSPL surveys and supports the discussion of PSPL surveys in Chapter 6 and the assessment in Chapter 7.

Appendix D: Jan Gehl's awards. Appendix D provides a table of awards received by Jan Gehl.

Appendix E: Media clippings. Appendix E provides a selection of publicly accessible media clippings from various newspapers and magazines worldwide to provide an overview of some of the media coverage that Gehl projects receive. It illustrates some of the discussion in Chapters 6 and 7, which seeks to analyse the effectiveness of Jan Gehl's approach.

Appendix F: Interviews. Appendix F provides the interview responses, classified into:

- Public Spaces Public Life surveys;

- Attributes of the methodology;

- Concerns with the methodology;

- Additional surveys;

- What surprised you most;

- Leadership; and

- Other comments.

The responses to the above categories are presented as quotes, with some of the categories also presented as a summary in a word cloud. Appendix F underpins the discussions of Chapters 5, 6, and 7.

Appendix G: Government of Western Australia, & Legislative Council. (2009). Question Without Notice No. 902. Appendix G provides the transcript of the Honourable Robyn McSweeney, the Western Australian Liberal Party's Minister for Child Protection, Community Services, Seniors and Volunteering, Women's Interests and Youth responding to a question by Honourable Lynn MacLaren, the Green Party's Member of the Legislative Council, regarding the status of implementation of the recommendations of the Perth PSPL survey 2009. Appendix G supports Chapter 6.

SECTION 1. URBAN DESIGN: REVIEW

AND OVERVIEW

We are bored in the city, we really have to strain to still discover mysteries on the sidewalk billboards, the latest state of humor and poetry…

…Abstraction has invaded all the arts, contemporary architecture in particular. Pure plasticity, inanimate, storyless…

We will not work to prolong the mechanical civilizations and frigid architecture that ultimately lead to boring leisure. We propose to invent new, changeable decors…
(Chtcheglov 1953)

CHAPTER 2: URBAN DESIGN THEORY: BRIEF HISTORY OF URBAN DESIGN AS A RESPONSE TO MODERNISM

Chapter 2: Urban design theory: Brief history of urban design as a response to Modernism

2.1 Introduction

In order to create and evaluate a more effective, sustainable, humanistic and responsive urban design theory and practice capable of responding to evolving urban conditions and the needs of residents, and to evaluate Jan Gehl's contribution, it is first necessary to understand what urban design is. This Chapter provides a brief overview of the history of urban design predominantly as it evolved as a response to Modernist urban planning theories and practices and from the social movements of the 1960s onwards. The Chapter initially introduces urban design, followed by Modernism. A brief discussion of the history of urban design from this period (particularly Harvard University's Urban Design Conferences) then follows. The Chapter then discusses the adoption of environment and behaviour studies and research methods into urban design research and practice and concludes with an introduction to the major academics and practitioners who participated in the early initiatives to incorporate human concerns into urban theory and practice.

2.2 Introduction to urban design

Urban design is a multi-disciplinary field focused on the built environment, particularly public spaces (formal and informal), aesthetics and use of space within urban areas. It draws on a wide variety of frameworks, methodologies and theories from varying disciplines, including, but not limited to, architecture, landscape architecture, geography (particularly urban geography), urban (town) planning, sociology, psychology, history and anthropology. This expansive scope partly reflects the broad nature of studying cities and people. Neither fits neatly into one field, one discipline, a 'one-size-fits-all' or formalistic model. I expand on this definition in the next Chapter.

This research takes a humanistic, organic view of urban design, primarily examining established 'classic' urban design texts that focus on human-environment studies,

as opposed to those that focus primarily on infrastructure, form or design. Many studies have been extremely influential in formulating and adding to urban design as a humanistic and organic practice. Of particular importance are the following:

- Kevin Lynch's *The Image of the City* (1960) and *A Theory of Good City Form* (1981),
- Jane Jacobs' *The Death and Life of Great American Cities* (1961),
- Jan Gehl's *Life Between Buildings* (1971 in Danish, 1987 English),
- William 'Holly' Whyte's work on New York Plazas (see Whyte, 1980; 1988),
- Christopher Alexander's *A New Theory of Urban Design* (Alexander, Neis, Anninou, & King, 1987) and
- Donald Appleyard's *Liveable Streets* (1981).

Many others have also contributed to urban design research and practice. Appendix A sets out a list of classic urban design texts (including those with a non-humanistic focus), and Table 2.1 below includes some humanist urban design texts and events, organised by year until the 1990s.

2.3 Modernism

Because of the expansive and extensive literature on Modernist planning and architectural ideologies, methods and consequences and the background nature of this discussion, this dissertation provides only a brief overview of Modernism, primarily to set the stage. Modernism as an idea and theory for practice has guided all professions in the past century. It arose as a response to the social and economic confusion and disillusionment created by industrial cities, the depression of the 1890s and the collapse of many certainties in the horrors of the First World War. In addition, with increasing technological advances, came the fixation on finding the 'one best way' in professional practice. Simplified functionality came to guide practice and problem solving. Modernism as a theory had immense influence and coincided with capitalism becoming the most dominant economic system. It galvanised economies, but it did not always solve complex problems and it often left behind wisdom that was not seen to be 'modern'.

Brief Urban Design Humanistic Timeline				
Pre 1960s	1960s	1970s	1980s	1990s
1944 Sert *The Human Scale in City Planning*	Reaction to Modernism Social upheaval, rights, environmental movements	Oil Embargo Increasing concern about the environment	1980 Whyte *Social Life of Small Urban Spaces*	The Congress for the New Urbanism (1993) Place Making
1956 First Harvard Urban Design Conference	1960 Environment-behaviour studies Lynch *Image of the City*	1970 Whyte: Street Life Project	1981 Lynch *A Theory of Good City Form*	1993 Jacobs *Great Streets*
1956 Team 10 established	1961 Jacobs *The Death and Life of Great American Cities*	1971 Gehl (1987 English) *Life Between Buildings*	1981 Appleyard *Livable Streets*	1998 Bosselmann *Representation of Places*
1957 University of Pennsylvania, civic design program	1961 Cullen *Townscape*	1972 Joint Centre for Urban Design at Oxford Brookes University	1982 Barnett *Introduction to Urban Design*	1993, 1998 (2nd ed.) Cooper Marcus and Francis *People Places*
1959 Congrès Internationaux d'Architecture Moderne (International Congress of Modern Architecture, CIAM) dissolves	University of California, Berkeley's Simulation of how people could view new projects (Bosselmann)	1975 Project for Public Spaces (PPS) 1975 Cooper Marcus[A] *Easter Hill Village*	1987 Alexander et al. *A New Theory of Urban Design* 1988 Whyte *City*	
	1960 Harvard University Graduate School of Design and urban design program	1977 Rapoport *Human Aspects of Urban Form*	1986 Cooper Marcus and Sarkissian *Housing as if People Mattered*	
	1964 Appleyard, Lynch and Myer *A View from the Road*	1977 Alexander et al. *A Pattern Language* 1978 Urban Design Group		

[A] Clare Cooper Marcus at the time of this work in 1975 was Clare C. Cooper, however for consistency she is referred to as Cooper Marcus throughout.

Table 2.1: Brief timeline of urban design from a humanistic perspective. Source: Author.

The Modernist planning movement was popular in the first half of the twentieth century from about the 1920s, gaining status as a norm around the 1950s and 60s. It is responsible for much of the layout of current Australian and other western

cities. Modernism in planning emerged from a reaction to the urban conditions resulting from the industrial revolution during the eighteenth and nineteenth Centuries, starting with the Public Health Acts in the UK[1] in the 1800s and the City Beautiful Movement in the late 1800s. These conditions included health concerns, crowding, pollution and the mixing of undesirable land uses. The Public Health Acts required local authorities to regulate sanitation and drainage and empowered them to address construction standards of buildings and roads (Broadbent, 1990).

The City Beautiful Movement advocated for monumental, ceremonious and uniform architecture and planning (Broadbent, 1990; Gallion & Eisner, 1986). From the City Beautiful Movement, city engineering was established to provide the infrastructure production necessary for large-scale developments (Gallion & Eisner, 1986). Modernism intended to give all residences access to "sunlight, fresh air and greenery in a way which was quite impossible in the narrow streets of the medieval city, or even the wider streets of the 19th century city" (Broadbent, 1990, p.133), and to combat the "dulling of man's creative spirit" and the "shabbiness, poverty, and grime" of "the nineteenth-century industrial city" (Gallion & Eisner, 1986, pp.69-70).

Modernism was a reaction to social issues and was established around the idea that it was "the responsibility of design to foster human comfort and well-being" (Krieger, 2009a, p.xiii). To achieve this, Modernism reversed the traditional "relationship between movement and urban place" (S. Marshall, 2005, p.4) by separating land uses into functions through zoning. Zoning was defined by Bassett[2] as "the regulation by districts under the police power [government authority] of the height, bulk and use of buildings, the use of land, and the density of population" (as cited in Gallion & Eisner, 1986, p.80). The separation of uses is particularly evident in the separation of motor traffic and pedestrians. According to Marshall, Modernism instituted a "new system of vehicular highways separate from buildings and public spaces" (S. Marshall, 2005, p.3). This new system can be seen clearly through the ideas of the 'pioneer' of modern town planning, Le

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[1] Europe and the US enacted similar laws also different names.
[2] Edward Bassett was a New York City attorney credited with writing the first comprehensive zoning ordinance in the US, adopted by the City of New York in 1916.

Corbusier[3] and his designs for a 'radiant city' (Boesiger & Girsberger, 1967). Le Corbusier redefined the street as a machine for circulation (von Moos, 1968). Marshall explains:

> Modernism set up a new urban model that liberated…roads and buildings from each other. Rather than being locked together in street grids, the Modernist model allowed roads to follow their own fluid linear geometry, while buildings could be expressed as sculpted three-dimensional forms set in flowing space. Each form could follow its own dedicated function, resulting in a divergence of forms and quite separate geometries for buildings and roads. (S. Marshall, 2005, pp. 6-7)

The separation of functions led to a separation not only of land uses, but also of professions, as roads became the domain of highway and traffic engineers and cities became the domain of architects and urban planners.

The Congrès Internationaux d'Architecture Moderne (International Congress of Modern Architecture, referred to as CIAM) established 1928 to 1959, was an international organization of architects, led by Le Corbusier and Sigfried Giedion, which was instrumental to the Modernist movement. CIAM's notion of urbanism was based on:

> the idea that cities had to be reorganised to better serve the needs of the working classes for better housing conditions, more efficient commercial infrastructure, and better opportunities for mass recreation near the city…along with the Corbusian advocacy of widely spaced buildings set in greenery instead of dense traditional urban building fabric (Mumford, 2009b, p.18).

CIAM asserted that cities were composed of "four basic elements of urban biology": sun, space, vegetation, and steel and concrete (Gallion & Eisner, 1986, p.136). This notion of the city was developed out of the industrial cities, where access to sunlight and space was at a premium and led to the widespread professional acceptance of land use zoning ('zoning' land for specific uses).

By the 1950s, a split within Modernism followers, particularly within CIAM, was beginning. José Luis Sert, President of CIAM from 1947–56 and Dean of Harvard University Graduate School of Design (GSD) from 1953–1969 (where he initiated the first urban design degree there), had been advocating for human scale,

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[3] Swiss architect Charles-Édouard Jeanneret adopted the pseudonym Le Corbusier in 1920. He is most commonly referred to as Le Corbusier.

pedestrian city centres, the "recentralize[ation] of large urban areas around pedestrian centers to bring people together" (Mumford, 2009b, p.22) since 1944.[4] Despite these commitments, Sert asserted the need for new patterns of housing, often in the Le Corbusier widely spaced style, but with pedestrian centres and civic, symbolic centres.

The formation of Team 10,[5] a group of primarily younger architects (although Sert was a member) within CIAM seeking to reform and revitalize the organization, made this split evident. Team 10 rebelled against the functionalism of CIAM's urbanism (Mumford, 2009b). At the tenth CIAM Team Congress, which Team 10 organised, in Dubrovnik in 1956, the divisions within CIAM became inoperable. This division led Team 10 to establish their own manifesto and meetings (although they did not hold to one unanimous theory or school). Team 10 eventually led into the Pop Art movement and the countercultures of the 1960s.

Sert's establishment of the GSD Urban Design conference in 1956 and the conference participants' agreement that there was an "intellectual split between the 'art of building' and the 'systematic nature of planning'" (Krieger, 2009b, p.113) further highlighted the split within CIAM. The internal challenges to Modernism, revealed by the dissolution of CIAM and the establishment of Team 10 and the establishment of the Harvard School of Urban Design, were closely intertwined, expressing practitioner and academic disillusionment with Modernist planning and architecture. Team 10 and Sert shared the idea of an architect-planner, defined as "someone who could organize the 'mutual relation of parts' involved in urbanism instead of focusing on the design of the individual part" (Mumford, 2009b, p.16).

The social upheavals of the 1960s, particularly in the US but also in other parts of the world, namely Australia, paralleled criticism of Modernist planning and architecture theories and results, particularly the results of various urban renewal and housing projects (Sorkin, 2009, p.158). Modernist planning and architecture

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[4] Mumford explains this further asserting that "Although the aesthetic and functional significance of Sert's own work remains controversial, his effort to synthesize the historic and the new, the technological and the artistic, in a context of strengthening urban pedestrian activity during a time of rapid urban decentralization remains of considerable contemporary importance" (2009b, p.32).
[5] Also written as Team X or Team Ten.

was attacked for "being naïve about value systems and the complexities of multicultural societies" (Scott Brown, 2009, p.67), for not consulting with those planned for, for not understanding social questions or conditions, and yet naively thinking that their designs would provide better social conditions.[6] The urban design practiced by Modernists was criticised as being simplistic in their "models of people, human behaviour and the way people experience the environment" having a lack of understanding regarding human environment interactions and basing "large-scale urban development projects" on inadequate theory (Lang, 2005, p.xxi). Koolhaas dramatically asserts, "Modernity is a radical principle. It is destructive. It has destroyed the city as we know it. We now inhabit 'what used to be the city'" (2004, p.12).

Modernist cities, although centred on people's health and access to fresh air and sunlight, became primarily about form, not people. The cities that developed following Modernist principles were "ultimately compromised by [Modernism's] self-defeating sidelining of history and context" (Krieger, 2009a, p.xiv). Modernist cities were about the buildings and the roads, not about people and places.

Although much of the Modernist movement's ideas came from a concern for people's health, not only did the movement discard considerations of human scale in their designs, but they also had a lasting impact on ways of thinking about cities, particularly on how professions involved with cities organised, planned and described them. Modernist planning was based on the rational model (also often referred to as the rational comprehensive model), which is considered the traditionally dominant urban planning paradigm starting in the 1960s and is primarily based on the scientific model, on technical (or scientific), expert and power-neutral processes rather than context (Fainstein, 2000; Healey, 2003). Within rational planning models, decision-making follows a process, essentially identifying the problem, need or goals, determining all possible actions and the possible consequences of those actions. From this assessment, the best course of action is determined. From this model, public input or consultation is relegated to

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[6] Fumihiko Maki recollects his time teaching at GSD in 1967: "students rejected the program we had prepared…they took the position that extensive discussions on certain contemporary design issues were far more important than acquiring urban design skills" (2009, p.91).

"the goal-setting process, after which experts would reach a decision using the tools of modern statistical and economic analysis" (Fainstein, 2005, p.123). Le Corbusier believed that "the design of cities was too important to be left to the citizens" (Fishman, 1982, p.190; Kim, 2010, n.p.n.). Fishman claims, "the organic city, the city that emerged slowly as the result of many individual decisions, was a thing of the past" (1982, p.190).

The Situationist International was a group concerned with the elevation of art and culture to everyday experience. They came into prominence in 1960s in France (discussed further in Chapter 4). They contended that, "the whole of urban planning can be understood only as a society's field of publicity-propaganda, i.e. as the organization of participation in something in which it is impossible to participate" (Kotanyi & Vaneigem, 1961, p.66). They were reacting against modern capitalism, which they believed, organised "the reduction of all social life to a spectacle" and that the corresponding architecture "falsely satisf[ies] a falsified need" and "is incapable of presenting any spectacle other than that of our own alienation" (Kotanyi & Vaneigem, 1961, p.65). In addition, they believed that traffic planning and circulation was one of the primary problems of modern (1950-60s) life: "traffic circulation is the organisation of universal isolation…It is the opposite of encounter, it absorbs energies that could otherwise be devoted to encounters or to any sort of participation" (Kotanyi & Vaneigem, 1961, p.66). Vaneigem contends, "we are poisoned by the spectacle. All the elements necessary for a detoxification (that is, for the constructions of our everyday lives) are in the hands of specialists" (1963, p.126). That is, increasingly, in the hands of specialist professionals.

These new ideas and reaction to Modernism emerged clearly from the perspective of physical determinism; they still laid the foundation for new thoughts and practices in urban design, planning and architecture. Mumford explains:

> while the standpoint expressed [in the 1950s by Sert and others at the Harvard
> Urban Design School] is clearly still a somewhat aristocratic one, based on the idea
> that urban designers can in themselves analyse and design the built environment
> for the general good, at the same time Sert and Sasakis' effort to synthesize
> Modernist urbanism with a new concern for both the pedestrian urban
> environment and natural environment laid the foundation for a new way of

understanding the role of design in shaping metropolitan development. (2009b, p.28)

The focus of the American branch of CIAM under the influence of Sert was on pedestrian city centres, thus breaking from earlier CIAM urbanism. However, the influence of CIAM's city model based on the functions of dwelling, work, leisure and circulation remained (Mumford, 2009a). Urban design today was developed in response to these criticisms; however, it remains, in part, embedded within the ideas of these paradigms especially within rationalist planning structures (Lang, 2005; Mumford, 2009a).

Transport and automobile-based planning

Modernism reversed the traditional relationships between movement and urban space by separating land uses into functions and the planning of these land uses into different professions and disciplines. Transportation planning further divided urban form and land uses by separating the existing complex relationships between urban form, transportation, traffic and land uses into simple mathematical and benefit-cost relationships validated by standardized indicators. The 1950s, continuing into the 1960s, particularly in the US but also elsewhere, saw the construction of major highway systems and the expansion of urban areas, combined with development of the mass production of single-family homes. At the World's Fair held in New York in 1939-40, General Motors displayed their vision of a future city of 1960, designed by Norman Bel Geddes, which redesigned existing cities by separating pedestrians and motor-vehicles (Brown, Dixon, & Gillham, 2009). This future city design combined with the popularity of Frank Lloyd Wright's 'Broadacre City' (1939-1958), which advocated for a horizontal city connected by roads, determined the way for many post-war urban projects.

Transport planning, with its strong reliance on engineering and reductionist, technical solutions, developed measurable transportation standards, focused primarily on predicting motor vehicle transport levels and requirements related to the economic development of the city. These measurable standards and indicators became entrenched in urban planning: road-capacity standards such as level-of-

service (LOS) measures, which are indicators of traffic speeds and congestion at particular intersections or road sections; car parking and price standards (particularly ratios of parking provision related to floor space and land use); and trip generation and distribution models (also called four-step gravity models), which divide a city into origin and destination zones linked by the road network to model traffic generation between the zones. Traffic planners link these transportation indicators to an area's economic development and need (Meyer, 2000) based on benefit-cost ratios.

However, because transport planning indicators primarily focus on vehicle travel, policies and funding focused on increasing car-dependence are normalised (Litman & Brenman, 2011). These indicators overlook other forms of transport, particularly at the small scale, leading in many cases to a culture of spending and planning for automobile traffic rather than sustainable transport and to a loss of perspective on how to manage the complexity of city centres as the automobile began to take over existing space and mobility became the primary concern. The late 1960s in the US saw the significant questioning of highway development as the social and environmental results started to become apparent. The sustainability movement, also starting in the 1960s and coming into prominence in the 1980s onwards, initiated new thinking about how to address some of these issues. A sustainable transportation system was determined to be one based on accessibility, safety, human and ecosystem health, equity, efficiency (both in consumption and land use) and one that supports a vibrant economy (Burden & Litman, 2011; Litman, 2011a; Newman and Kenworthy, 1999). In addition, the planning of a sustainable transport system must be integrated with other urban disciplines, recognising the complexity of urban environments.

Despite the development of theories on sustainable transport planning and the recognition of a need for sustainable and integrated transport options within cities, the practice of town planning (established from this period) continued to be dominated by road and traffic planning.

Conclusions about Modernism

As discussed in Chapter 1, changing transport technology and changing architectural and city planning paradigms affected the shape, function and use of cities. The changes in form and shape of cities parallels changes in transport technologies. With the uptake of zoning, urban planning segregated land uses and functions. In addition, these changing paradigms disregarded consideration of human scale and walkability within city design. Most importantly to this discussion was a separation of professions, as roads became the domain of highway and traffic engineers and cities became the domain of architects and urban planners. This separation of professions has had a lasting impact on our ways of thinking about cities. Modernism has had, and still has, a lasting influence on the aesthetics, design and planning of built environments. In addition, it has deeply influenced how people relate to and use those environments. The next section discusses how urban design emerged from a response to these criticisms.

2.4 An introduction to urban design

Urban design was 'established' to rectify some of the 'weaknesses' of Modernism as played out in both architecture, transportation, particularly automobile dependence, and planning. However, initially in the "postwar, suburban formulation", Modernism and functionalism formed urban design (Shane, 2005, p.64). In 1944, Sert published *The Human Scale in City Planning*, which advocated neighbourhoods as the dominant planning tool to combat suburban sprawl and "began to advocate the cultural and political importance of urban pedestrian life at this time" (Mumford, 2009b, p.17). Despite the criticism of Modernism and the separation of land uses, particularly in the US and Australia, Modernism was established within planning as the dominant doctrine. In 1957, Burchard argued that "the greatest lesson some European cities today could teach American city planners and architects—and travelling citizens—is that every pleasure does not lie at the other end of a ride in an automobile. The misfortune is that the lesson seems to be going the other way" (p.122). From these social upheavals and the questioning of Modernism came the question of what ideology and form a new

urban design should take (Lang, 2005; Sorkin, 2009), along with the idea that social planning and physical design should be considered concurrently and that "human needs should be the basis for thinking about design" (Lang, 1994, p.121).[7]

Urban design is a relatively new field in terms of designated terminology and professional understanding; however, the ideas, thoughts and actions of urban designers have been with 'urbanists' for a very long time (Childs, 2010; Cuthbert, 2005, 2007b, 2003; Krieger, 2009b; Lynch, 1981; Mackay, 1990; Mumford, 2009a), as cities and urban areas have been 'designed' and planned throughout history. The term 'urban design' and the idea of urban design as a distinct profession are, however, relatively new.[8]

In the US, the term urban design came into usage in the 1950s replacing the term 'civic design' with its City Beautiful connotations (Lang, 1994). Sert first used the term 'urban design' publicly in a 1953 lecture at the Regional Conference of the American Institute of Architects (AIA) Middle Atlantic District[9] in Washington D.C. (Krieger, 2009b, p.115). In 1956, Harvard University under Sert held the First Urban Design Conference (discussed below). In 1957, the AIA established a 'Committee on Urban Design' and commissioned Architect Paul Spreiregen to write *Urban Design: The Architecture of Towns and Cities* (1965). This vision for urban design, as established by Spreiregen was "ambitious and comprehensive. It extended from the regional/national scale to the design of street furniture; from urban renewal to historic preservation; and from comprehensive development to aesthetic control" (Rowley, 1994, p.180). During and immediately following this period, a number of urban design schools were also established, notably Harvard University's Graduate School of Design and its urban design program in 1960, but also at the University of Pennsylvania, with their civic design program (1957), and the University of Chicago.

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[7] Lang emphasises this asserting, "urban design, as we know it today, has developed in response to the limitations of the philosophies and design paradigms, rationalist and empiricist, of the modern movement in architecture and city planning" (2005, p.xxi).

[8] Krieger reaffirms this idea: "while urban design is a phrase first popularized during the twentieth century, cities have, of course, been the subject of design theory and action for centuries. It is the notion of urban design as an activity distinct from architecture, planning, or even military and civil engineering that is relatively new—as is the label urban designer" (2009b, p.115).

[9] The American Institute of Architects (AIA) Middle Atlantic District includes the states of Delaware, District of Columbia (Washington D.C.), Maryland.

In the UK, although less popular, the term urban design gained footing in the 1970s with the establishment of the Joint Centre for Urban Design at Oxford Brookes University[10] in 1972 and the Urban Design Group in 1978.

Harvard University's urban design conferences

A pivotal moment in urban design history and in the creation of the professional field, was the Harvard University First Urban Design Conference, April 9 to 10, 1956. The conference invited attendees to explore "the role of the planner, architect, and landscape architect in the design and development of cities" (Urban Design Conferences, Harvard University Archive, 1956, as cited in Krieger and Saunders, 2009, p.45),[11] with the aim of finding a common ground among the professions. The conference was born out of the collective idea that Modernist planning had not had the desired results. It represented a professional and academic desire to return to thoughts about 'urbanism' rather than functionalism. In addition, a core idea underpinning the establishment of the conference was that "the design professions should claim intellectual and practical territory around the problems of urbanism" but that these professions were currently struggling "with how to define the terms of that claim" (R. Marshall, 2009, p.40). The aim of the conference was to investigate the potential of a "broad set of principles around which urban design might be founded" (R. Marshall, 2009, p.45).

The conference was attended by many renowned architectural and urban planning thinkers, including: Jose Luis Sert, Robert Geddes, David Lawrence (Mayor of Pittsburgh), Edmund Bacon (Philadelphia planner), Lewis Mumford, Jane Jacobs, and many of the leaders of Team 10.[12] Sert's desire to have a synthesis of the professions of architecture, planning and landscape architecture is evident through the diverse attendees present. The initial conference was held after CIAM was fractured by Team 10 and was initiated by Sert, who wanted to "reunite the Modern Movement under the umbrella of urbanism," to shift "the centre of

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[10] Oxford Brookes University was named Oxford Polytechnic at the time.
[11] The full reference for this is Urban Design Conferences, Proceedings of Spring 1956 Conference. Transcripts, Notes, etc. Harvard University Archive, 1956, UA V 433.7.4, as cited in Krieger and Saunders, 2009, p.45
[12] This is not a comprehensive list of attendees.

discourse from Europe to America" (Krieger, 2009a, p.xiii) and "to change the subject of design from the individual patron to the collective urban population" (Mumford, 2009b, p.31). Duany questions its legitimacy thus:

> What is this 1956 Urban Design conference about? It seems that a group of middle-aged gentlemen are gathered in an attempt to mitigate the consequences of their youthful indiscretions, since, some years earlier, meeting as CIAM, they had discarded urbanism.
>
> By 1956 the negative consequences of this disposal are becoming evident, and Sert has decided that Harvard must lead the correction… (Andres Duany, as cited in Krieger, 2009a, p.xviii, footnote 10.)[13]

Duany credits the Harvard conference (and others such as Colin Rowe, the members of Team 10 and Leon Krier) with teaching 'better urbanism', leading to Duany's New Urbanist ideas (see Appendix B).

The importance of the first Urban Design conference to the field of urban design is paramount. The approach to urban design defined by the initial conference set the tone for the teaching of urban design during the subsequent decades (Maki, 2009; Scott Brown, 2009).

In total, GSD held six urban design conferences between 1956 and 1970. By the third Urban Design conference in 1959, the focus had shifted towards architecture and the 'design' component of urban design, coinciding with Modernism becoming the primary urban planning method. Marshall contends that this shift "gave way to a narrower architectural conception of urban design's role in the world" and "urban design became an activity defined and practiced by architects" (R. Marshall, 2009, p.49). This architecture-focused concept of urban design is still often the dominant view of urban design; architects often see urban design as a way to spread beyond the 'design' component or individual building component of architecture, and as a way to view the city more holistically. This shift was apparent at Harvard's GSD and in other design schools.

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[13] Duany continues: "…the ascent of CIAM and its destruction is the great epic of architecture in the 20th century, but the concomitant damage sustained by the world's cities and the diminished well-being of generations of their residents was not worth the thrill. All of us would have been better off without these gentlemen and their meetings" (Andres Duany, Assuaging Youthful Indiscretions: Gentlemen Rediscovering Urbanism, originally published *Harvard Urban Design Magazine* 24, 2006, Krieger, 2009a, p.xviii, footnote 10).

The 1960s on: Environment-behaviour research

Up to and during this time, urban design practice was still very much based within functionalism and Modernism, with many current planning systems and professions today still embedded in this system. In the 1960s, many of the contemporary urban design theories and approaches were established within the discipline, both building on Modernism and developing as a reaction to it. Eric Mumford, author of a history of CIAM and Director of the School of Architecture, Washington University in St. Louis, explains some of this duality in the following way:

> While…it has been fashionable to dismiss all the work of this [Modernist] period as simply empty verbalizing on the one hand and the production of grim, Brutalist concrete monoliths on the other, it is in fact at this time many ideas about urbanism were formulated in ways that are still current. These ideas include the recognition of the importance [of] the 'heart of the city' as a place of urban pedestrian life and cultural institutions, the need to better organise traffic circulation patterns, and the value of the natural environment as part of urbanism… (2009b, pp.31-32)

Urban design became established as a profession during the 1960s (Barnett, 1982; Moudon, 1992). Barnett, in *Introduction to Urban Design* (1982), credits the first professional practice of urban design to a professional group of urban designers in New York in the late 1960s.[14] Moudon is less specific, asserting that the "exact origins" of urban design "have yet to be determined, coveted as they are by many different groups" (1992, p.331).

During the 1960s, urban design professionals and academics started to explore different ways of looking at and designing the city. A break from the Modernist planning and design theories is demonstrated through the adoption of environmental psychology studies by built environment professionals, academics and researchers. These studies are field surveys "primarily concerned with the relationships that exist between the physical environment and human behaviour" (T. Schmidt, 1998, p.240). They are based on the idea that "studying 'uncontrolled' patterns of behaviour in uncontrived situations" can inform designers about how

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[14] The New York urban design group rejected Modernist planning principles in favour of a more 'iterative' process able to respond to the needs of various groups within the city.

people use everyday spaces (T. Schmidt, 1998, p.240) and generally include behavioural mapping, tracing and interviews (see Appendix C).

The study of the relationships between the built environment and people, traditionally the realm of sociology and psychology, has a long history. However, it gained increased influence in the 1960s about the same time that criticism of Modernism was at its peak (Moudon, 1992). It has had a profound influence on urban design, as various researchers and practitioners realised the importance of the 'human dimension' to design. Amongst those key participants in this change are Rapoport, Lynch, Alexander, Appleyard, Whyte, Gehl (discussed in Chapter 5, 6 and 7), (Jane) Jacobs, Cooper Marcus, (Allan) Jacobs and Bosselmann[15] (see Appendix A for a list of key texts within urban design). Sitte, although he predates the others listed, is also influential to environment-behaviour studies. Broadbent (1990) refers to this period and researchers as 'neo-empiricism', referring to the concern by many researchers and practitioners that "modern city design was overlooking the elements of human experiences in the planning of urban environments" (Isaacs, 2000, p.151).

Part of the adaptation of environment-behaviour research practices to fit within urban design theory and practice is that the environment-behaviour research and theories became less positivistic (Moudon, 1992) and have deliberately become 'looser.' Thus enabling urban design researchers to include effective, perceptual, emotional and intangible elements, as well as design elements in their research and has also provided urban designers with tools to collect quantifiable information about how people use and relate to the natural and built environment. Moudon expands on this: environment-behaviour research's "original influence on design was due to its science-based approach, which was deemed more serious, reliable, and rational that the then-traditional intuitive, often highly personal design process" (1992, p.339). The adoption and adaptation of environment-behaviour

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[15] Others could be easily included in this discussion, including those associated with the UC Berkeley environment-behaviour research: Donlyn Lyndon, Galen Cranz, Randolph (Randy) Hester and Robin Moore. Of particular note is Colin Rowe (with his work *Collage City*, 1978, with Fred Koetter), but for reasons of focus—to reference Cuthbert (2007b), *College City* is primarily conflating urban design with architecture—texts and researchers focusing on architectural urban design have not been included. See Appendix A for a full list of influential urban design texts.

research provided built environment practitioners and researchers with tools to examine and understand how people use, perceive, assess, respond to and value the built environment.

Key participants in environment-behaviour research

The work of Camillo Sitte (1843-1903), influential from 1889, had a revival in the 1960s, particularly in the UK. His ideas provided those looking for alternatives to Modernism with another way to plan and design cities and streets for people.[16] Sitte was concerned that city planning lacked artistic design. He was primarily concerned with the "decoration of streets and squares" (Moughtin, 2003, p.3) that invited people "to linger!" in the city (Sitte, 1889, p.3). His work, *City Planning According to Artistic Principles*, was a "plea for irregularity in planning" (Broadbent, 1990, p.117). Sitte believed that the physical environment of cities impacted the soul and therefore urban planning and design should be concerned with designs that make users "secure *and happy*" and that:

> In order to realize this, city planning should not be merely a technical matter, but should in the truest and most elevated sense be an artistic enterprise. Such it was in Antiquity, in the Middle Ages, in the Renaissance; indeed, whenever the arts were fostered. It is only in our mathematical century that the process of enlarging any laying out cities has become an almost purely technical concern. (1889, pp.3-4, original emphasis)

Sitte's work provided much of the inspiration for Gordon Cullen's *Townscape* (1961, 1971).

Amos Rapoport, educated in Melbourne and now Distinguished Professor Emeritus, Department of Architecture, University of Wisconsin-Milwaukee, in *Human Aspects of Urban Form : Towards a Man-Environment Approach to Urban Form and Design* (1977), developed environmental psychology research applicable to the built environment, contributing to the development of the field of environment-behaviour research. Moughtin argues that Rapoport "brought the close relationship between built form and culture to the attention of architects and

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[16] The revival of Sitte's work in the 1960s was assisted by the publications of English translations. The first English translation was in 1940, followed by Phaidon Press publishing the work in London and Random House publishing in New York in 1965 (Isaacs, 2000).

planners. The idea that architecture is applied social anthropology broadens the scope of urban design from 'architecture writ large' to a subject that now includes the social sciences" (2003, p.6). Rapoport's work enabled understanding that urban form results from an "interplay of a number of factors such as location, transportation networks, land value and topography" (Moughtin, 2003, p.6). Rapoport believed that "consistent design principles were present in pre-industrial, pedestrian-dependent environments across a variety of cultures and through a variety of points in history" demonstrating "ideal, universal characteristics of pedestrian-oriented design" (Isaacs, 2000, p.152).

Kevin Lynch's (1918-1984) work was also highly influential, particularly his focus on how users perceived the city. Lynch, especially with his seminal works *The Image of the City* (1960), *Site Planning* (1972) and *A Theory of Good City Form* (1982), changed the way that urban designers thought about how people viewed and related to the city. Regarding the influence of Lynch's work, Sorkin writes:

> Lynch's critique was—and is—fundamental. Objecting to urban design's fixation on essentially architectural projects and its reliance on a limited set of formal typologies, Lynch argued throughout his work for an urban discipline more attuned to the city's complex ecologies, its contending interests and actors, its elusive and layered sites, and for complex readings, unavailable within the discipline of architecture, that would allow the city to achieve its primary social objective as the setting for variegated and often unpredictable human activities, behaviours that had to be understood from the mingled perspectives of many individuals, not simply from the enduring Modernist search for a universal subjectivity, however 'egalitarian'. (2009, p.160)

Lynch wrote some 25 articles and seven books.

Lynch primarily worked with ideas surrounding how people create cognitive or mental maps of the city and he documented visual experiences of walking through cities. Lynch saw urban models as "an expression of city theory, and expansion of the concept of urban design" (Shane, 2005, p.27) and established three normative models of the city: the sacred city, the city as a machine, and the city as an organism (see Lynch, 1981 and later sections of this Chapter for more discussion of

these models).[17] Lynch is attributed by Anne Vernez Moudon as "putting urban design on the intellectual map of city planning" (1992, p.332).[18] Lynch's theory of urban design was normative and prescriptive (discussed in Chapter 3) and he developed qualities in urban form that urban design should attempt to attain. Much of his work is now seen as 'intuitive'.

Greenwich Village writer and neighbourhood activist, Jane Jacobs (1916-2006), studied the life on her street through observation. She was (and still is) instrumental in bringing environment-behaviour studies to the urban professions. She argued for "common sense derived from direct observation, and related everything to peoples' daily lives" (Gratz, 2003, p.17). Jacobs stresses the importance of the street in representing the city, recommending that one should, "think of a city and what comes to mind? Its streets. If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull" (1961, p.37). Jacobs attended the initial Harvard 1956 conference as a journalist. Jacobs explored the problems of urban design and architecture at her time, arguing that "architecture with a capital A has become more and more interested in itself, and less interested in the world that uses it" (1965, p.110).

In order to solve the problems of unfriendly cities, Jacobs asserts that:

> ...we should start quite humbly. We should start simply by giving direct, very functional and obvious considerations to pedestrians. And this should be done in precisely the places where pedestrians already appear in large numbers in spite of the inconveniences they meet and the impositions to which they are subjected. Some of these humble improvements which immediately suggest themselves are:

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[17] Lynch's definition of a model is 'something worth emulating,' rather than an architectural model. He explains: "Design decisions are largely based on models in the head of the designer. Presumably, those models connect with more general theories, but models and theories can be surprisingly independent of each other. To begin with, the word 'model' is ambiguous. In common talk, it is a three-dimensional physical miniature of a building, machine, or landscape…It is also the current academic word for an abstract theory of how something functions, in which the elements of a system, and the relations between those elements, are clearly specified, preferably in a quantitative mode…Not long ago, *model* was an adjective meaning 'worthy of emulation,' and this is the tradition I shall follow. For our purposes, a model is a picture of how the environment *ought* to be made, a description of a form or a process which is a prototype to follow" (1981, p.277, original emphasis).

[18] Although Moudon goes on to assert that "even though Lynch emerges as a powerful figure, his legacy is made less clear when coupled with all the other bits and pieces of research available" (1992, p.332).

more frequent places to cross the streets; widen sidewalks (i.e. a bigger share of the road bed); more sidewalk trees; niches for standing outside the line in foot-traffic. (1965, p.110)

Jacobs has been extremely influential to urban planners and urban designers around the world,[19] with her work, *The Death and Life of Great American Ci*ties (1961) still providing vital insights into how to design vibrant cities (Gratz, 2003). Gratz highlights that Jacobs saw "cities as appealing, complex organisms", while the current planning doctrine at the time "focused on cities as full of cancers" (2003, p.17). Sorkin contends that "Jacobs's nuanced conflation of neighbourhood form and human ecology was—and continues to be—precisely the right theoretical construct to animate the practice of urban design" (2009, p159).

Also in New York, the methodologies and theories pioneered by William 'Holly' Whyte (1917-1999) in his Street Life surveys have been very influential to the study of human and built environment interactions. Whyte, along with a research team, observed people in public places (primarily streets, small squares and parks) throughout New York, using various methods of observation and mapping (discussed in Appendix C) to establish what were effective design elements for public places (discussed in Chapter 4). The results of this research were published in *The Social Life of Small Urban Spaces* (1980) followed by *City: Rediscovering the Center* (1988). Building on his work, Fred Kent, who worked with Whyte on his Street Life Project, founded a non-profit organisation Project for Public Spaces (PPS) in 1975, dedicated to the creation and maintenance of high-quality public spaces. PPS has developed performance evaluation methods to understand why some places are successful for people and why other places are not, based largely on Whyte's methods (Project for Public Spaces, 2010, n.p.n).

During this time, scholars at the University of California, Berkeley, establishing the College of Environmental Design in the 1960s, also brought environment and behaviour to the study of architecture, planning and urban design. The Berkeley

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[19] Jane Jacobs has been very influential to Jan Gehl and the continuation of his theory and thinking on city life and planning. One of the most touching moments I have spent with Gehl is when he showed me his copy of *The Death and Life of Great American Cities* with a personal inscription by Jacobs.

School, as this group is casually referred to, predominantly includes Christopher Alexander, Clare Cooper Marcus, Donald Appleyard, Allan Jacobs and Peter Bosselmann, amongst others.

Christopher Alexander is currently Professor at the Graduate School and Emeritus Professor of Architecture at the University of California, Berkeley, and operates the association A Pattern Language.[20] He is interested in patterns and relationships within urban form and organic city planning, particularly with the idea of 'wholeness' (see organic design theory in Chapter 3). He has had a tremendous impact on urban design and on Lynch's theories of city design. Alexander believes that all design acts within the city should have a primary purpose of creating "a continuous structure of wholes around itself" (Alexander et al., 1987, p.22). Alexander argues against the Modernist planning principles of the hierarchical division of infrastructure and services in favour of a more holistic design of cities. He has published many articles and books, most notably 'A city is Not a Tree' (1965), *A Pattern Language* (Alexander, Ishikawa, & Silverstein, 1977), *A New Theory of Urban Design* (Alexander et al., 1987) and a four-book series *The Nature of Order* (2002a, 2002b, 2002c, 2002d).

Alexander argues for city design that creates homeostasis,[21] allows for adaption and the generation of a 'correct' form through an 'unselfconscious' design process built on an organic design process (designing in a natural and organic way. This aligns closely with organic process discussed in the next Chapter). This position puts Alexander in direct opposition with modern architectural practices (Cuthbert, 2007b). Alexander's work focuses on a set of 253 patterns, proposing a "specific process by which a group of collaborators on an urban project might create such organic wholes more successfully, following a series of specific rules" (Mehaffy, 2008, n.p.n.).

Clare Cooper Marcus, currently Professor Emerita in the Departments of Architecture and Landscape Architecture at the University of California, Berkeley,

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[20] See http://www.patternlanguage.com/
[21] Homeostasis: a tendency to reach a state of equilibrium.

conducted research into the psychological and sociological aspects of architecture, land use planning and landscape design, with a particular focus on urban open space and public spaces within housing and special care areas. Her influential work *People Places* with Carolyn Francis (1998) is still very relevant to the field today. Cooper Marcus used observation to evaluate open spaces and place designs and was particularly interested in the emotional reactions people had to the built environment and emphasized that these need to be considered in design.

Donald Appleyard (1928–1982) has made an immeasurable impression on the study of how the environment affects people, both in terms of the results of his surveys and in pioneering new methods to study people and spaces (Anthony, 1983). Appleyard's methods and surveys pioneered in *Livable Streets* (carried out in 1969 and published in the *Journal of the American Planning Association*, 1972; see Appleyard, 1980; Appleyard, 1981) has been reproduced by many people including his colleague, Peter Bosselmann,[22] and more recently by Joshua Hart (2008) in the UK. Appleyard viewed streets as the "most essential space for life" (de Vasconcellos, 2004, p.8). In his assessment of and tribute to Appleyard, de Vasconcellos explains:

> [Appleyard] helped replace the] strictly technical and economic view—of roads as physical assets with limited capacity, to be distributed among different sorts of vehicles—with a social and political view, where different people, with different and conflicting interests and needs, are instead the objects of such distribution, implying equity considerations. (2004, p.4)

In addition, de Vasconcellos maintains that Appleyard embraced a social and environmental approach to the study of streets. Appleyard worked with Lynch (and Myer) on an analysis of the built environment and movement, in this case as a driver, published as *A View from the Road* (Appleyard, Lynch, & Myer, 1963). Appendix C discusses Appleyard's surveys in detail.

Allan Jacobs, Professor Emeritus in the Department of City and Regional Planning, University of California, Berkeley, and the former Director of Planning for the City of San Francisco (1967-1975), studied streets using observational techniques

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[22] Appleyard and Bosslemann worked closely together, with Appleyard providing mentorship to Bosselmann.

focused on the built environment (A. Jacobs, 1985, 1996). Jacobs' research concentrated on understanding what could be determined through careful and systematic observation of streetscapes and buildings about built environment and human interactions, rather than through observations of people. In this case, the methodology, although providing insight and complementary information, differs from other environment-behaviour methodologies, grouping Allan Jacobs' work more with what Moudon refers to as 'place studies'. Nevertheless, Jacobs' work has had immense influence in built environment-behaviour studies because of the infrastructure requirements and guidelines established by them, particularly his work *Great Streets* (A. Jacobs, 1996). Chapter 4 discusses the requirements of pedestrians. Jacobs's research provides a unique and practice oriented perspective.

Peter Bosselmann, an early student and colleague of Appleyard, provides a unique perspective and uses a variety of methods to understanding a city to enable appropriate transformations through design. Bosselmann is concerned with visual representations of cities and their forms and with how this visual representation could influence what planners and designers build and design. Bosselmann is concerned that "professionals rarely represent the way people move through urban places, looking down streets or standing in a square alone or with others– actual conditions that people imagine" (1998b, p.xiii). Bosselmann stresses that city design must incorporate natural processes and that city form needs to relate to human experience. Bosselmann's focus is to enable the effective and appropriate transformation of cities in order to increase the vibrancy of public life and the sustainability of cities, both environmentally and economically. Bosselmann provides methods to gain knowledge about a city (or cities) that would enable effective and appropriate urban transformations and stresses that city design draws from three domains of knowledge: science, values and art. Bosselmann continually stresses that urban designers need to "think of themselves as agents of change" and remain "committed to a place" (2008, p.289). Bosselmann provides methods to examine a city, and evidence and inspiration to enable designers to

transform their cities appropriately. Bosselmann has been strongly influenced by Jan Gehl, and in turn has influenced Gehl.[23]

2.5 Conclusion

This Chapter briefly introduced urban design, provided an overview of Modernism (as it pertains to the development of current urban design theory), and an overview of some of the influential theorists within urban design, focusing on those interested in human-built environment interactions. These Modernist, rational and transport planning models based on auto dependent planning have shaped modern cities. Most importantly for this discussion, urban design, despite having humanistic foundations, had no serious way of combating the power of auto-dependent planning. Urban design has not had the theoretical or practical skills necessary to counter formulistic car-oriented planning and its proponents in theory, practice, and within the general culture. To change cities requires a new theory of urban design that is both more sustainable and more encompassing of people. At the same time to change cities requires a new urban design practice that has the power to question the politics of the car. In the 1960s, many contemporary urban designs theories and practice were established both building on Modernism and developing as a reaction to it. The adoption of the built environment studies by urban designers can be understood in part as a break from the Modernist planning and design theories. Increasingly the appropriate distribution of space, based on ideas of use, and reclaiming space from traffic has become a new form of urban design practice (discussed in the following Chapters and Appendix B). The next Chapter will provide a greater discussion of current urban design theory, with Chapter 7 providing a further discussion of how urban design can overcome formulistic solutions.

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[23] Bosselmann worked as a visiting professor at the Royal Danish Academy of Fine Art with Gehl and is a friend and associate.

CHAPTER 3: URBAN DESIGN THEORY: WHAT IS URBAN DESIGN?

…having a name for something does not necessarily mean
that we understand what it is! Urban design is, surely a case in point.
(Rowley, 1994, p.179)

Chapter 3: Urban design theory: What is urban design?

3.1 Introduction

Urban design, as it has progressed from Modernism and the theories building on environment and behaviour studies, is concerned with built environment and human interactions within the public spaces of a city. These concerns include the natural environment and the built environment focusing on transport, streets, public space, recreation and economy (Barnett, 2009), and is a common view expressed through the urban design literature. This Chapter elaborates further on discussions within urban design and the evolution of urban design theory following from its emergence from Modernism.

The Chapter discusses the many (and varying) definitions of urban design and offers an introduction to some current arguments, conversations and concepts prevalent within urban design today, particularly as they relate to urban design theory. The Chapter begins with a discussion of the different definitions of urban design and some normative and substantive urban design theories, focusing on organic urban theory. The Chapter then provides an overview of some of the debates within urban design surrounding the nature of the field—is it a technical profession or a way of thinking?—and the relationships among urban design, architecture and planning. The Chapter then discusses important concepts, principles and commonalities of urban design theory, focusing on the issue of human use of a city, here termed *walkability*. The Chapter then discusses some of urban design's current limitations as explored in the literature. All of these concepts provide a structure for the following Chapters and help to progress a more humanistic, effective and sustainable practice able to respond to changing needs within cities, substantiated by an evaluation framework.

3.2 A definition of urban design

A simple definition of urban design would be "the art of building cities" or the "method by which man [*sic.*] creates a built environment that fulfils his [*sic.*] aspirations and represents his [*sic.*] values" (Moughtin, Cuesta, Sarris, & Signoretta,

2003, p.5, referring to the work of Rapoport, 1969). However, urban design is a term full of looseness and fluidity of meaning and is used to describe a variety of research and projects (Lang, 2005; Rowley, 1994). Lang explains, "urban design can mean anything one wants it to mean" (2005, p.xix). Mackay expands: "It is easier to talk about urban design than to write about it…In between [planning and architecture] but belonging neither to one nor the other, lies the magic world of urban design. We can recognize it by its absence. It is inferred, suggested, felt" (1990, p.42).

In general, according to Cuthbert, urban design "encompasses the material process of designing cities, urban spaces and places, as well as knowledge of the general economic and political systems that bring them into being" (2007a, p.263). Moughtin expands on this definition, contending that urban design is: "a people's use of an accumulated technological knowledge to control and adapt the environment for social, economic, political and religious requirements. It is a method learned and used by a people to solve the total programme of requirements of city building" (2003, p.12). However, often in practice, the economic, political and social systems become second to the design. Alexander et al. contend that of all professions, urban design *should* be responsible for a "city's wholeness" (1987, p.3, emphasis added), building on Lynch's expansive description:

> City design[1] is the art of creating possibilities for the use, management, and form of settlements or their significant parts. It manipulates patterns in time and space and has as its justification the everyday human experience of those patterns. It does not deal solely with big things, but also with policies for small things—like seats and trees and sitting on front porches—wherever those features affect the performance of the settlement. City design concerns itself with objects, with human activity, with institutions of management, and with processes of change.
>
>   …It uses techniques of its own: area diagnoses, framework plans, sequential strategies, conservation zones, illustrative designs, design liaison and service, development controls and guides, process rules, place monitoring, and the

[1] Lynch uses the term *city design*. Child's describes Lynch's use of city design, stating that it was "a term that Kevin Lynch used in distinction to 'urban design' to emphasize care for the quality and character of the entire public realm with an emphasis on fundamental human values such as justice, control and vitality. Many of Lynch's colleagues and students at MIT have worked in this thread. Based on the focus of their work, Lewis Mumford, Jane Jacobs and to an extent, J. B. Jackson, may be considered part of this school of thought" (2010, p.2).

creation of new place institutions. Its peculiar features are the consequences of the

scale and complexity of its domain, the fluidity of events, and the plurality of actors,

as well as its imperfect and overlapping controls. (Lynch, 1981, pp.290-291)

Urban design in this utopian sense is a process towards a 'better' city—it is never finished and works within existing situations and offers possibilities through examples (stories), guidance and advocacy. In addition, urban design in this sense is able to work at many scales from the broad to the intimate and through scales of time. These concepts are expanded on later in this Chapter.

Many of the definitions within the urban literature have in common the view that urban design is concerned with three-dimensional qualities of urban places of varying scales and it the "practice which determines urban form" (Schurch, 1999, p.17). This concern includes the "interweaving of structure" in a city and the "conscious formation of spatial sequence" (Sasaki, 1957, as cited in Mumford, 2009b, p.134), while adding considerations of time (both in passing and in movement).

A definition of urban design: The debate

However, there is much debate as to an exact definition of urban design[2] and some of this lack of a concrete definition is due to the complexity of urban environments. Despite its long history, urban design lacks a clear definition and therefore lacks a clear theoretical framework, professional authority, territory or role (Sternberg, 2000).[3] It must be noted, however, that the confusion over a definition does not necessarily prevent urban design from being practiced. Shurch expands on this view:

> In hermeneutical terms, the significance here is twofold. First, it confirms the idea
> that urban design is neither a profession nor a field, although this condition does
> not necessarily preclude it from being either. Second, the lack of academic or
> scholarly theory does not preclude serious consideration of a definition of urban

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[2] Sert's fog of amiable generalities of urban design definitions persists.
[3] To quote Knack: "Trying to define urban design is like playing a frustrating version of the old parlour game, Twenty Questions, in which the answer to every question (Is it animal? Vegetable? Or mineral?) is no. Most people find it easier to say what urban design is not…than what it is" (Knack, 1984, p.4, as cited in Rowley, 1994, p.181).

design in that the deficiency is compensated for through the large body of built work that has occurred in the postmodern period. (1999, p.7)

Sert, considered by many the 'founding father' of urban design, particularly in the US,[4] uses two conflicting definitions. The first ties urban design closely to planning, with urban design being "that part of city planning which deals with the physical form of the city" (Sert, 1956, as citied by Krieger, 2009b, p.114). The second considers urban design to be an overarching discipline, which unifies architecture, planning and landscape architecture and is a way of viewing the city holistically (Sert, 1956, as citied by Krieger, 2009b, p.114). Sert's definitions have been heavily criticised by Australian urban design academic, Alexander Cuthbert, who maintains that Sert believed "he could monopolize history, brand it, turn it into a commodity" and that Sert "…in the process of naming…reduced the vast social complexity of urban form generation to an endless regression of architectural compositions" (2010, p.447). Cuthbert argues that this notion of urban design "perpetuates an archaic vision of the field" that conflates urban design to project design (2010, p.447). This is, however, an idea of urban design that still persists.

Sert's conflicting definitions highlight an inbuilt contradiction in many of the definitions of urban design, namely: is urban design a 'design' profession like architecture or is it a way of looking at urban environments holistically? This contradiction is still apparent in the lack of a clear definition of urban design, in the contradicting views expressed by different practitioners and academics and is, according to Marshall, "one of its enduring challenges" (R.Marshall, 2009, p.40). I expand on these views below in section 3.5.

Frequently, definitions of urban design include natural elements, along with built environment elements, including natural landscape elements such as parks, gardens and other green areas. An example of this type of urban design definition is Barnett, who explains:

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[4] Many others could be considered to be the 'founding father of urban design', particularly Lynch, Alexander and Sitte *(all discussed earlier)*. Cuthbert refutes the idea of authorship of urban design, arguing "in reality, urban design invented itself, and no authorship can be made on it" (2010, p.444) and, referring to Sert, that naming a phenomenon is not the same as founding it.

> Urban design is the generally accepted name for the process of giving physical design direction to urban growth, conservation, and change. It is understood to include landscape as well as buildings, both preservation and new construction, and rural areas as well as cities. (1982, p.12)

This broad definition reveals that urban design is an act practiced by all those involved in the environmental design fields, primarily architecture, urban planning and landscape architecture, and introduces the natural environment to urban designers' concerns.

Therefore, central to the development of a concrete definition of urban design is the relationship (existing and potential) between the environment (natural and built) and people, using Rapoport's definition of the environment as "a series of relationships among elements and people…" (1977, p.9). Urban design is about these relationships—it is, according to Cullen, the "*art of relationship*" (Cullen, 1971, p.7, original emphasis)—between people and environment (Carmona, Heath, Oc, & Tiesdell, 2003). This idea is expressed in Figure 3.1, which illustrates the relationships among the different core elements of concern within urban design as proposed by the literature: namely people, the built environment and the natural environment. These relationships are primarily about space and the organisation of space between elements and between elements and people (Rapoport, 1977).
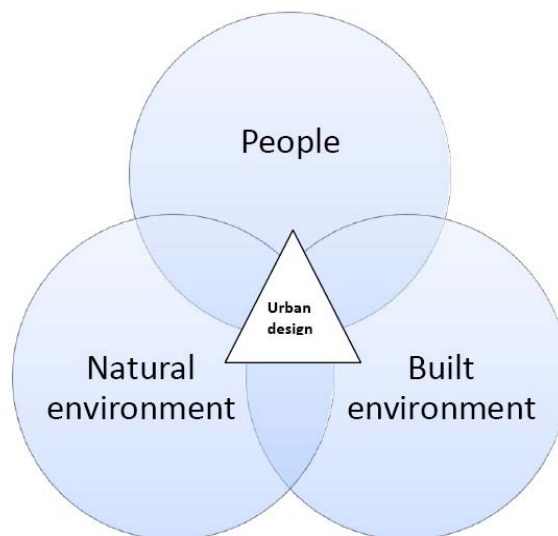
Figure 3.1: Venn diagram illustrating the relationships between urban design concerns. Source: Adapted from Schurch, 1999.

Within sustainability literature, the limitations of the linking of these relationships as in Figure 3.1, has been recognised, primarily that the illustration provides an anthropocentric view of the elements and that all of the elements are not equal, despite being illustrated as so. In addition, the illustration lacks some important considerations, namely ideas of culture and good governance (Newman & Jennings, 2008; Newman & Kenworthy, 1999; Sarkissian, Hofer, Vajda & Shore, 2009). Building on these limitations and on the work of Ian Lowe and others, Sarkissian et al. (2009) see the relationships more as a nested table with economy and society embedded within culture and the environment (given here as the natural environment) (Figure 3.2). This illustration shows the overarching importance of the environment: that everything else, all other concerns and activities must be conducted within the natural capacity (Lowe, 2005; Brown, 2008). It also recognises the importance of cultural systems, of ethics and values, and most importantly of hope (Assadourian, 2010; Newman, 2005; Newman, Beatley & Boyer, 2009). This idea is built on and adapted for sustainable urban design in the conclusions of this Chapter (Figure 3.4).
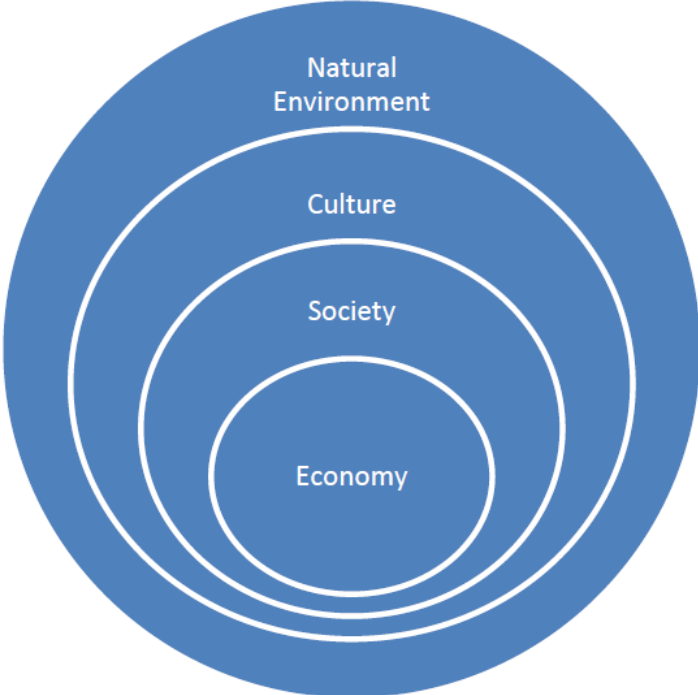
Figure 3.2: Current view of sustainability. Source: Redrawn and altered from Sarkissian, Hofer, Vajda & Shore, 2009, p.23.

3.3 Urban design theory. Is there an urban design theory?

Building on the lack of a concrete and accepted definition of urban design, the literature review reveals that there is no unambiguous urban design theory. This is a somewhat surprising realisation given its long history and its recognition as a profession. Rather, urban design borrows from and shares theory with the social sciences, architecture, landscape architecture and planning amongst others. Although this shared lineage enables it to circumnavigate and unite divergent theoretical ideas and academic paradigms (part of the reason it was developed), this eclectic collection of theory also means that as a profession it lacks a concrete theory necessary for praxis. Thus, it can be argued that urban design will continue to remain ambiguous and open to many definitions, interpretations and practices (a matter discussed further in Chapter 4) (Cuthbert, 2003; Moudon, 1992).

On the other hand, the interdisciplinary nature of urban design theory offers some advantages in terms of enabling development of new knowledge, which could perhaps enable advancements in all the fields concerned with city design. This idea is supported by Cuthbert, who maintains that it is at the "overlaps between more traditional academic regions" that knowledge is able to make "its own interventions" (2003, p.10). Cuthbert continues: while it may be confusing that urban design draws on a variety of discourses, "this context nonetheless offers a healthy and dynamic environment for substantial theoretical engagement and new forms of intellectual integration across a multitude of disciplines, all of which touch on the design of cities" (2003, p.10). The interdisciplinary nature of urban design theory and practice offers some real advantages for the discipline (Charlesworth & Adams, 2011).

The lack of consensus about a definition of urban design and a complete theory is, to some extent, consistent with the dialectic between 'research' and 'design'— both of which ask different questions and produce different results. As shown in Table 3.1 below, Ann Forsyth argues that the goals, methods and tools of design and research are very different from each other and the links among them are often "tenuous" (2007, p.465). However, both research and design are needed for

innovation to occur. Currently, Forsyth argues, much "urban design is still solving specific problems using design and not research methods" and therefore "urban design is not equivalent to urban research" (2007, p.467).[5]

Dimension	Research	Design
Goals and Background	Answers a question that has some general interest—related to gaps in knowledge or key questions.	Answers a specific, site related questions for a client.
Methods	Provides evidence that has been systematically collected and analysed, and that is capable of answering the core question.	Combination of analysis and inspiration.
Relation to earlier work	Builds on earlier work.	Sometimes part of a school, often deliberately unique.
Argument	Makes an argument that at least implicitly counters reasonable objections.	Makes a proposal in graphical/visual form.
Documentation and evaluation	Documents and evaluates its methods and findings, so that both can be replicated by others.	Is documented and made public through building (and drawing).
Peer review	Is subject to peer review.	May occur through awards. Not essential.
Public/dissemination	Is made public.	Is documented and made public through building (and sometimes through public comment process).
Contribution	Contributes to knowledge in a field.	Solves a problem; contributes to body of work of designer.

Table 3.1: Elements of research and design. Source: Adapted from Forsyth, 2007, p.466.

Despite the lack of concrete theory, urban design is, however, an accepted term both within practice and academia (Schurch, 1999). Cuthbert emphasises that the terminology and practice of urban design are more than just accepted, that "it is a deeply embedded social practice that societies have valued from time immemorial…As such it does not have to justify its existence through reference to a discrete set of home grown theory" (2003, p.10). This is a well-established idea of urban design, as Scott and Roweis explain: "…it is not an independent and autonomous urban design theory that produces the various facts of actual urban design; it is rather the realities of contemporary urbanization that give rise to urban design as a necessary social activity, and hence its explanation as a social fact" (1977, as cited in Cuthbert, 2007b, p.186). This acceptance is partly due to its long intellectual and practice history. People have always designed their cities. Because

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[5] Forsyth's distinction between research and design is similar to the theory and practice distinction used in this dissertation.

of this lack of concrete theory (and definition), Cuthbert uses the term urban design to connote *the production and reproduction of urban form*" (2007b, p.185, original emphasis).

3.4 Normative and substantive theories of urban design

Urban design theory and practice are split between those who view it as a purely technical endeavour and those who view it more as a way to look at cities and make them more 'people-friendly'. Therefore, many urban design definitions in the literature are either broad, all-encompassing, what Schurch refers to as "fundamental, superficial and cursory" (1999, p.8), or prescriptive in that "they describe certain qualities, goals and principles regarded as necessary to realizing 'good' urban design" (1999, p.10) based on normative theories of what a 'good' city is.[6]

Normative (regulating or prescriptive) theories regarding city design illustrate how we want the city to be. They are about the ideal city either in terms of outcomes or in terms of design. Emily Talen and Cliff Ellis explain that normative planning refers to "the quest for excellence, quality and beauty in our built environments—how the metropolitan areas *ought* to be" (2002, p.37, original emphasis). Substantive theories are theories about how the city actually is. Lang (2005) identifies that from Modernism, two paradigms developed: the rationalists (idealists) and empiricists (realists) and that the tensions between the two views still exist in much urban design theory and are played out within discussions of normative and substantive theories.

The relationships between the normative and substantive aspects of urban design practice and research are complex. Urban design, especially in terms of outcomes, is a normative field, according to Moudon (1992), with urban design training centred on producing schemes for the future. In addition, many of the normative ideas about city design, while valuable in that they elucidate characteristics of what

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[6] Schurch also groups urban design definitions into other categories (namely Historic, Proprietary and Process). However, for this discussion these categories unnecessarily complicate the issue, which is: what is urban design?

is considered 'good' urban design, generally define urban design only in terms of practice, ignoring social and cultural considerations (including political and economic ones) and only sporadically respond to 'paradigms' or theories (Cuthbert, 2003; Moudon, 1992). However, research is fundamentally substantive and centres on understanding explicit phenomena. Therefore, research within urban design will need to have potential normative outcomes. So while these normative and substantive needs of urban design are essentially contrasting theoretical ideas, research and theories within urban design need to be able to do both—to explain and to enable (Lynch, 1981; Moudon, 1992).

Many of the works of the authors of the 'classic' urban design texts (discussed in Chapter 2 and Appendix A) exhibit the tensions between normative and substantive research within urban design, most notably Lynch, Alexander, and the New Urbanist authors. This tension is partly a reflection of the correlation and differences between 'research' and 'design' (as shown in Table 3.1, above).

Theories of urban design need to reflect this continuum between normative and substantive research, as well as the other levels of what is happening in a city, particularly the relationships between people and the natural and built environments and the meanings constructed and conveyed by these relationships (see section 3.9 below). This need is at the heart of urban design research and practice. This idea is reflected by Alexander et al. who, regarding their 'new theory of urban design', emphasise that the theory "will not, of [itself], produce a city which is moving, which has feeling in it, deep feeling" (1987, p.243). For many urban designers, and in particular Jan Gehl, it is necessary to see how this tension and continuum between normative and substantive ideas of the organic city have emerged, in part as a response to trying to explain a city that has deep feeling in it.

Normative urban design definitions

Many definitions and theories of urban design are normative and prescriptive in that, according to Schurch, "they describe certain qualities, goals and principles regarded as necessary to realizing 'good' urban design" (1999, p.10). There have been a number of historic attempts to develop a normative theory of urban design,

with, to quote Harvey, "most of what passes for urban and city planning in the broadest sense has been infected (some would prefer 'inspired') by utopian modes of thought", referring to "utopias of spatial form" (2000, pp.156-160). Kevin Lynch argued that normative theories of urban design "deal with the generalizable connections between human values and settlement form, or how to know a good city when you see one" (Lynch, 1981, p.37). These include:

- Works by Saint Augustine (*City of God—De Civitate Dei*, a series written in the early fifth century), Leon Battista Alberti (*De re Aedificatoria*, 1452, rules for urban design), Sir Thomas More[7] (*Utopia*, 1516, a model of urban design), Ebenezer Howard (*Garden Cities of To-morrow*, 1898), Le Corbusier (*La Ville Contemporaine*, 1922 and *La Ville Radieuse*, 1933), Françoise Choay (*Urbanisme, Utopies et Réalités*, 1965, and *La Règle et le Modèle*, 1980) and Geoffrey Broadbent (*Emerging Concepts in Urban Space Design*, 1990).

- Historic ideas of how a city should be, such as:

    - The 'city of faith', the religion based city designs from India, China, Greece and Rome amongst others; and

    - The grid city designs, prevalent in the settling of the US, have clearly differentiated functions (for example, the urban layout of New York or the work of Le Corbusier).[8]

Lynch (1981) refers to this last theory as the 'city as machine model'. The thinking of the 'city as a machine model' is prevalent in most modern western cities and lies behind many of connections with cities, particularly land zoning, building codes, and how utilities and new land subdivisions are laid out.

Many current urban design definitions are prescriptive in that they provide certain characteristics that are considered fundamental to a 'good' city. They are usually referred to as 'principles', 'fundamentals', 'checklists' and/or 'requisites' of urban design, and include a list of required characteristics such as diversity in land use and housing types, adaptability of built forms and vitality, rather than providing an

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[7] Sir Thomas More (1478-1535) is also called Saint Thomas More, as he is recognised as a saint within the Catholic Church and in the Anglican Communion. He was beatified in 1886 and canonised in 1935.

[8] See Lynch (1981) for explanation of these models.

actual explanation (Cuthbert, 2007b, 2003; Schurch, 1999; Moudon, 1992). Most of these 'principles' or 'checklists' of urban design are based on the work of Lynch, (Jane) Jacobs, Gehl and Whyte, reflecting their lasting influence on urban design.

Table 3.2 below displays four 'classic' examples of prescriptive definitions of urban design from Lynch, Jacobs, Alexander et al. and Bentley, Alcock, Murrain, McGlynn and Smith. Current examples of prescriptive design theories include Moughtin (2003; Moughtin et al., 2003) and Emily Talen (2009b) who predominantly abide New Urbanist philosophies (Appendix B). Other than Alexander et al.'s urban design definition, which is concerned with urban design process, most of these prescriptive urban design definitions are concerned with products, rather than processes.

Kevin Lynch	Jane Jacobs	Christopher Alexander et al.	Bentley, Alcock, Murrain, McGlynn and Smith
Vitality	Appropriate activity before visual order	Every increment of construction must be made in such a way as to heal [make whole] the city.	Permeability
Access	Mixed use, mixed age, mixed tenure, concentration	Piecemeal growth	Variety
Control	Importance of the street	The growth of larger wholes	Legibility
Sense	Social mix and community engagement	Visions	Robustness
Fit (adaptability)	Robust spaces	Positive urban space	Visual appropriateness
Efficiency	Gradual not cataclysmic money for city building	Layout of large urban buildings	Richness
Justice	Activity richness	Construction	Personalisation
	Automobile attrition	Formation of centre	
	Natural surveillance		
	Safety		
(Lynch, 1975, 1981)	(Jacobs, 1961)	(Alexander, Neis, Anninou, & King, 1987)	(Bentley, Alcock, Murrain, McGlynn, & Smith, 1985)

Table 3.2: Classic normative definitions of urban design (or urban design as a set of characteristics). Source: Compiled by the Author from the above sources.

Organicism and evolutionary urban theory

Organicism is a philosophy, doctrine or way of viewing the world based on the idea that reality is best understood as an organic whole.[9] According to Hill, this view is entrenched in the ideas of "biological similitude, vitalism, holistic unity, diversity, and humanistic developmentalism", along with a romantic attitude (D. Hill, 1992, p.4). It is distinguished from the philosophy of 'holism' because of its non-spiritual dimension (Gilbert & Sarkar, 2000). Within urban design and planning, organicist urban theory is a normative theory based on ideas about how urban environments should be. Many of these theories are based on substantive research. Organicism within city planning and design is sometimes referred to as 'traditional' city design, based on the idea that many traditional cities developed 'organically'. Alexander et al. explain:

> when we look at the most beautiful towns and cities of the past, we are always impressed by a feeling that they are somehow organic. This feeling of 'organicness,' is not a vague feeling of relationship with biological forms. It is not an analogy. It is instead, an accurate vision of a specific structural quality which these old towns had…and have. Namely: Each of these towns grew as a whole, under its own laws of wholeness. (1987, p.2)

The organic view sees urbanism moving from simplicity to diversity until finally reaching its full potential. David Hill, using an ecological metaphor and building on the work of Ian McHarg,[10] demonstrates the direction of organic development, illustrating that "there is growth from psychologically fragile homogenous grasses to psychologically synergistic, creative, and resilient hardwood forests" (1992, p.5). Table 3.3 shows the direction of organic development. Within urban design, this development would be the move from singular land use areas, with low levels of diversity and mixed use, uniform land uses and urban form, to diverse land uses and complex urban forms, enabling resilience and a fulfilling urban system with low levels of disorder.[11]

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[9] It is also sometimes referred to as wholism.

[10] Ian McHarg (1920-2001) was a landscape architect who conducted research into planning based on ecological systems. See McHarg (1969) *Design with Nature.*

[11] Newman (1975) suggested a similar approach to cities based on their ecological succession qualities.

Directions of organic development	
Evolution	
← →	
Primitive State	**Advanced State**
Simplicity	Complexity
Uniformity	Diversity
Instability	Stability
Low number of species	High number of species
Low number of symbioses	High number of symbioses
High entropy	Low entropy
Regression	
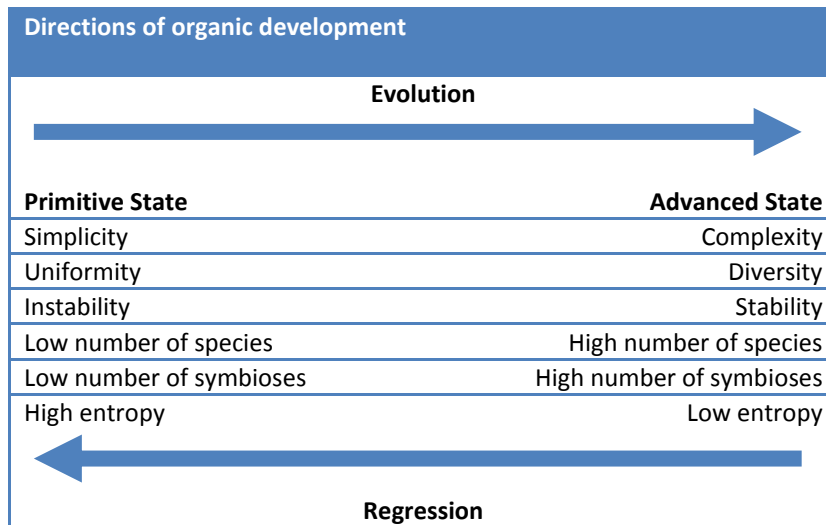
Table 3.3: Directions of organic development. Source: Redrawn from D. Hill, 1992.

Organicism, within urban planning and design is concerned with the overall dynamic of the city—the city as a whole. It places importance on experimental (or trial-and-error) learning and on a sense of balance that includes social justice (Shane, 2005). Organicism sees all individual parts of the city as a 'whole', the sum of which is greater than the individual parts. Its proponents are interested in the relationships and patterns that exist among all the parts that form the whole.[12] This view places importance on the design principle of integration (see section 3.7 Integration).

The primary values of organicist urban theory are, based on Lynch's view of the city as an organism: "community, continuity, health, well-functioning, security, 'warmth', and 'balance', the interaction of diverse parts, orderly cycling and recurrent development, intimate scale and closeness to the 'natural' (that is, nonhuman or other-than-human) universe" (Lynch, 1981, p.94). Alexander et al. see this organic city as piecemeal, unpredictable, coherent, "full of feeling, always" (1987, p.14). (See Table 3.2 for more of Alexander et al.'s 'rules'.)

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[12] The idea that all parts form a whole that is greater than it parts is related to the idea of 'gestalt'—where a whole is more than a sum of its parts, e.g., a forest is more than individual trees that compose it.

The organic city is both autonomous and linked, with parts, forms and functions of the city cooperating in order to be mutually beneficial. Lynch explains:

> There is a mix of diverse people and places, and that mix has some optimum proportions, a 'balance.' The parts are in constant interchange with each other, participating mutually in the total function of the community. But these parts, being different, have different roles to play. They are not equal or repetitive, but are diverse, and support each other in their diversity. (p.91)

Lynch sees the different functions of an organic city as "rhythmic", able to maintain "dynamic, homeostatic [internal equilibrium] balance" with the "optimum state" a "stage of ecological climax, with a maximum diversity of elements, and efficient use of energy passing through the system, and a continual recycling of material" (1981, pp.91-94). Hill's ideas established in Table 3.3 build on Lynch's discussion of a healthy organic city, instituting ideas of 'healthy' and resilient cities through a diverse and organic urban system.

Many organic urban design and planning theorists have developed normative organic planning theories based on substantive research resulting in many diverse theories and flexible spatial concepts (D. Hill, 1992; Moudon, 1992). Some of the influential theorists include Christopher Alexander et al., Kevin Lynch, Frank Lloyd Wright, Lewis Mumford, Jane Jacobs and William H. Whyte. According to Lynch, some common physical forms emerging from organic urban theory include the following:

- Radial patterns;
- Bounded units with focused centres;
- Romantic, anti-geometrical layouts (organic shapes);
- Visible proximity to earth, plants and nature (open space);
- Moderate density;
- Human service, craft production, open-air activities are all highly valued over large-scale automated, high production ones;
- Nostalgia; and
- Irregularities (or special character) are to be rejoiced (adapted from Lynch, 1981).

These diverse urban forms reveal the spatial flexibility of the theory. As Gallion and Eisner report in a classic city planning textbook: "There can be no centreline about which the city of democracy is built; it is a fluid, changing form. The rigid symmetry of formal planning is alien" (1986, p.517).

This flexibility occurs primarily because creating the wholeness sought within organicism is more about process than form and, according to Alexander et al., is based on "the specific, peculiar structural nature of [a place's] past. That is an autonomous whole, whose internal laws, and whose emergence, govern its continuation, govern what emerges next" (Alexander et al., 1987, p.10). Alexander et al. contribute further by arguing that, "future growth…is created, from the present, by an impulse towards wholeness. Somehow, this impulse towards wholeness is allowed to govern the next steps in the creation, the expansion, the formation of details…the formation of the largest and the smallest wholes" (1987, p.13).

A number of questions arise from organicist urban theory. Of particular note is questioning a metaphor of a city as an organism. Cities are not an organism. They are not autonomous; they do not repair themselves or reproduce. Rather, they are creations built and formulated by people through different organisational systems (Alexander, 1965a, 1965b; Lynch, 1981). In addition, there is a fundamental ineptness in the 'organism' metaphor that could lead to the ability to cut out unwanted parts as infectious. This approach could include the removal of parts of the city that are unwanted or undesirable, including the removal of so-called 'slums'. The theory could also lend itself to a search for optimum city size, to block growth, to the creation of separate uses, to suppress competing centres within cities, and to issues of hierarchy (Lynch, 1981). Alexander et al.'s 'new theory of urban design' attempts to develop an organic city theory that avoids some of these pitfalls. However, they recognise that their theory is incomplete and evolving (1987). These issues, and some of the processes that have emerged from this theory, while not negating its usefulness, have to some degree limited its adoption into practice.

What is valuable about the organic urban theory is the holistic viewpoint, that it "defines a dynamic relationship between the built and natural environment, society, history, and culture" (Mehmood, 2010, p.67) and "a holistic view of the interaction and relationship between humans, nature and the environment" (Mehmood, 2010, p.69). This idea is further expressed by Lynch:

> [I]t is this holistic view which is the most important contribution of organic theory: the habit of looking at a settlement as a whole of many functions, whose diverse elements (even if not strictly separable) are in constant and supportive interchange, and where process and form are indivisible. This idea and the accompanying emotions of wonder and delight in diverse and subtle linkage are an enormous advance over the [other] models…Incorporating purpose and culture, and especially that ability to learn and change, might provide us with a far more coherent and defensible model of a city. (1981, p.98)

The holistic view enabled by organic urban theory and the ability for theory to encompass the relationships among built form, the natural environment and people represent perhaps the most important lesson from organic theory to the further development of urban design theory. In addition, organicism offers flexibility to adapt and change and to perhaps enable an enhancing of meaning—the 'deep feeling'—within a city (Alexander et al., 1987). Thus, this holistic viewpoint naturally leads to the view that integration (or wholeness) is the central principle and concern of urban design.

3.5 Urban design: A technical profession or a way of thinking?

Many debates within the urban design literature have focused on whether urban design is a technical design profession or a general way of thinking about cities (a school of thought or a mind-set). Original 'all-encompassing' definitions of urban design have evolved into a narrower architectural and technical design perception of urban design. Therefore, urban design is now, according to many analysts, a 'technical' design profession primarily practiced by architects (Cuthbert, 2007b; R.Marshall, 2009; Mumford, 2009b). In this context, the term 'urban design' usually refers broadly to specific projects within public spaces. This idea was also

expressed by respondents in interviews conducted by the author (see Appendix F).[13]

Talen (2009b) argues that many definitions of urban design as a technical profession are concerned with the creation of three-dimensional objects in space. Primarily, they are concerned with the following:

- The creation of new friendly places;

- Transit-oriented developments (TODs);

- Pedestrian-oriented developments (PODs);

- The preservation and restoration of older neighbourhoods and historic districts;

- The creation of new suburbs;

- The creation of new precincts in cities and suburbs;

- Urban renewal and redevelopment;

- Public places (both formal and informal); and

- The shaping of urban and suburban developments.

On the other side of the debate, many within the urban design field believe that urban design is less a technical design based profession than a mind-set—a shared way of viewing urban environments, shared regardless of discipline. Alex Krieger, Professor of Urban Planning at Harvard University GSD explains: urban design has "evolved less as a technical discipline than as a frame of mind shared by those of several disciplinary foundations committed to cities and to improving urban ways of life" (2009a, p.vii). Further, it has come to represent "distinct avenues for engaging and facilitating urbanity" (2009b, p.129).[14] In this view, urban design is not necessarily a discipline; rather, it sees urban design as crossing professional

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[13] For example, one interviewee said "And so going back to your question on what urban design is, I guess, the way I would define it is it would be good design principles that can be applied to street spaces. And, unfortunately, I think that the people who hold the answer and the key to knowing what those design principles—or effective or appropriate design principles for the environment it is being applied to—are the niche professional who specialise in the area. So perhaps there is a big issue with the education of transport professionals as well as planners so that it becomes part and parcel of their knowledge and understanding as well and it can be applied in any project they are utilising not just into high profile schemes" (urban designer, female, 20093006FL)

[14] Krieger bases this view on the idea, referencing his colleague, Machado, that urban design and planning is the process "that produces or enhances urbanity" (2009b, p.129).

divides focused on the shared concern regarding the relationships between different parts of the city, and the integration of all parts of into a coherent whole.

This idea of urban design as a shared way of viewing cities is supported by many seeking ways to research the city holistically. For example, Christopher Alexander and colleagues use the term 'wholeness' (Alexander, Ishikawa, & Silverstein, 1977; Alexander et al., 1987). This idea was supported during the interviews. For example, one urban designer emphasised that urban design is too often a 'niche' profession, indicating:

> Urban design would [be more] useful as a 'school of thought,' included in the education of transport professionals, engineers and urban planners. Urban design needs to become part and parcel of urban and transport planning….It needs to be a school of thought. (urban designer, female, 20093006FL)

(Please see Appendix F for more interview results.)

This expansive idea of urban design is supported by Marshall, who maintains that urban design is "not about separation and simplification but rather about synthesis. It attempts to operate holistically in a world fragmented by disciplinary distinctions, to deal with the full reality of the urban situation, not the narrow slices seen through disciplinary lenses" (R.Marshall, 2009, p.55).

A component of this analysis of urban design as a mind-set providing a holistic lens to various disciplines is the preoccupation with enhancing 'community', urbanity, 'liveability' and economic vitality within cities and has a distinct social purpose (Krieger, 2009b; Sternberg, 2000; Talen, 2009b).[15] Although it could be regarded as romanticised, this definition recognises the need for a field that can view the many and complex elements of the city holistically. It also acknowledges the need for a vast array of skills to create a city. Childs describes this in another way, assigning urban design as "an overarching term for a school of professions and disciplines that focus on the physical design of our settlements and their component pieces, just as 'medicine' includes doctors, nurses, epidemiologists, and others" (2010, p.4).

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[15] Both of these authors are associated with New Urbanism (discussed in Appendix B).

Embedded within this view of urban design as a mind-set is the idea of urban design being part of a process within cities that reveals possibilities and enables cities to adapt and evolve (Lapintie, 2007; R. Marshall, 2009). According to this view, all elements—location, people, politics, objects, transportation networks, market forces and popular culture amongst others—must be considered as "linked and contextual" (Schurch, 1999, p.17). Along these lines, Greenberg defines urban design today as becoming more like improvisational jazz:

> In Stuart Brand's terminology, we are learning 'how cities learn.' Rather than producing finite products, urban design is increasingly about the anticipation and guidance of long-term transformations without fixed destinations, mediating between values, goals, and actual outcomes. (2009, p.205)

Urban designers who view their role in these terms are concerned with:

- Community based urban planning;
- 'Health' of the city;
- Sense of place;
- Creation of a supportive and inspiring public realm; and
- Support of economic, social and environmental vitality of centres, neighbourhoods.

Despite these distinctions, there are many overlaps between the view, application and philosophical foundations of urban design as a technical profession and urban design as a mind-set.

3.6 Is urban design a distinct discipline? The relationship between urban design, architecture and urban planning

Urban design theory has primarily been the domain of architects, planners and landscape architects and is often seen to represent the more social, human (than ecological or technical) concerns of these professions. However, the question remains—is urban design a discipline in its own right? To be a discipline, Lang determines that urban design needs "a body of unique literature, journals and its own processes of socializing new members into its ranks—into its norms of behaviour" (2005, p.392). According to Lang, this understanding of a disciple leads to questions of "how large does a unique body of knowledge and exclusive do its

norms of behaviour have to be for a sphere of activity to be regarded as an independent…discipline?" (Lang, 2005, p.392).

The literature review undertaken for this dissertation revealed a variety of sources on this issue. Many books, journals and academic departments are devoted to the study of urban design. However, much of the literature and research overlaps with, and is not independent from, works from the *land professions* as Beatley (1994) refers to in planning and other built environment disciplines (along with conservationists amongst others, and adding architecture based disciplines). In addition, many institutes and professional societies identify as being for urban designers (although they are quite few compared to those in architecture and planning but are rapidly increasing in number). To join many of those organisations, one does not need to be an 'urban designer'.[16]

The literature review revealed that urban design theory and practice are closely related to architecture and urban planning. In fact, many claim that it was 'born' almost as the missing link between the two fields (see Chapter 2) and was initially established to overcome the contextual limitations of architecture and the policy and statutory focus of planning. Schurch, in his work on defining urban design, identifies "three predominant views" in the literature as to where urban design 'belongs': (1) an extension of architecture, (2) an extension of planning, or (3), that it falls "somewhere between these two professions" (1999, pp.13-14). Schurch extends this view, arguing that, "because urban design is neither a profession nor a field—and certainly not a discipline—the viewpoint that it occupies a 'no man's land' may be the most objective of the three" (1999, p.14). This idea builds on Edmund Bacon's comments at the 1956 Harvard Urban Design conference, when he claimed that what was missing from current city design was a link between the existing three principles of planning, architecture and administration. Bacon claimed that planners focus on the creation of broad concepts and consider design a mere detail, architects focus only on individual buildings or projects and administrators focus on public policy, considering only architecture at the end of

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[16] The most well-known of these professional urban design institutions would be The Congress of New Urbanism, although you do not need to be an 'urban designer' to join.

the process. What was missing, claimed Bacon, is "the architect-planner-administrator, and if we ever get it, we will then really have an urban designer" (Bacon, 1956, as cited in Krieger & Saunders, 2009, pp.12-13).[17] Urban design from this perspective is the overlapping of architecture, planning and administrators (policy makers) with an ability to view the city holistically. Lang (2005) would include civil engineers and landscape architects in this group.

Speaking at the same influential 1956 conference, Sert located urban design within urban planning, for, in his view, it is the part of urban planning that deals predominantly with the physical form of the city (1956, as cited in Krieger & Saunders, 2009, pp.3-4).[18] Currently, this idea is mostly refuted, with urban design most often seen either as closer to architecture than to planning. Others see it as its own profession. An exception to this view is reflected in a recent article by Michael Gunder, a New Zealand academic at the University of Auckland. Gunder claims that urban design needs "to be retained as an important subset of planning practice…so that the core planning values of serving the public interest in the attainment of social equity, democratic civil society, and an ecologically sustainable future may be maintained in our city-building process" (2011, p.1).[19] Although urban design as 'belonging' to or within urban planning is largely refuted, the two fields are intrinsically linked and will continue to have a close relationship with, urban planning, enabling its practitioners to look at whole cities and 'spaces' or 'places' in a large sense.

Some see urban design as being part of architecture, particularly those trained and practicing as architects. Schurch explains that while the idea is not pervasive, "the profession of architecture apparently assumes that urban design extends directly from its practice" (1999, p.15). Krieger agrees, maintaining that "an architectural

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[17] The full citation is Bacon, Extracts from the First Urban Design Conference, originally published in Progressive Architecture, August, 1956, as cited in Krieger & Saunders, 2009, pp. 12-13.

[18] The full citation is Sert, Extracts from the First Urban Design Conference, originally published in Progressive Architecture, August, 1956, as cited in Krieger & Saunders, 2009, pp.3-4.

[19] The idea that many activities within urban design are part of urban planning is expanded on by Krieger, who maintains that the social activism side of planning (for example: local improvements, small-scale activities, advocacy for housing affordability and transit), is now seen as urban design. Krieger maintains that the public see "urban design as a friendlier, less abstract concept than planning (which never fully shed its urban renewal-era reputation as a top down approach to problem solving) and so demands good urban design from its public planners" (2009a, p.ix).

point of view has tended to prevail in most efforts to describe what urban design is—prevail but not encapsulate" (2009b, p.115), with urban design largely being regulated to the "domain of urban-minded architects" (2009a, p.ix). This idea is taken even further by Sorkin, who provocatively contends that "urban design, from its origins, was a way into the system, a means for architecture to recover its lost credibility [because of the "overthrow of the old Modernist formal and social model"] and continue its own traditional role as an instrument of power" (2009, p.170). This is an idea that was persuasive during the GSD conferences, as seen by Chermayeff and Soltan from the Harvard GSD, who in a combined declaration at the Tenth Urban Design conference in 1966, contend that "architecture and urban design are but a single profession. Design is at the heart of these efforts" (as cited by R.Marshall, 2009, p.53).

However, as with planning, the idea of urban design being a subset of architecture is largely refuted.[20] Again at the Tenth Urban Design conference, the chairperson of urban design at GSD established that "urban design is not architecture. The function of urban design, its purpose and objective, is to give form and order to the future" (Willo von Moltke, 1966, as cited by R.Marshall, 2009, p.53).[21] One of the major factors removing urban design from architecture is the idea of authorship. Urban design is usually anonymous: the result of partnerships, collaborations, and many vested interests, with designers often acting as 'conduits' for the needs of the users of the city. Within urban design, the 'everyday' is important, requiring a focus on settings for economy, functionality, ethics of space, use of space and mass

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[20] This idea is reinforced by many practitioners in the field interviewed in the 1956 issue of *Synthesis*, a journal published by students at the Harvard's GSD, the year the debates surrounding the definition of urban design and the unification of planning and architecture were at a peak. The practitioners interviewed included Frank Lloyd Wright and Le Corbusier, who gave a general response, stating that the job of urban design "is to organize the use of the land to suit the works of man" (Le Corbusier, 1957, as cited by R. Marshall, 2009, p.54). Other responses included: "giving shape to a community and moulding its activities is urban design. It deals with the dynamic features in space, but in time as well," by Richard Neutra (1957, as cited by R. Marshall, 2009, p.54): "good urban design represents that consistent effort to create imaginatively the living spaces of our urban surroundings. In order to supersede today's soul-destroying robotization, the modern urban designer's exciting task is to satisfy all emotional and practical human needs by coordinating the dictates of nature, technique, and economy into beautiful habitat" from Walter Gropius; and from Sigfried Giedion "urban design has to give visual form to the relationship between You and Me" (Synthesis, 1957, as citied by R. Marshall, 2009, p.54).
[21] The full citation is Willo von Moltke, 1966, 10th Urban Design Conference Proceedings, April 17-18, as cited by R.Marshall, 2009, p.53.

culture. Burchard specifies it in this way: "…it is the task of the planner and the city designer not so much to dictate public taste as to seek incessantly to find the best of this taste and to encourage it to thrive" (1957, p.122). Within architecture, authorship is important (Schurch, 1999). According to Heynen (1999), this emphasis on the author of a building could be seen to exclude the social side which is the primary focus of urban design.

Increasingly, urban design and landscape architecture, a previously non-urban field, are becoming closely related. The primary difference between the two is the dimension of interest, with landscape architecture being primarily concerned with the two-dimensional and ground plane. Lang (2005) argues that unless the area of concern also includes the surrounding buildings, generally much of what is considered in open-space design is landscape architecture. It is this holistic view of an area that differentiates the two professions. The combination of landscape interests and urban interests has resulted in a profession of 'landscape urbanists'—professionals who maintain that the landscape is the "real glue of the modern metropolis" (Krieger, 2009a, p.x). Krieger determines that while landscape urbanism is "still somewhat vague in methodology and projects, the promise…is powerful, since it promotes a logical integration of land use, environmental stewardship, and place making" (2009a, p.x). All of these concerns and qualities are at the heart of urban design.

The links and separations between the three professions are expressed by Scott Brown (herself an architect, planner and urban designer), who jokes:

> put a group of architects, urban designers, and planners in a sightseeing bus, and their actions will define the limits of their concerns. The architects will take photographs of buildings or highways or bridges. The urban designers will wait for that moment when the three are juxtaposed. The planners will be too busy talking to look out of the window. (2009, p.77)

Despite sharing theory and remaining intrinsically linked to the other built environment prodessions, urban design is progressively being considered a distinct discipline (Lang, 2005; Moughtin, 2003) and field (Banerjee, 2011; Banerjee & Loukaitou-Sideris, 2011). Figure 3.3 illustrates Lang's view of this development. This idea is emphasised by Marshall:

> By its nature design defies neat categorization. It should not be thought of as architecture, landscape architecture, or planning disciplines are…Urban design has always been and continues to be work in progress—progress not toward clarity of definition or professional accreditation but toward a professional engagement with the changing complexity of the urban condition…The urban designer needs to understand, integrate, and communicate across professional divides all the evolving complex factors that create the urban situation. (R.Marshall, 2009, p.55)

Lang, referencing the work of Rowe and Koetter (1978), expands on R. Marshall's concept of urban design, contending that "the city is a collage of overlapping precincts, places and linkages" (2005, p.391). Urban design essentially designs within this overlapping. Restricting urban design to any one of these disciplines limits the scope necessary for urban design and ignores the foundations and reasons for initiating the main concepts of urban design in the first place. Locating urban design within architecture limits it to a technical discipline; locating it within urban planning, ignores the links to 'design'. Urban design, urban planning and architecture are closely linked and integrated as part of the holistic nature needed to view the built environment from a sustainability perspective—"in action it will remain a collaborative task" (Lang, 2005, p.394).
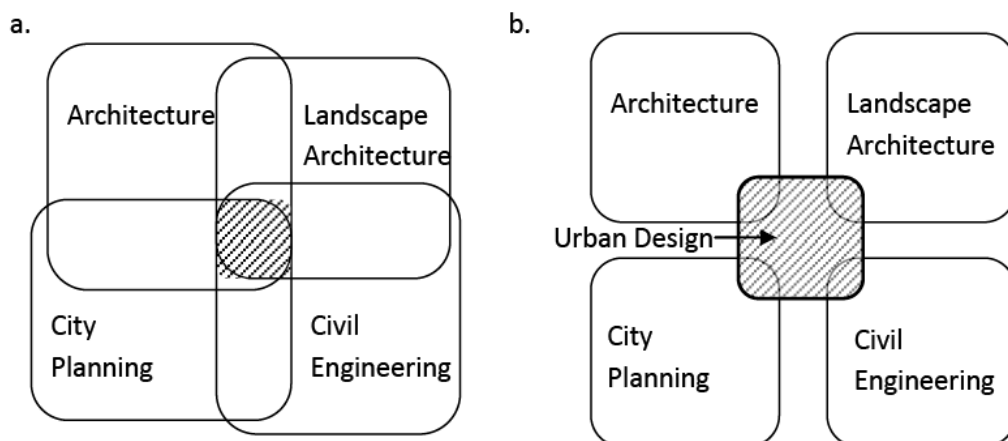
Figure 3.3: The traditional view of urban design as the overlap between architecture, planning, engineering, and landscape (a) and the current view of urban design (b). Source: Redrawn from Lang, 2005, p.394.

3.7 Concerns fundamental to urban design

> The urban designer must first of all believe in cities, their importance, and their value to human progress and culture. We must be urban-minded. (Jose Luis Sert, 1956, as citied in Krieger & Saunders, 2009, p.5)

There are a number of primary core issues within the urban design discourse. Generally, urban design boundaries are determined by physical space, with boundaries drawn focused on the space between building—public spaces such as squares, streets and building façades (Moughtin 2003). The recognition of the importance of the space between buildings allows urban design to mark out a space of its own within the competing land discourses discussed previously. To urban designers, as Cullen explained in 1961, "…the space between the buildings is seen to have a life of its own over and above the buildings which created it" (p.7).

However, as seen from the relationship between environment-behaviour research and urban planning and design, and, importantly, the need to include understanding of people's relationships with spaces, it can be argued that the boundaries of concern need to be expanded to include research on dynamic elements (See, for example: Cullen, 1961; Hedman & Jaszewski, 1984; Lang, 2005; Lynch, 1981). These dynamic elements include people use public spaces and recognition of contextual factors (political, cultural and economic) and the functionality of the city centre as a whole (Gerner, 2002; N. Taylor, 1999). The need to expand the boundaries of urban design can be seen through the wide breadth of activities, modes of action and scales of concern that urban designers are currently involved in and practice at (Chapter 4). Fundamentally, urban design is concerned with the creation, enhancement and understanding (reading) of public spaces in order to enable emerging possibilities within the public physical realm.

Concerns fundamental to urban design: Principles

A survey of urban design literature reveals the recurrence of some normative design principles (here grouped into 14), which warrant specific description:

1. Vision;
2. Integration (wholeness);

3. Robustness;

4. Efficiency;

5. Vitality and vibrancy;

6. Richness (complexity) and variety;

7. Personalisation;

8. Visual order (unity);

9. Enclosure;

10. Accessibility;

11. Permeability and legibility (cohesiveness);

12. Appropriateness;

13. Incremental and sensitivity to existing context; and

14. Safety.

These principles are discussed further below.

Principle 1: Vision

The principle of vision is essentially about enabling the possibilities about a place to emerge from the collective stories and histories and to enable decision-making (Newman & Jennings, 2008; van Dijk, 2011). Central to urban design, no matter where one draws the boundaries or spheres of concern, is the formation and projection of vision—urban design is essentially about enabling visions of an area to emerge and to be communicated (Lang, 2005). Urban design is communicating normative visions of 'good' city form (Talen & Ellis, 2002). This idea is furthered by Pieprz: "you can think of urban design as something that doesn't have to be built but that puts forward different visions that allow debate about strategy and priorities…and so you can meet the public who care about what gets done" (as cited in Crawford et al., 2007, p.313).[22] These visions require collaborations and the emergence of stories to enable possibilities.

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[22] The visioning process and its effectiveness is a contested area of research outside of the scope of the vision discussion in this research. See, for example: Shipley (2000, 2002).

Principle 2: Integration (wholeness)

Building on the discussion of organic urban theory, a central city design principle is wholeness or integration. For the purpose of this study, the principle of integration is defined as looking at all parts of the city holistically and is based in the idea that the whole is greater than the parts. This principle of integration expands traditional design boundaries and must include collaboration with other disciplines concerned with the built environment (Charlesworth & Adams, 2011).

As part of looking at the city holistically, it is essential that urban design is aware of, and occurs at, a wide variety of scales from site-specific scales (individual lots or projects), district (neighbourhood) scales, the entire city, a region, and corridors (Schurch, 1999; Webster, 2010).[23] Schurch refers to urban design's concern with various scales as the "thresholds of scale" based on the idea that urban design is holistic and it therefore must consider all scales—that "design intervention at one scale requires consideration of the context of the other scales" (1999, p.21). This is the recognition that all elements are linked.

Principle 3: Robustness

Urban design is also concerned with an urban environment's development and use over time—the principle of robustness. This principle is primarily about longevity and adaptability. It has been argued that the time span within urban design is different from that of architecture or planning: usually longer in range than architecture and perhaps shorter than many aspects of urban planning. The principle of robustness requires considerations to the ability of the built form to accommodate evolving and changing uses over time—from the initial pattern of use to re-use (Hayward, 2002; Rowley, 1994). This principle requires consideration

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[23] Although much of the urban design literature discusses the notion of an urban design 'scale,' which is usually seen to be something larger than a single building, there is no consensus about an 'urban design scale'. Urban designers work at many different scales. In addition, 'scale' differs immensely from the very large (the whole city or metropolitan region), to the small (an urban square or park). Depending on the scale of concern, the reading of the city and the purpose, the response will be very different. Cuthbert explains that, "to many, urban design is either 'architecture writ large' or. Many theories and discussions define urban design as either large-scale architecture or small-scale urban planning. However, there is no real consensus.

of long-term use, the flexibility of buildings and the urban structure to adapt, an active public realm and energy efficiency.

Robustness, moreover, is related to ideas of conservation and heritage protection and enhancement, all of which are important to the sustainability (particularly to discussions of embodied energy), richness, a sense of place and the unity of a place. This principle includes considerations of built and cultural heritage, including the spiritual and intangible elements of a place's history (see Chapter 4 for a discussion of 'sense of place').

Principle 4: Efficiency

To allow for efficiency in design, function must also focus on ability to adapt, change and accommodate varying uses. This idea links to the principles of robustness and accessibility. Efficiency requires considerations of effective space use, of time, phases and movement (including process and experience), maximising accessibility (discussed below) and of environmental and sustainability concerns along with other design focused considerations. Maximising accessibility and efficiency is a primary concern of urban designers using Space Syntax methods (see Appendix C).

Principle 5: Vitality and vibrancy

The principle of vitality refers to activity or aliveness in a city. It is related closely to Principle 14, Safety (discussed below) and is part of the reason cities exist. Vitality requires a fine grained urban area at a certain level of density and compactness in order to concentrate activities and people. This principle requires consideration the numbers of people in and around the street (pedestrian flows) during different times of the day and night, the uptake of facilities, the number of cultural events and celebration over the year, the presence of active street life, and generally the extent to which a place feels alive or lively (Montgomery, 1998).

The principle of vibrancy is the level of activity within a city. It is the feeling of a places energy or aliveness. Vibrancy and vitality are very closely related and the two terms are often used interchangeably.

Principle 6: Richness (complexity) and variety

Richness can be defined as the amount of sensory experience provided by the built environment (Bentley et al., 1985). This principle requires considerations of the tactile and sensory environment, particularly the visual qualities of the buildings (diversity and ornamentation in architecture), the visual and tactile qualities of the streetscape and street furniture, the landscape elements, the climate, smells and sounds and also how people use the space (Ewing, Handy, Brownson, Clemente, & Winston, 2006). Variety in this sense is about the visual opportunities provided by the environment. Richness and variety are not chaos; rather, they are the elements in the environment that provide interest and stimulation. Variety and complexity are needed to meet the innate human need for the environment to provide stimulation, interest and excitement through contrast, disorder, difference and change in the environment (Goakes, 1987; Herzog, Kaplan & Kaplan, 1976; Sennett, 1970). However, this principle requires balance, as too much variety is detrimental, creating chaos and confusion (see the Principle 8, visual order, below).

Principle 7: Personalisation

Personalisation refers to how people alter or modify the environment and is "an expression of claiming territory, of caring for and nurturing the claimed territory" (Mehta & Bosson, 2010, p.781). In environment-behaviour research, personalisation is viewed as a basic human function that requires expression (Cooper Marcus, 1995; Sommer, 1969). Personalisation of an environment is important psychologically for a sense of connection and security (Mehta & Bosson, 2010) and to enhance, maintain and contribute to sense of place (discussed in Chapter 4). Personalisation is important to the sustainability of a place, as it enables and enhances personal commitment to that place and often provides a visual representation of commitment that others can empower others (Beatley &

Newman, 2009, p.131). Personalisation is important in residential (Cooper Marcus, 1975, 1995) and commercial areas and is important for "enabling possibilities that generate conversation and other social interactions" (Mehta & Bosson, 2010, p.781).

Principle 8: Visual order (unity)

Visual order (or unity) is an essential component of a successful urban space. It is a reflection of the rhythm of the built environment and is related to Principle 2: Integration (above). Isaacs reminds us that "rhythm, the regular repetition of time units, is easy to comprehend and hold in the mind" (2000, p.147) and needs to be balanced as "overstimulation leads to coping behaviours, such as ignoring the environmental cues" and a lack of variety results in under-stimulation and boredom (2000, p.148). Order makes the environment understandable and enjoyable as the "brain responds positively to what it can understand" (Goakes, 1987, p.18). Visual order is necessary inorder for people to be able to place themselves within the environment.

Principle 9: Enclosure

Enclosure is the definition of the space created by the boundary elements and the degree to which they provide definition. The boundary, constructed by the walls, buildings, floors, ceilings (or sky), level changes, landscaping, fencing, lighting, texture changes, water, the horizon and any other objects or elements bordering the space, conveyed through its openings (windows, doors, spaces between buildings etc.), convey this feeling of enclosure or the opposite (Ewing et al., 2006; Ewing & Handy, 2009; Norberg-Schulz, 1980). The amount of enclosure provided by these elements influences the use of the space because of the psychological response the enclosure evokes in the user. The principle of enclosure is a fine balance: neither too much nor too little enclosure is desirable (Goakes, 1987) and people preferring a sense of enclosure to a sense of openness (Kaplan, Kaplan & Brown, 1989). Enclosure is judged from a human scale (Chapter 4) (Sternberg, 2000).

Principle 10: Accessibility

Central to urban design is the principle of accessibility—access.[24] It is not a static state and the principle focuses on the relationship between modes of movement and the natural and built environment. Accessibility allows all people, regardless of age, mobility, impairment, gender or other characteristics, to gain the resources, services and other everyday requirements that they need and is an important 'quality of life' measure (Iacono, Krizek, & El-Geneidy, 2009; Montgomery, 1998). However, until the emergence of concepts such as Universal Design, conventional planning[25] for accessibility has often focused more on mobility (movement) rather than access (Iacono et al., 2009), resulting, according to de Vasconcellos, in approaches that see traffic "as a 'given' and mobility and fluidity [as] sacred objectives." Therefore, "the single task of planners is that of dividing space according to the number of vehicles, therefore placing car drivers as the main beneficiaries" (de Vasconcellos, 2004) rather than for accessibility.

Urban design, on the other hand, must consider the principle of accessibility, related to the principle of efficiency. Planning and designing from the principle of accessibility, rather than mobility, enables other objectives, such as people using other modes of travel (walking, cycling and public transport), equity and environmental considerations, to be considered along with vehicles (Appleyard, 1981; de Vasconcellos, 2004; Newman & Kenworthy, 1999). In addition, as Lang reminds us, urban design seeks "efficient environments" in terms of ease of movement, access, servicing and within the various networks of communication (Lang, 2005, p.367).

Accessibility and efficiency are linked to infrastructure choices, particularly those concerned with transport, and questions about how we use the space, paths, districts, landmarks, edges and nodes we have in cities (Lynch, 1960; Newman,

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[24] "In lay terms, something is accessible if it is within reach" (Webster, 2010, p.79).
[25] Conventional planning or design refers to planning after 1950s and is reflected in suburban layouts featuring looped roads and cul-de-sacs. This is compared to traditional planning and design which was popular in the US and Australia around the 1900s and features grid layouts, or traditional European 'village' layouts, which feature non-linear road networks.

Beatley, & Boyer, 2008). Efficient and accessible urban forms are a central responsibility of urban designers and others concerned with spatial planning, including those that occur at macro- and micro-accessibility scales and are related to synergies in land use, permeability, legibility and appropriateness (Webster, 2010) (see below and Chapter 4).

Principle 11: Permeability and legibility

Permeability is the choice provided by the built form: the "number of alternative ways through an environment" (Bentley et al., 1985, p.10). Permeability is central to the use of an environment; this concept is explored in detail in Chapter 4. It is about how all the land uses in an area are linked together. This principle is closely related to accessibility and efficiency.

Legibility can be described as "how easily people can understand what opportunities [the built environment] offer" (Bentley et al., 1985, p.9), that is how easy it is to 'read' and navigate the environment and how people can locate themselves within it (Ewing et al., 2006). This principle is closely related to the principles of visual order and robustness, amongst others, and is important in mental mapping.

Principle 12: Appropriateness

Linked to legibility is appropriateness: how the visual environment reflects its use through design elements. A component of appropriateness is the recognition of the importance of understanding of the existing social context (including built form norms).

Principle 13: Incrementalism and sensitivity to existing context

Related to legibility and appropriateness is the principle of incrementalism and sensitivity to existing conditions and context. Urban designers believe in the "bits and pieces" of the city (J. Jacobs, 1961, p.390) and with continuity within the city (Sternberg, 2000). The principle of incrementalism is based on the idea that "towns

are not designed…They are pasted together, piece by piece" (Gallion & Eisner, 1986, p.515). (This idea builds on the organic urban theory discussed above.) This is the principle of what Talen calls "nudging and tweaking rather than demolishing and building anew—making small, strategically placed interventions" (2009b, p.4). It requires recognition, as Burchard points out, that "a great urban aesthetic arises not from a cluster of architectural chefs-d'oeuvre but from a sensitivity on the part of each successive builder to the amenities that are already there" (1957, p.117). This idea was particularly important to Alexander et al., who determined through their research on urban patterns that "when you build a thing you cannot merely built that thing in isolation, but must repair the world around it, and within it, so the larger world at that one place becomes more coherent, and more whole" (1977, p.xiii). Their work builds on ideas of integration and robustness.

Critically, the principle of incrementalism does not negate the power of large changes or large developments. Rather, there is power in many small changes, recognition and understanding of existing cultural contexts (cultural knowledge and the contextual richness of a place) in incrementally building in meaning to spaces and a recognition of the importance of a bottom-up approach (Brecknock, 2006; Gehl & Gemzøe, 1996; Talen, 2009b; see Chapter 4).

Principle 14: Safety

Underlying all of the urban design principles discussed is the idea of personal and community safety, both perceived safety and actual safety, recognising that perceptions influence actions and behavioural responses (Engwicht, 1999, 2005; Whyte, 1988). Imbedded in this idea is that provision of safe environments is a key principle and concern of urban design, as seen through the proliferation of safety concerns in the literature on environmental crime prevention, environmental criminology, and Crime Prevention through Environmental Design (CPTED)[26] (see, for example: Carmona, 2010a; Jacobs, 1961; Sarkissian & Stewart, 2000; Whitzman, 2008).

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[26] For more information on CPTED see the International CPTED Association http://www.cpted.net.

Although safety recommendations and considerations are highly site-specific and contextual, generally this principle focuses on the need to increase vitality, increase the human presence in public spaces (legitimate activity, walking and cycling), providing natural surveillance—Jane Jacobs' 'eyes on the street', promote the use of transparent streetscapes, articulated and active street frontages and façades and creating areas with a mix of land uses that attract people at various times of the day and night. In addition, community safety concerns underlie the principles of sightlines, clear delineation between public and private spaces, lighting, signage, design elements that might create spaces for entrapment or concealment, as well as maintenance and management practices.

For the principle of safety, the readability of the built environment is also important as it signifies who is welcome in a space (Engwicht, 1999; Whyte, 1988), as is personalisation and control. According to Lynch (whose work predates modern environmental criminology), the theory is that "ethical influences run from place to man [*sic*.], as well as vice versa; our ideas of what is right derive from the nature of things around us, as well as from the nature of ourselves" (1981, p.294). Of particular importance to the principle of safety are considerations of the perceptions of safety and feelings felt by users of the space, perceived through, amongst other elements, the character, sensory experiences (such as smells, noise, maintenance and visual stimuli) and the general ambiance of a place. The principle of safety is integral to all urban design considerations.

Related to this principle is that concerns for safety, particularly in promoting places as safe, have led in some cases to over management and formal or electronic surveillance of public spaces (both private and publicly owned) and the use of controls regarding behaviour and conduct, allowing those who manage spaces to be able to remove those deemed unsuitable. A manifestation of this over management is local public sectors adopting 'generic' standards, guidelines and controls, in part increasing the homogenisation of place—the designing out of risks (Carmona, 2010b) (discussed further in Chapter 4).

Discussion on the principles

These normative design principles, particularly ideas about safety and accessibility for all underpin urban design theory and practice. To this list of principles could be added gender, community engagement and difference building on the sustainability urban planning research and work of the 1980s and 1990s. This is beyond the scope of the research here, other than that ideas of equality underpin sustainable urban design.

Concerns fundamental to urban design: Conclusion

Based on this review of the literature (see Appendices A, B and C along with the literature explained in the main text), I have identified that the following considerations are interrelated and fundamental to urban design:

- **BUILT ENVIRONMENT:** considerations given to place, human scale built environments (horizontal and vertical), mixed and compatible uses, and to public, semi-public and private spaces, building exteriors and the interface between public and private spaces.

- **CENTRES:** the creation and promotion of centres—areas and conditions where people experience meaningful events in their daily lives (vitality, vibrancy). These centres include central business districts (CBDs), central areas, neighbourhood centres, transit centres and other important centres. This concern includes buildings and their grouping.

- **DENSITY:** attainment of appropriate compactness in order to promote mixed land uses, accessibility, a lively and walkable pedestrian realm, and alternative forms of transportation. This includes the need to create variety in uses and urban form and a critical mass to provide activity, vibrancy and sustainability.

- **MIXED AND COMPATIBLE USES:** diversity and appropriate mixing of land uses (including diversity in housing choices) to create lively places and reduce the need to travel. Diversity is primarily concerned with a variety of uses, offering choice and providing enough reasons to be in a place that it is able to create a critical mass of people and activities.

- **PUBLIC SPACE AND REALM:** (public domain, public space) considerations given to the creation and promotion of appropriate public spaces, including streets, streetscapes, formal public spaces, informal public spaces and 'forgotten' spaces.

- **SENSE OF PLACE:** integration of land, work, people and their history where the quality of synecdoche (part represents the whole) or harmony reflects mutual dependencies and profoundly contributes to a sense of community, and facilitates an emotional connection to place, essential for the sustainability of places. This relates to principles of personalisation and to ideas of conservation and heritage, and public art.

- **NATURAL ENVIRONMENT:** consideration given to the preservation and integration of the natural environment and to ecological responses within the built environment.

These concerns are interrelated and must be considered together. Regardless of the scale of the investigation or the discipline of those theorising about urban design, the task of the urban designer is to create, enhance and enable these characteristics based on these principles of integration, accessibility, safety along with the others, from a humanistic perspective.

3.8 Issues within urban design

To this discussion about urban design theory, some of the field's failings need to be acknowledged. Urban design has some identified issues, namely:

- That it perpetuates formulistic design solutions that inadequately address local context, lack a clear sense of place and perpetuate a dominant, generic identity;

- That it does not adequately consider for whom it is being designed and does not adequately address inequity within cities and economies;

- That many of the theories and practices subscribe to philosophies based in physical determinism; and

- That in theory and practice, it has been unable to adequately incorporate the natural environment into urban environments despite emphasis on this.

These criticisms are partially due to urban design's adherence to and continuation of Modernist approaches that focus on the physicality and form of the city and attempt to follow primarily rationalistic and 'scientific' solutions to urban issues. Importantly for this discussion, urban design has been unable to overcome the dominant formulistic transport-planning paradigm embedded in western planning.

Much of the criticism of urban design concerns its preoccupation with establishing formulae and guidelines. Critics argue that too often urban design reduces the complexity of the city to a guideline or formula that perpetuates a dominant, generic identity, which, according to Cuthbert, is engrossed with "idealized" versions of the "English village located in a beautiful landscaped garden" based on Cullen's townscape (1961, 1971) (2007b, p.184). This is part of the commodification of city image (Gunder, 2011) and the increasing need to 'sell' cities and urban areas in order to attract people and businesses (see, for example: Carmona, 2009, 2010a, 2010b; Cuthbert, 2006; Florida, 2002; FORM, 2008; Hall, 2007).

In addition, many urban design responses are criticised as being fundamentalist, inflexible, prototype or *Disneyland* responses focusing on pedestrianisation and public transport (Sorkin, 2009). These responses are primarily a result of insufficiently understanding the human-built environment interactions (Lang, 2005), the preoccupation with design guidelines and of not adequately addressing issues of 'community' and 'public'. Sorkin (2009) is highly critical of urban design's solutions, contending that it is essentially urban renewal with a human face based on resolving problems with formulistic solutions. For Sorkin, many urban design solutions create "evanescent moments of street-style sociality within a larger system entirely dependent on cars" (2009, p.169) and that "today's dominant urban design is all lifestyle and no heart, and has nothing to say to the planet's immiserated majority" (2009, p.179).[27] His criticisms seems to be based more in the

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[27] Talen refutes some of Sorkin's criticisms maintaining that, "Sorkin is annoyed with urban design because, naturally, he is thinking like an architect. Architects crave originality—a cliché, but a true one…success in urban design is often about unoriginal things" (2009a, p.183).

uninventiveness of the solutions proposed by urban design (discussed in Chapter 4), than in urban design's ability to address the problems.

Furthermore, this criticism of urban design also revolves around issues of not adequately addressing inequity and social justice within cities and economies. Sorkin asserts that, "what is missing is an idea of justice, a theory that addresses not simply the reconfiguration of space but also the redistribution of wealth" (2009, p.180). Writing in 1997, David Harvey (discussing a related discipline, urban geography) contends that "the problem is to enlist in the struggle to advance a more socially just, politically emancipatory, and ecologically sane mix of spatio-temporal production processes rather than to acquiesce to those imposed by uncontrolled capital accumulation" (1997, p.3). This criticism is in part a reaction to the commodification of city and capitalist economic systems and requires interdisciplinary solutions.

Criticisms of urban design also centre on the lack of consideration given to who a city is being designed for with the public never conceptualized (Sommer, 2009). The public who is intended to use the space is often not clearly articulated or identified within urban design projects and guidelines and so solutions often fail to address all of the needs of the various users of public space adequately. It is claimed that much urban design is for the early to middle-aged élite, not for children, youth or older people (Lang, 2005; Shaftoe, 2008). Particularly, the needs of youth are often not catered for, despite the recognition that they are primary public spaces users. In addition, their presence is often viewed as a negative and their behaviours scrutinized (Travlou, 2007). Projects are usually for a specific user group or for a generalised public rather than based on specific understanding of the diverse ranges of user needs. Issues of inclusiveness will continue to be debated and are not easily resolved, especially since city spaces and people's use of them are constantly in flux (see Chapter 4).

Collaboration is central to urban design. However, collaboration, both with residents, or the 'community', and with other built environment professionals, is often deficient, as much literature especially around deliberative democracy

illustrates, and is often lost amongst issues of budget and authorship. Burchard, in 1957, was advocating for collaboration between urban environment professionals and others, maintaining, an appropriate urban environment "will not appear, I fear, through the actions of a few dictatorial master planners, however talented they may be. I doubt that there is any human genius which is individually able to comprehend or provide the whole urban aesthetic" (p.122). Rather, collaboration—"at the hands of many [people] in many places, individual [people] and not [people] of committees, but architects, and sculptors, and painters, and planners working in consort and even sometimes in opposition"—can result in the creation of a 'good' city if they work from "common qualities…a respect and even an affection for the past, a solicitude for the future, and an understanding of the present" (p.122). Or poetically, "…to me it seems that a city is too big a piece of sculpture for any one [person] to carve, and I am still more apprehensive about sculpture by a committee" (Burchard, 1957, p.116).

In addition, many urban design theories have been criticised for subscribing to physical determinism—"the view that the physical environment determines human behaviour" (Rapoport, 1977, p.2). This idea is embedded in much of the early urban design literature (R.Marshall, 2009, p.41) and is a criticism often associated with urban design. This is not a new issue. In 1977, Rapoport explains that "in planning and design environmental determinism has been the traditional view—the belief that changes in the form of cities and buildings can lead to major change in behaviour, increased happiness, increased social interaction and so on" (1977, p.2). This idea still holds, with Sommer believing that one of the "erroneous assumptions" in urban design is that "if you build it, they will come—following the credo that form may determine behaviour" (2009, p.136). Following a similar line of thought, Sorkin contends, "it remains an item of faith for urban design that…an architectural object retains the power to re-create the values and relationships that first gave it form. This is a remarkably utopian position in the very worst way" (2009, p.167) as the "the city seems to everywhere sacrifice its rich ecology of social possibilities for simply looking good" (2009, p.163). Sorkin's criticism is based on the idea that a diverse public is a democratic public (Crawford et al., 2007).

However, along with the idea of physical determinism is the recognition that humans are not passive. Rapoport determines that the "built environment can be seen as a setting for human activities. Such settings may be inhibiting or facilitating…but cannot, however, determine or *generate* activities" (1977, pp.2-3, original emphasis). Carmona et al. agree, maintaining that environment-people interaction is not a one-way process; rather, people influence the environment and the environment influences them. They maintain that "rather than determining human actions or behaviour, urban design can be seen as a means of manipulating the probabilities of certain actions or behaviours occurring" and that therefore "while urban designers cannot 'make' places, they can create more 'place potential'" (2003, p.107). It is a narrow debate, with often urban design theories having some of the fundamental notions of physical determination embedded within.

This debate might also be related to an 'English' way of viewing cities, the use of the terminology 'urban design' vs. the Latin 'urbanisme' or 'urbanismo', or the use of 'urbanism' and 'urban science' in Italian studies. That urban design is primarily an Anglo-Saxon term highlights the limitations of the English language to address adequately notions of 'urbanism'. The basic difference between the meanings of these terms may be the prescriptive versus descriptive difference (Moudon, 1992). Broader understandings would perhaps enable broader processes and forms to be employed by urban design (Krieger, 2009a).

Furthermore, much urban design theory and practice has been unable adequately to incorporate the natural environmental into urban environments despite emphasising the importance of doing so. The environmental concern, enhancement and protection component of urban design needs to be progressed as generally concerns for nature have yet to be realised within urban design as a whole. However, the concern for the natural environment is increasingly important for, as Greenberg argues, "we are witnessing a major dissolution of the false professional and conceptual dichotomy that divided the city from the natural world" (2009, p.203). This breaking down of the separation between built and natural environment concerns requires more sustainable practices (increased

walking and cycling, less car dependency, lower energy consumption and other practices) along with an "intertwining of city and nature in a new sense of place" (Greenberg, 2009, p.204) and considerations of health. Greenberg maintains that there is a third way for urban design (from the dichotomy of New Urbanism and post-urbanism) that is "propelled by the environmental imperative, informed by the need to integrate this perspective with competing social, economic, and cultural forces and by closer observation of how cities actually behave" (2009, p.202). (See the biophilia discussion in Chapter 4.)

Issues within urban design: Inability to counteract automobile-based planning and design

As established in Chapter 1 and 2, modern western cities have been shaped by the Modernist, Rational and auto based transport planning models based on auto dependent planning, however, most importantly for this discussion, the design professions have essentially become complicit and unable fundamentally to counteract some of the negative consequences of automobile-dependent planning despite having humanistic foundations and intentions. Urban design has not had the theoretical or practical skills necessary to counter formulistic car-oriented planning and its proponents in theory, practice and within the general culture. They have primarily been losing the battle for the city in ideas and in politics. To change cities requires a new theory of urban design that is both more sustainable and able to respond to the needs of people and the changing uses of cities. In addition, it requires a theory that is able to overcome some of the formulistic issues, and at the same time to change cities. This is a tall order: it requires a new urban design practice with the power to question the politics of the car building on the already established urban design foundations.

3.9 Urban design as the relationship among people, the built environment and the natural environment

Emerging from these fundamental concerns of urban design, the discussed definitions and some of the issues within urban design, particularly urban designs inability to overcome Modernist, car-based foundations, the development of urban

design as proposed by this author sees urban design as *the meaning constructed and imparted by the relationship between elements and people* (Figure 3.3). This concept of urban design builds on the urban design practiced by the theorists influenced by built environment studies (discussed in Chapter 3) and on the ideas of sustainable city development and sustainable transport planning. This *meaning constructed and imparted by the relationship between elements and people* includes the organisation and construction of meaning through space organisation and the meanings constructed and conveyed through the details of the built and natural environment (Rapoport, 1977).

These relationships and particularly the meanings constructed and conveyed by them, are at the heart of urban design research and practice. This focus includes trying to understand elements of successful places—or stories—of these relationships and trying to enhance, create or progress successful versions. Clarence Stein, writing in 1955, explains this clearly as urban design is the "art of relating: STRUCTURES to one another and to their NATURAL SETTING to serve CONTEMPORARY LIVING" (Stein as cited in Lang, 1994, p.ix, original emphasis). This idea is expressed in Figure 3.3, which illustrates the relationship of elements as a nested table, showing urban design at the centre, concerned and shaped predominantly by people, which are embedded within space, the built environment and ultimately within the natural environment. This reflects the increasing importance of concerns of the natural environment and sustainability to urban design (see, for example: Beatley, 2010; Beatley & Newman, 2009; Charlesworth & Adams, 2011; Lang, 2005; Newman & Jennings, 2008; Newman & Kenworthy, 1999). Culture, which here is taken to include ontology, decision-making and governance processes, such as political, economic or religious systems, worldviews and knowledge-building systems, and ethics, has been included as this ultimately influences the view of, and responses to, all of the other issues.

The relationship between meaning and urban design is clarified by King, an Australian urban design academic, who explains "urban design is concerned with the *purposive production of urban meaning*, through the *coordinating design of conjunctures or relationships* between spatial elements" (1988, p.445, original

emphasis). King follows sociologist Castells' idea that urban design is "the symbolic attempt to express an accepted meaning in certain urban forms" (1983, p.304, as cited in Cuthbert, 2007b, p.186). Both of these ideas embed urban design within other urban functions. King continues, specifying that urban design is concerned with "relational, contextual dimensions of spatial forms" (1988, p.460). The art of relationship's purpose is "to take all elements that go to create the environment…and to weave them together in such a way that drama is released" (Cullen, 1971, pp.7-8).[28] Although King and Cullen are both referring to built and natural environment elements (and economic ones, in King's case), people, and their culture, political and economic considerations are integral to these relationships and to the progression of a humanistic urban design.
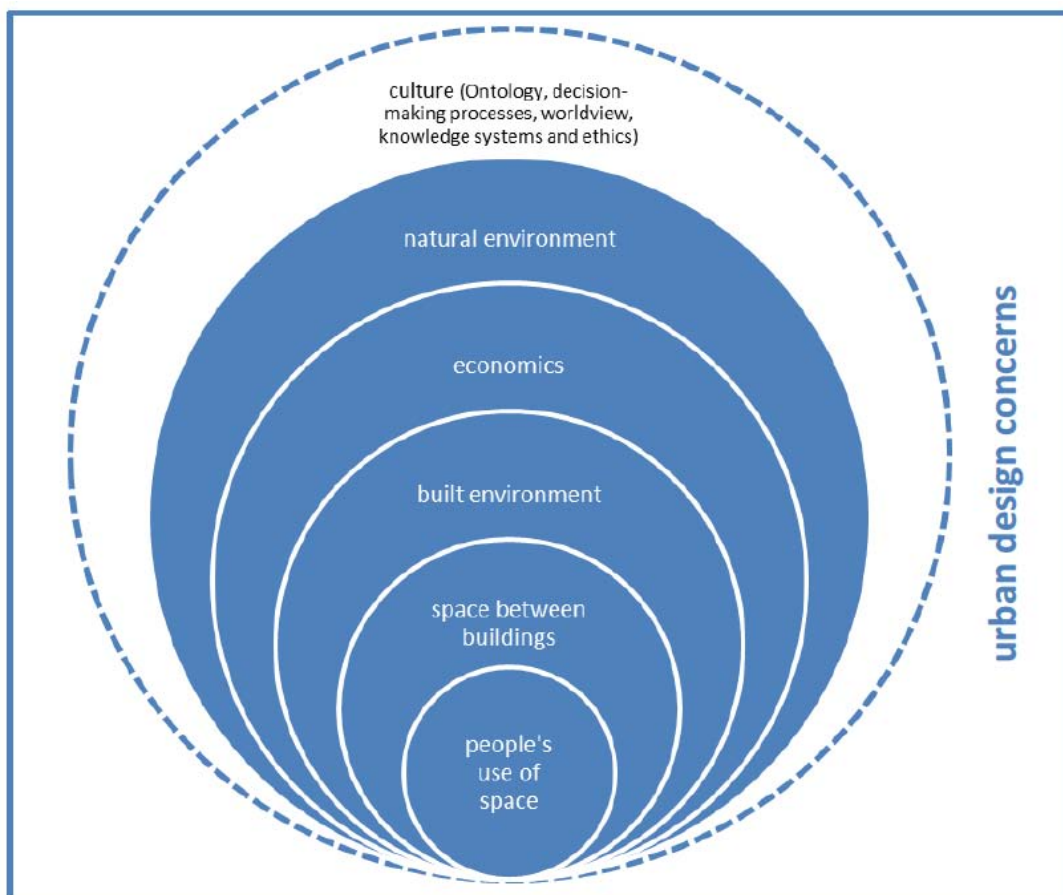
Figure 3.4: Venn diagram illustrating the relationship of concerns within urban design. Source: Author building on work from the literature, particularly the sustainability literature.

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[28] To Cullen, if a "city appears dull, uninteresting and soulless, then it is not fulfilling its self. It has failed. The fire has been laid but nobody has put a match to it" (1961, p.8).

The uniting factor creating *cities for people*

The aim of this definition is to bring the human element of urban design to the forefront. Sternberg contends that "urban design comes into its own as the field that engages the human experience of the built environment" (2000, p.266). It is this human concern at the forefront of concerns that differentiates urban design. From this difference comes the need for urban design to shed completely the rationalist, formulistic approaches and solutions focused on the physicality of the city that currently shape the discipline. To take the next step in theory development and respond to current urban issues (such as sustainability and competitiveness between cities), urban design must now focus on humanistic design processes (based on empirical research), on the appropriate distribution of space (based on ideas of use), as well as reclaiming space from traffic. This idea of creating *cities for people* is not new, and returns to the original formations and developments of the field in the 1950s and 1960s.

Urban design is about the creation or improvement of cities for the betterment of people and the environment and the relationship between the built environment, people and meaning. Further, I have identified the need for integration of natural environment, social and built environment concerns and the scope for the urban designer to contest the pre-eminence of the traffic engineer to shape our cities. All urban design definitions and theories are concerned with a place for civil society to occur—therefore the object of concern becomes the public realm or space of our urban areas and the way people use those spaces (Cuthbert, 2003; Montgomery, 1998).

Urban design is about hopeful cities—hopeful places, that are able to adapt and respond to residents social, environmental and economic needs. Lang contends that, above all, urban design "represents acts of will in creating positive changes to the world, physical and social" (2005, p.xix). According to Juris Greste, it is fundamentally about creating cities (or improving existing ones) to be vibrant,

comfortable, inclusive and sustainable places—places which relate to people's use and need (Greste, 2009).

Coming out of this literature review, I would argue that the relationships and meaning constructed by the relationships between people and the built and natural environment are the central concern of urban design. However, we need to go further. Specifically, this means focusing on the *walkability* of a city. This focus is based not only on the notion that humans must walk for physical and mental health, but also, that it is only by emphasising walking in urban design can cities begin to fulfil the relationships between people and the built and natural environments. This has been the aim of urban design, particularly in the past 60 years.

Urban design from this view is based on the needs and senses of people walking, using and spending time in the city. This definition of walkability alters the traditional idea of the 'pedestrian' within city planning, transport planning and city design to include all people within the public space. It makes the structuring focus people and their needs, rather than cars or mobility. Walkability is thus included in the central concern for urban design theory. This is expanded on below. Chapter 4 provides a discussion of walkability in urban design practice.

3.10 Urban design as walkability

According to Wunderlich, walking is a mode of transport, a way of moving through and around places, and (equally importantly) it "is a 'mode of experiencing place' and 'the city'. It is a multifaceted activity and a temporal practice, which has an impact on design" (Wunderlich, 2008, p.125). In recent times we have seen a reversal of some Modernist approaches to urban planning and an emerging understanding that 'we are all pedestrians'.[29] It is now widely accepted that a central concern of urban design practice is to encourage pedestrian activity (Isaacs, 2000). Planning for pedestrians and providing appropriate and high-quality

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[29] As discussed in Chapter 1, the use of the word pedestrian refers to pedestrians as people using that mode of transport but is also using it as a general term to include people on the street in a vitality sense, i.e. also those staying and using public places, not just those walking through.

pedestrian infrastructure are important, not only from an economic and urban vitality sense, but also from the perspective of environmentally sustainable transport (Newman & Kenworthy, 1999). Sustainable transport options require appropriate pedestrian infrastructure *and* an attractive pedestrian-friendly urban environment.

Based on the recognition that all trips in a city centre have a walking component, advocating for the needs of pedestrians is a fundamental component of urban design practice. Traditionally, people built cities structured around pedestrian movement needs (Kostof, 1992; Newman, 2003; Newman & Kenworthy, 1999; Pushkarev & Zupan, 1975). We know that pedestrians are the basis of a vibrant city. However, in modern western cities, the pedestrian is often the forgotten factor in transport and urban planning. The advent of motorized transport resulted in a change from accessibility to mobility, with pedestrians crowded into left over city space. As a result, pedestrians received attention only in terms of safety (and not interrupting motor vehicle movement) (Pushkarev & Zupan, 1975). In addition, this sort of planning can turn stale public spaces into vibrant places. As Paul Murrain asks, referring to the over regulation of roads and public spaces: "What is the point of being 'safe' if the death of life is a result?" (2002, p.141).

However, as Calthorpe explains, the situation is finally changing:

> Pedestrians are the catalyst which makes the essential qualities of communities meaningful. They create the place and the time for casual encounters and the practical integration of diverse places and people…they set the scale…To plan as if there were pedestrians will turn suburbs into towns, projects into neighbourhoods, and networks into communities. (1993, p.17)

Calthorpe's call for pedestrian neighbourhoods is reflected in a 2011 survey of housing preferences in the US which shows that people are choosing neighbourhoods with quality walkable characteristics, particularly abundant footpaths and neighbourhoods that had shops, restaurants, schools and local businesses within walking distance from homes. In addition, the survey revealed that people would choose a smaller home if it was in a location that would reduce their commute to under 20 minutes (National Association of Realtors, 2011). This

survey reinforces those by Newman and Kenworthy (2011) and Newman and Newman (2006) which show that there has been a marked cultural shift in western cities with residents seeking more urban locations and less car-dependent lifestyles (Chapter 1).

The use of cities is constantly in flux—changing and evolving. A major component of urban design practice is responding to these changing needs, particularly to the global expansion of capitalism (Knox, 2002; Lang, 2005). Furthermore, mobility (of people, ideas and goods) has increased, with people, information and capital easily travelling long distances. Knox argues that "globalization has generated a 'fast world'—a world of restless landscapes" in which "commonalities amongst places are intensifying" and places are less able to sustain their uniqueness (2002, pp.3-4).

Currently, the ways people interact and communicate have also changed and are changing rapidly, first with the telephone and now with the Internet and online realities and interactions (new media and social media). Much discussion has centred around the changing use and declining importance of public spaces within cities (Carmona et al., 2003; P.Hall, 1999). Carmona et al. base this declining use on the "reduced availability of, and significance attached to, public space and public life" and that many functions and activities that once happened in the public realm have moved to the private realm, particularly shopping and recreation (2003, p.110). With leisure shoppers now considered as the most important city users in terms of adding vibrancy and vitality to a centre, it is now widely accepted that for these users, the whole 'experience envelope' of a place is important, not simply the land uses or car parking (Engwicht, personal communication, November 13, 2009). Thus there is a new focus on rediscovering the local and re-establishing the traditional walkability of cities.

As Richard Florida (2002) explains, those who design and manage cities are finding that they need to focus on catering to a 'creative economy' consisting of young highly educated professionals who deliberately choose cities for their amenities and lifestyle choices, not solely for their job market. Cities now market their vibrant, attractive and active centre, using it as competitive milieu—a commodity

to meet the demands of this new creative class and to be globally competitive (Knox, 2002; Gospodini, 2002; S. Schmidt & Németh, 2010). Gospodini explains it in this way:

> In the era of globalization, the relationship between urban economy and urban design, as established throughout the history of urban forms, seems to be being reversed. While for centuries the quality of the urban environment has been an outcome of economic growth of cities, nowadays the quality of urban space has become a prerequisite for the economic development of cities; and urban design has undertaken an enhanced new role as a means of economic development (2002, p.60).

Increasing the creative image of the city, at least in the public realm, is often one of the primary roles of an urban designer, along with regeneration of underutilised spaces within the city. What lies behind the aesthetics of such spaces is the need to create walkable spaces that are attractive to people—to walk through and walk to.

This idea is linked to the concept of the creative city (Landry, 2000), which looks at the location of creative industries and the relationship between artists, culture, the urban environment and economic development, using the idea of creative culture as an "engine to support a city's image and economic development (Comunian, 2011, p.1158). Landry maintains that here has been a marked shift from an "urban engineering paradigm to a creative city making paradigm." This is based on the idea that cities need to "be the best, not *in*, but *for* the world". This idea necessitates a rethinking of the measure of urban success, which Landry believes is now measured by "achieving a more humanistic urban form" (personal communication, October 27, 2010).

Definition of walkability

A place is most easily understood through walking around it. For Wunderlich, it is "an ordinary activity in our everyday life in the city" and "an unconscious way of moving through urban space, enabling us to sense our bodies and the features of the environment…It is while walking that we sensorially and reflectively interact with the urban environment, firming up our relationship with urban places" (2008, p.125). Walking is how a place is experienced (Tight, Kelly, Hodgson & Page, 2004)

and therefore the movements both to a place (the flows in and out) and through a place (T.Hall, 2009). Allan Jacobs, a great fan of pedestrian activity in cities, claims that walking is "how public socializing and community enjoyment in daily life can most easily occur. And it's on foot that one can be most intimately involved with the urban environment" (1996, p.272). Walking is intrinsically linked to sense of place (discussed in Chapter 4, Section 4C.7).

Walkability is a central concern of urban designers—both as a mode of transport and as a mode of experiencing urban space. Because, as Wunderlich claims, urban design seeks to "enhance the everyday experience of walking in the city and spaces" (2008, p.137), it also affects the walkability of the environment. In this dissertation, I use a definition of walkability adapted from Forsyth and Southworth (2008):

encouraging physical activity, being accessible (close and barrier-free), safe, full of appropriate pedestrian infrastructure and destinations, and having places that are pleasant, interesting and that provide the services necessary.

3.11 A new approach to urban design

All of the issues and conclusions discussed in this and the previous Chapter, particularly those related to sustainable transport needs, when examined through the lens of a humanistic perspective (i.e., the need for appropriate distribution of space, based on ideas of use), require us to change the urban design approach and the necessary responses. Jon Lang, through his research on urban design in the US, urges the establishment of a 'more encompassing approach' to urban design that addresses some of the failings and shortcomings of the discipline. Lang determines that to become more encompassing, urban design needs:

> (1) to be seen within a moral order, (2) to understand its potential contribution in a changing world, (3) to deal with the new realities of life rather than the problems of the past, (4) to recognize its political nature, (5) to see itself as a collaborative act, (6) to have a future orientation, (7) to be based on experiential knowledge, and (8) to follow knowledge-based approach to design. (1994, p.127)

Lang determines, furthermore, that to meet these needs, urban design "will have to draw on both Rationalist and Empiricist thinking while firmly rooted in the latter approach" (1994, p.127). These criteria offer a way forward for urban design and will be used extensively in later Chapters as a way to evaluate the contribution of Jan Gehl to urban design.

3.12 Conclusion

As a review based on the urban design literature, this Chapter has offered an overview of urban design, canvassing definitions, philosophy, theory and current urban design thought, the fundamental principles and concerns for urban design and some of urban design's failings. This chapter has argued, based on a literature review, that the relationships and meaning constructed by the relationships between people and the built and natural environment are the central concern of urban design. Finally, it suggests that these relationships begin to make sense when urban design focuses on the walkability of cities. These insights inform a conceptual frame for evaluating and progressing urban design theory and practice (introduced above and expanded on in Chapter 7), by exploring the work of Jan Gehl (Chapters 5 and 6). Chapter 4 discusses practice: what urban designers actually do in practice and the considerations of urban design practice from a humanistic and sustainability—walkability—perspective.

SECTION 2: URBAN DESIGN THEORY AND PRACTICE—AN EVALUATION

CHAPTER 4: URBAN DESIGN PRACTICE: WHAT DOES URBAN DESIGN DO?

Chapter 4: Urban design practice. What does urban design do?

4.1 Introduction

The purpose of this Chapter is to understand the primary concerns and responses within urban design practice. It builds on the ideas established in Chapter 3, which expanded our understanding of how urban design operates from a humanistic perspective. The approach in this Chapter aims to establish the foundation for the subsequent evaluation framework: an evaluation of Jan Gehl's contribution and for a way to develop an effective, sustainable, humanistic and responsive field of urban design. Part A of the Chapter presents an overview of urban design practice. Parts B and C discuss the primary concerns of urban design as established by the literature, with Part B offering a discussion of walkability as it underpins all of the other concerns discussed in Part C.

Urban design is a practical field—it is concerned with 'good' outcomes. "It sees processes, policies and strategies as servants to good outcomes" (Government of Western Australia, 2003, p.178). This exploration aims to address a fundamental issue for urban design practitioners identified by Krieger: to "be guardians of what is best about traditional urbanism, yet also help orchestrate our urban futures by creatively responding to contemporary conditions" (2009,p.xii). This Chapter discusses what urban design actually does both in academic practice and in the hands of practitioners,[1] looking at the eight fundamental (and interrelated) characteristics important to sustainable urban design as developed in Chapter 3. Part B discusses the first consideration: *walkability*; Part C discusses the following seven urban design issues:

- Built environment;
- Centres;
- Density and compactness;
- Mixed and compatible uses;
- Public realm;

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[1] Both academic research and professional practice has been determined to be important for innovation within urban design (Forsyth, 2007).

- Sense of place; and

- Natural environment.[2]

The principles introduced in Chapter 3 (vision, integration, robustness, efficiency, vitality and vibrancy, richness and variety, personalisation, visual order, enclosure, accessibility; permeability and legibility, appropriateness, incrementalism and sensitivity to existing context and safety) all underpin this discussion of the urban design concerns.

This Chapter is concerned with fields of practice and research, rather than with a history of practice or a discussion of 'design' tools. It is important to note that I am not offering these characteristics here as a 'best practice' or as a formulistic model; rather, they provide general principles. Urban design is very context-specific, so in practice the local context (natural, built and cultural) (see Figure 3.4 in Chapter 3) is of upmost concern to how these generalities play out in practice.

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[2] Much of this discussion and these classifications are interrelated and therefore the characteristics and elements could be discussed within different classification sections. For example: the discussion of elements important within urban design regarding streetscapes could be included under discussions of public realm, walkability and built place.

CHAPTER 4, PART A: URBAN DESIGN PRACTICE

Chapter 4, Part A: Urban design practice

4A.1 Introduction

Urban designers are concerned with creating a vibrant and sustainable city, paying particular attention to the public realm. Within urban design, as Montgomery argues, the underlying assumption is that "a good city is designed, develops and is managed over an extended period of time to become a 'successful urban place'" (1998, p.93). Krieger reinforces this view, arguing that the role of an urban designer is the "maintenance of urbanism" (as cited in Crawford et al., 2007, p.315). We must acknowledge, however, as Cuthbert (2003) argues, that, although urban design is a profession, in a sense we are all 'urban designers' and the acts of individuals are just as important as those of architects, designers and planners.

4A.2 Urban design roles

Urban design as a profession and field of research involves, according to Lang, "coordinated and self-conscious actions in designing new cities and other human settlements or redesigning existing ones and/or their precincts in response to the needs of the inhabitants" (Lang, 2005, p.xix). Many of the roles undertaken by practitioners within the built environment professions are not referred to by practitioners as 'urban design'. Building on the work of Rowley (1994) and Appleyard (1982),[1] these roles include landscape architecture and planning, architecture, community development, urban and rural (town) planning, environmental planning, social planning, public policy, and some forms of engineering (especially civil engineering) (Figure 4A.1). Lang (2005) establishes a typology of four 'generic' urban design works:

1. Total urban design (team projects carried from inception to completion);
2. All-of-a-piece urban design (master plan style design guidelines);
3. Piece-by-piece urban design (policies and procedures to guide development); and

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[1] Rowley establishes that "mainstream practice traditionally affords urban designers two basic roles. One is as architect/urban designer…the alternative is as planner/urban designer" (Rowley, 1994, p.192). Appleyard (1982) saw three roles for urban designers in practice: development, conservation and community.

4. Plug-in urban design (infrastructure-based urban design).

This typology highlights the wide scope of projects and scales that an urban designer works at.

Childs presents an alternative view of the scope of urban design practice using the metaphor of editing, categorising practitioner roles as *Authors, Editors* and *Fellows.* To elaborate, Childs explains:

- Authors—the designers of parks, streets, buildings and other built forms—focus on individual cases. However…these designers also have civic responsibilities.
- Editors review, commission, compose, orchestrate and create venues for good city form. In various degrees editors balance case work with systemic work.
- Finally, Fellows are members of public organizations who aim to develop public policy, shape the agenda of the field and set standards. Of course, a single person may play many of these roles. (2010, p.7)

This categorisation of roles enables recognition of the various scales at which urban designers work (from small-scale projects to large-scale projects). It also accommodates a diversity of views of urban design: as a concrete profession or a mindset that allows people from various professions to view and plan the city holistically (as established in Chapter 3).

Urban design
(Practicing roles within the realm of urban design)

- urban design (as a job title)
- landscape architecture
- public policy
- engineering
- community (social) planning
- architecture
- urban planning
- community development
- other
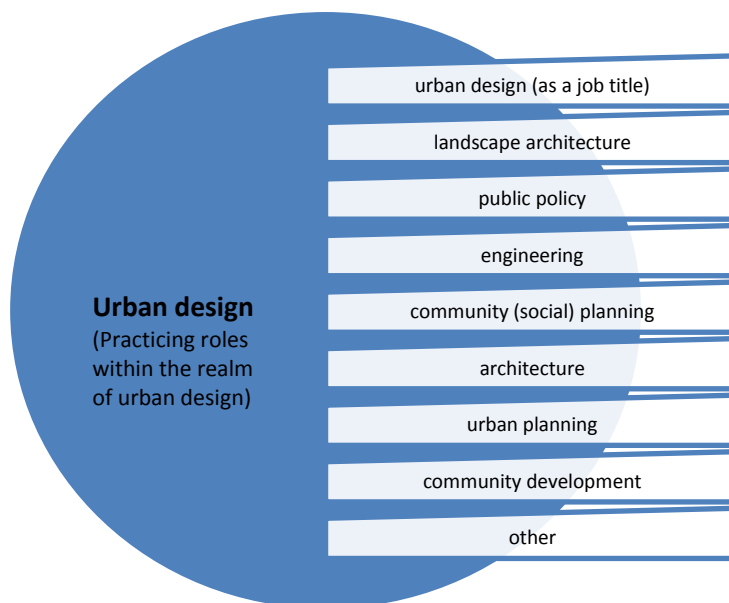
Figure 4A.1: Roles and professions in which urban designers work. Source: Adapted and redrawn from Greste, 2009.

The roles of urban designers are wide-ranging within built environment profession activities. Krieger establishes ten spheres of urban design action. These spheres, shown in Table 4A.1, reveal many overlaps and generalisations, as well as the great breadth of activities, modes of action and scales which concern and involve urban designers.

Krieger's ten spheres of 'urbanistic' action
1. **The bridge connecting planning and architecture:** This sphere of action is found primarily within public planning agencies and the urban designer's roles here is the establishment and assessment of design criteria for development projects.
2. **A form-based category of public policy:** This sphere of action for urban design is based on the idea that "if one could agree on specific attributes of good urbanism...then one should be able to mandate or encourage these through regulatory requirements" (p.116) and is the formation of public policy.
3. **The architecture of the city [designers of public space]:** This sphere views urban designs roles as the "shaper" of public space and is dominated by "architect-urbanists" (p.118). This sphere primarily involves the revitalisation of districts through revamping the public spaces, or the reinforcement of different areas of the city by adding unique characteristics to the public realm (i.e. through colour choices, furnishings).
4. **Urban design as restorative urbanism:** This sphere of urban design involves preserving and promoting traditional urbanism, to "slow excess change, resist unwarranted newness" (p.120). This sphere of action is the urban designer as advocate of traditional urban forms, e.g., New Urbanism.
5. **Urban design as an Art of Place Making:** This sphere of action is urban designer as place makers.
6. **Urban design as Smart Growth:** This sphere is advocating for smart growth methods and limiting sprawl and helping new developments have elements of vitality and vibrancy.
7. **The infrastructure of the city:** This sphere see urban designers as integrating mobility needs with transportation infrastructure, urban form and other social needs.
8. **Urban design as landscape urbanism:** This sphere sees urban design as concerned with the integration of ecological concerns and landscape architecture concerns within urban concerns.
9. **Urban design as visionary urbanism:** This sphere sees urban design as providing visions for the future, i.e. visions of the 'ideal' city. This is the "long-standing expectation of urban design: that its practitioners...provide insight and models about the way we ought to organize spatially in communities and not simply accept the ways we do" (pp.126-127).
10. **Urban design as community advocacy:** This sphere sees urban design as an advocate for local community concerns, such as "improving neighbourhoods, calming traffic, minimizing negative impacts of new developments, expanding housing choices while keeping housing affordable, maintaining open space, improving streetscapes, and creating more humane environments in general" (p.128). This sphere equates urban design with community planning. The urban designer here is "seen as the professional most attuned to tangible urban problem-solving, not as the agent of bold transformations...They are...the custodians of the qualities valued by a community, qualities that the urban designer is asked to protect and foster" (pp.128-129).

Table 4A.1: Krieger's ten spheres of 'urbanistic action'. Source: Krieger, 2009b.

The urban design roles, or spheres of action, put forward by Childs and Krieger see an important role of urban design as being an advocate for the enhancement of local places and as being a connection between community representatives, residents and planning organisations. As part of this advocacy role, the pre-design phase is of extreme importance (Czerniak cited in Crawford et al., 2007). It can include community engagement, advocacy and research. An urban designer interviewed commented:

> I found in my area of expertise that just about 80 or 90 percent of the effort is associated with politics of the project and funding of the project and only 10 or 20 percent in the design itself. So effectively the majority of the time ought to be spent and will be spent lobbying, discussing issues with people, trying to get people on board, trying to get political support, trying to get a buy in, integration with other projects and other issues and only a small percent will be…getting on with the project. (urban designer, female, 20093006FL)

Essentially, as a practical art, urban design is concerned with the public realm of urban environments, with particular consideration of the site (location) and situation (relationships) of a place; of the objects (buildings, urban furniture, trees and plants) within a place; of spaces within the existing urban environment and how they are created; of the sensory nature of the urban environment; and with movement (both in terms of accessibility and experience). Essentially, urban designers must address aesthetics and function. Above all, urban design must be functional: it must achieve its stated purpose (Cuthbert, 2003; N. Taylor, 1999).

Urban design roles: Leadership

Currently, within urban design practice, particularly as practiced within institutional settings and the public sector, many urban design roles are limited primarily to aesthetics of public spaces (both existing and new—see Place Making, Appendix B), to protecting and restoring historical areas and to the creation of design guidelines and policies (Barnett, 2009; Scott Brown, 2009). However, there is a great need for the role of urban designer as source of inspiration—to provide the leadership for the creation of more sustainable, human-focused cities. This role requires ideas of leadership based within sustainable (effective) leadership theory, linking leadership to influence, creativity and process.

Sustainable leadership theory is based on the ideas of Jaworski (1996) and Newman (2010) using Taylor, Cocklin and Brown's (2008) definition of leadership as *a process of influence*. Leadership within this framework is based within complexity theory, innovation theory (based on the waves of innovation developed by Freeman and Louçã, 2001), and leadership theory. This type of leadership requires creative thinking (second road thinking), effective communication skills, continual learning, collaboration, imaginative and adaptive responses and dialogue to enable possibilities to emerge (van Dijk, 2011). Sustainable leadership theory is integral to the development of an urban design evaluation framework and for an effective, sustainable, humanistic and adaptive field. Table 4A.2 describes this theoretical approach.

Sustainable leadership theory	
Sustainable (or effective) leadership theory here is based on the ideas of Joseph Jaworski, the founder of the American Leadership Forum,[A] and is expanded to reflect the urban design discussion.	
What	Effective leadership works from the premise of possibility: that "if individuals and organisations operate from the generative orientation, from possibility rather than resignation, we can create the future into which we are living, as opposed to merely reacting to it when we get there" (Jaworski, 1996, p.182). When we are open to possibility, we are able to "take a stand and make a declaration to create a new reality…for in our being we have this inner certainty we can reinvent the world." We can sense the right time that "the reality is already in the system waiting to be brought forth" (Varela, as cited by Jaworski 1996, p.179). This is the basis for effective leadership because "when we are in touch with our 'open nature'…we exert an enormous attraction to other human beings" (Varela, as cited by Jaworski 1996, p.179).
Foundation	Effective leadership requires that leadership provides an opening for possibilities, a platform "to 'listen' to the implicate order unfolding" and is able to "create dreams, visions, and stories" that "emerge from the collectively will". Effective leadership uses stories to enable people to actualise new possibilities and futures. From this view leadership is about "collectively 'listening' to what is wanting to emerge in the world, and then having the courage to do what is required" and "creating, day by day, a domain in which we and those around us continually deepen our understanding of reality and are able to participate in shaping the future". Jaworski reveals that this is the "deeper territory of leadership" (Jaworski, 1996, p.182). This view of leadership is opposed to conventional view that generally emphasises positional power and accomplishment.
Application	From this view, leadership needs to: • Provide a domain that continually learns; and • Participate in the unfolding future. To be able to do this effective leadership needs to be: • Collaborative: have the ability to work with other people, to form partnerships and recognise synergies. • Emergent: able to encourage process to find solutions. • Creative: ability to develop creative responses and recognition that change can be fun. • Servant-oriented: a leader must be able to demonstrate the skills necessary

within themselves.

- Team-based: ability to recognise and facilitate others skills, and a recognition that teams are better than one.
- Transformational: ability to facilitate deeper steps.
- Adaptive: flexible and able to respond to changes.
- Distributed (functionally): recognition that a series of smaller solutions that all can work together.
- Hopeful: recognition that fear destroys change, therefore effective leadership must inspire hope and produce enduring value. (adapted from Newman, personal communiciation, 6-7 August, 2010)

Fundamental to this is the ability to communicate effectively complex issues in a shared language. This requires mindshifts from a "mental model of the way the world works…[as] images of clockwork, machinelike universe that is fixed and determined, to the model of a universe that is open, dynamic, interconnected, and full of living qualities" and requires that we see relationships "as the organizing principle of the universe" (Jaworski, 1996, pp.183-184). Lastly, this leads to a shift in commitment to a nature of willingness and possibilities. From these mindshifts the promotion of formulistic solutions is not possible, as there is recognition that rationalist formulae are not possible, and from these mindshifts people are attracted and synchronicities start to happen.

[A] The American Leadership Forum is a US-based network focused on enhancing local communities by enhancing localised leadership that builds "on the strengths of diversity" and "promoting collaborative problem solving within and among communities" (American Leadership Forum, 2010, n.p.n.)

Table 4A.2: Sustainable (effective) leadership theory. Source: Author, compiled from the cited sources.

Strong effective leadership is fundamental to implementing creative and sustainable changes within cities, as can been seen in the examples of cities that have undergone substantial changes to make them more people-friendly: Melbourne with Rob Adams, Curitiba with Jamie Lerner, Bogotá with Enrique Peñalosa, New York with Janette Sadik-Khan and Michael Bloomberg and London with Ken Livingstone and Richard Rodgers. Many of these leaders are not urban designers. However, they are working within the scope of urban design and implementing urban design and sustainable transportation planning approaches within their cities. They have gone beyond having good ideas and have shown how they can be implemented.

4A.3 Urban design's role as an interdisciplinary field

Anne Vernez Moudon specifies that urban design, as a "young" enterprise "must endure many punches, pushes and pulls. But its institutional survival is essential to guarantee even a glimpse of interdisciplinary activity in planning and design" (1992, p.221). Significantly, as a practical art, urban design has the ability to provide the actors able to operate holistically within a city and be able to interact and build

cohesion with other actors, primarily with actors from municipal organisations providing urban, service and transport planning but also with interest groups, private developers, landowners and community members amongst others (Sternberg, 2000). An important role for urban design is the ability to ascertain the influences on a whole city of numerous issues. This approach offers perhaps a broader perspective than architecture but a narrower focus than urban planning. As Richard Marshall contends:

> …urban design provides an important role for the generalist who has the ability to ask the questions that no one else is asking, to seek connections where others seek distinctions. The urban designer needs to understand, integrate, and communicate across professional divides all the evolving complex factors that create the urban situation. (2009, p.55)

Urban design offers a basis for enabling cross-disciplinary research and activities within cities. Its philosophies enable focus within these complexities—human activities, built environment and natural environment.

4A.4 Urban design zones of conflict and compromise

Urban design practice works within zones of conflict and compromise, as do all of the built environment and transport professions:

- The design or creative imperative: design is of paramount concern;
- The market/economic imperative: cost and return on investment are of paramount concern; and
- The policy/regulatory imperative: the design satisfies policy requirements (often set up to counter market failure) (from Carmona, 2009).

In addition to these conflict and compromise zones, much public space within cities, particularly within the US, is created through public-private partnerships or by private developers under planning bonus arrangements (and then often owned and controlled by the private company) (Smithsimon, 2008). This development structure introduces other actors and additional conflicts and compromises.

4A.5 Considerations for urban design practice

Scott Brown seeks to describe urban design's position as follows:

- Having a particularly broad and interdisciplinary subject area;

- Working at scales from the street corner to the region and beyond;

- Having varying project durations;

- Encompassing multiple decision makers, designers, and multiple cultures;

- Requiring an understanding of the decision processes and cultural norms;

- Creating multiple connections—physically and across disciplines;

- Offering complex vocabularies; and

- "Involving fights about anything from equity to iconography—amicable fights, we hope" (2009, p.84).

The scope of urban design as a profession is very broad: it is about creating better cities socially, economically and environmentally, using the skills and theories of various disciplines and depending to a large degree on the public and political process to define the values, priorities and implementation processes. There will inevitably be conflicts but part of the leadership practice of an urban designer will be to find the overlaps that can demonstrate design which fulfils policy, is creative and is cost effective.

4A.6 Conclusions to urban design roles

Urban design roles as a practical art is essentially concerned with the public realm's design and use, however as established the roles and scope of urban design practice are quite diverse. An important role of urban design is as an advocate for users of the spaces and for creative and sustainable changes within cities. This role requires effective leadership using good communication and political skills to resolve the inevitable conflicts with other parts of urban governance. This section of Chapter 4 has introduced some of the diverse roles in which urban designers operate focusing their practical art. Part two and three discuss what some of these requirements of practice.

CHAPTER 4, PART B: WALKABILITY IN PRACTICE

Chapter 4, Part B: Walkability in practice

4B.1 Introduction

Central to this discussion are the needs of pedestrians and walking in city centres. It has been shown to be critical in theory and in practice to understanding the role of urban design. This section expands on the discussion of walkability in Chapter 3, looking at what are the characteristics and requirements of pedestrians.

Unless specified, this dissertation does not make a specific distinction among walking for leisure, for physical activity, or for travel (as differentiated in much of the environmental health discussions: see Owen, Humpel, Leslie, Bauman & Sallis, 2004). All types of walking are important to urban design considerations. My view is that this classification would unnecessarily complicate the issue presented here. In addition, I support the view of the pedestrian as a social being, a person, rather than as a form of transport (see, for example: Porta, 2003; Wolfinger, 1995). For the purposes of this dissertation, the focus is on walking in an urban environment, predominantly in centres (the focus of much urban design theory and practice).

In Chapter 3 I established that urban design practice is primarily concerned with activity in public spaces, particularly streets, and views "people walking along the streets [as] key to creating vibrant public areas at a human scale" (Forsyth, Krizek, & Rodraguez, 2009, p.171) and provide a definition of walkability (adapted from Forsyth and Southworth, 2008) as:

encouraging physical activity, being accessible (close and barrier-free), safe, full of appropriate pedestrian infrastructure and destinations, and having places that are pleasant, interesting and that provide the services necessary.

To accomplish a vibrant public space at human scale it is important to establish the requirements of pedestrians, not only in terms of infrastructure, but also in terms of urban design. The city is the collective face we show to the world. It is how we represent ourselves and how the rest of the world can experience 'us' collectively. How this 'face' is experienced is by foot—details experienced by pedestrians—by

walking through the city, by entering the city and by perceiving the city. So we need to ask: What does the city say to us?

Conventional pedestrian studies and planning generally examine only the main components of pedestrian movement infrastructure: the footpath, pedestrian crossing (or crosswalk) infrastructure (such as signalised intersections, tunnels, striping on roads) and the holding areas (i.e., space at intersections). Increasingly, pedestrian studies need to go beyond conventional studies to examine the complete environment and its effect on the use of an area.

We must also establish what makes a pedestrian-friendly environment. This section builds on the introduction to walkability in Chapter 3, accentuating the importance of walkability to urban design and provides a survey of the planning and urban design literature to establish the characteristics of pedestrians and the requirements of pedestrians in space and infrastructure. Chapter 4, Part C discusses the urban characteristics and urban design elements that shape the experience of the city centre for pedestrians

4B.2 Designing for walkability

When evaluating a walkable/pedestrian space, US pedestrian traffic analyst and crowd circulation specialist, John Fruin (1987) contends that we must examine the following fifteen factors:

1. Configuration and dimension of the streets;
2. Configuration and dimension of footpaths;
3. Traffic regulations;
4. Location and amount of signs;
5. Signal locations and cycle lengths;
6. Vehicle traffic volume;
7. Location and dimensions of buildings to the street;
8. Location and entrances of transit and bus stops;
9. Location of footpath furniture;
10. Location of objects in the footpath;
11. Numbers of pedestrians;

12. Origin and destination of pedestrians;

13. Trip purposes;

14. Time of day; and

15. Pedestrian volumes.

Fruin wrote nearly 25 years ago. To his list, we could now add the following four factors:

16. Issues of climate and weather;

17. Safety (or crime and inappropriate behaviour levels);

18. The built form and how it addresses the public space; and

19. Demographic characteristics (e.g., gender, age, ethnicity, mobility) of those using the space.

Appendix C, Toolbox 1 presents a full list of walkability questions compiled by the author for a UNEP low carbon transport guidebook *Technologies for Climate Change Mitigation: Transport Sector* (Salter, Dhar & Newman, 2011). Encouraging built environment considerations such as human scale environments and density, mixed land uses, the design of public realm and sense of place (all discussed in Part C) from the point of view of the pedestrian is of vital concern to urban designers. In Rendell's view, designing for walking requires a new way of looking at the city and its activities, as well as a holistic and systemic perspective:

> Walking encounters sites in motion and in relationship to one another, suggesting that things seem different depending on from where we are coming and to where we are going. Rather than proceed from the observational, to the analytical, to the propositional, by intervening and moving through a site, walking proposes a design method where one can imagine beyond the present condition without freezing possibility into form (2006, p.151, as cited in Wunderlich, 2008, p.136).

Ewing and Cervero, from their meta-analysis of built environment and travel surveys, believe that walking "is most strongly related to measures of land use diversity, intersection density, and the number of destinations within walking distance" (2010, p.265). A popular urban design response to increasing walkability in cities is Shared Space (Appendix B).

The following sections explore some of these walkability requirements.

Walking

Walking is a necessary practice, an ordinary, everyday activity in cities and is "almost instinctively performed" in urban space. For Wunderlich, it is "an unquestioned form of movement through the city, often unnoticed" (2008, p.126). From his observations of behaviour in New York City's public spaces, William H. Whyte identified the following eleven basic characteristics of pedestrians:[2]

1. **WALK ON RIGHT**: Pedestrians usually walk on the right. ("Deranged people and oddballs" are more likely to go to the left, against the flow.);[3]

2. **PAIRS AND THREESOMES**: A large proportion of pedestrians are people in pairs or threesomes;

3. **HARD-TO-FOLLOW PEDESTRIANS**: The most difficult to follow are pairs who walk uncertainly, veering from one side to the other, taking two lanes to do the work of one;

4. **FAST-WALKING MEN**: Men walk somewhat faster than women;

5. **FAST-WALKING YOUNG PEOPLE**: Younger people walk somewhat faster than older people;

6. **SLOW-WALKING GROUPS**: People in groups walk somewhat slower than people alone;

7. **FAST PEOPLE CARRYING BAGS**: People carrying bags or suitcases walk about as fast as anyone else;

8. **FAST WALKING ON UPGRADES**: People who walk on moderate upgrades walk about as fast as those on the level;

9. **SHORT CUTS**: Pedestrians usually take the shortest cut. In pedestrian malls, curving pathways have been outlined in the paving. Pedestrians ignore them. They stick to the beeline;

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[2] It is important to note that this research was conducted in the 1960s and 70s and the characteristics (and behaviour) of New York City pedestrians may have changed significantly since that time. Since 2007, New York Department of Transport and Gehl Architects have been conducting pedestrian surveys in New York, updating some of Whyte's work. The results of these surveys are discussed in Chapter 6.

[3] This is a culturally specific finding. In Australia, observations reveal that most people in city centres walk on the left, with the 'oddballs' moving to the right. Indeed Whyte's cultural bias is even more extreme when walking in non-western cities, such as those in India and China. Clearly, the author is just pointing out that there is a majority side and a minority side (and it follows the traffic rules).

10. **PLATOONS AT THE LIGHT**: Pedestrians form up in platoons at the light and they will move in platoons for a block or more; and

11. **RUSH-HOUR FLOWS**: Pedestrians often function most efficiently at the peak of rush-hour flows (1988, p.57).

Walking implies continuity and progression, a forward movement (Vergunst, 2010) and is inclusive, available to almost anyone, requires no cost or additional learned skills (Boyce, 2010; Guo, 2009) and "has the capacity to promote a sense of being included within public spaces and places" along with mental well-being (Boyce, 2010, p.468).

Walking speeds

Much urban design literature uses the average that people walk at 5 kilometres per hour to account for different mobility levels and different urban environments. Recent research reveals that outdoor walking speeds on flat ground have a mean average of approximately 3.82 kilometres per hour (Yue, Wang, Di, & Sun, 2009, p.143).[4] Much research indicates that walking speed is affected by age and mobility levels along with gender, cultural differences, time of day, weather and the size of the city, amongst other elements making a standard walking speed hard to determine (see, for example: E. Hall, 1966; Jacobs, 1993; Pushkarev & Zupan, 1975; Sarkar, 2003; Whyte, 1980, 1988). In addition, people are unpredictable (discussed below) and will often change their speed enroute. Walking speeds would clearly be different in different urban environments, with people walking slower in dense urban environments and in difficult topography.[5] Whyte's New York City research revealed that in a big-city downtown, men would average about 5.6 kilometres per hour.[6] At the time of that research, Whyte claimed that people would sustain these speeds for between three to four blocks in new automobile-oriented cities, and for five blocks in a dense city such as New York (1988, p.65).

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[4] Yue et al., (2009) determine that outdoor walking speeds on flat ground have a mean average speed of 1.06 metres per second, with a standard deviation of 0.22 metres per second. I have altered their data here to report an hourly average.

[5] Walking speed is a little slower on stairs or on sloping surfaces.

[6] Whyte's New York City research revealed that in a big-city downtown, men will average about 5 feet a second [1.52400 metres]; 290-300 feet a minute[88.39 to 91.44 metres]; 3 ½ miles an hour [5.6 kilometres].

It is widely accepted that the environment influences walking speed (Gehl, Kaefer, & Reigstad, 2006; Walmsley & Lewis, 1989; Zacharias, 2001b). For Cullen, in 1961, it was an "instinctive and continuous habit of the body to relate itself to the environment" (1961, p.10). Walking speed is particularly related to the level of interest in the building façade. Whyte, who based on his observations of cities in the US particularly New York, determined that:

> A pedestrian may start out at a brisk 290 feet a minute, than slow down to about 200 feet a minute as he goes past something—a shop window, a merchandise display - and he may sometimes stop for a few seconds. When he resumes he may go up to 340 feet a minute, as if impelled to make up the pause. Similarly, as he passes a bank or a blank wall, he may step up his pace a bit. Dull blocks are traversed fast. (1988, p.66)

Recent research supports this finding (Gehl, Kaefer, & Reigstad, 2004). This research determines that if pedestrians are interested and actively engaged in the environment, they may walk more slowly and not hurry through a space on their way to somewhere else.

Walking and the senses

How we walk and what we experience, see, hear and feel as we walk relate to our senses and body characteristics, our height and the length of our legs. Walking is a multi-sensory experience—"we compulsively engage using all our senses when walking in urban places" (Wunderlich, 2008, p.128). The sense of vision is often the primary sense considered in urban design, given the nature of the field. Most people have a 180-by-130 degree field of vision, enabling them to understand situations and environments quickly (Hedman & Jaszewski, 1984, p.57). Goakes explains how sight affects understanding of the environment: "the movement of the eye itself among different *Gestalten*[7] and among different parts of the *Gestalten* is the whole process of visual perception in the planning context" (1987, p.10). The eye follows "visual clues and patterns to create total pictures of the environment for the individual's position in that environment" (Goakes, 1987, p.10).

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[7] *Gestalten*: The whole which is more than the sum of its parts.

How people move through an area and are able to understand relationships among the parts that make up the whole city influence their perceptions.[8] Building on Cullen's notion of 'serial vision',[9] Isaacs contends that, "the city is a single unit. Yet, our experience of it is made up of a series of views collected over time" (2000, p.151). He reminds us of Cullen's typology of the *existing view* and the *emerging view,* demonstrated by Cullen through a number of illustrations of what one sees while walking through a city centre. They show the perceptions of the structure and elements of the town visible to the pedestrian to "expose the art of environment which, had it been understood and practiced, could have prevented the [design and planning] disasters mentioned" (Cullen, 1971, p.193).

The sense of sight to urban environments is important to urban design partly because the interest offered by pleasing or fascinating details can help increase the awareness and appreciation of the environment (Cullen, 1971). Hedman and Jaszewski explain this idea in their classic urban design text:

> when people enter a strange new place, they automatically scan the parameters of the space, pausing only to study features of interest...People enjoy re-examining familiar areas where multiple levels of visual enjoyment are offered and where there always seem to be new visual relationships and effects to appreciate. (1984, p.57)

The environment needs to provide stimuli, richness and diversity to engage people's senses and interest. By walking, according to many theorists, we form relationships with the built environment (see, for example: Lynch, 1960; Wunderlich, 2008)

As urban design is a highly visual profession, it is easy to overlook the importance of the other senses of smell, touch, taste and hearing. Burchard, the first Dean of the MIT School of Humanities, Arts and Social Sciences, makes the point that we

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[8] See the discussion of organic theory in Chapter 3.
[9] Writing before the publication of much environment-behaviour research on sensory perception in cities, Cullen (1961) argued that people perceive the scenery through a "series of jerks or revelations", what he called "serial vision" (p.8). For Cullen, this means that "the human mind reacts to a contrast, to the difference between things, and when two pictures...are in the mind at the same time, a vivid contrast is felt and the town becomes visible in a deeper sense. It comes alive through the drama of juxtaposition" (p.8).

must not privilege the visual sense to the detriment or exclusion of the other senses:

> the true aesthetic experience exacts the use of all of the senses, not the optical alone…The character of a fine or a mean city is composed of its smells, its noises, even its taste as well as its sights…A city is not architecture alone, perhaps not even principally. (1957, p.112)

All of the other senses contribute significantly to the character of the city (Lefebvre, 1996b; Sarkar, 2003; Taylor, 1999).

Of particular importance is the sense of hearing. As we know, cities contain many noises. In particular, within public spaces traffic noise is an issue. Hearing has a significant impact on our enjoyment of public spaces. If places are too loud, they are generally unenjoyable. Further, in loud places conversations become difficult, especially for older people or those with a hearing impairment. The generally established comfortable noise level for a healthy person is 0 to 80 decibels, with sustained noise over 80 decibels being uncomfortable and detrimental to hearing.

A background noise level between 50-70 decibels still allows for normal conversations conducted between people with up to one-metre spacing. This is the noise level of normal light traffic. In contrast, a diesel truck driving past generates approximately 85 decibels, which prohibits normal conversation and the ability to relax in a public space. Yang and Kang (2005), evaluating acoustic comfort in fourteen urban open public spaces in Europe (via 9200 interviews), establish that the level of tolerance (or acoustic comfort evaluation) depends on the type of sound. Pleasant sounds (particularly water), even if quite loud, greatly improve acoustic comfort. Therefore, a quiet environment is not necessarily desirable; rather, the focus should be on the types of noise and their impact on comfort levels. However, Yang and Kang (2005) suggest that a quieter background noise level (under 73 decibels) is desirable for 'pleasant' public spaces.

The sense of touch is also important, although there is little literature on touch requirements, other than those of inclusive urban design (or Universal Design). These approaches require tactile and other accessible ground surfaces to enable mobility for vision-impaired people (primarily as 'wayfinding' devices). Primarily,

the urban design literature focuses on the aesthetic, textural and tactile qualities of the ground surface (Lynch, 1971; Taylor, 1999).

The sense of touch is also important as a response to climatic conditions. If places are too hot or too cold they become uncomfortable. This is particularly an issue for public seating. How the built environment and particularly public spaces respond to climatic conditions is of vital importance to design (Jacobs, 1996; Whyte, 1980, 1988; Zacharias, Stathopoulos, & Hanqing, 2004). This includes providing adequate shelter from precipitation, wind or extreme heat and enabling access to sun depending on the place's climatic conditions.

Social and personal distances

Social distance is an important consideration in designing public spaces. Edward T. Hall's groundbreaking research in the early 1960s assessed social distances based on observation of middle-class adults in the US, described in the classic book, *The Hidden Dimension* (1966).[10] Hall, an anthropologist, found that personal space varied from one culture to another and that Americans use four different 'distance zones' He identified different social distances: intimate, personal, social and public:

- *Intimate distance* (0 to 45 centimetres or 0 to 1.5 feet): intimate contact is possible and somewhat unavoidable. Intense emotion can be expressed (e.g., love), particularly through touch and intimate details can be seen, but complete visualisation is difficult. Often considered inappropriate in public spaces. When people are forced into intimate distance in public, defence mechanisms often come into play.

- *Personal distance* (0.45 to 1.30 metres, or 1.5 to 4.5 feet): physical contact and conversation are easy. Mmost often used by people familiar with each other: the distance between close friends sitting on a bench talking.

- *Social distance* (1.30 to 3.75 metres or 4.5 to 12 feet): for ordinary conversation. Intimate details cannot be perceived, touch requires effort but easy communication is possible. The distance of business and social situations.

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[10] Hall termed this research 'proxemics.'

- *Public distance* (greater than 3.75 metres or 12 feet): used for teaching, for listening to lectures and other formal situations, which require only one-way communication (E.T.Hall, 1966).

Hall's research revealed that distance has a profound impact on architecture. While his research focused primarily on the effects of crowding in housing and work places (and the mental stress effects of crowding), the social dimensions are also important considerations in planning and designing public spaces. Hall's work has had considerable impact, especially on built environment-people interactions. However, it is important to note the limitations of his research: the research focused on white middle-class adults in the US. Almost certainly, many of these distances are different in other cultural situations. Hall (2003) maintains that different ethnic groups measure (or set) their social distances in different ways, making universal distance measures impossible.

Walking space

Pedestrians require space in order to see obstacles and other pedestrians clearly and to walk freely without having to manoeuvre too much. People also need space to allow time to alter their course accordingly and for clearance from objects (Ewing, 1999; Fruin, 1987). Although the exact amount of space a pedestrian requires varies (depending upon personal tolerances, mobility levels and cultural preferences), some basic requirements apply, based on body size and attributes. Much current pedestrian planning and level-of-service (LOS) measures[11] are based on the research of Fruin (1970, 1987) and Pushkarev and Zupan (1975). According to Fruin, a "desirable pedestrian environment" allows for the following:

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[11] Pedestrian LOS is an A through F weighted rating system of pedestrian facilities, and have been adapted from traffic engineering LOS measures to fit pedestrian facilities. Generally, LOS measures footpath presence (some LOS also include a footpath width measurement), crosswalk facilities, intersections, traffic separation and/or traffic volumes. Various pedestrian LOS have been developed since the 1960s, however none of these has been considered comprehensive nor is there an established standard (Stangl, 2008). The most widely referenced are Sarkar (2003), the US Department of Transport (2003,) the US Transportation Research Board's *Highway Capacity Manual 2010* (2010) and Austroads (2009) *Guide to Road Design Part 6A: Pedestrian and Cyclist Paths*. In addition to motor vehicle traffic and pedestrian LOS measures there has been a movement to develop a multimodal LOS. This is aimed at allowing all modes and their interactions to be quantified (Henderson, 2011).

- sufficient space for pedestrians to choose, independently, their own relaxed walking speed;

- to bypass slower pedestrians if desired;

- to avoid conflicts with oncoming or crossing pedestrians; and

- to interact visually with surroundings, using the full range of visual capabilities (1987, p.46).

Designers in the US have traditionally used the "body depth and shoulder breadth" of the 95th percentile (a body depth of approximately 33 centimetres and a shoulder breadth of 52.5 centimetres) (Fruin, 1987), as the measure of space needed. The New York Subway Authority and the United States Army use 18 by 24 inches (or 2.3 square feet: 45.72 cm x 60.96 cm, or 0.21 m2) as the "the practical standing capacity" (Fruin, 1987, p.20). These dimensions allow space for carrying bags and for the "natural psychological preferences to avoid bodily contact with others, and body sway" (Fruin, 1987, p.20).[12] His research on pedestrians in New York revealed that, at normal walking speed, an amiable walking space is 7 feet, or 2.1 metres. This space enables the pedestrian to see other pedestrian movements clearly, to sense obstacles and change course accordingly, and to be involved with other pedestrians.

Commonly quoted footpath widths are between 7 to 12 feet (approximately 2 to 4 metres), however this depends on the size of the locational characteristics.[13] This width is wide enough to allow for objects to be placed in the path, such as outdoor café seating, and still allow for room to walk, and is narrow enough so as not to feel too large. A footpath 1.5 meters (5 feet) wide has been determined to be the *effective footpath width* (see, for example: Dixon, 1996; Ewing, 1999; Transportation Research Board, 2010; Romer & Sathisan, 1997). This is wide enough for two people to walk comfortably side-by-side. To this *effective footpath width* (the walking space of a footpath) space needs to be added to allow clearance or buffers from objects, footpath boundaries, from other people and for

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[12] See the discussion of social distance above in section 4B.2.
[13] For larger cities Alexander, Ishikawa, & Silverstein (1977) recommends a minimum of 12 feet, Whyte (1988) recommends a minimum of 15 feet, Calthorpe (1993) recommends 15-20 feet. These are all in the US context, and in Whyte's case for New York.

manoeuvring space, particularly in areas that may congest with people and/or objects (for example: signs, café seating, bus stops). This clearance space needs to be about 30 centimetres (approximately 1 foot) from objects and about 80 centimetres (2.6 feet) from the boundary with the roadway (Pushkarev & Zupan, 1975; Stucki, Gloor & Nagel, 2003). In many older western cities, the footpaths are about 3.6 to 5.4 metres (11.8 to 17.7 feet) wide. A often quoted recommended minimum footpath width of 7.6 metres (24.9 feet) on avenues in medium to large cities is used. According to Fruin, a footpath needs to be sufficiently wide to allow for normal walking convenience and avoidance of conflicts during all the expected fluctuations in traffic demand. It needs to be clearly identified for people to move freely and confidently "with senses devoted to the full enjoyment of the space" (1987, p.34).

Most pedestrian evaluations, including LOS measures, and research on walkability focus on the presence and quality of footpaths rather than on widths (see Appendix C, and for example: Larco, Steiner, Stockard & West, 2011; McCormack, Giles-Corti, Lange, Smith, Martin & Pikora, 2004; Parks & Schofer, 2006; Pikora, Giles-Corti, Bull, Jamrozik & Donovan, 2003; Tan, Wang, Lu & Bian, 2007). This is in part because standards for widths usually dependent upon the location and on the location's pedestrian volumes and are provided by the municipal or public sector authorities (see for example: New York City Department of City Planning, 2006). Guo (2009), researching commuter path choice from a transit station to work place in downtown Boston (based on 2748 observations), determined that commuters were more likely to choose routes with wider footpaths. Similar findings were established by Samarasekara, Fukahori and Kubota (2011) footpaths who maintain that presence of a clear safe (here measured as safe from car traffic) place to walk was the primary determinant of walkability. In addition, the presence of footpaths have been strongly linked to increased human health (see, for example: Active Living Research Program of the Robert Wood Johnson Foundation, 2009; Owen, Humpel, Leslie, Bauman & Sallis, 2004; Reed, Wilson, Ainsworth, Bowles & Mixon, 2006; Rodriguez & Joo, 2004; Sallis et al., 2009). Increasingly, the presence of footpaths and other walkability characteristics are being linked to potential to

reduce individual vehicle miles traveled (VMT) and therefore reduce greenhouse gas production (Frank, Greenwald, Kavage & Devlin, 2011; Litman, 2011b; Sciara, Handy & Boarnet, 2011). Footpaths have many roles within an urban environment: they provide movement space, but also public, social and economic space (Ehrenfeucht & Loukaitou-Sideris, 2010).

Pedestrian density

Pedestrian aggregate levels are usually represented by pedestrian density or by the number of pedestrians per hour by location. Within pedestrian planning, pedestrian density is commonly measured by the number of people per unit of effective footpath width per unit of time and is a measurement of pedestrian comfort and of how much room pedestrians have to manoeuvre (Fruin, 1970, 1987; Jacobs, 1996; Pushkarev & Zupan, 1975; Romer & Sathisan, 1997; Whyte, 1988). Much current pedestrian planning and LOS measures are based on findings from Fruin (1970, 1987) and Pushkarev and Zupan (1975).

The common level of appropriate, or comfortable, pedestrian density, as determined by the research, is between six and seven people per minute per metre of footpath width, with an upper comfort limit of between 10 and 15 people per minute per metre.[14] At about three people per minute per metre of footpath width, or lower, the footpath can seem 'abandoned' (Whyte, 1988; A. Jacobs, 1996). Exploring the phenomenon of footpath crowding, Allan Jacobs establishes that crowding starts at about 13 people per minute per metre. Again, it needs to be reinforced that all these densities have established in European and American contexts and may differ in other countries. Clearly, they depend on personal preferences and to some extend urban context.

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[14] Whyte's research in New York revealed that 10 to 15 people per minute per metre (3 to 5 people per minute per foot) of footpath, in two-way pedestrian traffic, is the maximum pedestrian density. Fruin (1987) maintains that a pedestrian needs 25 square feet of footpath to maintain normal walking speeds. This is 2.3 metres per pedestrian and equivalent to 10 pedestrians per foot width (30.48 centimetres) of footpath per minute (or 30 people per metre of footpath width per minute). Although a little dated, the research of Pushkarev and Zupan (1975), on integrating transport and land use planning, is still influential on pedestrian surveys. They found in New York that 396 people per hour per metre, or 6.5 people per minute, is the appropriate level of density for comfortable movement. Allan Jacobs (1996), using North American data, calculated that 3 to 8 pedestrians per metre per minute is a good level, allowing for personal walking speed.

Fruin's research on pedestrian transport planning requirements in the US in the 1980s sampled 1000 pedestrians outside of transit stations in New York City. He found that "psychological factors, reaction to environment, traffic composition, and trip purpose could all contribute to each pedestrian's selection of unimpeded free-flow speed" (1987, p.41).[15] Further, issues such as gradient and the presence of baggage or packages had "no appreciable effect" on free-flow walking speed up to a gradient of 6 percent (1987, p.41). Thus, Fruin concluded that pedestrian density is the most important factor affecting pedestrian speed, as increased density decreases speed capabilities.

Cultural preferences for space requirements

As Edward Hall (1996) explained, space requirements are influenced by cultural preferences and therefore require local research to determine the appropriate densities and footpath widths for a particular place. The pedestrian densities specified above provide an illustration rather than a concrete 'rule'. Equally important (when planning and designing for pedestrians) is providing and design appropriate spaces for the different pedestrian spaces (infrastructure space, leisure space and 'everyday' space) (Ehrenfeucht & Loukaitou-Sideris, 2010).

Problems with pedestrian formulae

Aggregate measures of pedestrian space provide a place signature for planners and designers (Zacharias, 2001b). However, some problems may arise with reducing concepts of pedestrian space to formulae (Sarkar, 2003). Shelia Sarkar cautions that it is important to "visualize walkways as dynamic environments where a variety of activities can occur when physiological, psychological, and physical comfort is provided" (2003, p.42) One problem is that the pedestrian becomes the focus of 'movement planning' and therefore treatment of people within the plan is based on moving people from one point to another, rather than about comfort and

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[15] Before this, for his PhD dissertation, Fruin (1970) developed a level-of-service (LOS) rating with seven pedestrians per foot per minute equal to a good service level (1970). He developed the pedestrian LOS with the aim of providing transport planners with a comparable way to measure footpaths and developed it on the same concept of LOS for highways and road intersections. He was trying to make it easier for transport planners to plan for pedestrians. However, it was never widely adopted as it does not consider design or activity nodes and destinations.

use of space (Stangl, 2008). Additionally, pedestrian formulae can ignore the unpredictability of people and behaviour. Whyte warns against "the scanting of the social components of congestion" (1988, p.77). There is a place for formulae, however, for example, in transportation situations: getting from concourse exit A to gate B; and in establishing transport planning measurable standards and indicators (such as benefit-cost-ratios and LOS) for walking and bicycling to enable the economic benefits of these travel modes to be considered (see Chapter 2 and 7; Litman & Brenman, 2011; New Zealand Transport Agency, 2010; Turner, Singh, Quinn & Allatt, 2011). However, as Whyte reminds us, "pedestrians are social beings too. They cluster in doorways. They pause to look at a shop window. They self-congest…part of what attracts people to the street is a measure of the congestion the high standards would save them from" (1988, p.77).

Another problem with using formulae is identified by Whyte is that it gives the same weight to one metre of footpath width as another. Yet we know that "context is all important" (Whyte, 1988, p.77). Engwicht agrees. For him, the problem is that we are caught up in thinking about *traffic* and transfer this approach to planning for pedestrians (Engwicht, personal communication, November 13, 2009).

Walkable catchments

Walking is the most efficient means to traverse small areas. The established walkable catchment, commonly referred to as a 'ped-shed', is one half-mile diameter, or about 800 metres,[16] depending on the pedestrian network (Barnett, 2003; Whyte, 1988). This equates to a ten minutes walking distance (Newman & Kenworthy, 2006) measured from a focal point, such as a major train station[17] or a town hall. This catchment is used to measure the available land uses within a ten-minute period. The walkable catchment timeframes are based on a 'boredom' measure, rather than physical stamina, with people willing to walk further in interesting environments and to larger destination nodes (Barnett, 2003; Schmitz &

[16] Five minutes, or 400 metres, is used as a measure for smaller centres and local transit stops.
[17] A recent survey conducted in the US reinforces this view: people will walk on average just over half a mile (the mean distance of 328 pedestrians walking to 6 stations was 0.58 miles) to access a train station (Agrawal, Schlossberg, & Irvin, 2008).

Scully, 2006; Whyte, 1988). Soltani (2006) found in an assessment of walkability and design of suburban areas in Adelaide that people would walk to work if their workplace was less than two kilometres. The distance people are willing to walk is generally associated with increased density and mixed use (Forsyth & Krizek, 2010).

In addition, ten minute walkable catchments enable the walker to maintain a practical time-travel budget, using the Marchetti constant of one hour travel a day (see Chapter 1; Marchetti, 1994; Newman & Kenworthy, 2006). When distances become longer than this, generally when walking times surpass 10 or 15 minutes to a larger destination, such as a train station, people will switch to other modes (Whyte, 1988).

That the streets form an adequate pedestrian network is vitally important to the success of a place. Pedestrian networks are composed of the footpaths, and other pedestrian accessible areas such as alleys, pedestrian-only streets, shared spaces and streets, side streets and other access ways.[18] They can also include other areas, for instance parks and plazas, which a pedestrian can use as a thoroughfare. The network needs to connect major destinations and enable pedestrians to access services without having to walk large distances or traverse major roads. Pedestrian networks and catchments can differ between day and night, because of real or perceived safety considerations. Considerations of both are vitally important when determining the walkable catchment or 'ped-shed' of an area.

Pedestrians' perceptions of the environment

Pedestrians' perceptions[19] of the length and time of a trip vary depending on the environment. This variation is based on the idea that a walkable area is not so

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[18] Bohl contends, "the small irregular blocks and intricate, organic web of streets, paths and alleys in medieval villages represent some of the most porous networks for pedestrian movement" (2002, p.69).

[19] Ewing and Handy define perception as "the process of attaining awareness or understanding of sensory information. What one perceives is a result of interplays between past experiences, one's culture and the interpretation of the perceived…Physical features influence the quality of the walking environments both directly and indirectly through the perceptions and sensitivities of individuals…Perceptions are just that, perceptions. They may produce different reactions in different people. They can be accessed with a degree of objectivity by outside observers; individual reactions cannot" (2009, p.67). Writing in 1977, Rapoport distinguishes between perception,

much defined by the actual length as it is by a reasonable time travel budget and boredom or interest (discussed above). Bosselmann (1998b, 2008) tested pedestrians' perceptions of the time of various walking trips by conducting four-minute walks through fourteen cities based on an initial four-minute walk in Venice.[20] Bosselmann (2008) identified that smaller spatial dimensions, more variation, more changes in direction, and shorter block dimensions influence people to estimate longer duration, close to 50 percent longer than the actual time it took to walk the distance. However, in retrospect, people consider the more varied or complex walks to be short. On the other hand, walks with less variation are considered longer in retrospect but shorter when walking. Isaacs (2001) had similar findings. He explains this phenomenon: "we cannot perceive empty time. To experience time is to perceive change, to perceive events in succession" (2001, p.110). Bosselmann concludes that, "Pedestrians tell the length of their walks by the rhythmic spacing of recurring elements" therefore, "a consideration of rhythm in city design is valuable" (1998b, p.91).

It has been widely documents that evidence of other humans is also of vital importance to a pedestrian's perception of a place (Fruin, 1987; Gehl, 1987; Isaacs, 2000; Mehta, 2009; Whyte, 1988). Zacharias (2001a) studied the path choice of 45 participants using altered photographs of an urban landscape. The choice leaned predominantly towards the paths with signs of other human life. Zacharias' study moved the visual stimuli to different locations and to places that would have otherwise been considered undesirable. He found that the quality and not the quantity of human elements attracted participants to a particular path. Zacharias demonstrated that the environment has to be meaningful and attractive to the pedestrian. His study was, however, limited to first-time visitors to an urban environment who would naturally be attracted to places where they see signs of activity and other people. Signs of other human life determine path choice.

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cognition and evaluation, stating that they are all part of a continuum of 'environmental perception'.

[20] To test this a pedestrian's perception of walking time, Bosselmann produces illustrations of segments of the walks. He recorded which physical spaces he encountered while walking and how long the four-minute walk appears to take, based on the spaces encountered. He based the walks on an initial four-minute walk in Venice, which needed 39 drawings to explain the rhythmic spacing of the walk. These illustrations are similar to Cullen's (1971) illustrations discussed above.

In addition, adult walking rates have been clearly related to a person's perception of access to destinations, parking and transit, perception of the walkability of the area, including urban design qualities and perceptions of the number of others walking and to the perception of social milieu rather than purely to the amount of pedestrian infrastructure (see, for example: Agrawal, Schlossberg, & Irvin, 2008; Alfonzo, 2005; Cao, Mokhtarian, & Handy, 2009; Brown, Werner, Amburgey, & Szalay, 2007; Ewing, Clemente, Handy, Brownson & Winston, 2005; Ewing & Handy, 2009; Forsyth & Krizek, 2010; Larco et al., 2011; Lund, 2002; McCormack et al., 2004; Sarkar, 2003; Van Dyck, Cardon, Deforche & De Bourdeaudhuij, 2011). The perception of an area and need for appropriate infrastructure is very different for those with mobility impairments and for parents—then perceptions and the quality and levels of infrastructure are vitally important for walking rates. Perceptions of safety are extremely important, both from traffic and for anti-social behaviour (see for example: Agrawal, Schlossberg, & Irvin, 2008; Brown et al., 2007; Ewing & Handy, 2009; Pikora et al., 2003; Phillips, Karachepone & Landis, 2001).

There is evidence also to support that, beyond perceptions and preferences related to residential location, the influence of the built environment, particularly its structure (principally intersection density, permeability and accessibility), along with diversity of land uses are important to encourage walkability (Ewing & Cervero, 2010; Forsyth & Krizek, 2010; Guo, 2009; Handy, Cao & Mokhtarian, 2005; Larco et al., 2011; Soltani, 2006). Of particular importance is the presence of a footpath, which has been clearly related to increased walking rates (Active Living Research Program of the Robert Wood Johnson Foundation, 2009; Owen et al., 2004; Reed et al., 2006; Rodriguez & Joo, 2004; Sallis et al., 2009).

Unpredictable movement of pedestrians

A wide body of research confirms that pedestrian movement is unpredictable (Cunningham & Cullen, 1993; Ma, Muller, Park, Muller-Schneiders & Kummert, 2009; Romer & Sathisan, 1997; Whyte, 1988; Wolfinger, 1995).[21] However, we can

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[21] During his Street Life Project, Whyte studied 95 pedestrians walking north on Lexington Avenue in New York City using aerial photography to track their movements from a predetermined A location to a predetermined B location. Whyte found that sixteen pedestrians went into one of the stores on

make a few assumptions. First, people are efficient with their movements. Pedestrians will generally choose routes that they *perceive* to be the shortest distance—the most direct route, usually following sightlines or other visual linkages—or the most attractive. Whyte cites a study by sociologist Michael Hill,[22] who tracked 250 pedestrians on routine trips. The "overwhelming majority" followed a least-distance route. Further, women tended to take a more complex route than men did, as do younger people than older people (Whyte, 1988, p.354). The choice to take a more complex route is based on interest and safety (both perceptions and realities of safety). Women are more discerning about where they will walk.[23] Youth are often willing (and able) to expend more energy walking, and they often engaging in more playful and interactive behaviour (both with others and with the environment). However it is the perceptions of the length and quality of the route that are important rather than the least distance. Research on elderly walking in three urban areas in the Netherlands revealed that only 20 percent of those surveyed took the shortest possible route available (Borst, de Vries, Graham, van Dongen, Bakker & Miedema 2009). Borst et al. (2009) determine therefore that characteristics of the environment are also important. Walking is a flexible travel mode and pedestrians are unpredictable. Urban environments need to be able to accommodate this flexibility.

4B.3 Findings about walkability

Considerations of walkability are essential to the sustainability and vibrancy of an urban environment. Understanding of pedestrian's space and sensory requirements need to underpin all the other urban design concerns, especially those that focus on the form of urban environments. Increasing walking within a city does not have one set solution; rather, it will require a combination of approaches, including those of concern to urban designers (Krizek, Handy &

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the block; one turned around and walked back south; two stopped for a mid block conversation lasting five minutes; 76 completed the journey, with an average elapsed time of 58 seconds (1988, p.356).

[22] As citied by Whyte (1988, p.354), Michael R. Hill, Department of Sociology, University of Nebraska, Proceedings of the Third Annual Conference on the Pedestrian; Bolder, Colorado, 1983.

[23] Research shows that statistically men (and specifically young men) are at greater risk from crime than women. However, it is well known that women do not experience this reality and fear crime and victimization more than men do (Carmona, 2010a).

Forsyth, 2009). For example, the need to combine urban design and walkability measures with public transport measures. This section has provided a foundation for the remaining urban design concerns. The next section discusses the urban design considerations of the built environment, centres, density, mixed and compatible uses, public space and realm, sense of place and the natural environment from a walkability perspective.

CHAPTER 4, PART C: URBAN DESIGN CONSIDERATIONS

The city that we love or detest is the summation of all such things:
Of its smells, its noises, its people, its voices, its clothes, its vehicles, its animals;
it is the sum too of its markets and its sidewalks, of its trees, flowers, water, and
sculpture, of its clean or grimy air, of its abundant or covered sun, of the color of its sky,
of its terrain, of a way of life, and a history. When the city is lucky, and this does not
always happen, it possesses an architecture which has understood and loved all these
non-architectural considerations. When we synthesize all these, the image of a given
city springs quickly to mind…
(Burchard, 1957, p.113)

Chapter 4, Part C: Urban design considerations

4C.1 Introduction

Burchard reminds us in the quote above that a city is more than the sum of its parts—it is how these parts work together that is important. Building on Part B, Walkability, this section discusses seven concerns or issues that are seen fundamental to effective urban design theory and practice:

1. Built environment;
2. Centres;
3. Density and compactness;
4. Mixed uses;
5. Public space and realm;
6. Sense of place; and
7. The natural environment.[1]

These concerns are all interrelated and need to be considered holistically from a walkability perspective.

Describing his 'place utopia', Lynch (1981) envisages a mixed use, active, highly accessible, 24-hour centre that offers a mix of housing types, tenures and land uses. All of these characteristics are related to the needs of people as pedestrians using city streets and public spaces. This section explains the elements (or components) of these characteristics that concern urban designers, looked at from the requirements of pedestrians and the requirements of city centres to provide a vibrant public realm to remain commercially viable and attractive for people to live and work in.

4C.2 The built environment

Both the pedestrian and public space infrastructure (movement and 'staying' infrastructure) and the urban design and quality of the infrastructure and

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[1] Much of this discussion and these classifications are interrelated. Therefore, the characteristics and elements could be categorised differently. For example, the discussion of elements important within urban design regarding streetscapes could also be categorised as the public realm, walkability and built place.

environment are very important to creating people-friendly environments. Providing more footpaths will not be effective for pedestrian use if these footpaths are undesirable and unfriendly. Therefore, we must examine the whole 'landscape' of the street. According to Foltête and Piombini, landscape is "the set of elements that one can see (and recognize) from a given viewpoint". It is "a visual factor capable of integrating aspects which are both morphologic (the geometry of visible urban forms) and functional (visually identifiable types of land use)" (Foltête and Piombini 2007, p 227).

The built environment is an indicator of a place's culture, beliefs and what people consider to be important: it is a symbol of the people who live and work within it and what they consider to be important. Within the built environment, urban designers must consider appropriate, human scale environments that address local climatic conditions, sense of place (discussed in section 4C.7) and mixed and compatible uses (discussed in section 4C.5). Urban designers must be discerning to considerations of public, semi-public and private spaces (the hierarchy, continuum or spectrum of public open space), building interior and exterior relationships (particularly the interface between public and private areas) and ambient conditions. In addition, the adaption of a place over time are important (see Chapter 3), along with balancing the needs of public institutions (civic buildings), businesses, infrastructure requirements, users of public spaces and residents (Bohl, 2002).

Cullen considers townscape, literally the view or appearance of an urban setting (equated here to the visible portion of the built environment of centres), as an art form. For him, a scientific attitude to the city is not possible. Rather, what is required is "an art of relationship" to create people-friendly built environments (1971, p.8). Cullen sees townscape "not as decoration, not as a style or a device for filling up empty spaces with cobbles" but "as the art of using raw materials—houses, trees and roads—to create a lively and human scene" (1971, p.167).

The art or artistry of any built environment reflects considerations of appropriateness and relationships between existing and proposed conditions:

- Appropriateness refers to how the visual environment reflects its use. The principle of appropriateness is partly about recognising and understanding the social context. Along with economic value, accoridng to Talen, "urban design should be undertaken to respond to the needs of the community as a social and communal entity" (Talen, 2009b, p.5).

- In addition, urban designers give consideration in built form to the relationships between existing and proposed conditions, prefacing a built form that is efficient, accessible and robust (with the ability to adapt and endure over time) (Hayward, 2002; Montgomery, 1998). Allied to this concept is Montgomery's idea that "places which continue to succeed despite changes in economic conditions, technology and culture do so because their built form is itself mixed and/or highly adaptable". For Montgomery, as a general rule, "the life of streets and urban areas is longer than the life of individual buildings, while the life of buildings is longer than the life of their original function" (Montgomery, 1998, p.106).

The design and development of human scale built environments are also vitally important to the success of public spaces.

Human scale built environment

The scale of a streetscape and a city is of vital importance to pedestrians and to a city's vitality, sustainability and future economic success (including attracting residents and employment). Human scale can be defined as:

> a size, texture, and articulation of physical elements that match the size and proportions of humans and, equally important, correspond to the speed at which humans walk. Building details, pavement texture, street trees, and street furniture are all physical elements contributing to human scale. (Ewing et al., 2006, p.S226, Table 1)

Human scale is generally regarded as the most important variable in overall walkability (Ewing et al., 2006). Place operates at many different scales (Montgomery, 1998) and questions about scale can include:

- Built scale (the ratio of building heights to street widths, spaces of grandeur or intimacy);

- Urban form (the size, or spread of the city, permeability and densities of residents and employment, amongst others);

- The demographic scales (the commonalities of a community, wealth of residents, amongst others); and

- The scale of land uses, including the concentration of land use, types of land use and the land use diversity.

Given that this discussion focuses on the built environment, the remainder of this section addresses scales within the built scale and urban form of the city.

The importance of 'scale' cannot be overstated.[2] Appropriate scales are important, according to Fruin, to provide "a clear human identification and image of a space enables one to move freely and confidently through it, in a relaxed manner, with the senses devoted to the full enjoyment of the space" (Fruin, 1987, p.34). Sert maintains that "if we want to get an element of life into the city, we have to have the formal and the informal, the intimate and the monumental…everything is a question of scale and the comparative contrasts of scale" (Sert, 1956, as cited in Krieger, 2009, p.13).[3]

The scale of the city needs to relate to the size, movement speed and senses of people. Whyte establishes that "downtowns work best when they are compact…many good downtowns have a core that is no more than about four blocks square" (1988, p 312-313). A compact area enables it to be readily accessible on foot and maintain continuity and connectivity. Whyte expands on this calculation, working out "a rough correlation between the size of the city and the pace at which its pedestrians walk" with people walking faster in big cities (1988, p.65). The increase in pedestrian walking speed could be related to increased distances and perhaps to increased intensity within big cities.

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[2] Disneyland's 'Main Street, U.S.A', 1954, was designed with an understanding of the importance of scale, and was scaled at two-thirds of a traditional street for the children to feel more comfortable (Shane, 2005).

[3] The full reference for this is: Jose Luis Sert, Extracts from the First Urban Design Conference, originally published in *Progressive Architecture*, August, 1956, as cited in Krieger & Saunders, 2009, p.13.

Compactness is elaborated on further in the density discussion in section 4C.4 below.

The permeability of the area needs also to be related to people's movement, particularly with block size and the number of intersections provided. The permeability of an urban environment is the "number of alternative ways through an environment" (Bentley et al., 1985, p.10) and is related to the choices provided by the built form. Permeability is a common measure used in assessing an environment for walkability (see Appendix C and for example: Baran, Rodriguez & Khattak, 2008; Parks & Schofer, 2006). Permeability is illustrated in Figure 4C.1 below. Intersection density has been positively correlated to levels of walking (Ewing and Cervero, 2010; Kerr, Frank, Sallis and Chapman, 2007; Montgomery, 1998; Saelens and Handy, 2008; Saelens, Sallis and Frank, 2003), with permeable urban districts having over 250 intersections within one square mile (A. Jacobs, 1996; Montgomery, 1998). However, it is also possible to have too many intersections, resulting in pedestrian and driver confusion. Montgomery (1998) reveals that this happens when both the number of blocks and intersections exceeds 700 per square mile.

Permeability and intersection density is related to the length of blocks. Overall, blocks should be relatively short in length (A. Jacobs, 1996; J. Jacobs, 1961; Montgomery, 1998). Siksna (1998), based on his assessment of block changes in the US and Australian city centres, maintains that cities with large initial block sizes have had to alter them significantly to increase permeability (and commercial possibilities), although this has happened in a largely *ad hoc* manner. Short block length increases the permeability of the area and provides more opportunities for walking and other social activities and for commercial activity. Figure 4C.1 illustrates this concept. Block lengths vary in location and local contexts. Montgomery (1998) maintains that a city block should rarely exceed 90 metres in length. Bohl (2002) on the other hand, through his research on Place Making in the US, determines that blocks should have a maximum of 600 feet (182.88 metres) but should be preferably shorter than that. Permeability is

central to the use of an environment and must be considered early in the design process: it is how all land uses link together.
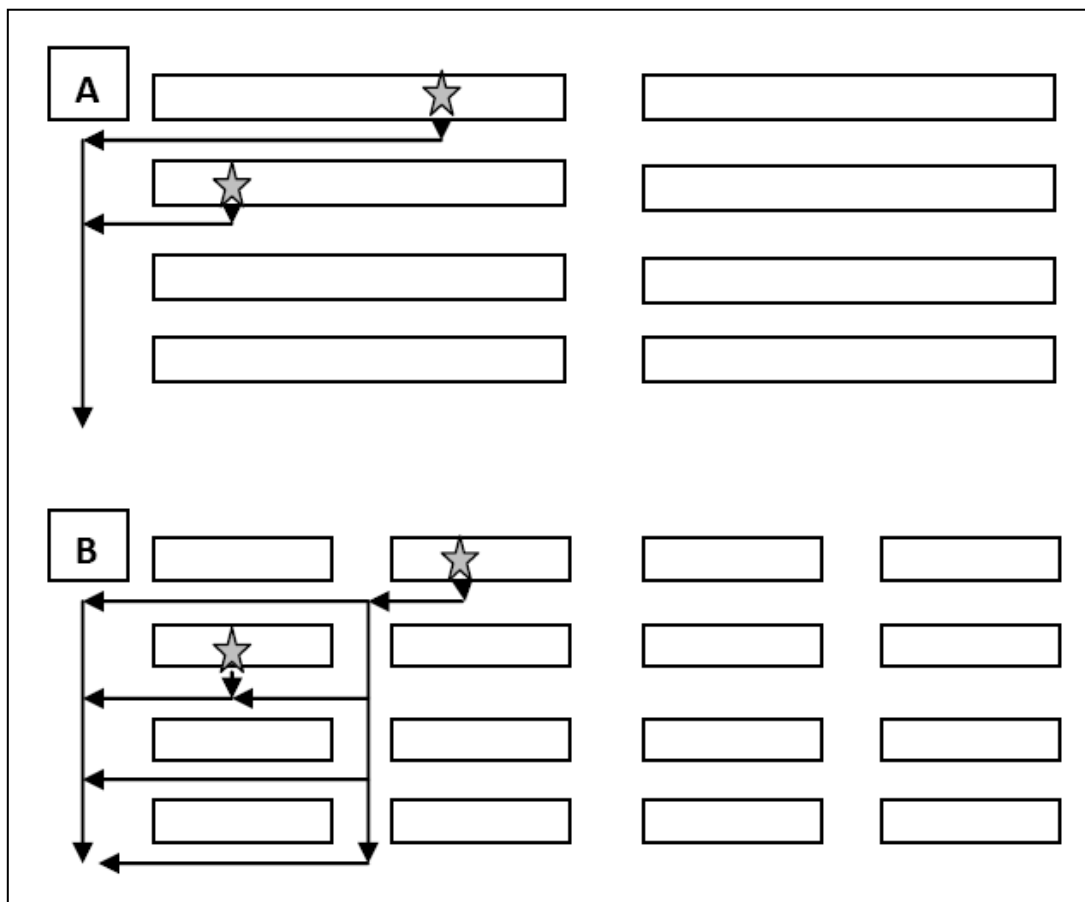
Figure 4C.1: Permeability of city blocks. The longer blocks in A offer less options for movement and result in a city with fewer intersections. The shorter blocks in B offer more options for movement and more intersections. Source: Author's reproduction of Jacobs, 1961 and Montgomery, 1998.

For the built environment to be effective, the landscape must relate to the pedestrian, and particularly the buildings lining the street must relate to the size and movement speeds of pedestrians. Through his survey of 'great' streets, Allan Jacobs, discovers that an appropriate human scale built environment has a vertical to horizontal ratio between 1:1.1 to 1:2.5. He determines that buildings will have "a sense of definition" when the height to horizontal distance ratios are at least 1:4, with the viewer looking at a 30-degree angle to the right or left of the direction of the street (1996, pp.279-280). Jacobs concludes that, to maintain a human scale, the maximum dimensions of the street should be a street width of 72 feet (21.94 metres), a building height of three storeys and a building width

of 36 feet (10.97 metres). Consequently, for a street to have clear definition from the perspective of the viewing pedestrian, it should have height-to-distance ratios of between 1:3.3 and 1:2. None of the building heights on the 'great' streets Jacobs studied exceeded 100 feet (30.48 metres). Their vertical-to-horizontal ratios ranged from 1:4 to 1:0.4, with most of the streets falling between 1:1.1 to 2:2.5. Jacobs' ratios uphold those prescribed by Hedman and Jaszewski's (1984) of a ratio of 1:2 to have good spatial definition. If definitions exceed these recommended amounts, other measures such as space sectioning and embellishing the building façade, are required to reduce the perception of the scale. Too small of a scale is also detrimental.[4] If the buildings are too low in relation to the width of the street, the buildings will not be able to unify and enclose the space. It is also important to have a close spacing between the buildings, which provides more definition to the street (see Chapter 3: Enclousure; A. Jacobs, 1996; Hedman & Jaszewski, 1984).

The built environment and health

Health has returned as a planning objective. The relationships between places and human health are now the subject of significant number of investigations with much research being conducted by urban designers, planners and health professionals into the environmental attributes that encourage a human health and a healthy community. Much of this research around human health and the built environment is undertaken primarily in the residential (including high-density and suburban) or neighbourhood settings and includes investigations of access to greenery, open space and environments that encourage active transport (relatively high-density, mixed used neighbourhood designs embedded within the existing urban fabric, minimising the need to travel to work) (see, for example: Ewing & Cervero, 2010; Jackson, 2003; Saelens & Handy, 2008; Saelens, Sallis & Frank, 2003; and footnote 32). Access to public transport and the distance between residences, commercial activities (particularly local stores) and employment locations (job-housing balance) has also been found to increase

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[4] From more information on how to increase definition of buildings, see Hedman and Jaszewski, 1984.

physical activity (Active Living Research Program of the Robert Wood Johnson Foundation, 2009; Ewing & Cervero, 2010). The Active Living Research Program of the Robert Wood Johnson Foundation (2009) found that in the US, 29 percent of people who use public transport were physically active for 30 or more minutes per day, due to walking to and from transit stops. In addition, they found that transit users compared to car users walked 30 percent more steps per day and spent 8.3 more minutes walking per day.

The Ottawa Charter for Health Promotion by the World Health Organisation (1986) first highlighted the importance of building healthy built environments. The need to plan and design environments that increase exercise particularly walking in everyday life has become the focus of much research, with much work focusing on the possibility of self-selection: people choosing neighbourhoods that suit their requirements for a particular life style. The relationship between health and the built environment is a rapidly growing field of research with many of the surveys conducted under this focus providing a foundation for the discussion of urban design considerations for walkability presented here.[5]

Findings about the built environment

From an urban design perspective, important characteristics of the built environment include:

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[5] For more information on the relationships between health and the built environment, see for example: Active Living Research Program of the Robert Wood Johnson Foundation, 2009; Falconer, Matan, & Richardson, 2010; Forsyth, Oakes, Schmitz & Hearst, 2007; Giles-Corti et al., 2008; Jackson, 2003; Owen et al., 2004; Reed et al., 2006; Rodriguez & Joo, 2004; Saelens & Handy, 2008; Saelens, Sallis & Frank, 2003; and Sallis et al., 2009.
The journal *Preventive Medicine* has a special issue on 'The Built Environment, Active Transportation, Public Transportation, and Health' (2008).
Maller, Townsend, St Leger, Henderson-Wilson, Pryor, Prosser, et al. (2008) provide a comprehensive review of the health benefits of parks.
The University of Western Australia has a research centre: Centre for the Built Environment and Health (http://www.sph.uwa.edu.au/research/cbeh).
In addition, many governments (federal, state and local) have recognised the need to encourage activity through the built environment. See, for example: Australian Government's *Healthy Spaces and Places* website (http://www.healthyplaces.org.au/); the American Planning Association website (http://www.planning.org/research/publichealth/); the International Physical Activity and the Environment Network (http://ipenproject.org); New York City Department of Health and Mental Hygiene (2011).

- **SCALE**: Scale, particularly the enhancement of a human scale environment, plays an important part in creating a pedestrian-friendly or human scale urban environment. A built environment of human scale corresponds in size (the height and width of the built elements and the centre) and articulation to the size and movement of humans. To determine whether a built environment is of human scale, various scales need to be addressed: built scale, urban form and the scale of land uses. A human scale street environment has a vertical to horizontal ratio of between 1:1.1 to 1:2.5.

- **PERMEABILITY:** The permeability of an area is also related to the scale of the urban form (distance between destinations and block size). This research has established that to be permeable, a centre should have a large number of intersections and connect different land uses within a relatively short distance.

Along with these elements, when examining and designing built environments from a walkability perspective, urban designers are concerned with the elements of appropriateness, existing relationships (incrementalism) robustness along with aesthetic concerns (Chapter 3). The relationship between health and the built environment has become a major research focus.

4C.3 Centres

Urban designers are concerned with the creation and promotion of centres, places (spaces) and conditions where people can experience meaningful events in their daily lives and with the sustainability, vitality and vibrancy of those centres. Centres include central business districts (CBDs), town centres, central areas, neighbourhood centres, transit centres and other important centres. Central to sustainable urban design is the creation of mixed use pedestrian and transit-oriented centres (PODs and TODs) where people can access daily needs and services efficiently (Bohl, 2002; Newman & Kenworthy, 1999).

The importance of centres

Centres are a fundamental part of any city. They are usually the most high-profile areas and have concentrated access and transport pressures. Therefore, centres are generally the first area to adopt 'green' transport and sustainable planning policies. Centres perform an important role in cities as gathering places for economic, commercial, recreational and informational purposes and come to represent the city as a whole, acting as a magnet for people and businesses. As such, centres are of vital importance to the practice of urban design (Bohl, 2002; Kenworthy, 2006; Newman & Kenworthy, 1999).

As discussed earlier in section 4B, the use of downtowns and city centres has shifted in recent years. Kenworthy contends that it is "increasingly clear that attractive, human scale centres with good public transport systems and diverse cultural and entertainment attractions are preferred sites for globally mobile jobs linked to the new information economy" (2006, p.76). Currently, to an increasing extent, pedestrian movements in downtown areas and city centres are not purpose-oriented. This means that they are not exclusively for travel to work, school, or shopping for need. Rather, they are used for leisure activities, such as shopping for fun, sightseeing, window-shopping, 'hanging out' and/or for entertainment reasons (Monheim, 2001).

Recreational shopping has become a legitimate form of public life (Carr, Francis, Rivlin, & Stone, 1992). Retail shops generate more trips than offices in city centres (Pawsey, 1985; Pushkarev & Zupan, 1975) and "shoppers account for the highest proportion of the total daily pedestrian trips in the city centre areas" (Pawsey 1985, p.241) (discussed further in section 4C.5 later in this Chapter). Zacharias establishes through photographic surveys of elements within city centres that attract users, that "entertainment or cultural representation may figure prominently in the image of the pedestrian environment and become an important reason for visiting and staying" (2001b, p.12).

Elements of centres: Character

Central to the importance of the centre and the image it projects is the 'character' of the centre. According to Norberg-Schulz (1980), character refers to a centre's aggregate traits and features and how they can be understood as a whole. Bohl, referring to the creation of new places, explains that, "it is critical to identify at the outset the essential character desired for the place to be created—the total fabric—so that the whole can, in fact, become greater than the sum of parts" (2002, p.277).

The character of a centre is established through how it is experienced. Character takes into account such elements as "symbolism, playfulness, clarity, legibility, and serendipity" and "a sense of exploration, mystery, and discovery…signs of a human touch…and a sense of art, history, culture, community, and humanity in the shaping of buildings, landscapes, streetscapes, and even basic infrastructure" (Bohl, 2002, p.278). Above all, however, the architecture of a place communicates its character.

Elements of centres: Visual order, variety and legibility

City centres need to provide a built form that is easy to understand, legible (cohesive) and that relate to people (human scale discussed above). It is well documented in environment-behaviour research that the environment is a 'communicating medium' that communicates what is expected of users (Becker, 1977). For pedestrians, the messages of the environment should be clearly communicated so that they can form a mental or cognitive map of the landscape. How well messages are communicated relates to the scale of the centre, the streets and streetscapes, the built environment and its appropriateness and how a pedestrian can perceive themselves in the landscape (Goakes, 1987; Hedman & Jaszewski, 1984; Kaplan, Kaplan & Brown, 1989; Lynch, 1981; Zacharias, 2001b; and Chapter 3). Successful communication is also, according to Cullen, related to a pedestrian's idea of being 'here' as opposed to

being 'there' (Cullen, 1971).[6] Cohesiveness requires that a place or a space have a centre of gravity (Bohl, 2002; Lynch, 1960). This centre of gravity could be a main (or high) street, a square, plaza transit centre or some other place that naturally draws people. This centre offers focus, identity and a sense of orientation and the capacity for wayfinding, along with a place for people to gather. The streetscapes and centres need to convey visual cohesiveness and unity to pedestrians for them to understand and feel comfortable.

In addition, the environment has to offer enough complexity to be interesting. Variety and visual order work together. For an area to be understandable, it needs to be easily understood. For an area to be interesting, it needs some variety. However, over complicated and excessively contrasting architectural elements contribute to confusion and feelings of anxiety or irritation, particularly for some older people and definitely for people with dementia or Alzheimer's disease and those unfamiliar with the area (Hedman and Jaszemski, 1984). Areas need to exhibit a balance between harmony and diversity both in built form and in activities and land uses: to exhibit a balance between order and disorder, predictability with the unpredictable (Bohl, 2002; Goakes, 1987; Gumpert and Drucker, 2000). This relates to the principles of incrementalism, robustness, richness and appropriateness, amongst others (Chapter 3).

Trees have been found to increase the unity and visual order of an area (Goakes, 1987; A. Jacobs, 1996). Allan Jacobs (1996), reporting on his study of 'great' streets, found that trees planted between 15 and 25 feet (4.5 and 7.6 metres) apart create visual lines that enhance the coherence of the street. Trees planted further apart than 25 feet (7.6 metres) did not create visual coherence despite their other benefits. Jacobs advocates planting trees as close to street corners as possible and at regular intervals. He found that the presence of under

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[6] The idea of legibility is expanded on by Fruin: "the full perception of a large space is closely related to its legibility and clarity of expression. If the visual elements that define the space convey purpose and orientation to the pedestrian, then a wider range of receptivity to other visual inputs is possible. If the visual elements that comprise a space are poorly defined, then a greater degree of concentration is required by the pedestrian to obtain orientation and direction" (1987, p 33).

maintained trees undermined the benefit of trees to an area. The need for greenery and nature in cities is discussed below in section 4C.8.

While the elements of complexity, variety and cohesiveness are very important in the understanding of a centre, overall, signs of human life and activity always outweigh the architectural elements in relation to pedestrian route choice (Whyte, 1988; Zacharias, 2001a).

Elements of centres: Streetscapes.

The streetscapes and the ground floor land uses of centres are of vital importance to its cohesiveness and attractiveness. Tibbalds claims that a city centre "draws its vitality from the activities and uses in the buildings lining its streets…façades and activities provided at street-level–closest to the eye-level– are particularly important" (2001, p.40). The façades of ground floor buildings are especially important in stimulating activity and allowing people to relate to the built environment. Currently, many urban functions have been moved indoors, with functions and services orienting themselves not to the street (as would have happened traditionally in market places), but rather facing towards an internal space. In addition, buildings and uses have grown larger with areas of streets becoming monofunctional. From an environmental crime prevention perspective, the activation of street-level façades (an 'active edge') is a major contributor to safety in centres, providing that the windows that look onto the space are from activity rooms and not rooms with little or no activity (such as bathrooms, store rooms or parking spaces).

The richness of the environment is important for the area to be perceived as welcoming and friendly. According to Bentley and colleagues, richness is the "choice of sensory experience" provided by the built environment (Bentley et al., 1985). Research supports that maintenance and care for detail in a city are closely linked to perceptions of being welcome, to safety and the amount of time people are willing to spend in a city centre (Boyce, 2010; Gehl, Kaefer, &

Reigstad, 2004; A. Jacobs, 1996; Zacharias, 2001a).[7] Other related factors are 'motivating' land uses, such as sporting and entertainment facilities, restaurants and high-turnover retail establishments. In turn, well-maintained areas will attract development and investment (J. Frick, 2006). Poor maintenance and untidiness are distracting and discouraging to users and may contribute to criminal activity or inappropriate behaviour in city streets (Ewing et al., 2006), and empty stores diminish an area (A. Jacobs, 1996).

The elements of streetscapes that relate to pedestrian requirements that concern urban designers seeking to create vibrant and sustainable cities will be explored in the next section. As streetscapes represent the primary public space areas of cities, this discussion overlaps with discussions of density, mixed use, public space, sense of place, pedestrianisation and the built and natural environment.

Findings about centres

From an urban design perspective, centres fulfil the following functions:

- **CENTRAL ROLE**: They perform an important role in cities as gathering places for economic, commercial, recreational and informational purposes;

- **THE WHOLE CITY**: They represent the city as a whole;

- **PLACES**: They are perceived as *places* (rather than *spaces*), particularly their public spaces which are often destinations;

- **APPROPRIATE STREETSCAPES**: They need well-maintained and appropriate streetscapes, offering variety and harmony both in design and in uses, with green elements;

- **HUMAN ELEMENTS**: They focus on human use and enjoyment; and

- **MEANINGFUL EVENTS**: They must provide conditions where people can experience meaningful events.

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[7] Zacharias (2001b) tested the importance of the quality of the urban environment of pedestrian areas on pedestrian choice. He found that "the appeal of the area depended strongly on the maintenance of the whole area and the appearance of the shop fronts", as well as presumed choice motivating forces such as street activities and entertainment and food venues (Zacharias, 2001b, p.11).

When examining and designing centres from a walkability perspective, urban designers are concerned with the elements of character, variety, visual order and cohesiveness.

4C.4 Appropriate density in activity, land use and urban form

Cities are not cities without activity. Urban designers are concerned with density, compactness and the attainment of appropriate density to promote mixed land uses (diversity), accessibility, a lively and walkable pedestrian realm, and alternative forms of transportation. The latter qualities cannot be attained without appropriate densities (Newman & Kenworthy, 1999, 2006) Residential density refers to the ratio "relating dwellings to land" (Dawkins & Matan, 2008b, p.2).[8] Density measures can also include employment density, land use density, building floor area and/or urban form density depending on the purpose of the measure. Newman and Kenworthy (2006) use *activity density*, which is a measure combining employment and residential density. Density is required to create liveliness, vitality and efficiency for infrastructure (transport and other land uses) and economic transactions (Bambrick et al., 2011; Cervero, 2009; Newman & Kenworthy, 1999, 2006; Trubka, Newman & Bilsborough, 2009).

However, it is important to specify that density is not the same thing as overcrowding (J. Jacobs, 1961) which is more about housing occupancy levels, and that "density in itself will not necessarily produce urbanity. For Montgomery, density is a necessary rather than a sufficient condition for urbanity" (Montgomery, 1998, p.103). Density will not by itself create a sustainable, vibrant city and lead to increased walking. Urban design adds the critical elements that make appropriate density into a lively and walkable city.

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[8] With density ratios "the number of dwellings is the numerator; the area of the land is the denominator. The 'land' can be a residential site, a site and the roads which serve it, a collection of sites with roads and parks, a neighbourhood with shops and schools and a railway passing through it, a local government area, or an urban area with factories, railways, freeway reserves (built and unbuilt), an airport, utility corridors, regional parks, land reserved for extensive future uses, bushland and wetlands, etc. A change in the definition and therefore the extent of the denominator, the 'land', can have a magnified effect on the ratios, throwing out all projections" (Dawkins & Matan, 2008b, p.2).
There are many varying definitions of residential density, which use a wide variety of numerators and denominators. See Forsyth, Oakes, Schmitz and Hearst (2007).

Responses to density are very much a local matter, as adverse community reactions in many countries testify. Not surprisingly, urban designers are reluctant to offer a rule for appropriate or optimum (or thoughtful)[9] density. Density requirements (increasing or decreasing density) differ by city, region and country. However, some recommended densities allow a place to develop a critical mass within cities (local neighbourhood density requirements are discussed below in section 4C.5 Mixed uses). Newman and Kenworthy (2006), reporting on a survey of 58 higher income cities in 1995,[10] calculated that a minimum activity density of 35 persons and jobs per hectare (2.47 acres) was necessary for the viability of a public transit service. In 1998, Montgomery calculated that areas with more than 50 dwellings per acre (0.4 hectare) are "more likely to be successful" in an English context (1998, p.103). Jane Jacobs (1961) recommended a density of approximately 100 dwellings per acre (in the USA in 1961) for vitality. Jacobs' figure has been reinforced by other surveys.

Traditional European 'walking' cities (discussed in Chapter 1) had relatively high-densities of at least 100-200 people per hectare, were compact and were rarely over 5 kilometres across in size (Newman & Kenworthy, 1999), while 'transit' cities (based around train and tram lines) had densities of 50-100 people per hectare, similar to many current European cities.[11] In 2006, Schmitz and Scully calculated that an appropriate critical mass in a US context would be at least 18,600 square metres of retail and other commercial space and at least 2,000 dwelling units within a ten-minute walk of each other (2006, p.31).

A recent survey on six UK neighbourhoods of varying densities (lowest 25 households per hectare and highest 271 households per hectare) by Raman

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[9] 'Thoughtful' density refers to density that enables a city to create a critical mass of people and to concentrate activities, creating a lively and safer city and that is at a human scale and relates to senses (Gehl, 2010b).

[10] This data was from the 'Millennium Cities Database for Sustainable Transport' and also from prior research by Kenworthy and Newman comprising a worldwide survey of over 100 cities (urban areas) from various income levels around the world collected from 1960 onwards, with the majority of the data collected for 1995. This database is being reviewed, with new statistics on cities being released.

[11] Kenworthy argues that, "European cities average 50 to 55 persons per hectare, automobile cities [such as those in Australia and the US] 15 to 26 persons per hectare, while Asian cities average 150 persons per hectare" (2006, p.70).

(2010) identified the relationships among density, the layout of an area and residents' social cohesion (social structure and social patterns). He found that residents living in high-density neighbourhoods had smaller but stronger social networks than those living in low-density areas. Those living in medium-density neighbourhoods of between 70 and 100 dwellings per hectare had the highest number of informal social contacts and interactions. However, Raman found that more than just density was responsible for social cohesion. Rather, the neighbourhoods with high levels of social cohesion also had high levels of well-being indicators (sense of safety, high-quality housing, public facilities, sport facilities, places for children, amongst other indicators), high levels of older people and children present in public spaces, strong place attachment and a built form that encouraged social interaction (which Raman defined as: visual integration of public spaces, highly integrated/accessible spaces, well-connected pedestrian networks, a mix of intimate and visible public spaces and a relatively simple layout). From this research, Raman determined that neighbourhood layout and design has "a significant impact on perceptions of density, friendliness and participation" (2010, p.76).

Forsyth et al. (2007, 2009), examining the correlation between walking and density with 715 participants in the US, reported similar findings. They found that increased land density is related to increased travel walking but not to an overall increase in walking for physical activity. These findings provide evidence that to enable land intensification for sustainability to work within urban areas, there are other equally important measures needed along with density.

Recently, western cities have experienced dramatic changes, with increased pressure for denser urban environments. There has been a marked shift in urban densities, particularly in US and Australian cities. And the changes are the following: younger professionals and creative industries preferring inner urban environments (the culture of urbanism); older people ('empty nesters') moving back to the city for smaller homes in more accessible places; the average single-family housing lot size decreasing; and an increase in infill development and redevelopment, particularly in older inner industrial areas. In 2000, the average

metropolitan density of US cities increased for the first time in the previous fifty years (Condon, 2010), with other cities around the world demonstrating similar increases (Newman & Kenworthy, 2011).

Density: Compactness

The need for urban containment and compactness now attracts widespread recognition.[12] According to Jabareen (of the Department of Urban Studies and Planning, Massachusetts Institute of Technology (MIT)), compactness refers to "urban contiguity (and connectivity), which suggests that future urban development should take place adjacent to existing urban structures" and in existing urban environments (2006, p.39). It refers to the "containment of further sprawl" (Jabareen, 2006, p.39) and is concerned with the efficient use of land, with services able to be supplied more economically at higher densities and within the existing land use than in new greenfield (undeveloped) areas at lower density (Condon, 2010; Trubka, Newman & Bilsborough, 2009).

Compactness is a widely accepted planning policy in Europe. Dulal, Bridnig and Onoriose argue that European cities have "generally been much more successful in maintaining the vitality of their central areas" than Australian and US cities (2011, p.2). A tighter (or fine) grain enables cities to maintain continuity within a small area and be easily accessible on foot and by bicycle. A sustainable city needs to be compact (Kenworthy, 2006; Newman and Kenworthy, 1999) and compactness has been shown to influence travel choices (Cervero & Kockelman, 1997). Compact cities have been shown to have lower greenhouse gas emissions than cities that are spread out (Dulal et al., 2011). Kenworthy explains: "urban form, as measured by urban density and the centralization of jobs, is found to have a very strong relationship with transport patterns, especially the level of car dependence and the effectiveness of public transport" (2006, p.69). Public

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[12] Many urban form models have developed around urban containment: Smart Growth models (see smartgrowth.org), urban village models (Aldous, 1992, Newman and Jennings, 2008), New Urbanism (see Appendix B), transit-oriented and pedestrian-oriented developments (see Cervero, 1998, Dittmar & Ohland, 2004, amongst others), transit city models (Newman and Kenworthy, 1999), modelling cities on ecosystems (Newman and Jennings, 2008) and car-free cities (J. Crawford, 2002).

transport use increases steadily as population/residential density increases, along with other measures to restrict car use (Dulal et al., 2011).

Density: Vitality

Vitality in city centres is not so much a measure of population as it is of density and compactness. Vitality, the extent to which a place feels alive or lively, requires a level of density in land uses and people because, as Sternberg points out, "places that want to be vital must densely concentrate dwelling units and businesses, thereby generating the many comings and goings that bring a place to life" (2000, p.272). For Montgomery, writing in 1998, from an English city perspective, "densities can be too low where they fail to generate vitality, and too high where they produce standardized buildings, regimented layouts and large development footprints" (1998, p.103). Further, Montgomery argues that the key to sustaining diversity lies in "relatively large numbers of people with different tastes and proclivities": "a relatively high population density" (1998, p.98) and concentration of people using the centre for a range of reasons. It is being 'concentrated' that produces "urbanity and convenience" (1998, p.103).

Findings about density

Density is a highly contested issue within urban planning and the social sciences. A successful increase in housing and other densities must reflect the local context and respond to local issues. What can be agreed is that an appropriate level of density is required to enable sustainable transport (walking, cycling and public transport) options, and for vitality. Some common themes in the density discourse are the following:

- **COMPACT:** Urban areas need to be compact enough to be efficient in land use, transport, environmentally and economically and *compactness* is increasingly being sought as a planning objective;
- **ACTIVITY GENERATION**: A certain level of density is required for an urban area to have activity and vitality;

- **BUILT FORM AND LAYOUT:** Along with density, consideration must be given to the built form and layout of the area (visual integration of public spaces, highly integrated/accessible spaces, well-connected pedestrian network, permeability, a mix of intimate and visible public spaces and a relatively simple layout), to factors that increase a sense of wellness (safety, high-quality housing, public facilities, sport facilities, amongst other), public spaces where older people and children feel comfortable, and a built form that encourages social interaction; and

- **EFFICIENCY:** Compact urban forms are increasingly being sought as a response to the challenges of sustainability as they enable increased walking, bicycling and public transport along with more efficient use of land.

4C.5 Mixed and compatible uses

Mixed use refers to buildings or areas that contain more than one land use. Kevin Lynch called it "the grain of a city" (Lynch, 1981). This grain can refer to residential grain—the mix of housing types or tenures—or to an activity grain—a mix of different land uses. Both are concerned with creating an optimum grain that is not so coarse as to cause too much segregation and unnecessary travel and not so tight as to be unsuitable. Mixed use is a key component of transit-oriented developments, New Urbanist and neotraditional and Smart Growth models. According to Grant (2002), it generally involves increasing the intensity and diversity of land uses and integrating segregated uses at a range of scales from the individual building/site to the larger neighbourhood or city scale.

Urban designers are concerned with the enhancement and creation of appropriate and mixed land uses to create safe, vibrant and sustainable places that reduce travel needs (Jabareen, 2006; Newman and Kenworthy, 1999, 2006). This mix of land use includes the appropriate mixing of employment, residential and services to enable people to access all their needs (and wants) within areas of close proximity, thus minimising their need to travel. When cities are viewed this way, they can be seen, as Jacobs and Appleyard explained decades ago, as "a

salt-and-pepper fabric of many colors, each color for a separate use or combination" (A. Jacobs & Appleyard, 1987, p.499). Diversity (in land uses, public spaces and in demographics) encourages innovation, creativity and exchange and is the primary requirement of a vibrant place (Brecknock, 2006, Landry, 2000). Land use diversity have been positively associated with decisions to walk, particularly for local services and non-work travel (unless the work destination is within the walkable area) (see, for example: Cervero & Radisch, 1996; Ewing, 1999; Ewing & Cervero, 2010; Kerr et al., 2007, Soltani, 2006). This land use diversity is very closely linked to the density discussion above, as diversity requires a critical mass (J.Jacobs, 1961). Mixed use within single blocks and within buildings (where appropriate) is also beneficial to vitality (Montgomery, 1998).

A large part of the mixed use discourse focuses on the creation of an appropriate mix of land uses to create safe areas. As discussed in Chapter 3, this area of research is often referred to as Crime Prevention through Environmental Design (CPTED). One of the ways that CPTED principles can be applied is to increase the presence of legitimate activity on (and looking onto) streets and other public spaces, providing what is now called 'natural surveillance'—Jane Jacobs 'eyes on the street'—through the use of walking, bicycling, transparent and activated streetscapes and land uses that attract people at various times of the day and night. The readability of an area is also an important crime-prevention strategy. The readability signifies who is welcome in a space, building on the idea that the design influences who is welcome there (Engwicht, 1999; Engwicht, personal communication, November 13, 2009; Whyte, 1988). This idea is in part because "ethical influences run from place to man, as well as vice versa; our ideas of what is right derive from the nature of things around us, as well as from the nature of ourselves" (Lynch, 1981, p.294).

Jane Jacobs, writing in the 1950s in a book published in 1961, identifies four conditions to generate diversity:

1. Areas must serve more than one primary function;
2. Most blocks should be short;

3. The district must mingle buildings that vary in age and condition, including a good proportion of old ones". This "mingling must be fairly close-grained"; and

4. There must be a sufficiently dense concentration of people, for whatever purposes they may be there (pp.150-151).

Much of Jane Jacobs' conditions still apply in the current research into mixed used areas in cities and underpins much of the later research and urban design guidelines.

Mixed uses: The attraction of land use

Land use is a primary reason why people enter a city centre—they come for a purpose. The quality of that centre will cause them to stay longer. Jane Jacobs, along with more recent analysts, observed that city centre areas devoted only to one land use, while busy at certain times, have been found to be monotonous (J. Jacobs, 1961; Lang, 2005; Whyte, 1988). Famously, Jacobs argued for an "intricate and close grained density of uses that give each other mutual support" (J. Jacobs, 1961, p.14). This is usually small businesses, specialty shops, restaurants and cafés (Barton, Grant & Guise, 2003). Montgomery, whose approach is heavily based on Jacobs' work, contends that the primary land uses and the 'secondary' activities they attract, must "ensure the presence of people on the streets and in the spaces and buildings across different times of the day" (1998, p.104). Further, "any successful urban place must not only accommodate large enterprises (which employ large numbers of people and impact on the wider local economy), but must also allow space for small enterprises to grow" (1998, p.106). The appropriate mix of retail providers is a large field of study, referred to as *urbandizing*.[13]

Mehta (2009), whose findings are based on research conducted in neighbourhood commercial centres within Boston metropolitan area, worked out that lively blocks contained a mix of places to eat and drink (coffee shops,

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[13] *Urbandizing* has evolved from the need for town centres to compete with shopping malls. See Gibbs (1992).

restaurant, deli, pub/bar), those that serve daily and weekly shopping needs (convenience store, hardware, drycleaner), and other shopping and services (bookshop, video shop, bank, florist, apparel, footware, and so on). He concluded that areas need a "fine grain of mix and variety" to attract people (2009, p.60). Mehta's surveys revealed that the most lively blocks in Boston had "seven to eight businesses for every 200 feet [60.96 metres] length of block" (2009, p.60).

Different land uses have different catchments and attraction levels of users. Commercial, retail and entertainment uses are the largest attractors of pedestrian traffic and attract others to the area than those using the facility (Barton et al., 2003; Foltête and Piombini, 2007). Part of this attraction to commercial areas is the significance of recreational and 'window' shopping (Carr et al., 1992; Mehta, 2009; Monheim, 2001; Pawsey, 1985). As previously mentioned, Pushkarev and Zupan found that offices have approximately twice the number of trips per unit of floor space as residences and that restaurants and high-turnover retail uses (supermarkets, delis and other) had more than ten times the number of trips as office space as a ratio to floor space, although they emphasise that this attractions depends on opening hours (1975, p.32). Therefore, both the immediate environment surrounding those land uses and the way that those land uses address the street are of vital importance.

It is vital to have a diversity of commercial and retail facilities within an area (Montgomery, 1998; Tibbalds 2001). Mehta (2009) explains that some land uses can generate and anchor liveliness, such as commercial and entertainment (particularly cafés and restaurants) land uses, and some can act as supports and others can contribute only minimally or sometimes even detract from liveliness. The appropriate mix of land uses and housing types within residential areas has been the source of much debate for many years.

Mixed uses: Neighbourhoods and housing

A mixed use neighbourhood or local area refers to a predominantly residential area that includes other land uses, such as retail, cultural and/or light industrial uses, usually clustered around a core area of streets that have the largest

concentration of activities (Mehta, 2007). Barton, Grant and Guise, writing in 2003 about local centres, offered a rough guide: it is possible to have a population of 8,000 to 10,000 people within 400-500 metres of a main (or high) street centre at an average density of 50 dwellings per hectare. It is unrealistic to expect a true diversity of mixed uses where the host population within walking distance is below, say, 5,000 (p.196). Condon (2010) calculates a gross minimum of 10 dwellings per acre to support local commercial services and a reasonable transit service.

Diversity in housing types, cost and tenures is a major concern of urban planning and development. According to Talen and Ellis, providing a variety of housing types and lot sizes, responding to different income needs, is "an obvious way that physical form promotes social diversity" (2009, p.191). They contend that "diverse neighbourhoods need to simultaneously support homeownership and rental housing, integrate a range of housing types, densities and levels of affordability, and foster a mix of uses, services and facilities". To create this mix requires flexible urban planning and urban design codes that allow for mixing of housing types and appropriate land uses. Also required is the elimination of minimum lot sizes, maximum densities, minimum setbacks, and other rules that work to prevent housing type diversity". In addition, these mixed residential areas need infrastructure that supports positive social connections, and that means, in the view of Talen and Ellis, "paying particular attention to the public realm" (Talen & Ellis, 2009, p.192).

Mixed uses: The debate

Research has shown that single-use areas create inefficiencies, particularly in transportation infrastructure (Lang, 2005; Newman & Kenworthy, 1999). Lang explains that large single-use residential areas provide poor educative environments for young children and adolescents (Lang, 2005, p.368). However, not everyone likes mixed use environments: many people do not want to live in constantly busy places. Thus, the question arises: what is the appropriate mix?

This question is the source of much debate within urban design and other built environment professions (Lang, 2005).

Lang emphasises that, "the questions today and for the future are: 'What do we mean by mixed uses?' 'How mixed should mixed uses be?' and 'Are we talking about mixed uses everywhere?". Lang continues: "answers to questions about the mix of uses depend on the objectives being sought in a project". Examples of different approaches to mixed use are in Berlin and Singapore. The City of Berlin requires 20 percent of commercial buildings to be residential to provide for the "natural surveillance of streets". In Singapore, planners were worried about racial segregation and therefore implemented "a policy to make all residential areas house the different ethnic groups of the state in proportion to their representation in the total population" (Lang, 2005, pp.368-369). Similar responses to increase the provision of 'affordable' housing been implemented in many cities.

While development of an appropriate mix of uses is of concern to urban design, it is often also the source of much contention (Barton et al., 2003). The complexities that debates about mixed use generate are seen by some as antithetical to the inherent sense of order that traditional urban planning and design seek to embrace. Ehrenfeucht and Loukaitou-Sideris tackle this 'messiness' problem, arguing that, "despite Jane Jacobs' criticism of the mono-functionality and rigidity of planned modern environments and her appreciation of the functions of the unstructured sidewalk 'ballets' (J. Jacobs, 1961), planners find it difficult to embrace messiness, spontaneity and unpredictability" (2010, p.461).

Talen and Ellis seek to understand why some places have been able to, despite opposing pressures, "manage to be both compact and diverse," referencing diversity in demographics (race, ethnicity and income) (2009, p.184). The long and fraught history of policies and plans for implementing 'social mix' reveals the complexity of social planning to create the 'mixed community' and indeed much research points out that policies to encourage social mix may be "counter-

productive or even fail to increase neighbourhood satisfaction" (Baum, Arthurson & Rickson, 2010, p.483). (see also: Sarkissian & Heine, 1978; Sarkissian, Forsyth & Heine, 1990)

Findings about mixed uses

Creating 'spontaneity', vitality and vibrancy is an area of concern of urban design practice and research. Progressively, urban design concern with mixed use focuses on mixed use to enable sustainable urban and transport solutions within urban areas. This section focuses on mixed use, establishing that appropriate mixed use includes:

- **APPROPRIATE MIXING OF EMPLOYMENT, RESIDENTIAL AND SERVICES:** An appropriate mix of employment, residential and service land uses is necessary to enable people to access all their needs (and wants) within areas of close proximity, minimising their need to travel;
- **SAFE AREAS**: Helps to create safe areas;
- **RESIDENTIAL POPULATION:** Needs a residential population of at least 5,000 within close walking distance for a neighbourhood, or local centre;
- **MUTALLY SUPPORTING LANDUSES:** Requires an intricate and approprate mix of land uses that give each other mutal support;
- **LANDUSES WITH A LARGE CATCHMENT OF USERS**: Supports commercial, retail and entertainment uses as the largest attractors of pedestrian traffic and attracts others to the area than those just using the facility; and
- **HOUSING DIVERSITY:** Provides diversity in housing types, cost and tenures.

In addition, this section has established that ideas about appropriate mix of uses are much debated by planners, designers and residents alike both in residential and urban contexts. All agree on the need for an appropriate mix as the basis for a more walkable city.

4C.6 Public realm and public space

A central concern of urban design is the creation and promotion of appropriate public spaces,[14] including streets, streetscapes, formal public spaces, informal public spaces, shared (or 'common') outdoor space,[15] private public space that is publicly accessible and 'forgotten' (grey) spaces.[16] As Gehl and Matan argue, "the everyday use of public space has been changing—from necessary uses to optional, recreational uses" (2009, p.106). These changing roles increase the need for urban areas to contain "appropriate, well-designed places in which people choose to spend time and that provide a place for people to relax, socialize and be part of urban life" (Gehl and Matan, 2009, p.106). As discussed above, cities are now using urban design to compete with other cities for residents and businesses. Montgomery argues that "successful cities are in part shaped by the relationship of built form to space, and the range, variety and characteristics of the spaces made available…" (1998, p.110). Thus, public space has become important in this competition.

It is important to clarify what is meant by 'public space', as there is much debate about definitions: whether it is public space that is publicly owned or private, inside or outside, restrictive or free, democratic and inclusive or otherwise, the legal definition, or the feeling or perception of the space? The different definitions used often reflect academic traditions and professional territories, as well as community and residents' perceptions. Goodsell contends that "the most striking contrast" in definition of public space is between those who refer to it as "the social realm of unfettered discourse on matters of public concern and those

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[14] There is much research on human needs and public space, and as it is somewhat outside of the scope of this research, I will not discuss it here. If interested please see Lang's (2005) model relating Maslow's (1987) 'hierarchy of human needs' to the built environment.

[15] Shared (or 'common') outdoor space, to use Clare Cooper Marcus's terminology, refers to outdoor space (usually in the form of gardens or courtyards) that is accessible only to those who 'own' it, such as shared gardens in housing developments or community gardens (Cooper Marcus, 2003b).

[16] Carmona (2010b) provides a good overview of public space typologies classified into design, socio-cultural and political economy perspectives, along with developing his own typology of twenty public space types based on management of the places. These classifications illustrate the huge variety of public space types within cities and the complexity of public space discussions. While these classifications have been very helpful, because of the focus of my discussion, I have not provided the same classification system and have focused only on a few overlapping types.

who conceive of it as physical, public places, such as a town square or urban plaza…" (2003, p.361). It is important to realise that public space is also politicised space, with common features such as openness, importance to democratic life, and "perceptions of its degeneration under conditions of modernity" (Goodsell, 2003, p.361).

Within the urban literature, public space is usually defined in physical as opposed to procedural terms. Goodsell (2003) explains that often it is an open site—such as a street, footpath, plaza or park—located in the midst of the city. These largely 'exterior' spaces are "meant for public use, allowing or facilitating relaxation and recreation, the formation of social bonds, the establishment of connections to the past, and the creation of community identity" (Goodsell, 2003, p.367). Further, for urban theorists, the focal idea regarding public space is its potential contribution to the quality of urban life" (2003, p.368). Carr et al. describe public space as "open, publicly accessible places where people go for group or individual activities" (1992, p.50). They believe that "public places should be responsive, democratic and meaningful" (1992, p.19). However, public space might be more useful if viewed in terms of behaviour settings, defined as consisting of recurring patterns of behaviour and built form (a milieu) and time (Lang, 2005).

Public realm and public space: Privatisation and commodification of public space

As discussed above, public spaces are now an important commercial commodity, enabling cities to compete in a global arena and are often privatised, linked to mass consumption and to capitalism, broadly slotted into the umbrella term 'globalisation' (Carmona, 2010a, 2010b; Gospodini, 2002; Knox, 2002; Lang, 2005; S. Schmidt & Németh, 2010). However, public spaces have never been and never are free from authority, control or commercial enterprise (the core of city functions) and have always been 'politicised' spaces. Miller (2007) explains that the current definitions and perceptions of public space within urban design as *publically owned, open, democratic* and *accessible* spaces do not necessarily

have a basis in reality. She defines public space as a "kind of hybrid of physical spaces and public spheres" and bases her definition on the assumption that physical space is "important to democratic public life" (2007, p.xvi). Miller follows feminist political thinker Nancy Fraser's (1992) idea that there is no 'public'. Rather, there are 'multiple publics' and therefore 'multiple public spheres'. Miller questions why urban designers, urban planners and architects' 'commonsense' definitions and ideas about public spaces are "so far from reality" (2007, p.xi). She concludes that a fundamental reason is probably a "preoccupation with the enduring physical qualities of public spaces." Further, by focusing on the physical and the concrete, urban designers often ignore "the nonphysical qualities—legal, economic, political, aesthetic" all of which affect a public space. For Miller, public spaces do not exist as static physical entities but are constellations of ideas, actions, and environments" (2007, p.xi).

Public spaces throughout history have never been completely free and democratic regardless of ownership. This fact raises many questions: if public space has never been free from authority, how is the current control of public space different now, and for whom is it different? This control is partly a reaction to a fear of strangers, illegitimate users and 'undesirables' (Malone, 2002; Whyte, 1988) and is based on the notion of "appropriate use and appropriate users of public space" and the "assumption that there is one shared set of 'public' values" (Malone, 2002, p.161), which prescribes how we should behave in public. The view that public space is democratic, open and accessible exposes the discourse to criticisms of idealising or romanticising 'lost' public space (Gaffikin, Mceldowney & Sterrett, 2010; Malone, 2002). In addition, many disagree that public space is in decline, rather arguing that it is just as essential today: it is always in evolution with use and forms constantly changing. Some authors cite 'successful' and alternative examples of public space that come close to the design and social requirements advocated by the literature (Carmona, 2010b; Carr et al., 1992; Gehl & Gemzøe, 2000).

Shaftoe believes that good urban places are the "heart of democratic living" (2008, p.5),[17] referencing earlier work by Carr et al. (1992). His analysis relies on a multidisciplinary approach to studying the perceptions and function of successful urban places. For him, the "litmus test of conviviality" is that successful spaces have people lingering in them (2008, p.9). To be a real public space, it must be used for various and sometimes conflicting purposes (Malone, 2002).[18] To create spaces that are convivial, along with the physical aspects, requires "changing perception and social use of space" by breaking the existing "fixed territories" (perceived and physical) through "ambitious vision and proactive intervention that writes a new script, while appreciating the capacity for such scripts to become self-fulfilling" (Gaffikin, Mceldowney & Sterrett, 2010, p.498). According to Malone, this new approach requires new stories of public space, and also being exposed to "disorder and difference" so that we can (re)learn "how to deal with conflict as part of [our] everyday life" (2002, p.161, referencing Sennett, 1994).

In the field of urban design, the increased privatisation, partitioning and commodification of public space and the creation of many privately owned public spaces have been the subject of extensive research. While this research is relevant to the general parameters of this study, a detailed investigation is beyond the scope of this dissertation. For a review of that literature, however, see: Davis (M. Davis, 1990), Harvey (1996, 2000), Lofland (1998), Sorkin (1992, 2007), amongst many others.[19] In addition, much discussion surrounds the right

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[17] Shaftoe explains his idea on inclusive public space: "places where people can be 'social and festive' are the essence of urbanity. Without such convivial spaces, cities, towns and villages would be mere accretions of buildings with no deliberate opportunities for casual encounters and positive interactions between friends and strangers…Without good urban spaces, we are likely to drift into increasingly privatized and polarized society, with all its concomitant problems" (2008, p.5).

[18] Public space is often the site of conflicts and throughout modern history has been the primary place for demonstrations—anti-Vietnam war and civic protests of the 1960s and 1970s, 'take-back-the-night' movements, civil rights protests and the 9/11, US Iraq war protests during the 2000s, to name but a few.

[19] S. Schmidt and Németh (2010), in a recent article on current public space research with in urban design and planning, provide a good summary of current debates on urban space, as do Gaffikin, Mceldowney, Sterrett (2010) from a contested space perspective. These works discuss issues related to notions of inclusive public space and how public space can contribute to

to the city and public space for youth and children. See, for example: Malone (2002); Owens (2002); White (1998); Whitzman, Worthington and Mizrachi (2010).

Public realm and public space: Clarification of terms

Within urban design literature, the terms 'public spaces' and 'public realms' are used interchangeably. However, we need to distinguish between public space and public realm (or sphere). It is clear that they are not necessarily the same thing. American ethnographer, Lyn Lofland, defines the public realm in the following way:

> …*not geographically or physically rooted pieces of space*. They are social, not physical territories. Whether any actual physical space contains a realm at all and, if it does, whether that realm is private, or parochial, or is public is *not* the consequence of some immutable culturally or legally given designation…It *is*, rather, *the consequence of the proportions and densities of relationship types present and these proportions and densities are themselves fluid.* (1998, p.11, original emphasis)

This definition highlights that the public realm is a fluid concept based on social understanding and readings of space, rather than purely on physical constraints.

Within urban design, however, both the physical and the fluid concepts of public realm are important, although generally the physical receives most attention. Therefore, for this discussion, the idea of public realms follow Carmona et al.'s definition and have "physical (space) and social (activity) dimensions" (2003, p.109). Carmona et al. define the physical public realm as "the spaces and settings-publicly or privately owned-that support or facilitate public life and social interaction" (2003, p.109). Although, this discussion of public space is embedded in democratic theory and political philosophy, rather than in urban design literature, it is a distinction is not often discussed by urban designers (Goodsell, 2003). Urban designers often use the terms interchangeably. Both are of concern, with public realms needing to receive increased attention.

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tolerance and interaction or otherwise in contested cities. Carmona (2010a) also provides a detailed overview of the privatisation of public space.

Urban design sees public spaces as the decisive component in urban centres that links all other built forms (D. Frick, 2007; Thwaites, Helleur & Simkins, 2005). Carmona et al. identify that the public space includes "all the spaces accessible to and used by the public" (2003, p.110). They identify three primary categories: external public space, internal public spaces (primarily public institutions) and external and internal quasi-public space (privately owned public space, such as university grounds and shopping centres). The primary public spaces that concern urban designers are streets, plazas, squares, piazzas, small (pocket, mini or neighbourhood) parks,[20] pedestrian malls—essentially any spaces 'public' between buildings. Plazas, squares and piazzas, grey (forgotten) public spaces and streets are discussed below, along with the provision of urban (or street) furniture.

Public space: Plazas

Plazas (including squares and piazzas) are essentially urban and "come in many shapes and sizes and serve many purposes" (Hedman & Jaszewski, 1984, p.70) and have held an important place in cities through history. Cooper Marcus, Francis and Russell define plazas as "mostly hard surfaced, outdoor public space from which cars are excluded" (1998, p.14). From their research on plazas in San Francisco, they identify various plaza types, primarily:

- Street plazas: small public spaces next to the footpath or street;
- Urban oasis plaza: heavily planted or gardened. Offering a quiet space generally set back or 'greened' from any adjoining streets;
- The street as a plaza: a pedestrian mall or pedestrian-only street;
- Grand plazas: the public spaces usually considered the heart of the city;
- City plazas, a centrally located plaza; and
- The city square, centrally located but not attached to any one building; rather, generally bounded by streets.

Plazas offer a wide variety of activities and functions from the quiet, individual to the formal and collective (Cooper Marcus, 2003c). Of all plazas roles, Hedman

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[20] Parks and other green spaces are also of concern to urban designers but other than small parks are generally the domain of landscape architects and others.

and Jaszewski emphasise that "there is one thing a plaza should never be: an urban nonevent". They emphasize that, "there is nothing innately good about a plaza" rather "creating a successful plaza space requires a special set of conditions". Hedman and Jaszewski identify seven interrelated aspects: size, shape, continuity, height, configuration, architectural characteristics of the surrounding buildings and sculpture (1984, p.71). Much urban design literature focuses on the built aspects of plazas rather than the use or the behavioural aspects. Some exceptions to this are Cooper Marcus (2003c), Cooper Marcus and Francis (1998), Whyte (1980, 1988), Gehl (1987, 2009), Gehl and Gemzøe (2006) and the classic plaza text by Sitte (1889), amongst others.

Plazas need to be large enough to create a space but not so large as to feel empty, with people preferring spaces that have an absence of openness (Kaplan, Kaplan & Brown, 1989). Many surveys have established that approximately 100 square metres is the appropriate size for a plaza, although this depends on its purpose and on the height of the buildings meeting the plaza (Gehl, 2010; Hedman & Jaszewski, 1984). Most traditional plazas in Europe have dimensions of 90-100 metres by 60-70 metres.[21] Piazza Del Campo in Siena, Italy, is frequently touted as an example of a great plaza meeting all requirements and is approximately[22] 90 metres by 135 metres, with a row of bollards breaking up the long side making the experienced size approximately 100 metres (see, for example:Gehl, 2010; Hedman & Jaszewski, 1984; Project for Public Spaces, 2010).

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[21] Hedman and Jaszewski identify that the maximum size of a plaza should be 200 (60.96 metres) by 500 feet (152.4 metres) and that beyond this "space begins to overwhelm the individual and spatial definition is very difficult to attain" (1984, p.72).
The SmartCodes developed along New Urbanism principles specifies that plazas should be half an acre in size with a maximum size of 2 acres (Center for Applied Transect Studies, p.SC41).
Goakes (1987) provides looser requirements, asserting that plazas, following European practices, should have a length 3 to 4 times the height of the buildings and a width 2 to 3 times the height of the surrounding buildings.
Others looser requirements have been established that the width of the plaza should be approximately two to three times the height of the surrounding buildings (Sitte, 1889).
Although Whyte does not specify an appropriate plaza size, he maintains "oversized spaces…are not desirable. They leave vacuums" (1988, p.76) and that people do not like large open spaces (1980, 1988). This idea is confirmed by Kaplan, Kaplan and Brown (1989).
[22] The Piazza Del Campo is irregular in shape making exact measuring difficult.

No one shape is appropriate for plazas. Hedman and Jaszewski stipulate that the shape should "permit the space to be experienced, in its entirety, from any point within". The form should be easy to understand: "people's impression of the whole depends in part on the mind's ability to complete the forward picture with an image of what they know behind their backs" (1984, pp.76-77). Plazas need to have well-defined edges, as Alexander et al. note "if the edge fails, then the space never becomes lively" (1977, p.600). The edges and thresholds are the places that offer many opportunities for different types of activities, including play, seclusion, to be an actor or an observer, interaction between internal activities and external activities, amongst others (Stevens, 2006).

The buildings lining the edge of plazas are of vital importance in shaping and framing the space. Important elements include enclosure created by continuity, building height, configuration and architectural characteristics of the surrounding buildings (Carmona et al., 2003; Sitte, 1889).[23] Generally, the width-to-height ratio of plazas should be 1:3 (Hedman & Jaszewski, 1984). If enclosures are too small, Goakes argues that people will "subconsciously feel hemmed in, uncomfortable, cramped" and if the enclosure is too large, people will feel that the space is vast and feel insecure (Goakes, 1987, p.25). The feeling of enclosure is also related to how the boundary elements are positioned in relation to each other; wide roadways or other openings reducing the feeling of enclosure. The boundaries also determine the character of the plaza; consideration of the whole boundary—how it "rests on the ground and how it rises toward the sky" and all the elements in between are important (Norberg-Schulz, 1980, p.14).

For his Street Life Project Whyte studied sixteen plazas, three small parks and a number of 'odds and ends of space', over three years and charted how people used the spaces. He establishes that 'good' plazas have the following characteristics:

- They are sociable places (they contain people);

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[23] Architectural qualities are similar to those discussed in the previous and following sections so they will not be repeated here.

- They will have more females than males (if a plaza has more men, something is wrong. Women are more selective and willing to spend more time finding a good place);

- They are well defined;

- They contain objects that people can place themselves near (walls, benches, sculptures, trees, steps and fountains);

- They are centrally located;

- They have access to sun and shade as needed; and

- They have appropriate and well-placed seating[24] (primary and secondary).[25]

Whyte established that "for a space to function truly well it must be central to the constituency it is to serve—and if not in physical distance, in visual accessibility" and that "...the surrounding streets [are] vital to the enjoyment" of the plaza or park. For a space to be used, it needs to have clear sightlines into and out of the space—if people do "not see a space, they will not use it". Whyte stipulates that a "good space beckons people in" and that "The transition should be such that it's hard to tell where the [street] ends and the [plaza] begins" (1988, pp.128-130). Whyte's research forms the basis for PPS's Place Making principles (Appendix B).

For plazas to be well used, elements that encourage use are of upmost importance. These elements include: appropriate and adequate seating (including: seating for different users of the space); visual complexity (through variety of colour, plantings, art, water features, land uses, and structural elements such as pavements and seatings); edges or anchors (places for people to stay near); appropriate climate provisions; good maintenance; and active and diverse land uses surrounding them (Cooper Marcus & Francis, 1998; Gehl, 1987, 2009; Lien, 2005; Whyte, 1980, 1988; Zacharias, Stathopoulos, & Hanqing,

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[24] Whyte reveals that "one linear foot [30.48 centimetres] of sitting space" was needed for every thirty square feet [2.70 square metres] of plaza space (1988, p.127). This included primary and secondary seating and is much more than most plazas contain today.

[25] Primary seating is formal seating such as benches, chairs and other forms of seating, usually provided by the local government/council or surrounding businesses. Secondary seating is any object that can be sat on that is not considered a 'seat' and generally includes stairs, low walls, ledges, art works, bollards, planters, fountain bases etc. that can be sat on.

2004).[26] Seating is particularly important. Plaza edges (both inner and outer) are the preferred location for seating, but not seating with edges exposed or located too close to the traffic and with men and women having different seating preferences and plaza requirements (Mozingo, 1989). This is confirmed by Whyte (through his observations of plazas in New York), Cooper Marcus and Mozingo (both with surveys of plazas in San Francisco), who ascertain that women generally prefer inner and 'oasis' locations and usually visit plazas in pairs or groups (unless there is seating near a food vendor, where they can have a 'reason' to sit). However, the more popular the location, the more balanced the characteristics of the users will be. To be successful, plazas need to provide opportunities for all types of seating, from the social, the reflective, the 'urban', the 'oasis', to seating for individual and groups.

Many existing plazas have been designed specifically to discourage certain use, predominately from fear of 'undesirable' users, particularly homeless and groups of teenagers (CABE, 2008; Cooper Marcus, 2003a; Cooper Marcus & Francis, 1998; Owens, 2002; White, 1998; Whyte, 1980). This discouragement is often done through: not providing seating, providing uncomfortable seating that discourages long stays, closed edges (where buildings lining the plaza have an internal focus), and fixtures to discourage certain uses (such as metal tabs to discourage skate boarding or art behind bars to discourage vandalism). David Engwicht (1999) argues that often these measures end up in attracting those who they are trying specifically to repel.

Therefore, the question arises how to create safe and inviting spaces that welcome all users, termed 'Inclusive design'? Inclusive design refers to designing places with all possible user groups in mind, with the relevant services and infrastructure, that are accessible, welcoming, flexible, free from fear and anxiety, convenient and able to accommodate various activity and users, particularly those with mobility restrictions and user groups that might not feel as welcome (older people, children, youth, women, low-income people, people

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[26] Cooper Marcus, Francis and Russell (1998) specify that the catchment for plazas is generally two to four city blocks.

from culturally and linguistically diverse backgrounds, and other users who might not follow the culture's established norms) (Carmona, 2010a; Cervero & Duncan, 2003; Commission for Architecture and the Built Environment [CABE], 2008; White, 1998, 2007). Plazas also need to provide spaces for all of the multiple user types (homeless, office workers, children, older people, men, women—depending on the location) that have different needs and requirements (Cooper Marcus, 2003c).

Public space: 'Grey' or forgotten public space

Gradually, we are recognising that the forgotten, 'grey' or 'lost'[27] spaces of urban environments are important to a city's vibrancy, robustness and sustainability. These spaces are the in-between, 'nowhere' spaces that people pass through in everyday life and the underutilized or abandoned spaces within the urban fabric. Predominantly, they are unitilized or vacant lots, alleyways (laneways), abandoned spaces and spaces for infrastructure provision. They often go unnoticed as people traverse them on their way elsewhere. However, these spaces provide a valuable source of additional land for a variety of uses (recreational, artistic, environmental, fleeting and permanent).

Often these spaces provide opportunities for communities to participate in the shaping of their urban environment. Historically, these spaces have been 'forgotten' by those with planning or design control over them.[28] However, increasingly, we see a resurgence of interest in these spaces from art groups such as Greyworld (2009), researchers (Németh, 2006; Loukaitou-Sideris, 1996) and city councils (City of Perth's Forgotten Laneways policy, 2008, and the City of Melbourne's laneway revitalisation; see also Adams, 2005). These spaces contribute flexibility and 'messiness' to the urban environment, allowing spaces for spontaneity and improvisation that enhance the vibrancy of the public realm and help to combat some of the placelessness and formulistic design solutions

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[27] Trancik (1986) uses the terminology 'lost' space.
[28] Forgotten spaces are also often referred to as SLOAP: spaces left over after planning.

prevalent in many urban environments (see section 4C.7 Sense of Place below and Appendix B).

Public space: Streets

Kostof defines the street as "an entity made up of a roadway, usually a pedestrian way, and flanking buildings" (1992, p.189). The pedestrian network is a major part of the overall connectivity of an urban centre (as previously discussed in Part B). The street, the roadway, the footpath and the building fronts are vital not only as the connective or linking space of a city but also as a public space where city life can happen (S. Marshall, 2005).[29] According to Lang, a "major clash in urban design paradigms has been over the way streets are considered. Are they seams or edges?" (2005, p.370), or alternatively, are they rooms or corridors (Engwicht, 2005)?[30] The social part of the street—the street as the primary public heart of a city—is often forgotten because of the unattractiveness of the street for pedestrians created by the dominance of motorised traffic, with much space given over to vehicular traffic.[31] Scott Brown cites Crane, who argues that the street has four faces of movement:

1. Access, or through movement;
2. A builder of cities;
3. The provider of outdoor living space; and
4. The giver of messages (2009, p.70).

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[29] Many researchers reinforce this idea of the street: The street "is the river of life of the city, the place where we come together, the pathway to the centre. It is the primary place" (Whyte, 1988, p.7). This idea is reinforced by Kostof who states that, "the only legitimacy of the street is as public space" (1992, p.195) and that "there are intricate levels of social engagement encouraged and hosted by the street structure" (1992, p.189).

Allan Jacobs reinforces this idea: "The street is movement: to watch, to pass, movement especially of people: of fleeting faces and forms, changing postures and dress...Everyone can use the street. Being on the street and seeing people, it is possible to meet them, ones you know or new ones...As well as to see, the street is a place to be seen. Sociability is a large part of why cities exist and streets are a major if not the only public place for that sociability to develop" (1996, p.4).

[30] Engwicht (2005) identifies that rooms are where multiple functions come together. They are exchange spaces, whereas corridors are for movement—they are movement space.

[31] Hamilton-Baillie and Jones (2005) report that in many cities in the US over 70 percent of urban space is street and car parking space. This space would include pedestrian space also but is still a very large percentage.

Clearly, streets fulfil many roles within cities and therefore, the quality of a city's streets influences the perception of a city (A. Jacobs, 1996; J. Jacobs, 1961; Lang, 2005; Whyte, 1988). They are part of the urban communication system: "the means of moving objects, people, and information from one sector to another" (Carr et al., 1992, p.30). They are also the 'arteries of the city', that enable contacts, both planned and serendipitous, that, according to Carr et al., "can draw people together" (Carr et al., 1992, p.30).

Importance of street space

The interactions and interfaces between the street and its users are of vital importance to the vitality, vibrancy and sustainability of a city, as Donald Appleyard pointed out as early as 1980. These interactions are complex and require careful consideration and reinforcement. In addition, as Vergunst argues, the street is "a place of rhythms" and the sensing of these rhythms (be they coherent or chaotic) enables the street to be "understood as a place and indeed form it as place" (2010, p.378).

In his path-breaking study, *Livable Streets* (1981), Appleyard identified the powerful impact of traffic on residential streets,[32] primarily using observation and interviews from two surveys conducted in San Francisco. His findings had long-lasting implications for residential street planning and design, particularly highlighting that the street had other functions than vehicle movement: it was a place for children to play, experience and learn to navigate the greater world; it is a mediator between home and the outside; it is social space; and symbolises a person's place in the world (1981, p.9). Appleyard's findings regarding traffic volumes and speeds as the biggest determinant of children's independent

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[32] Appleyard found that the 'heavy' block had an average daily traffic level of 15,750 vehicles. It was one way with synchronized stop lights. The residences were predominantly single dwellings with few children living in the block and a large proportion of elderly residents. The residents were mainly renters and had an average length of residency of 8.0 years. The 'light' block had an average daily traffic flow of 2000 vehicles.
The road was two-way traffic. The residents in the light block were predominantly homeowners with families. The average duration of stay was 16.3 years. Appleyard found that residents of the heavy block had 0.9 friends and 3.1 acquaintances within the block and the residents of the light block had 3.0 friends and 6.3 acquaintances.

mobility has been confirmed by other research (Sharpe & Trantera, 2010; Whitzman, Worthington and Mizrachi, 2010).

The importance of streets as public space is of as vital importance today as it was during Appleyard's surveys. The idea of the street as the public heart of a city has been overshadowed by the needs of motorised traffic, especially under Modernist planning, and many city streets have becoming unattractive to pedestrians except by necessity. To encourage people to linger requires that a city's connective space be attractive and welcoming. Referring to Sitte's work (1889), Bohl argues that the street should be "designed as an artistic unit" (2002, p.66). It is important, however, not to over romanticise streets, as interactions between street elements and user needs of the street are complex. Rather, we should view the street as a realm whose function is to bring together the public life of the city, for spontaneous exchanges and to achieve the basic purpose of cities: maximising exchange and minimising travel for that exchange.

Public space: Streetscape characteristics

The streetscape of an area and the quality of its public spaces and pedestrian infrastructure determine its level of use. Jacobs, through his survey of 'great' streets, establishes that "there is magic to great streets. We are attracted to the best of them not because we have to go there but because we want to be there" (1996, p.11). Some of the recognised characteristics of streetscapes that are friendly for people include:

- Appropriate densities (both of people and activities) (discussed previously);
- Transparency;
- Good maintenance of buildings, streets, footpaths and trees;
- Human scale built environment (discussed previously);
- Buildings that are complementary, either through height or traits that unify the area;
- Trees;
- Climate appropriate protections and enhancement;

- Articulate building façades with many small details, niches, corners, small setbacks and steps, alcoves and ledges;

- Context appropriate textures, surface treatments and finishes; and

- Buildings lining the street meet the street, providing space definition and clear edges. (see, for example: A. Jacobs, 1996; Mehta, 2009; Montgomery, 1998)

These characteristics are explained below and throughout the chapter.

Transparency is generally defined as "the degree to which people can see or perceive what lies beyond the edge of a street. However, what is particularly important about transparency is the degree to which people can perceive human elements in the environment (Ewing & Handy, 2009, p.78). Transparency can be both real (as in windows that allow visual transparency into the building lining the street) and perceived (evidence of human activity or the softening of the environment). Perceived transparency can still help create friendlier (and perhaps safer) environments in situations where real transparency is not desirable. Elements that influence transparency include windows, doors, fences and walls, landscaping and other openings into buildings or blocks (Ewing & Handy, 2009). In addition, these threshold spaces often are the primary place of play within cities, enabling activities to spread out of the internal space (Stevens, 2006). If these elements enable the passersby to sense that other people are present in the space or just beyond the space, an area may feel transparent, friendlier and safer.

The quality and condition of a streetscape affect its use. Schmitz and Scully contend that:

> street-oriented storefronts enhance walkability. First-floor retail gives an 'edge' to the street and helps provide definition to an area. Buildings that enclose and frame streets are more attractive to pedestrians: it is more stimulating to walk along a street of storefronts than to walk along the blank walls of an office complex or through the open, undefined space of a parking lot. (2006, p.31)

Streetscapes also need to have visual complexity and complementariness, meaning that they need to communicate clearly and meaningfully to the passerby and be visually interesting and attractive (Ewing & Handy, 2009;

Zacharias, 2001b). Allan Jacobs calculates that the buildings lining the street should have entranceways no more than 12 feet (3.65 metres) apart; these buildings "communicate clearly where the edges of the street are" (1996, p.277). Blank walls facing the street are deterrent to increasing vibrancy and safety, particularly in small to mid-sized cities, as they have less wall space, and high-crime areas. Mehta's research revealed that people do not linger and engage in any social activities where there is "nothing to do or see" (2009, p.55). In addition, according to Jacobs, buildings lining the street should be complementary, with increases and decreases of no more than 1 to 2 floors, have close spacing between buildings, provide definition to the street, and maintain a good width-to-height ratio (A. Jacobs, 1996) (see human scale discussion previously).[33]

For an area to be of a human scale (as discussed previously), it should relate to pedestrian movement and their ability to perceive subtle and small, micro-scale details better than can those using than faster moving modes (Clifton et al., 2007; Krizek, Forsyth & Baum, 2009; Tibbalds, 2001). These intimate details are of upmost importance and affect the way people use and feel in a space (Cullen, 1961). Crucial to the micro-scale environment is the appearance of the ground surface (Goakes, 1987; Kaplan, Kaplan & Brown, 1989). However, despite the importance of the micro-scale elements of streets and building façades, they are often not designed for walking speeds. Rather, they are designed to be read while driving past at 60-kilometre per hour or greater speeds and by planners and architects designing at plan scale.

Streetscape elements do not necessarily have to be lavish or 'fancy'. Rather, as Bohl explains, "the appeal of great streets" stems more from the provision of ample footpaths and appropriate street trees, and from the presence of building frontages whose windows, doors, and awnings are oriented toward the footpath, "forming a consistent street wall" (Bohl, 2002, p.67). Personalisation of the

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[33] Width-to-height ratio is a ratio of the buildings width to its height. It is a common measure within urban design and is used particularly to determine whether the streetscape is of an appropriate scale for people walking by or using the space. This concept was developed further in 4C.2 under the discussion of human scale.

streetscape, especially in commercial areas, is particularly important for attracting people to the area. This can be done by stores personalising their street-frontage with signs, displays and decorations, and by bringing their wares, goods and services out to the street (see Chapter 3 and Mehta, 2009).

Although design is important and 'good' design is fundamental to the attractiveness and comfort of a streetscape, the use of that place is most important. Spaces, particularly streets, should be studied from a users' perspective in combination with design-focused methods. Appendix C discusses methods to determine use and examine urban design characteristics. Using a multi-method approach helps to combat some of the failings of singularly focused methods. Measuring the attractiveness of a site, particularly in relation to streets, based solely on the number of pedestrians or people using a space has some drawbacks. These drawbacks are mainly that the presence of a large numbers of pedestrians does not necessarily mean a 'good' environment, as pedestrians may be there for necessity, such as work, rather than by choice. In addition, the reliability of surveys to make consistent non-subjective qualitative judgements about urban quality is contested. These issues are explored in Appendix C.

Public space: Urban furniture

The use of public space is influenced by the urban furniture (or urban objects) provided (Mehta, 2009). Urban furniture includes the provision of seating (primary and secondary, including outdoor café seating),[34] climate protection and enhancement (awnings, trees, plantings and other devices), public art (particularly sculptures, monuments and fountains), street signs, advertising (and progressively the use of large screens and illumination as entertainment or enhancement devices), boundary elements (walls, bollards, poles and chains)

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[34] Outdoor café seating is included in assessments and counts of seating if: 1. it is in the public realm and 2. adds to the vitality and vibrancy of the public realm (see Gehl & Gemzøe, 1996 and Montgomery, 1997). Much of the literature include cafés in their discussion of 'third places'—those public and private meeting places that are important in the current use of cities, for sense of place and civic engagement, including restaurants, cafés, town halls, libraries and small wine bars, popularized by Ray Oldenburg (1989).

and the provision of services such as rubbish/litter bins, drinking fountains, public toilets, parking meters, mail boxes, phone booths, lighting and public transport stops. The placement of urban furniture is vitality important in encouraging use of a space and can be used to unify public spaces. However, its design and placement need to be carefully considered so that they provide a useful purpose rather than simply adding clutter or statistics to the urban environment. In addition, furniture that provides multiple, or blurred functions engages users more and adds more to the vibrancy of the environment. This idea is reinforced by Goakes, who maintains "some parts of our streets and most 'urban spaces' are in fact the outdoor living rooms of our urban existence, and the same loving care needs to be used in the choice of our street furniture as in our home furniture" (1987, p.133).

The provision in seating is particularly important. However, the seating needs to be appropriate (particularly for people with mobility issues) and suitably placed as the quality and position will influence its use. (Goakes, 1987; Mehta, 2007, 2009; Mehta & Bosson, 2010; Whyte, 1980, 1988; Zacharias, Stathopoulos, & Hanqing, 2004). Whyte (1980, 1988) determines that one linear foot [30.48 cm] of sitting space is needed for every thirty square feet [2.78 metres square] of plaza space and that the width of seating should be two body widths with an ideal width of 36 inches (91 centimetres). Inclusive (or universal) design stipulates that benches require a seat of 20 to 24 inches (51 to 61 centimetres) in depth, with back support. In his study of local commercial streets in the Boston Metropolitan area, Mehta found that seating with a back "seemed to be more physically comfortable and retained people, especially singly or in pairs, for long periods" compared to those without backs. However, he maintains that seating without backs was able to accommodate larger groups of people "in social activities, either sitting or standing near" (2009, p.45).

In addition, when deciding on the location and type of seating (including considerations of material, shape and form) other issues such as the climate and user needs need to be considered. Climatic conditions include providing seating with access to sun and/or shade as needed, and considerations of how the

material of the seat will respond to the climate both in durability and also in comfort. In addition it is important to provide seating for both socialising, for individual use and for reflection or quiet activities (Cooper Marcus & Francis, 1998; Whyte, 1980). The location of the seating determine the use of the seating and also how the seating can enhance (or otherwise) the environment. Seating near activity-supporting businesses, particularly those that provide consumable goods, can enhance the liveliness of the area (Metha, 2009; Whyte 1980, 1988).

Consideration of the potential for use of seating is more important than the architectural or design aspect of seating, which too often is considered only from a plan or design perspective (Goakes, 1987). More often than not, Whyte claims:

> benches are artifacts the purpose of which is to punctuate architectural photographs. They're not so good for sitting. There are too few of them; they are too small; they are often isolated from other benches or from whatever action there is on the plaza. (1980, p.33)

The location, form and composition of seating require an understanding of human behaviour and requirements and If not properly considered, seats may be too few, unprotected from main pedestrian routes, and "not suitably placed for watching the passing parade" (Goakes, 1987, p.135). Secondary seating is equally important to encourage people to stay in public spaces.

Seating is more than the ability to be able to sit and stay in a place. Seating also acts like furniture in a house (Goakes, 1987; Mehta, 2009) and its presence can increase the friendliness of the environment. Mehta (2009) observed that people frequently used seating (and other surfaces) as a place to stop, rearrange their belongings, search through their bag(s), lean on, take a rest near and for children to play on. Both Engwicht and Whyte advocate for the provision of moveable seating, maintaining that it builds ownership and trust and increases the friendliness of an environment, as people can make the space their own. Moveable furniture also helps to combat some of the 'boredom' issues within public spaces, creating spaces that can forever change.

The provision of other 'staying' infustructure such as rubbish (litter) bins, public toilets, drinking fountains, public telephones and booths and lighting, are also

very important to encourage people to spend time in a place. The provision of clean, easily accessible and inclusive toilets and restrooms is a contentious, unglamorous and often undiscussed aspect of public space, with the provision of facilities often, particularly in a US and Australian context, left to the surrounding businesses (often at their discretion to whom they allow access).[35] The location and provision of public toilets needs to be carefully considered especially when trying to encourage children, families and older people to use city spaces. Lighting is particularly important for safety with night-time lighting needing to provide enough illumination (a minimum illumination of 4 metres and an ideal illumination range of 10 metres) to be able to ascertain the intent of people approaching (facial expression recognition and associated body language) (Fotios & Raynham, 2011). The provision of lighting needs to be carefully considered and can be used to enhance or undermine an area.

The micro-features of the built environment and the furniture are important as 'props' to increase social interaction (Metha, 2009; Whyte, 1988) and for play (Stevens, 2006).[36] In studies of urban play in cities worldwide, Stevens, identified the importance of 'props' in enabling and inspiring play and alternative use in the public space, providing "tactile engagements with urban form" that are "close, detailed, and specific" and "inspire and locate particular experiences and actions." Stevens concluded that props "serve desires for sensory pleasure, escape into imagination, testing bodily limits, and engaging with strangers", adding delight, fun and diversity within public spaces (2006, pp.812, 814-815).

Findings about the public realm and public space

This section has examined the characteristics of public spaces, starting with a discussion about the differences between the concepts of public realm and

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[35] These issues, in regards to toilets, including issues of gender roles and cultural differences are discussed in a current compilation 'Toilet: Public Restrooms and the Politics of Sharing' (Molotch & Norén, 2010).

[36] The importance of urban furniture is reinforced by Mehta's (2009) survey of local commercial streets, where he determined that approximately 90 percent of the people he observed carried out their stationary and social activities near some physical object.

public space and the importance of both in the urban design of city centres. This section included:

- **PLAZAS:** Plazas (or squares) should be approximately 100 square metres, the form should be easy to comprehend, they should convey a sense of enclosure and have strong boundaries.
- **STREETSCAPES:** Streetscapes require a sense of transparency, upkeep and maintenance, along with a human scale urban form and attention given to the fine grain and micro-scale elements of design details.
- **URBAN FURNITURE:** Much care and thought need to be given to urban furniture, particularly to seating and other elements that encourage people to stay (including provision of public toilets).

These three features are essential elements of a walkable city. Along with the other urban design principles (Chapter 3), underpinning the discussion of public space is the importance of safety considerations, particularly with regard to lighting and casual surveillance.

4C.7 Sense of place

The environments that people encounter during their everyday activities are where people most experience, live in and use the city, providing an overall perception of the city based not only on places used on 'special occasion' moments. The concept of 'sense of place'—the belonging and emotional attachment to our everyday locations—is of vital importance to urban design. All places have a sense of place, although it is not "always that desired by critics" (Lang, 2005, p.370). Sense of place, according to Lang, deals with two concerns: sociological and psychological. The first has to do with the sense of one's location, or society's location, within a larger social unit, and the second with a sense of belonging to a region and a regional culture (Lang, 2005, p.371). Sense of place is also closely aligned with Lynch's idea of 'imageability'—that is, the

extent to which elements of the environment make an impression on people (Lynch, 1960, 1981)[37] and to a person's perception of a place.[38]

Sense of place differentiates between *places* and *spaces*. Timothy Beatley, referencing Yencken (1995), defines spaces as "generic and non-specific", whereas places are "immediate, known, and lived-in" (2004, p.25). He expands that places "have significance and meaning to us; our memories are wrapped up with them. Places are those spaces and environments (built or natural) imbued with personal and cultural meanings" (2004, p.25).

According to Gieryn (2000), place is comprised of three key features: 1. a geographic location, 2. a material form, and 3. investment with meaning and value and is culturally specific.[39] Gieryn argues that, "put positively, place is space filled up by people, practices, objects, and representations" (2000, p.465) and are interpreted and constructed by people and imbued with meaning and value. Soja contends that places are "interpreted, narrated, perceived, felt, understood and imagined" (1996, as cited by Gieryn, 2000, p.465). However, building on the evolving use of public space discussed above, Maki emphasises that, "today, the temporal and geographical environment of everyday activities has, for most people, an unprecedented shallowness; the city seems comprised only of the here and now; historical depth is absent" (2009, pp.91-92). Newman and Jennings emphasise the importance of this point:

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[37] Imageability is "the quality of a place that makes it distinct, recognizable, and memorable. A place has high imageability when specific physical elements and their arrangement capture attention, evoke feelings, and create a lasting impression" (Ewing, et al., 2006, p.S226, Table 1), building on ideas of legibility and cognitive maps.

[38] Robbins and El-Khoury explain that, "Cities also are shaped by the ways of seeing and understanding we bring to them. Depending on our experiences and our viewpoint, we come to see and understand cities differently. We in effect shape and design the same city differently" (2004, p.1).

[39] As a geographic location, place is a "unique spot in the universe" (Gieryn, 2000, p.464) and is a location, locale, locality or a site. There are many varying geographical scales, ranging from the personal to the global, i.e., a place could be your favourite spot in your house, a district of a city, or an entire country. In this meaning, place is defined: geographically, biophysically (e.g. climate etc.), spatially, politically, culturally, economically, spiritually, and other defined ways. In this sense, it is the "distinction between here and there" and can be absolute or relative (Gieryn, 2000, p.464).

Place as a material form means that it "has physicality" (Gieryn, 2000, p.465) and can be built or natural. Gieryn states "it is a compilation of things or objects at some particular spot in the universe" (Gieryn, 2000, p.465) and includes place features, assets, resources, qualities, and characteristics.

cities need to be recognised again as place-bound, embedded in ecosystems and bioregions, part of a life-community, part of an unfolding story of place. Rebuilding connections enriches our lives and our cities and strengthens our capacity to care for the places that sustain us…

The stories of the people and other inhabitants of our life-communities need to be woven explicitly into the physical and cultural fabric of our cities… (2008, p.151)

Therefore, how we plan a city and design its buildings should take into account everyday activities.

From a sustainable urban design perspective, sense of place is intrinsically tied to the sustainability of a place. This link between sense of place and sustainability is due to the sense of attachment, involvement and responsibility to a place that can be enhanced through a strong sense of place (Beatley, 2004; Montgomery, 1998; Newman & Jennings; 2008). This attachment and sense of responsibility are termed 'psychological access' by Montgomery, who maintains that "places which achieve this are much more likely to be respected and looked after" (1998, p.102).This view accords with the idea that this is a 'good' city or place.

Within urban design, it is the physical manifestations of the emotional attachment to place—the shared stories of a place that will always be built into its built environment—that are of vital importance (Engwicht, personal communication, November 13, 2009), whether they are consciously built or not. Richard Brecknock argues that all cultures have a "shared visual language" built into their environment and influenced by history, religion, cultural beliefs and geography (2006, p.20). Beatley contends, "many things influence what a place feels like, its place qualities. The unique qualities of places are the cumulative result of the many sensory impressions we experience when being there" (Beatley, 2004, pp.25-26) combining tangible and intangible elements (N. Marshall, 2009). British planning academic, Patsy Healey, is careful to guide us away from deterministic formulations aimed at creating a sense of place, contending that, "…the essence of a city does not exist to be 'found' objectively. It is brought to life through the mental work of imaging what it is and could be" (2002, p.1782). Healey explains that a sense of place, or the imaginings of a city

are "not just about physical form and ordering. They are also about culture, social relations and economic dynamics" (2002, p.1783).

Pedestrians perceive place and time differently from people using other modes of travel. As Engwicht observes, "we have a different relationship to time, depending on which persona (frame of mind) we are in. As a 'motorist', every millisecond is precious. As a 'storyteller' [someone engaged in the environment] time stands still" (Engwicht, personal communication, November 13, 2009, p.1). Bosselmann reinforces this notion that movement speeds influence perceptions of place. He emphasises the importance of looking at places through the eyes of a pedestrian and that "pedestrians tell the length of their walks by the rhythmic spacing of recurring elements" (1998b, p 90), although, in his view, urban professionals "rarely represent the way people move through urban places" (1998b, p xiii). Pedestrians' perceptions of their environment are formed and influenced by their slow (and often unconsciously navigated) mode of travel (de Certeau, 1984) and their ability to observe small details in the environment.

Perceptions of place and everyday

If we consider the Urban Design Conference of 1961 as the emergence of urban design as a school of thought and a profession, urban design was concerned with everyday situations and environments. This concern has been attributed to Sert's influence (R. Marshall, 2009)[40] and to the other participants at that conference, particularly Jane Jacobs with her focus on everyday moments and living spaces (external, on-the-street living spaces).

French sociologist and philosopher, Henri Lefebvre (1901-1991) argues that everyday life is "the impetus at the 'base' that makes the edifice totter. Whatever happens, alterations in daily life will remain the criterion of change"

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[40] Marshall states: "Sert was concerned with the ordinary elements of urban situations and not singular monuments created through personal genius. Sert understood that cities are not made through individual acts and that it was ordinary environments that made a city what it was…This interest in everyday life would set Sert's idea for urban design in a very different trajectory from those of some of his more Napoleonic urban design contemporaries (like Le Corbusier)…Sert's conception of urban design, rather, offered a holistic view of urbanization" (R. Marshall, 2009, p.42).

(2005, p.41). It is imperative for urban designers and planners regularly to study the everyday activities of streets and public spaces to determine how they are used and perceived by people. Lefebvre explains "in so far as the science of man [*sic.*] exists, it finds its material in the 'trivial', the everyday" (1996a, p.133) and that: "the art of living…presupposes that life as a whole—everyday life—should become a work of art and…as with every genuine art, this would not be reducible to a few cheap formulas…" (1996a, p.199). Our cultural knowledge of the 'everyday', of human behaviour in 'everyday' streets and public spaces is of vital importance and needs constant examination, as it is a reflection of our lives, our society and our beliefs, dreams and values. Lefebvre further argues that everyday life needs to be elevated to 'critical thinking' (Lefebvre, 2005, as cited in Aronowitz, 2007). Everyday life needs continuous and current examination. Grogan et al. agree:

> Most people and communities suffer from 'cultural blindness'. Ask them about the culture of their town and they are likely to respond: 'What culture? We don't have a culture.' This cultural blindness is understandable. We grow up with the things that make our place and our way of life different. To us they are the norm. To the tourists or visitors they are unique…our architecture, topography, history, customs and the way we conduct our everyday life. (1995, p.11)

Situationist International, a group that came into prominence in 1968 in France of which Lefebvre influenced, sought to fuse art and culture into everyday life, working from the belief that art and culture, because of the processes of capitalist economy and mechanised mass production, were missing from everyday life. They define everyday life as "the measure of all things: of the fulfilment or rather nonfulfillment of human relations; of the use of lived time; of artistic experimentation…" (Kotanyi & Vaneigem, 1961, p.69). The Situationist International members believed that pedestrians were the element that shaped the city by weaving spaces together (Sæter, 2011).

Many Situationist International members were also part of the group, Research on Everyday Life, which held a conference in 17 May 1961 in Paris, convened by Lefebvre, and in which many of Situationist International's core ideas were discussed. They emphasised a return to poetry and art in the everyday life of

people—a 'revolution of everyday life' (Vaneigem, 1967, 1983) and a built environment that supported that. The members believed that under capitalist economic systems the creativity of people had become "diverted and stifled" and that "society had been divided into actors and spectators, producers and consumers" (P. Marshall, 1992, p.551). They maintained that the city planning of the time had manipulated cities and made people unable to see possibilities in their environment (Kotanyi & Vaneigem, 1961). The Situationists wanted a revolution of imagination, for "imagination, not a group of men, to seize power, and poetry and art to be made by all" (P. Marshall, 1992, p.551). Chtcheglov avows, "we will not work to prolong the mechanical civilizations and frigid architecture that ultimately lead to boring leisure. We propose to invent new, changeable decors" (1953, n.p.n.). They wanted an urban environment that enabled "experimental life" and social life (Kotanyi & Vaneigem, 1961, p.66).

The Situationist International emphasised the importance of studying everyday life, through active participation, claiming: "it is not enough to recall that old stereotypical image of the detached scientific observer is fallacious in any case. It must be stressed that disinterested observation is even less possible here than anywhere else…" (Kotanyi & Vaneigem, 1961, p.70).[41] This idea, the study, design and planning for the 'everyday', has always been central to urban design. However, as discussed in Chapters 2 and 3, this interest has often been sidelined in favour of 'design' concerns, except by those interested in environment-behaviour studies and influenced by Lefebvre and the Situationist International.

Deliberately, interest in the everyday use of cities is coming to the forefront of concerns again. Richard Brecknock (2006) offers a way to bring culture to the forefront of planning and design concerns, maintaining that culture underlies all technical decisions, it just needs to be more explicit. Figure 4C.2 provides an altered composite interpretation of Brecknock's way to plan and design culturally. This composite shows culture and technical elements underpinned by

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[41] The rest of this quotation is: "to fail to criticize everyday life today means accepting the prolongation of the present thoroughly rotten forms of culture and politics, forms whose extreme crisis is expressed in increasingly widespread political apathy and neoilliteracy, especially in most modern countries" (Kotanyi & Vaneigem, 1961, p.70).

social, environmental (natural and built) and economy elements. The technical elements need to be considered simultaneously, with the same weight given to all components. These elements then help to inform research, briefs and designs, which, in turn, help to produce culturally along with technically informed outcomes and, finally, a more culturally rich environment that recognises the everyday cultural elements of a place. Everyday places provide the text (structure) and context (setting) that enable "shared meanings…derived from the lived experience" fundamental to sense of place (Knox, 2005, p.2).

Loose space

According to Franck and Stevens, the privatisation and commodification of public space have "homogenized urban activities and identities, placing people in the role of passive consumer rather than active creator or participant" (Franck & Stevens, 2007, p.4). Therefore, they argue, cities need to have 'loose' spaces that offer people "a fluidity of meaning" (2007, p.4) and allow them to "pursue a very rich variety of activities" not originally intended for the place (2007, p.2). There is no set location for loose space; rather, it is determined by how people use and appropriate public space. It can include a wide variety of locations, including planned public spaces, such as footpaths, streets and plazas, but also those forgotten spaces, such as abandoned buildings or lots and surface parking lots (discussed in 4C.6 Public space: 'Grey' or forgotten public space). These are spaces are where "definitions and expectations are less exclusive" and generally restrictions on use are less and are "apart from the aesthetically and behaviourally controlled and homogeneous 'themed' environments of leisure and consumption" (Franck & Stevens, 2007, p.3).
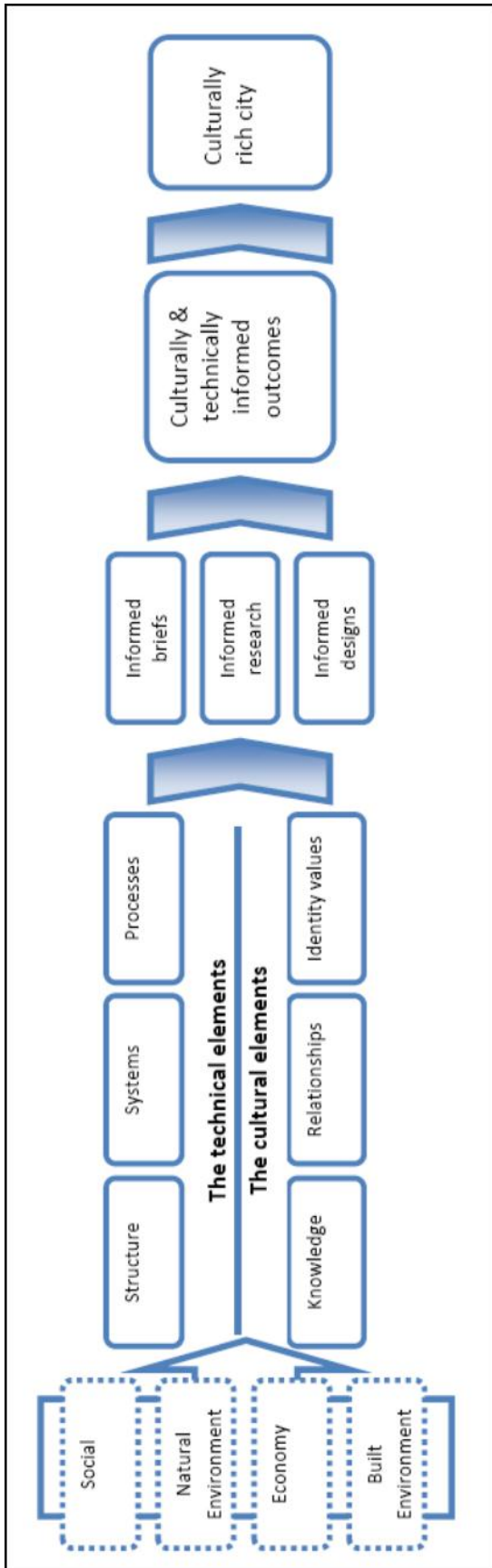
Figure 4C.2: Framework for culturally rich urban planning and design. Source: Composite constructed from Brecknock, 2006.

Loose space provides users with "greater accessibility and freedom of choice to pursue a variety of activities" and offers a "breathing space" in city life, offering "opportunities for exploration and discovery, for the unexpected, the unregulated, the spontaneous and the risky" (Franck & Stevens, 2007, p.3). Loose spaces give the city vitality. This idea is supported by Isaacs (2000), who found that streets which offered freedom of movement were more popular than other perhaps more attractive streets. These spaces are "'found' in the sense that users locate and appropriate them for uses that they serve effectively but for which they were not originally design to serve" and "meet the needs of people in a casual manner" (Rivlin, 2007, p.39). The spaces that offer loose space, that can be used in fluid and changing ways, are important in enhancing and maintaining sense of place within in a city and enabling the everyday activities to occur and for people to personalise space, as discussed above.

'Placeless landscapes'

The importance of sense of place and a strong connection to place can be seen throughout discussions of 'placeless landscapes'.[42] These landscapes have no special relationships to the places in which they are located. They could be anywhere and developed out of the increased mobility afforded by increased automobile use—out of the "freedom from the constraints of proximity" (Arefi, 1999, p.180)—enabling production, services and other land uses to be located anywhere and to increased commodification of the street (Malone, 2002).[43] The decoupling of transport and location constraints has been a long-term but escalating problem. In 1957, Burchard declared:

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[42] Placeless landscapes are also referred to as placelessness (although this implies a loss of meaning), nowhereness and otherness through the literature, depending on the authors preference. Non-place generally refers to transitional zones (such as spaces for movement, highways, bridges and parking lots) (Arefi, 2004).

[43] Gieryn expands on the decoupling of transport and location constraints: "technological revolutions in transportation and communication…have all but eliminated the drag once imposed by location and distance on human interaction and on the flow of goods, capital, or information. Social life now moves through nodes in one or another network, through points of power or convergence or translation but not anchored at any place necessarily. The places we build appear as clones of places elsewhere: suburban tracts, shopping malls, freeway interchanges, office complexes, and gussied up old neighbourhoods vary less and less. As places lose their distinctiveness, place loses its reality and significance…" (2000, p.463).

the lesser cities of the world look more and more alike every day, and at a slower pace as we know more about each other, as we adopt each other's conveniences and we merge them with our own, the same thing is happening to the greater cities…A slow levelling process is going on all over the world…The symbols of Western 'progress,' coveted in too many places, are not always pretty symbols. (p.114)

This process, referred to generally under the umbrella of 'globalism' (the evidence of sameness, inauthentic and manufactured landscapes), is apparent in most cities, in part impelling Place Making (Appendix B) and is no longer a slow process (Arefi, 2004).

Placeless landscapes are places you visit only because you have to (because of limited choices). The most common examples of placeless landscapes are: strip shopping malls that line highways and usually contain petrol stations, chain stores and fast food chains, internal shopping malls, and new housing estates that retain nothing of the natural environment and have no connection to the area in which they are located (Arefi, 2004; Kunstler, 1993, 1998). These are the 'degenerative utopias' of global capitalism (Harvey, 2000) and could be anywhere and, indeed, are found in most cities. According to Iranian planning academic, Mahyar Arefi, the impacts of these placeless landscapes on the urban landscape are "more profound and longer-lasting than simply temporary phenomena…Their driving forces are as much embedded in our consciousness as they are rooted in modernism and global capitalism" (1999, p.186). About these places, as American writer and art collector, Gertrude Stein (who could not find her childhood house in Oakland) famously remarked, "there is no there there" (Stein, 1937, p.298).

As discussed earlier, the use of the city is in constant flux, responding to external conditions, including the need to respond to the needs of mobile, educated and relatively wealthy creative class (Florida, 2002). Increasingly the city is viewed as a product to be marketed (FORM, 2008; Maki, 2009), as is its public space (Zukin, 2010). This idea of the city as a marketable commodity is related to ideas of commodification of place, what Sharon Zukin (2010) calls 'corporate city', which "generates standardized landscapes and 'inauthenticity'" (Arefi, 1999, p.184)

through the creation of standardized, homogenised, sanitized and marketed 'places' and packaged ideas of 'main street' and 'downtown'.[44] This element of urban design practice is often criticised for the creation of formulistic places based on Disneyland's Main Street, U.S.A (referred to as 'disneyfication'), relating strongly back to the two main current urban design practice streams of New Urbanism and Place Making (see Appendix B). These urban design responses are in part attempting to respond to a need created because people have recognised that something crucial is missing from many places.

Creating or enhancing sense of place

Writing about sustainable cities, Newman and Jennings (2008) argue that places with a strong sense of place encourage long-term commitment, engagement and connection to the place from residents. Community-building activities, constant learning of a place and recognition of a place's ecological and biological systems, indigenous history and heritage, and cultural and political traits can all foster a sense of place (Newman & Jennings, 2008). Sense of place can also be strengthened by a renewed commitment to the public realm, the places dominated by pedestrians—through pedestrian planning and planning for people in city centres (as discussed above). American urban commentator and New Urbanist advocate, Howard Kunstler proposes that by reviving civic art and civic life, we will rediscover public virtue and a new vision of the common good. He contends that "the future will require us to build better places" (1993, p.239).

Personalisation of space (discussed in Chapter 3) is important in enhancing sense of place. Engwicht emphasises that, "A space does not become a place until it is used for a purpose other than that intended by the designer" (1999, p.117). Part of this idea of personalisation is related to the idea of authenticity or the perception of authenticity of a place (Zukin, 2010) and the idea that urban space

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[44] The idea of the commodification of the city is part of a cycle of urban middle class seeking authentic urban places to live. Zukin explains that they move into places that they consider to be 'authentic', only to drive out the residents and elements that the made the place authentic (Zukin, 2010).

is "essentially a realm of possibilities instead of subjective spatial experience, material structure, or an abstract form" (Lapintie, 2007, p.49).

Beatley and Newman emphasise that commitments to sense of place are not onetime actions or decisions but are "an ongoing, dynamic process" that must be constantly and consistently addressed (2009, p.148). Montgomery expands on the complexity of enhancing sense of place, maintaining that it needs "a happy combination of circumstance" along with "knowledge, understanding, skill and judgement: an understanding of how successful places work…; the skills to design for urbanity; and the judgement to know when to design and when to leave space for organic growth and development" (1998, p.94). As sense of place is such a personal issue, both in individual sense and in the unique collective qualities of a place, there is not a 'one-size-fits-all' solution to creating sense of place. However, the personalisation of public spaces through the inclusion of public art can help to enhance sense of place.

Creating or enhancing sense of place: Public art

Public art is important in contributing to sense of place (Beatley & Newman, 2009; Montgomery, 1998; Newman & Jennings, 2008). Art—as an expression of society—profoundly influences how we perceive the world around us. Beatley and Newman believe "one role of public art in sustainability is to tell stories about the past that can help us to see our way to the future" (2009, p.126). Art is often used to upgrade "the quality of the built environment, creating meeting places and talking points, coming to represent important points of reference and for its capacity to animate public space" (Montgomery, 1998, p.112) and is part of personalisation of spaces.[45] Public art includes the traditional 'art' elements such as sculptures, statues and murals, but things that might be less obviously art, such as street furniture, streetlights, signposts, footpaths and the ways in which residents, tenants and landowners decorate the public parts of their

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[45] There is much research evaluating the effectiveness and appropriateness of public art which is outside the scope of this research. See Public Art Evaluation Research, Leeds Metropolitan University, http://www.leedsmet.ac.uk/as/cudem/708D1FB122FD45D9BCF76EEFE1D3EAA7.htm

property. The inclusion of "cultural symbols" as art in the public space are particularly important at strengthening sense of place (Low, 1994, p.75).

A different form of public art is the creation of, what Engwicht describes as 'mental speedbumps' (Engwicht, 2005). Three primary mental speedbumps are intrigue, uncertainty and humour. Intrigue is about keeping the mystery in the street: "the way our brain processes sensory data is to create a best-fit story. The more mysterious the pieces of the puzzle, the greater our level of engagement in trying to guess the story" (Engwicht, personal communication, November 13, 2009, p.1). Intrigue needs mystery and ambiguity in our environment. "Literal signs decapitate intrigue. Standardised devices do not require the storyteller to be engaged" (Engwicht, personal communication, November 13, 2009, p.1). Through this approach, Engwicht encourages street and place reclaiming through *igniting the storyteller*—creating or enhancing uncertainty and intrigue, by engaging people in the future.[46]

Places need humour and some mystery in order to provide delight, interest and commitment (Kaplan, Kaplan & Brown, 1989). Humour personalises spaces, as Engwicht reminds us: "humour humanises streets and public places, especially those that have become anonymous and depersonalised. Taking humour into the public realm is to offer an unconditional gift" (Engwicht, personal communication, November 13, 2009, p.2). Delight and surprise are features of all successful cities. Maki points out that the fact that "the basic human need for delight has remained largely unchanged gives us [as] architects and urban designers [and planners] both encouragement and a clear objective" (2009, p.98). Recent research by Nasar and Cubukcu (2011) reinforces this the need for mystery and delight with the researchers determining from virtual environment research that preferences of participants were for streets with positive mystery

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[46] The uncertainty that Engwicht is referring to is from when places, primarily streets become 'shared' places. Engwicht describes this: "Traffic control devices are a covert promise of predictability and certainty. The greater the social and cultural life of a space the greater the levels of unpredictability. Design must reflect this level of unpredictability otherwise it creates a false sense of security" (2009, p.2). Shared streets is discussed in Appendix B.

(primarily lightly curved streets) and surprise (judged by differences in approach and post turn streetscapes).

Public art is becoming a form of activism, aimed at changing perceptions of public spaces, exerting ownership over spaces, recognising diversity or history and reactivating spaces (Brecknock, 2006). Public art as activism is seen throughout many cities, and includes such acts as graffiti art, murals, stencil art, guerrilla knitting, amongst many other acts sanctioned and not.

Findings about sense of place

This section provided a brief overview of sense of place, establishing that sense of place is the belonging and emotional attachment that people have to a place. In addition, this section provided an introduction to some of the main concepts within sense of place, primarily:

- **PLACE AND SPACE:** Places are spaces and environments that have significance and meaning. Spaces rather, are non specific environments.
- **EVERYDAY SPACES:** The everyday spaces and places that people encounter are of vital importance. These are the places that people experience, live in and use the city. These everyday spaces are where people form their attachement and sense of belonging to place, and form the structure to enable shared meanings to develop.
- **TANGIBLE AND INTANGIBLE ELEMENTS.** A sense of place involves tangible and intangible elements. A people's emotional attachment to a place becomes embedded within the built environment as a shared visual expression of culture and beliefs. In addition, sense of place is also linked to the mental imaging of and feelings about a place.
- **PLACELESSNESS:** Placeless landscapes have no special relationship to the places they are located.
- **SUSTAINABILITY:** Sustainability is intrinsically linked to a sense of place as places with a strong (positive) sense of place is linked to feelings of attachment, involvment and responsibility.

In addition, the section introduced how sense of place could be enhanced through loose space, personalisation of place, through mystery and humour and through public art, particularly non-traditional means that allow the stories of place to be understood and for surprise and delight to come forth. Sense of place is an important part of an urban designers toolkit. It is the ingredient that brings a human touch to the walkable city.

4C.8 The natural environment

Urban design is concerned with the preservation and integration of the natural environment. This has been a long recognised goal, with Sitte believing in 1889, "…one of the city builder's duties is obviously to plant new units of greenery…" in a skilful manner (p.174). In 1957, Burchard explains that "No city is really beautiful, nor can any peripheral development achieve beauty, if nature is too much ignored" (p.117). The need for nature, and unity between the built and natural environment is wistfully followed by Lynch, who describes that the people living in his 'place utopia' will be "aware of the living process around them and feel themselves a part of that process" (1981, p.308). In addition, they will feel responsible for the "well functioning" of the territory around their place as the people and the land will belong to each other (Lynch, 1981, p.308). Despite this long history of desire to unite built and natural concerns, urban design responses have often been superficial, centring on stated goals to protect, incorporate or enhance the natural environment but primarily focused on built environment concerns.

However, the need to preserve and integrate the natural environment within the built environment is pressing, for, as Lang, asserts, "all urban design projects change the nature of the terrestrial environment in which they are located. In terms of the health of the [earth] many of these changes have been detrimental" (2005, p.374). Increasingly, according to Greenberg, "we are witnessing a major dissolution of the false professional and conceptual dichotomy that divided the city from the natural world" (2009, p.203). Sustainable practices (particularly increased walking and cycling, less car dependency and lower energy

consumption), along with an "intertwining of city and nature in a new sense of place" (Greenberg, 2009, p.204), the closer production of food and the protection of natural systems all require the integration of city and environment concerns.

Within sustainable urban design, "designing for a healthy natural environment and a built world healthy for people are two sides of the same coin" and that "there is increasing pressure for attitudes towards the natural world to change and for people to be husbanders rather than consumers of the land" (Lang, 2005, p.374). Urban design needs to address environmental sustainability and environmental integrity, using environment in Kaplan and Kaplan's positive terms as a "wellspring of sustenance and joy" (2011, p.350). From this point of view, the urban design challenge is to enhance the possibility of the environment to "enable the positive dimensions of people"—*to bring out the best in people*— so that, people will in turn "take better care of the environment" (Kaplan & Kaplan, 2011, p.350; 2008). The challenge is furthered by Beatley, who challenges urban practitioners to rethink "every aspect of our built environments to find ways to inject nature" (2004, p.127) and to rethink how cities relate and protect their 'blue nature', their water (2011).[47]

In terms of urban design practice, urban designers relate to the natural environment primarily from the perspective of: recreation, health, setting and understanding (Montgomery, 1998) which are all essentially ethically antropocentric (Beatley, 1994). The urban design reaction basically relates to providing appropriate parks and green spaces for health and recreation, and the provision of vegetation for landscaping, framing, to provide shade, connection to the local environment and aesthetics.[48] However this is changing to a more holistic view of environmental systems within urban areas, particularly in relation

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[47] Beatley (2011) refers to this as 'blue urbanism' and it is a call for built environment professionals to protect and become better stewards of their oceans. This protection of the ocean and water systems are particularly important as most cities (at least traditionally) are focused around some form of water.

[48] Water sensitive urban design (WSUD) has progressively become an important part of city design (Newman, 2010). However, as it is outside of the scope of research discussed here, it will not be included. See Beatley and Newman (2009), Newman and Jennings (2008) and Melbourne Water, http://www.melbournewater.com.au/, and CSIRO, http://www.csiro.au/).

to the provision of food within urban areas and within biophilic urban design (discussed below).

Humans are dependent on nature for all needs beyond the basic needs of shelter and food. Beatley argues that we need to look beyond the functioning provisions of nature:

> Nature can provide wonder and awe to our lives. It can amaze, stimulate and propel us forward to want to understand our world more fully. Nature provides an unparalleled wonder value to our lives. The qualities of wonder and fascination, the ability to nurture deep personal connection and involvement, and visceral engagement in something larger than ourselves offers the potential for deeper meaning in life. (2009, p.214)

Nature helps to satisfy "psychological, emotional, and spiritual needs that are difficult to satisfy by other means"—"access to nature plays a vital role in human health, wellbeing, and development that has not been fully recognised" and needs attention (Maller et al., 2008, p.1).

Recent research reveals that access to green nature (in the form of parks or other natural areas) with an urban environment can improve mental and physical health, reduce crime and increase walkability (Guo, 2009; Maller et al., 2008). Guo (2009), researching commuter path choice from a transit station to work place in downtown Boston (based on 2748 observations), determined that commuters were more likely to choose routes that passed through Boston Common (a central public park) even if they were longer. As discussed previously, trees are extremely important as a design and climate-enhancing element in cities. Trees are also important as "place-strengthening icons" (Beatley & Newman, 2009, p.120) and as a metaphor for city functioning (Beatley, 2004). This emphasises people's preference for routes and built forms with green space. Increasingly, biophilic urban design is a way to increase nature in urban environments.

Biophilic urban design

Biophilic urban design is, according to Kellert, "the deliberate attempt to translate an understanding of the inherent human affinity to affiliate with

natural systems and processes…into the design of the built environment"
(Kellert, 2008, p.3). It puts natural elements first in the design, planning and
management process with the idea that increasing greenery in the city provides
a healthy environment for people and the environment (Beatley, 2010; Ulrich,
2008). The concept of biophilia, developed by Edward O. Wilson, maintains that
humans have an innate "urge to affiliate with other forms of life" that is "clearly
evinced in daily life and widely distributed as to deserve serious attention"
(1984, p.84). Kellert identifies six biophilic design elements to incorporate
natural elements into the built environment:

- Environment features;

- Natural shapes and forms;

- Natural patterns and processes;

- Light and space;

- Place-based relationships; and

- Evolved human-nature relationships. (2008, p.15)

The most obvious design element of biophilia is the integration of the natural
environment features within the built environment, particularly plants, animals,
sunlight, natural air, water, natural materials, views and vistas amongst other
elements. Integral to this is the local and visible production of food within cities.

The concept of biophilic urban design acknowledges that natural elements "need
to be central in everything and anything we design and build" at all scales
(Beatley, 2010, p.83). Beatley establishes many scales at which urban designers
can work to integrate nature into the urban environment from the small scale to
the larger scale:

- **BUILDING SCALE**: green rooftops, rooftop gardens, green walls and daylit
  interior spaces;

- **BLOCK SCALE**: green courtyards, housing around green space and the use
  of native species in gardens and public spaces.

- **STREET SCALES**: footpath gardens, street trees, low-impact development,
  vegetated swales and skinny streets and edible landscaping.

- **NEIGHBOURHOOD SCALE**: water sensitive urban design, stream restoration, urban forests, ecology parks, community gardens, neighbourhood parks, pocket parks and the greening of brownfield and greyfield sites.
- **COMMUNITY SCALE**: urban creeks and riparian areas, greenways and networks, greening of schools (including school gardens), city wide tree planting, community forests and community orchards and greening utility corridors.
- **REGION SCALE**: river systems and floodplains, riparian systems, regional greenspace systems and greening major transport corridors. (adapted from Beatley, 2010, p.84)

Incorporating natural elements into many different facets of the city is an emerging area of research within urban design (Newman, 2010).

Findings on the natural environment

The natural environment is increasingly becoming an important consideration within urban design practice, as sustainability and environmental concerns become paramount for cities. Considerations of the natural environment within urban design include:

- **RECREATION, AESTHETICS AND HEALTH:** Urban design has primarily been concerned with recreation, aesthetics and health, providing parks, green spaces and landscaping.
- **BIOPHILIC URBAN DESIGN:** Biophilic urban design is emerging as an important urban design concern that puts nature first in design, planning and management processes. This concern also includes the field of water sensitive urban design.

In terms of the walkable city the natural environment is a critical element for enabling the amenity of the dense area to be attractive and healthy for the pedestrian.

4C.9 Conclusions

This Chapter has discussed what urban designers do in practice, the principles of walkability, or people-focused urban design from the perspective of the requirements of pedestrians and people in public spaces. It has established the need to study people's use of space and to provide appropriate places for people. Although people are the focus behind all of these characteristics, it is clear from this research that often urban design practice is about form only—the form of spaces and buildings and the city only—rather than being about the people intended to use or relate to these forms. Looking at urban design from a walkability and people-first perspective helps to establish a new scope for urban design.

In addition, this Chapter establishes that the practice of urban design is more than a purely aesthetic 'design' based field and indeed has the scope to progress and build on its existing foundation. Urban designers can be advocates and provide leadership, focusing on people and their needs within urban environments. They can challenge the dominant car-based planning in cities. In addition, from this perspective urban design has the scope as a profession to consider the city holistically, including a wide range of considerations such as politics, economics, accessibility, place, culture, environment and the need for aesthetically pleasing places. To quote Isaacs, the task of urban designers is not to create "potentially contrived or superficial urban spatial configurations;" it is rather to seek opportunities (2000, pp.178-179). When seen this way urban design practice has an opportunity to provide a new set of 'guidelines', different in different cities, that enable people-oriented public spaces to replace car-oriented public spaces. This is the distinct challenge and opportunity of urban designers that gives them a clear contribution to cities that no other profession can provide.

The next Chapter introduces Jan Gehl and how he has faced up to this challenge. The Chapter provides a brief biography and then an overview of his theory. The work and theory of Gehl is provided as a case study of a humanistic urban design

theory. Chapter 6 then presents an overview of Gehl's practice and then Chapter 7 establishes an assessment criteria and applies this to Gehl's work to evaluate his contribution.
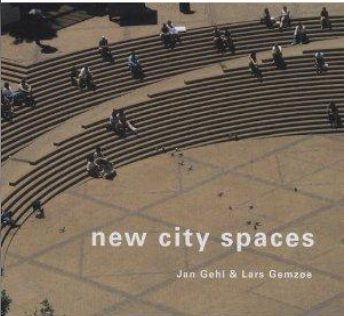
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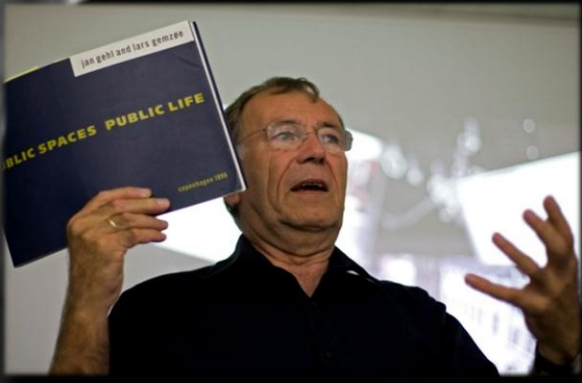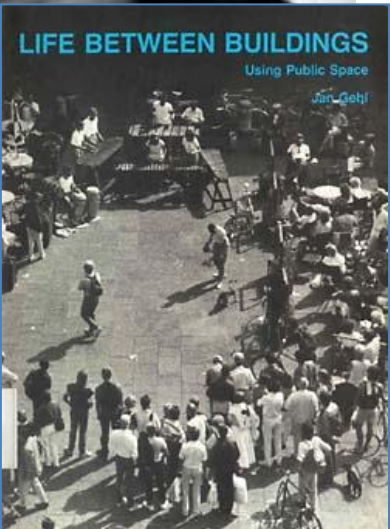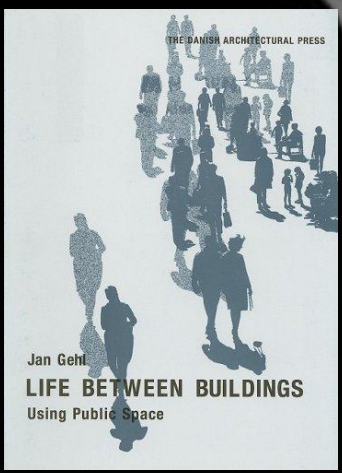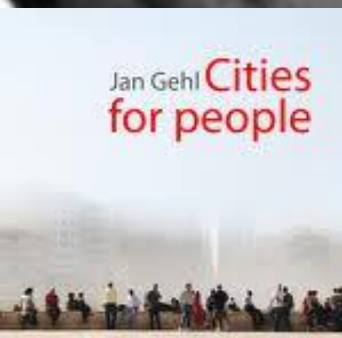
Photo: Jean-Paul Horrè
Book Covers: Jan Gehl

CHAPTER 5: JAN GEHL'S URBAN DESIGN THEORY

Chapter 5: Jan Gehl's urban design theory

5.1 Introduction

In the previous chapters, I have discussed many ideas about urban design theory and practice, centred around the premise that urban design is about the creation and improvement of cities for the betterment of people and the environment; it is concerned with relationships among the built and natural environment, people and meaning, termed here *walkability*. Danish architect and urban designer, Professor Jan Gehl, is both a practitioner and an academic. He has managed to walk the two paths that do not often cross in the urban design field and has increasingly become recognised for his contributions to urban built environment theory and practice. Gehl has continued and expanded on the humanistic, organic urban design developed, researched and practiced during the 1960s, 1970s and early 1980s as a reaction to Modernism (discussed in Chapter 2). As a theorist, Gehl is explicitly humanist and pro-urban, always emphasising that we must design 'cities for people', rather than purely for vehicle movement or economics. Indeed this is the title of his most recent book (Gehl, 2010).

This Chapter provides an overview of Gehl's theories, along with select biographic and personal information. It then discusses some of the major influences on his theoretical development. The Chapter then provides an overview of Gehl's teachings structured around the core considerations of urban design established in Chapter 3. The purpose of this Chapter and the biographic information is not to write a comprehensive biography of Gehl but rather to discuss his theories and major works within the context of urban design. This Chapter is foundational, not an assessment of his work. Chapter 6 introduces Gehl's practice and Chapter 7 discusses Gehl's theory within the context of an urban design framework.

5.2 An introduction to Jan Gehl: Select and basic biographic information

Jan Gehl was born in 1936. He graduated with a degree in architecture from the School of Architecture at the Royal Danish Academy of Fine Arts (RDAFA) in Copenhagen in 1960. From 1960 to 1966, he practised as an architect until 1966,

when he became a researcher with the School of Architecture at RDAFA, studying the form and use of public spaces. He undertook an influential trip to Italy with his wife Ingrid Mundt (discussed later in this Chapter), where he studied public life in plazas. In 1971, Gehl became a Lecturer of Urban Design before becoming the Head of the Department of Urban Design at RDAFA from 1976 to 2003. He received a Doctor of Letters from Heriot-Watt University in Edinburgh in 1992. From 2003 until his retirement from the university in 2006, he was Professor and Director of the Centre for Public Space Research at RDAFA, a position that enabled him to become more research-oriented than previously.

Gehl began his practice, Gehl Architects based in Copenhagen, in 2000, with Helle Søholt as founding Partner and Managing Director. Gehl has been a visiting professor at many universities internationally.[1] He continues to work as a principal at Gehl Architects and is responsible for many international projects, many of which he began as an academic at RDAFA. As Figure 5.1 shows, Gehl Architects conducts much of its work internationally, with approximately 95 percent of their work conducted outside of Denmark (Isager, 2010).

Gehl's major publications include the following:

- *Life Between Buildings,* 1971, 1987 (first English edition)*,* 1996, 2001, 2006, 2007, 2008.[2] Van Nostrand Reinhold, New York, and Danish Architectural Press, Copenhagen. Translated into 21 languages.[3]

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[1] Gehl has been a visiting professor at universities, including: Canada: Toronto (1972-73), Waterloo (1977) and Calgary (1990); Australia: University of West Australia (1978), Royal Melbourne Institute of Technology (1978) and the University of Melbourne (1976 and 1978, resulting in the publication 'The interface between public and private territories in residential areas'), Curtin University (2008); Norway: Oslo (1978); USA: University of California, Berkeley (1983 and 1985) and Cleveland (2000); Mexico: Guadalajara (1983); Germany: Dresden (1986) and Hanover (1995); Poland in Wroclaw (1987); Belgium: Ghent, Antwerpen, Diepenbeek (1991); Lithuania: T.U. Vilnius (1999); Costa Rica: Universidad de Costa Rica, San Jose (1999 and 2003); South Africa: University of Cape Town (2000); and Indonesia: Yogyakarta University (2000).

[2] The Danish version has six editions, the last of which was published in 2007. The English translation has seven editions, the seventh published in 2008. Another English edition is currently in publication by Island Press.

[3] *Life Between Buildings* has been published in over 21 languages (as of November, 2010). The countries include: Norway, Holland, Japan, China, Korea, Italy, Costa Rica, Taiwan, Czech Republic, Germany, Spain, Bangladesh, Vietnam, Poland, Serbia, Romania, Iran and Brazil. It is currently being republished in the United States, Japan and Italy.

- *Public Spaces and Public Life Copenhagen*, 1996, 2003, with Lars Gemzøe. Danish Architectural Press, Copenhagen.

- *New City Spaces*, 2001, 2004, with Lars Gemzøe, Danish Architectural Press, Copenhagen, published in Danish, English, Spanish, Portuguese, Czech and Chinese.

- *Close Encounters with Buildings,* 2004, with Lotte Johansen Kaefer and Solvejg Reigstad, Centre for Public Space Research, Realdania Research, Institute for Planning, School of Architecture, The Royal Danish Academy of Fine Arts.[4]

- *New City Life,* 2006*,* with Lars Gemzøe, Sia Kirknæs & Britt .S. Søndergaard, Danish Architectural Press, Copenhagen, published in Danish and English.

- *Cities for People*, 2010, Island Press, Washington D.C. Simultaneously published in Denmark (2010, Bogvaerket)[5] and China (2010, China Architectural and Building Press).[6]

In addition, Gehl has created a documentary, *Cities for People* (56 min.) (Mortensen, Gehl & Heide, 2001), a joint production of the National Television channels in Denmark, Sweden, Norway, Finland and Iceland. Gehl Architects also publish numerous booklets and reports, particularly on their Public Spaces Public Life surveys (see Chapter 6). A recent example of a booklet is 'Our Cities Ourselves: 10 Principles for Transport in Urban Life' (2010), written with the Institute for Transportation and Development Policy (ITDP).[7] Gehl has also sat on many editorial boards, including the *Journal of Architecture and Planning Research*, *Architecture and Behaviour*, *Urban Design International*, and *Town Planning and Architecture*.

Gehl has been one of the most prominent professionals in calling attention to the need of cities to focus on pedestrians. His work in cities often results in a wide media coverage, especially his work in Sydney, New York and London (see Appendix E). For example a recent CNN report on the 'Copenhagenization' of cities has been very

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[4] Originally published in *Arkiteken,* 9, 2004. Also published in *Urban Design International*, 11, 2006.
[5] Currently being reprinted.
[6] *Cities for People* is currently being published in numerous languages, with upcoming publications in Arabic, French (Quebec), Polish, Czech, Spanish, Portuguese and German.
[7] 'Our Cities Ourselves: 10 Principles for Transport in Urban Life' (2010) was written as part of ITDP's 25th anniversary, in connection with the opening of an exhibition of the same name at the Centre for Architecture, American Institute of Architects (AIA) in New York City.

popular with its story based around Jan Gehl and how the extraordinary advances in walkability in Copenhagen are now being exported to the world (CNN & Quest, 2011). The Ministry of Culture, Denmark, in nominating Gehl for the Danish National Award for Outstanding Contributions to Art and Culture, wrote: "there is something sensitive, attentive and immediate about Jan Gehl's understanding of the importance of public space…Gehl can be said to have established a new school for city planning, that can be characterised: Public Space Architecture…" (Denmark Ministry of Culture, 2009). (See Appendix D for a list of awards.) This award was given because for 30 years Gehl refined his skills on urban design through walkability in his own city. As the results began to become obvious he was brought to other cities, especially in the Anglo-Saxon world. This made him into a global urban designer and his firm now are seen as the pre-eminent source for advice on creating walkable 'cities for people' (see Table 5.1).

Phases of Jan Gehl's work

Gehl considers his work to have three major phases: (1) his research and theory development (1960-70s onwards); (2) the development and testing of his methodology in real-life projects (initially in Italy and Copenhagen: 1960s onwards); and (3) communication and expansion of his methods and ideas by working in projects worldwide (1990s onwards). Currently, Gehl sees the educational component of his efforts, progressively undertaken in developing cities, as the most important part of his work. He describes that he and his firm are starting to move away from 'fishing' (such things as city design frameworks and masterplans) to 'teaching fishing'—providing education and tools to enable people and cities to look after the people component in their cities themselves (Gehl, personal communication, November 29-30, 2010). Gehl considers his books to be his major achievement (personal communication, April 23, 2008).

5.3 Jan Gehl's urban design theory

Gehl's urban design theory is a pro-urban, people-friendly theory for planning and design that is a rejection of Modernist and car-based transport planning ideas, which

Public Life Public Spaces Surveys	
Adelaide, Australia (2002, current 2011)	New York, USA (2007)
Auckland, New Zealand (2010)	Odense, Denmark (1988, 1998 and 2008)
Brisbane, Australia (2009),	Oslo, Norway (1987, advisor for improvements also)
Cape Town, South Africa (2005)	Perth, Australia (1994 and 2009)
Chongqing, China (2010)	Riga, Latvia (2001)
Christchurch, New Zealand (2009)	Rotterdam, the Netherlands (2007)
Copenhagen, Denmark (1968, 1986, 1996, 2005)	San Francisco, USA (2009, Fisherman's wharf)
Edinburgh, Scotland (1998)	Seattle, USA (2009)
Hobart, Australia (2010)	Stockholm, Sweden (1990, 2005)
Istanbul, Turkey (2010)	Svendborg, Denmark (2008)
Launceston, Australia (2010)	Sydney, Australia (2007)
London, United Kingdom (2004)	Vejle, Denmark (2002)
Melbourne, Australia (1994, 2004)	Wellington, New Zealand (2003/4)
Melbourne Docklands, Australia (2010)	Zurich, Switzerland (2004)
Harbour Front Regeneration	
Aalborg, Denmark (2007)	Nordatlantens Brygge, Copenhagen, Denmark (2007)
Aarhus, Denmark (2007)	Oslo, Norway (2002-03 and 2008)
Belgrad, Serbia (2009)	Pittsburgh, USA (2006)
Bjorvika, Oslo, Norway (2005)	Victoria Quay, Cork, Ireland (2007)
Design guidelines and public space/urban strategies/frameworks	
Oslo, Norway (1998, 2003, 2008)	
Bjorvika, Oslo, Norway (2005)	
Mexico City, Mexico (2009) (bicycle mobility plan)	
Muscat, Oman (2010) (strategic urban planning & public space design)	
Master Plans/ Development Plans	
Aarhus-Lisjerg, Denmark (2007)	
Cambusmore, Scotland (2004) (Master plan for a new settlement)	
Cherrywood, Dublin, Ireland (2004-07)	
Croydon Learning and Cultural Centre, UK (along with MAKE Architects) (2009)	
Heuston Gateway, Dublin, Ireland (2006)	
Kavlinge, Sweden (2007)	
London, Elephant and Castle, UK (2003)	
Malmo (Varvstaden), Sweden (2008)	
Newcastle Science Central development, UK (along with MAKE Architects) (2009)	
North Harlow, UK (with Landsecurities, Places for People & Grimshaw) (2009)	
Prague, Czech Republic (2007)	
Rejeka, Delta Area, Croatia (2006)	
Riga, Latvia (2006)	
Stoke Town, UK (as part of a team with URBED, DTZ and Arup) (2010)	
Competition programmes	
Carlsberg (programme), Copenhagen, Denmark (2006)	
Copenhagen, Frederiks Brygge, Denmark (2005) (programme & management)	

Odense, Denmark (2008) (competition programme and analysis)
Other
Amman, Jordon (2005)
Amwaj, Rabat, Morocco (2006)
Apeldoorn, The Netherlands (2009)
Brighton, United Kingdom (2005, 2007) (Street design)
Billund ('vision' project along with Årstiderne Arkitekter and Mindfolio) (2009)
Christchurch, New Zealand (2011) (Advise for Central City Plan—the rebuilding of Christchurch after a major earthquake)
Copenhagen (Bryghusgrunden), Denmark (2006)
Copenhagen (Metropozonen), Denmark (2008)
Copenhagen (Norrebrogade), Denmark (2005)
Copenhagen (Vesterbrogade), Denmark (2006) (Public Space design)
China (2008 continuing) (improving city quality, various cities)
Chennai, India (2010) (capacity building process for ITDP)
Dublin Docklands, Ireland (2006)
Fredericia, Denmark (2007)
Gothenburg, Sweden (2007)
Guangzhou, China (2009)
Haderslev, Denmark (2005) (design guidelines and programme)
Kunming Pandong River Project, China (2011) (PSPL survey and advise)
London, Elephant and Castle, UK (2003)
London, Mayfair and Belgravia, UK (2006)
London, Victoria Interchange, UK (2007)
Malmo, Sweden (2007)
Malmo, Hyllievang, Sweden (2004)
Milan, Garibaldi Repubblica, Italy (2005)
Nottingham, United Kingdom (2008) (Neighbourhood Development Framework)
Rosengarden, Malmo, Sweden (2007)
Sao Paulo, Brazil (2006) (pedestrian counts)
Sheffield, United Kingdom (2005)
Reykjavik, Iceland (2007)
Wakefield, UK (2004) (small PSPL)

Table 5.1: List of projects, particularly Public Life Public Spaces surveys conducted by Jan Gehl and Gehl Architects, as of 2011. Source: Assembled through personal communication with Jan Gehl, Gehl Architects and from GehlArchitects.com.

resulted in cities designed for vehicular movement and function, rather than for people. These ideas are still prevalent in many city planning and design departments today (see Chapter 2). Gehl's theories regarding city design are explicitly humanist, offering normative (prescriptive) urban design theories based on substantive (descriptive) research and are part of organic urban theory (D. Hill, 1992; Lynch, 1981) based on ideas of pedestrian based transport planning (see Chapter 3).

Jan Gehl's urban design theory development

Gehl graduated from university at a time of great change in architecture and urban design paradigms: what he refers to as the 'first paradigm shift', with Modernism firmly taking hold of urban design, architecture and planning, resulting in rapid growth, large mono-functional buildings and land uses (Gehl, 2010a; Gehl, personal communication, November 29-30, 2010). This paradigm shift coincided with (and was driven by) the newfound ability to produce large-scale prefabricated and manufactured buildings and the rapid expansion of cars, which "flooded to fill all space" and resulted in a "confusion of the sense of [built] scale" that had previously existed in cities (Gehl, personal communication, November 30, 2010). As previously discussed, this paradigm shift also created a profession of traffic planning. His work has been driven by questioning of this 'big scheme'-focused and professionalised traffic and urban planning and architectural practice and the question of 'why do architects not pay attention to people?'[8]

As part of this reaction to the city problems created by Modernism, functionalism and the subsequent automobile-focused planning, Gehl has focused on the human elements of public spaces, primarily streets and squares, as these were the spaces that Modernist planners neglected (Fyfe 1998; Harvey 2000). Gehl argues that "throughout the entire history of human habitation, streets and squares had formed focal points and gathering places, but with the advent of functionalism, streets and squares were literally declared unwanted" (Gehl, 1987, p.47). Part of the change in

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[8] Whenever Gehl talks about 'people' he means pedestrians. Of course people drive cars and hence traffic engineers believe they are designing for people as well. However as discussed here it is the scale and context of people walking that Gehl believes is the truly human aspect that urban designers must address.

use of public spaces was a change in city planning and design, from cities being designed by crafts people to being designed by professional planners and traffic engineers (Gehl, 2010a).

Gehl maintains that, "the Modern Movement, from the mid 1920s onwards, in its quest to provide growing urban populations with cleaner and healthier cities and accommodation, dramatically downgraded the importance of traditional public spaces" (Gehl, 2007, p.4). Further, "walking, cycling and meeting others in shared urban spaces were not part of these visions, which in subsequent decades had an immense impact on new urban development all over the world" (Gehl, 2010b, p.56). The result has been the creation of monotonous and dull cities that do not encourage city life and which have been very unpopular with the general public (Gehl, 2007, 2010a).

An important guiding principle for Gehl is that the planning, engineering and design practice and theory brought about by Modernism developed planning at three scales: city-plan scale, site-plan scale and people scale. However, as planning and engineering were ideally suited only to the city and the site-planning scales, the people scale was not adequately addressed. Gehl cites the City of Brasilia, in Brazil, as a classic example of this type of planning. It looks fantastic from above, at the city scale, but at the intimate scale, the people scale, it does not work. Gehl argues that "a collection of towers is not a city. You need all three scales" (2010a, n.p.n.).

Consequently, because of this separation of planning scales, professions such as architecture became "more and more focused on form" and on individual projects, rather than with context (Gehl, personal communication, November 30, 2010). Gehl contends that there has been a movement "from where buildings were in a society context, where you were adding to the social [and] physical fabric of the city to the new situation where you are doing buildings one by one" (2010a, n.p.n.). Moreover, with much new architecture, "[t]here is great effort done about how [the buildings] would address the sky but not much effort done with how they address the sidewalk and many [buildings] would come trundling down with a big bang. However this

needs to be the other way around with the landing of the building as the art" (Gehl, 2010a, n.p.n.).

Part of Gehl's theory development was the recognition that the increased privatization of public life is one of the basic problems in modern cities. Although "we have known always that the greatest attraction in the life of people are other people", cities continue to be designed and managed so that meeting and watching other people are difficult (Gehl, personal communication, April 21, 2008). Gehl continues:

> Other people, life, lively cities, the possibility to meet your society, to meet your fellow citizens, are actually becoming increasingly more attractive and important. It is the whole public side of life which always was part of our cities, the public realm and the public life was a very important part of life in the cities. Now everything has been privatized, some places to such an extent that there is no public life any more. You cannot go anywhere and meet other people except in a shopping mall. (personal communication, April 21, 2008)

The changes within cities brought about by Modernism and increased car use have resulted in the increased need for stimulation in many modern cities (Gehl, 1987). Gehl's ideas about the changing use of public space are highlighted by Figure 5.1, which illustrates the changes in use of public spaces from necessary activities to optional activities (discussed later in section 5.4). Gehl's work has been driven by these ideas and questions of 'what is a city as meeting place in the 21st century'.

It is increasingly evident, since the turn of the century and certainly by 2011, that we are participating in another paradigm shift. This paradigm shift is a response to an awareness that previous urban and transport planning, architecture and urban design practices have resulted in unsustainable and unhealthy cities—both socially and environmentally. Gehl believes that for the past fifty years people have felt that something was missing in their cities. This paradigm shift reflects the need to capture some of the missing elements within cities, particularly the human scale, lively built environments and a reconnection with nature and community (Gehl, personal communication, November 29-30, 2010).
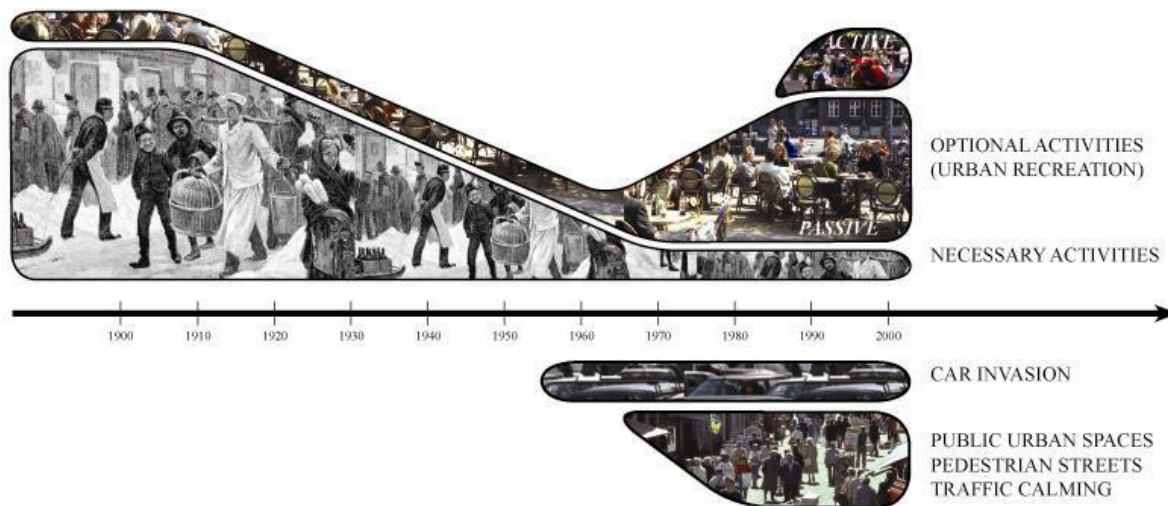
Figure 5.1: Gehl Architect's timeline of the changing use of public space. Source: Courtesy of Gehl, Gemzøe, Kirknæs and Søndergaard, *New City Life* (2006), p.9.

However, because of the planning paradigms of the last fifty years, none of the built environment professions has a substantial body of knowledge to draw on regarding the people scale of cities. Knowledge of the people scale is an "area of planning completely overlooked" in most cities; it is overlooked in most professional and educational curricula (Gehl, personal communication, November 29-30, 2010). Gehl advocates for a profession that focuses on people's use of cities: a profession that looks after the small, the people scale—"the little story"—of cities (Gehl, personal communication, November 30, 2010).

Jan Gehl's urban design theory development: Influences

Gehl's philosophy is about "making people visible and having a better balance. And it's a very modest philosophy" (Gehl, personal communication, April 23, 2008). The origins of his philosophy, he claims, are "the fact that way back, what I did was sit in Italy for half a year and then sit in Denmark for a full year and just watch the street ballet as Jane Jacobs writes about" (Gehl, personal communication, April 23, 2008). This is an important insight as it shows how Gehl began to gain a coherent theory of what urban design should be and at the same time to see what it meant in practice. This is a consistent feature in Gehl's urban design theory development.

Gehl has been influenced by many other theorists within the urban disciplines. He particularly credits Jane Jacobs, Christopher Alexander, 'Holly' Whyte,[9] Clare Cooper Marcus, Allan Jacobs, Peter Bosselmann, Donlyn Lyndon[10] and in his early development, Ralph Erskine. In addition, Gehl credits Rob Adams, Director of City Design, City of Melbourne, Jamie Lerner, former Mayor of Curitiba (Brazil), Enrique Peñalosa, former Mayor of Bogotá (Columbia), and Richard Rodgers, advisor to the City of London. All of these he sees as the "doers who understood the human dimension" in cities (Gehl, personal communication, November 29-30, 2010). All of these people have influenced Gehl's theories and theory development. Of particular significance to Gehl's theory development, however, is Gehl's wife Ingrid Mundt, (whom he credits as one of his major influences) and his personal hero, Ralph Erskine.

Gehl credits Ingrid Mundt, a psychologist, with influencing his theory development and making him question how people interact with the built environment. Although Gehl completed an architecture degree and worked as an architect, he soon rebelled against his architectural training, which was heavily influenced by Modernism. Gehl credits the discussions he had with his wife and their psychologist friends around the dinner table with forcing him to question why architects did not think about people in their designs and that they designed at city and site-plan scale, rather than from a people and use perspective. Regarding this influence, Gehl explains:

> I am an architect, educated as an architect. I graduated in 1960 in the days of modernism where city was bad and…putting buildings freely on grass, that was good…Architects were towering over the projects, and sort of making compositions. That was my training…[Then] I got married to a psychologist. All these psychologists started to say 'why are you architects not interested in people' and then we had long discussions whether aesthetics were more important than life, and in the end I realised that I had been fooled in school of architects, [and] spent the next forty years…revolting against my education…(personal communication, October 20-24, 2008)

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[9] Gehl and Whyte met for the first time in New York in 1976 while Whyte was working on his 'Street Life Project' in New York. This meeting was influential as it enabled both to see that the issues they were researching and theories about city life they were coming up with were not unique to their own cities.

[10] Lyndon is the Editor of *PLACES* journal and Eva Li is Professor Emeritus of Architecture and Urban Design, University of California, Berkeley.

From these initial discussions, Gehl's research took a different, more humanistic path, resulting in his influential trip to Italy and ultimately to his publication, *Life Between Buildings* (1971).

In addition, Gehl was strongly influenced by Ralph Erskine (1914–2005), an English/Swedish architect and Quaker. The two met in the 1970s and their connection had been a defining point and a source of support for Gehl's own work. Gehl credits Erskine with being able to work at all three of the planning and design scales, contending that Erskine was able to do a "fantastic city plan, a fantastic site plan and a fantastic people landscape and has made some of the most successful areas in Europe with this feeling for people" (2010a, n.p.n). Erskine always emphasised that "to be a good architect you must love people as architecture deals with the framework for people's lives" (Gehl, 2010a, n.p.n.). This has been one of the guiding philosophies behind Gehl's work as well as a key motivational source.

Gehl's theories are also influenced by his formative years—the 1960s—which involved a radical rethink of all major western approaches and institutions. Gehl started work as an architect during the 1960s, a period in Denmark he describes as filled with women's liberation, communes and "anti-Modernism, almost" (personal communication, September 27, 2009). Gehl started with "being incensed by the way people were treated or not at all looked after in new housing, in new city districts, and in the existing cities. In the existing cities, it was mostly the dominance of the traffic engineers and the whole issue of making room for the cars." He could see that: "In the new districts, it was very much the planning paradigms of scattering the buildings and…seeing what was left over and then putting some grass there, and completely neglecting the public realm as a goal of planning in itself" (personal communication, April 23, 2008).

In 1962 (which Gehl refers to as the 'year of Jane Jacobs'), whose work he had discovered while he was researching *Life Between Buildings*, Gehl was asked to design a housing development on a former nursery in Hillerød, Denmark. The site was being rezoned from rural to urban. The landowner wanted to leave a legacy: something to be proud of, not a 'Modernist block of flats'. He asked Gehl to find a

better way of building housing that was good for people. Gehl consulted with sociologists based in Denmark, who determined that, historically, houses had been clustered in groups of about fifteen houses centred on a square. The results of Gehl's housing development proposal were widely published in Denmark. Although the proposal was never built., it was Gehl's first attempt at doing something more than just an architectural block 'landing on the city' and doing something with a public realm emphasis (Gehl, personal communication, September 27, 2009).

Gehl and his wife then travelled to Italy to study 'why are squares good?' on a Carlsberg Park 'Roman Scholarship'. This enabled him to have the time and space (literally) to develop his ideas into a coherent urban design philosophy (Gehl, personal communication, September 27, 2009).

Gehl explains that his colleagues have thought his persistence in emphasising people in the built environment to be inconsequential. He maintains that it has been a "lonely vigil in all these years"—to insist on studying life and built environment interactions. His colleagues thought it a "funny and 1970-ish, arty interest—a funny sidetrack from the real thing of making architecture" (2010a, n.p.n.). However, Gehl emphasises, referring to the work of Ken Worpole,[11] "good architecture is the interaction between life and form, and only if the interaction works is it good architecture. If not, it is free-standing art, it is sculpture" (Gehl, 2010a, n.p.n.).

5.4 An integrated design approach

Gehl's philosophy is simple—if you provide attractive and welcoming places in which people can walk around and spend time, you will have a more attractive and lively city: 'Life is attracted to life'. At the foundation of his urban theory is the need to orient (or reorient) environments towards human needs, particularly pedestrian needs. In doing this, he is continually advancing a "probabilistic relationship between the quality of the urban environment and behavioural activities" (Isaacs, 2000, p.152). For Gehl, people's priorities should be the "most important driver in the

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[11] Ken Worpole is Senior Professor at The Cities Institute, London Metropolitan University and has served on the United Kingdom's Urban Green Spaces Task Force, as adviser to the Commission for Architecture and the Built Environment (CABE) and the Heritage Lottery Fund.

planning process for cities" (Gehl Architects, 2011, n.p.n.). This is the origin of his official mantra: *people first, then space, then buildings.* This approach to planning and urban design recognises the different scales as mentioned before but importantly it shows how the decision-making process needs to set a priority for people by orientating and designing streets and plazas before buildings. This is an indication of both his theory and practice of urban design.

For Gehl the overriding planning rule for cities should be: whatever we do in this city, everything will be done to *invite* people to walk (and bicycle) as much as possible in the course of their everyday activities. The invitation is the provision of appropriate urban spaces, infrastructure and furniture that make it very easy and attractive to accomplish daily needs on foot or bicycle. This policy would enable the creation of lively, attractive, safe, healthy and sustainable cities: what Gehl refers to as his 'five birds, one stone policy'. By this, he means that if you look after pedestrians and public life (the one stone), you can accomplish all the other elements also (the five birds: lively, attractive, safe, healthy and sustainable cities). Gehl's policy is not 'anti-car' but rather is 'pro-people'. He believes that we can no longer plan, run and design our cities around the car.

For Gehl, the primary concern of urban planning should be the *everyday* activities that happen in streets. The objective should not be an "ambitious program"; rather, should be about "everyday life, ordinary situations, and space in which daily life is lived" (1987, p.53). What is important is what happens on "an ordinary day on an ordinary street" (Gehl, 1987, p.11). Gehl divides everyday activities that happen in streets into three categories: *necessary, optional* and *social*. Some activities (such as going to work or school, shopping for necessities and other errands) must be done regardless of the conditions. They are the *necessary* activities. *Optional* activities include recreation activities that will occur in good conditions: sightseeing or walking for leisure*. Social* activities will occur in a high-quality environment (talking with others or sitting on a bench watching the world pass by). A high-quality urban environment enables all three types of activities to occur.

For Gehl, the goal is to "make it simple, uncomplicated and safe to walk any time of the day or night" (2010b, p.113). He advocates that first, one must have the invitation right; then one can start thinking about the buildings. He believes that for anything to work in the 21st century city, you must start with first asking "what activities would people like to do here, what spaces would we need for them to do it and how could the buildings create these spaces and support these spaces and enjoy these spaces?" (personal communication, April 23, 2008). He warns that, particularly when planning and designing new buildings and areas, if you do not start first with the invitation to people, you cannot add the people side later "after you have made cars happy and placed a number of buildings around a place. You have to *start* with the people" (Sierra Club, 2010, n.p.n., emphasis added).

The 'five stones, one bird policy' is firmly entrenched in ideas of sustainability within cities. Gehl maintains: "…What is good for people is generally also very good for sustainability…many of the aspects which make cities liveable are also aspects that make cities sustainable" However, simply making a city of sustainable 'green' buildings is not enough: "We can certainly design a city full of sustainable buildings, but that city may not at all in any way be sustainable as such. The Buildings may be but the whole city may be shit" (Gehl, personal communication, April 21, 2008).

Changing use of public space: Public space as meeting, market and connection place

Much of Gehl's research has focused on the changing uses of public space caused by changing lifestyles and demographic changes, reinforcing other urban discussions, particularly the links between health and the built form (illustrated previously in Figure 5.1). Gehl contends:

> Recent decades have seen a gradual development from industrial society's necessary public life to the optional public life of a leisure and consumer society. Where city life was once a necessity and taken for granted, today it is an option. For that very reason, this period has also seen a transition from a time when the quality of city space did not play much of a role in its use, to a new situation in which quality is a crucial parameter. In the past, people had to use the streets and squares of the city regardless of their condition. (2006b, p.1)

These changes, as determined by Gehl, are shown below in Table 5.2.

	1900 Old City Areas	2000 New City Areas (high-density)	2000 New city Areas (low-density)	2000 New City Areas (suburbs)
Average size of household (people)	4	1.8	2	2.2
Average dwelling area per resident (m^2/sq.ft)	10/110	60/650	60/650	60/650
Number of dwellings per hectare	475	155	21	8
Number of Resident per hectare	2000 persons	280 persons	42 persons	17 persons

Table 5.2: Demographic changes 1900 to 2000. Source: Adapted from Gehl, *Cities for People* (2010), p.66.

Gehl, Gemzøe, Kirknæs and Søndergaard (2006) reinforce the discussion about demographic changes and the need for public space to accommodate these changes (in reference to Copenhagen, but relevant for any modern, 'developed' city):

> Dramatic changes in living standard, working life and the economy have contributed in various ways to the new functions of city space over the past century. Households have shrunk…Young people study longer and start their families later than before. There are more single adults with their own dwellings and now, too, more older residents in small accommodations due to increasing longevity. In many parts of the city, half of the dwellings have only one resident… (2006, p.14)

(See Table 5.2) In addition, working patterns have changed, with people now having much more free time than in recent decades. Changes in consumption patterns result in "on the whole greater resources for consumption and pleasure" (Gehl, Gemzøe, et al., 2006, p.14). People today have greater mobility and increased indirect communication than in past decades. Further, "new roles for public space and public life are redefined in situations where daily life for many people continues steadily to be more privatised…meeting other people is no longer an automatic part of daily life" (Gehl, Gemzøe, et al., 2006, p.14).

Central to the changing use of public spaces is the link between health and the built environment with the need to create healthy cities where the ability to walk and

cycle are built into the urban fabric.[12] Gehl emphasises that invitations to walk and bicycle need to be built into city plans and into the everyday urban environments so that the city can have exercise built into its residents' everyday lives (personal communication, April 23, 2008). These health benefits are increasingly becoming a focus of Gehl's work. In addition, Gehl emphasises that the social costs of building exercise into the built environment have been found to be economically beneficial to society, referring to a study from Copenhagen that found that every kilometre ridden by bicycle effectively gave the City 25 cents, whereas every kilometre driven cost the City 16 cents (American Society of Landscape Architects, 2011). Gehl strongly believes that exercise can be encouraged through the built environment, with not only physical and psychological health benefits but also financial benefits, which provide real incentive for cities.

Discussing long-term historical uses of public space in cities, Gehl divides them into three types: public space as *meeting* (social) place, public space as *market* (commercial and other exchange) place and public space as *connection* (access, democratic) space. These uses of public space provide the fundamental design rules guiding his work.

The city as a meeting place

The city as a meeting place refers to the traditional role of the city as a place for social exchange. Gehl's quest has been to find a role for pedestrians and public life in globalised, modern cities where the need for traditional urban forms is no longer considered relevant and people live increasingly isolated, private lives (Gehl, Gemzøe, et al., 2006, p.14). Thus, Gehl sees a need for public space to return as a place for people to meet and interact with others and be part of urban life. His prescription is an uncomplicated principle: "we have known always that the greatest attraction in the life of people is other people. And if we can make a city with people, where people can meet, it is an attractive city...." (personal communication, April 23,

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[12] As discussed in Chapters 3 and 4, the relationships between the built environment and health are an emerging field of research, primarily led (at least in Australia) by the health sector but also increasingly integrated into urban design, planning, architecture and transport planning. See Chapter 4.

2008). Thus, the first design rule guiding all his work is that the central role of the city is as a "meeting place" (Gehl, Gemzøe, et al., 2006, p.15).

The city as a market place

The use of public space in cities as market places for the commercial exchanges of goods and services is another traditional role for cities. The city as market place underwent major changes in the twentieth century, primarily with trade moving from outdoors and small shops to large internal shopping centres (often located outside of the city centre). Furthermore, "In those cases where shopping centres were established within the city, they closed in on themselves and were no longer part of the public arena…Quite literally, the market was taken from the public arena and moved to the private sphere" (Gehl & Gemzøe, 2000, p.13). Although the items traded have changed—"that market maybe has taken other forms, not only exchanging potatoes but exchanging information and cultural exchange"—there is still clearly a role for the city as market place (Gehl, personal communication, April 23, 2008). Thus, the use of public space as a market is the second design rule.

The city as connection space

Both of the first two design rules are about connection but they do not completely represent the essential nature of what Gehl proposes by 'connection' space. Critical to success are high-quality urban spaces as pedestrian places where connection can occur among all people in a city, along with the access and economic exchange or marketplace meaning. Connection space has a strong social justice component. Gehl believes that a good public realm is one that enables people to be part of society in an equal way. Recognition of the importance of city as connection space, the third design rule, is an integral component of creating quality urban environments.

An integrated design approach: Traditional, invaded, abandoned and reconquered cities

Gehl and his colleague, co-author and collaborator, Lars Gemzøe, categorise cities into various types: *the traditional city, the invaded city, the abandoned city* and *the*

reconquered city. For them, the *traditional city* is "where meeting place, marketplace and traffic continue to coexist in balance, more or less" (Gehl & Gemzøe, 2000, p.14). Commonly, traditional cities still retain their 'walking city' layout and are at a human scale in form and function. The *invaded city*, which started appearing in the 1950s, refers to a city where cars have taken over the public realm and people depend on them for their everyday needs. The *abandoned city*, established predominantly from the 1970s onwards, has been so invaded by cars that people have abandoned it. These cities contain an overabundance of surface parking lots, with buildings facing internally rather than towards the street and "where public space and public life have disappeared" (Gehl & Gemzøe, 2000, p.14). *Reconquered cities* are those whose managers and planners have shown a willingness to place constraints on vehicular traffic. Their planners and managers realise the importance of public life and the public realm and seek a balance between city life and car traffic and between the primary uses of a city as marketplace, meeting place and connection space (Gehl & Gemzøe, 2000; Gehl, Gemzøe, et al., 2006). Gehl attributes eight cities around the world with being reconquered: Copenhagen, Melbourne, Barcelona, Lyon, Strasbourg, Freiburg, Portland, Curitiba and Bogotá. These cities have demonstrated that urban design can reinvigorate a city by placing an emphasis on walkability.

An integrated design approach: Creating lively, attractive, safe, sustainable and healthy cities

To create cities as market places, meeting places and connection places, Gehl emphasises that *life, spaces and buildings are equal partners*. This view furthers the concept of 'whole' from organic urban theory, particularly that expressed by Christopher Alexander (Alexander et al., 1987), with his focus on the 'whole use', rather than the 'whole infrastructure and form'. Designing and planning an area from the perspective of *life, spaces and buildings as equal partners* means thinking about how a place could be successful for everyday life—how it could be lively, attractive, safe, sustainable and healthy. To accomplish this objective, Gehl emphasises that areas need to be: free from fear, real and perceived (both fear of crime and fear of traffic); have thoughtful density; a human scale form; an

integration and diversity of uses (particularly many small places and a diversity of rents); active ground floors and transparent façades; environments that are friendly to walk and stay in; and a good public transport and bicycle system.

The eight fundamental concerns of urban design underpin all of these characteristics (outlined above). As established in Chapters 3 and 4, the eight concerns of urban design are:

- Walkability;
- Built environment;
- Centres;
- Density and compactness;
- Mixed and compatible uses;
- Public realm;
- Sense of place; and
- Natural environment.

These considerations are combined and used here to position Gehl's work and theory. Chapter 6 provides an overview of some of Gehl's practice and Chapter 7 offers an evaluation of Gehl's theory and practice.

An integrated design approach: *Walkability*

Fundamental to creating a lively, safe, sustainable and healthy city is the need to make the city walkable. All of the other elements from Chapter's 3 and 4 contribute to an area's walkability:

- Safety;
- Appropriate density and compactness;
- A human scale built environment;
- Soft, active edges;
- Diversity and mixed land uses;
- Quality public spaces, streetscapes and built façades,
- Appropriate 'staying' furniture; and
- Integration and protection of nature within the urban environment.

For Gehl, walking is transport; however, more importantly, to him it is the public life aspect of walking. Gehl sees walking as "about life itself" (personal communication, October 20-24, 2008) maintaining: "…if we look at walking as a mode of transportation we only grasp ten percent of what it is all about, because we were meant for walking, we are walking animals. We do everything on our feet—everything worth talking about" (personal communication, April 21, 2008).

David Engwicht recalls a conversation with Gehl:

> He told me that it used to take him 8 minutes to walk to school and 2 hours to walk home. His mother would say, 'Jan, why does it only take you 8 minutes to get to school but two hours to get home?' Jan said, 'The 8 minutes was a trip. But what happened in the two hours was the stuff of life'. (2003, n.p.n)

For Gehl: "life happens on foot" (2010b, p.119) and walking enables one to have "an informal and uncomplicated possibility for being present in the public environment" (Gehl, 1987, p.135). From walking, you can shift effortlessly to other types of activities: "to standing, to sitting, to talking, to listening, to dancing at the spur of the moment" (Gehl & Gemzøe, 2001, p.113). Therefore, "city walking is the necessary key to urban quality, vitality and pleasure. The basis and the beginning for everything. Vadare necesse est—walking is essential" (Gehl & Gemzøe, 2000, p.257).

Central to Gehl's theories is a consideration of human senses and physical makeup, particularly the senses of sight, smell, touch and hearing, and the movement speed, stimuli needs and the space preferences of people walking. The senses are very important in determining how people perceive and understand built environments. Particularly important is the sense of sight, given that urban design is primarily a visual discipline. It is what happens at eye level in public spaces that is most important.[13]

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[13] Gehl affirms that human's sense of sight is 'distinctly horizontal' and is well-developed to see downward and has a field of vision of about 75 degrees with an upward field of vision of about 50 degrees (Gehl, et al., 2004, p.4), therefore, "from the street, we can only experience with difficultly events that take place higher up in buildings" (2010b, p.41). Gehl maintains that "if one looks straight ahead, it is possible to glimpse what is going on to both sides within a horizontal circle of almost ninety degrees to each side" (1987, p.65). Gehl et al. determine that "As pedestrians we have to stand at quite a distance to see a building in its entirety. When we come closer, we have to stretch our necks and lean our heads far back to take in the whole building, but few structures are designed for viewing from that angle. As we move closer the upper storeys gradually disappear from view, until we can only see the ground floor, or when we get really close, only a section" (2004, p.4).

Gehl discusses various 'social' distances that are related to human senses, building on the work of Hall (1966) discussed in Chapter 4. Of particular importance for Gehl to these social distances is the sense of sight. For Gehl, the 'social field of vision' is at about 100 metres (325 feet) where figures become individuals and you can distinguish the individual elements of people.[14] Gehl elaborates that "at a distance of between 70 to 100 metres (250 and 325 feet), it begins to be possible to determine with reasonable certainty a person's sex, approximate age, and what that person is doing" (2006a, p.65). As we come closer, it becomes possible to perceive more details until it becomes possible to determine feelings and moods (20 or so metres, 60 feet).Then "at even shorter distances the amount and intensity of information is increased greatly because the other senses can now begin to supplement the sense of sight" (Gehl, 2006a, p.67). At distances of 1 to 3 metres (3 to 10 feet), normal conversations can take place and "the experience involves the degree of detail generally necessary for meaningful human contact. At still shorter distances, impressions and feelings are further intensified" (Gehl, 2006a, p.67). Gehl maintains that, "the existence of these communication ground rules is important in order for people to move securely and comfortably among strangers in public space" (2010b, p.49).

Along with visual elements, Gehl emphasises paying attention to the other senses, particularly the senses of smell, touch and hearing, as these are connected to our emotions and require intimate environments.[15] People's social distances and movement space requirements relate to their sense of touch, with pedestrians generally avoiding touching strangers and the edges of spaces (until they are ready to stay in a space, i.e., to sit or lean against something). Gehl maintains that hearing has a significant impact on our enjoyment of public spaces; he emphasises the

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[14] These ideas are similar to those of the CPTED discourse and involve issues of lighting in public places so that gender and other features can be determined from a distance.

[15] The sense of smell is particularly important. Gehl determines that: "The sense of smell registers variations in odors within a very limited range. Only at distances of less than 1 meter (39 in) is it generally possible to catch the relatively weak odors emanating from the hair, skin, and clothing of other people. Perfume and other slightly stronger odors can be perceived at 2 to 3 meters 97 to 10 ft). Beyond this distance human beings can perceive only much stronger smells" (2006a, p.64).

importance of considering people's ability to be able to listen, hear and talk within urban space.[16]

Central to the discussion of senses and social distances is speed of movement. Speed reduces the amount of information that people can absorb. For Gehl, "if the speed of movement is increased [beyond walking and running speeds], the possibility of discerning details and processing meaningful social information drops sharply" (2006a, p.69).

Integral to the consideration of human senses is consideration and understanding of the pedestrian's perception of a place: both perception of quality, but also of size and safety. A walkable city must contain an interconnected pedestrian network with short logical routes, small spaces and clear city space hierarchy, along with active 'soft' edges (Gehl, 2010b). Gehl established the basics for a good urban landscape for pedestrians. In his original study of Perth, he suggests that a good city to walk in has:

- Room to move—with dignity, integrity and without overcrowding;
- Comfortable climatic conditions—sun/shade (depending on the season) and protection from the wind;
- Pleasant façades at street level to stroll alongside and observe;
- Good conditions for the handicapped;
- Clear structure in the pedestrian system–easy to find your way around;
- Ability to promenade through the city;
- A pedestrian system that connects important destinations;
- Good walking rhythm with few interruptions;
- Few and short waiting times at intersections with traffic roads;
- Safe places and routes to walk around–both day and night;
- Good lighting; and
- Benches to rest on. (1994, p.2)

When walking through a city, many factors that affect walking speeds must be carefully considered: "the quality of the route, the surface, the strength of the crowd, and the age and mobility of the walker. The design of the space also plays a

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[16] Gehl argues that "a background noise level of 60 decibels (dB)" is the upper limit "if people are to carry a normal, varied conversation at an ordinary conversational distance" (2010b, p.167). This is the level found in many car-free city areas, with traffic areas often having noise levels of 72 to 75 dB, which make talking difficult. Within distances of up to 7 metres, "the ear is quite effective. It is possible to hold conversations with relatively little difficulty up to this distance" (2006a, p.64).

role. Pedestrians usually walk faster on streets that invite linear movement, while their pace falls while traversing squares…Weather is another factor" (Gehl, 2010b, p.120).[17] However, Gehl maintains that it is time spent in the street—not necessarily that there are more people in the street—that is important. Walking speeds are important because when people slow down there is "more life in the street" (personal communication, October 20-24, 2008).

A pedestrian's perceptions of the size and attractiveness of a place are of vital importance to their satisfaction with that space: "If the route is straight unprotected and dull it is experienced as very long, but if the route can be 'perceived in stages' it seems shorter". Walking distances are "an interplay between the length of the street and the quality of the route" (Gehl, 1987, p.139). Gehl elaborates: "a walking network with alternating street spaces and small squares often will have the psychological effect of making the walking distances seem shorter. The trip is subdivided naturally, in manageable stages. (1987, p.143). This psychological effect is based partly on the need that people have for new stimuli (approximately 1,000 new stimuli per hour) for their brains to remain alert (Gehl Architects, 2010a). In addition, people will pick the shortest and most direct route that they can see as a "natural response, often in an unfortunate and almost comic conflict with architects' rulers and the resulting right-angled urban projects" (Gehl, 2010b, p.127).

Central to the walkability of an area is the provision of space for pedestrians to walk. Gehl (1987), agreeing with Whyte (1980, 1988), establishes that 10 to 15 people per minute per metre (3 to 5 people per minute per foot) of footpath, in two-way pedestrian traffic, is the maximum pedestrian density. In addition, "there has to be room to walk without too many interruptions and obstacles" (Gehl, 2010b, p.123). These obstacles include objects placed in the footpath and also small interruptions, such as driveways and small side streets that cross the footpath and are lowered to the level of the street rather than raised to the level of the footpath (Gehl, 2010b). Gehl contends that in almost all situations, the footpath should be "led unbroken through entranceways and side streets as part of a general policy of inviting rather

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[17] Gehl found that pedestrian traffic in the main shopping street in Copenhagen was 35 percent faster in winter than in summer (Gehl, 2010b).

than discouraging pedestrian traffic" (2010b, p.124). Designers also need to be careful about introducing stairs because, although they provide places to sit, they can be an obstacle to pedestrian traffic, especially to those with restricted mobility.

Fundamental to inviting pedestrians into the city is avoiding unnecessary interruptions to crossing roads. Gehl asserts that in traffic planning, "crossing the street is not a basic human right but rather something pedestrians have to apply for by pushing a button at intersections" (2010b, p.124). From the London survey, Gehl and his associates determine that:

> …people move across streets whenever they see a pause in the traffic flow. This well-known phenomena is not a sign of well-behaved pedestrians versus less well-behaved pedestrians, but merely a sign of a traffic system not laid out to meet pedestrian requirements for short waiting periods at lights and direct crossings at level…Push buttons are part of a traffic culture where pedestrians are meant to apply for crossing streets and where overall emphasis is put on keeping vehicular traffic running. (Gehl Architects, 2004b, pp.38-39)

In many cities he surveyed, Gehl found that people spend a large amount of their total trip time waiting to cross roads.[18] Waiting at intersections exacerbates the natural 'clumping' of pedestrians when walking through a city, leaving the rest of the streets empty of people. This is a major source of frustration.

Along with high-quality walking environments, a city needs to invite people to stay. Gehl and Gemzøe emphasise that, "once we take the subject of creating good and worthy surroundings for foot traffic seriously, the next step is to ensure that people can sit down to rest and relax along the way. Benches and café chairs enter the picture…the social aspect comes into play" (2000, p.257). The amount of people spending time in the city is a vital sign concerning city quality. Gehl highlights that:

> If you see many people walking in the city, it is not necessarily a sign of good quality. If you see many people not walking in the city, it is surely a sign of good quality because they would not stop and sit and linger and enjoy if it wasn't worth being in that place. (personal communication, April 21, 2008)

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[18] Gehl found in the City of Sydney that pedestrians could easily spend half of their total walking time waiting for the green signal to cross (Gehl Architects, 2007; Gehl, 2010b), and that pedestrians in many cities waited for 15 percent or 25 percent of their walking time.

To invite pedestrians to linger, stop and stay in a place requires a high-quality environment (Gehl 1987) (discussed in the next section).

For a place to be walkable, it must contain an adequate and attractive public transportation system and bicycle system. Gehl sees the future of cities as moving away from automobile travel and more towards public transport (building on the work of Newman and Kenworthy, 1999). A good public transport system is vital to the success of a city. Gehl views an attractive public realm, an attractive walking environment and an attractive public transport system as intertwined aspects of a 'good' city (personal communication, April 21, 2008). Further, he contends "the good public realm and the good public transport system are brothers and sisters and you can never have a good public transportation if you're treated as shit the moment you leave the carriage" (personal communication, April 23, 2008). A "good public space and a good public transport system are simply two sides of the same coin" (Gehl, 2010b, p.7). Walking and bicycling are at the heart of the ten principles for sustainable transport provided in Table 5.3.

The link between a vibrant, sustainable and healthy public realm and cycling is particularly important. Gehl sees cycling as vital not only for improving people's health but also for increasing the amount of life in the public realm. He maintains that:

> Bicycling is not only transport, it is city life. It is just a little bit faster city life than walking…So we treat bicycles and pedestrians as one group. They cannot be mixed normally without some problems but if the city and the street is full of bicycles there's street life, there's life in the faces in the street. It is not a street full of cars. (personal communication, April 21, 2008)

In addition, "people on the sidewalks can easily see bicyclists as individuals, as people. So you cannot say that public life is only on sidewalks, I also think it's in the bike lanes" (Sierra Club, 2010, n.p.n.). Bicycle riders are part of the urban landscape, as opposed to motor vehicles, which move through (rather than in) the landscape.

Ten principles for sustainable transport
1. Walk the walk: Create great pedestrian environments.
2. Powered by people: Create a great environment for bicycles and other non-motorized vehicles.
3. Get on the bus: Provide great, cost-effective public transport.
4. Cruise control: Provide access for clean passenger vehicles at safe speeds and in significantly reduced numbers.
5. Deliver the goods: Service the city in the cleanest and safest manner.
6. Mix it up: Mix people and activities, buildings and spaces.
7. Fill it in: Build dense, people and transit oriented urban districts that are desirable.
8. Get real: Preserve and enhance the local, natural, cultural, social and historical assets.
9. Connect the blocks: Make walking trips more direct, interesting and productive with small-sized, permeable buildings and blocks.
10. Make it last: Build for the long-term. Sustainable cities bridge generations. They are memorable, malleable, built from high-quality materials, and well-maintained.

Table 5.3: Ten principles for sustainable transport. Source: Adapted from *Our Cities Ourselves,* Gehl Architects & Institute for Transportation and Development Policy (ITDP), 2010.

Central to the link between a sustainable public realm and cycling is the issue of space allocation. Cities have limited space. Gehl reveals that:

> Two sidewalks 3.5 meters (11.5 feet) wide, or a pedestrian street seven meters (23 feet) wide can handle 20,000 people per hour. Two bike paths two meters (six feet) wide are sufficient for 10,000 bikes per hour. A two-lane two-way street can take between 1,000 and 2,000 cars per hour (peak load). A typical bike path can thus transport five times as many people as a car lane. (2010b, p.105)

Thus, the issue is how to allocate space for movement and for storage, particularly for car parking space. Bicycles, in particular, are space-efficient, with "ten bicycles in one parking space"; "you can have five times more people going through one bicycle lane than any car lane" (Gehl, personal communication, April 21, 2008).

Gehl illustrates his philosophy on cycling through his discussions about Copenhagen and how the City has invited people to cycle as much as possible in the course of their everyday lives (see also Chapter 6). The Copenhagen experience reveals that "bicyclists live longer. Danes who bicycle to work every day reduce their risk [of disease] and they live seven years longer than the rest of us" (Gehl, personal communication, April 21, 2008). The 'Copenhagenizing' of cities claims that this new word has arisen because Copenhagen is the first city where road space has been taken away from motor vehicles to accommodate bicycles because of 'bicycle

congestion' (CNN & Quest, 2011). Copenhagen now has 36 percent of people going to work by bicycle compared to 27 percent by motor vehicle (see Chapter 6).

Gehl also emphasises the sustainability aspects of bicycling, maintaining that bicycling is particularly fuel-efficient, both compared to a car and compared to walking, emphasising that "in Copenhagen cycling saved 90 000 tonnes of CO_2" (personal communication, April 21, 2008).

The invitation to walk provided by city design that is most important—you must invite people to walk and cycle by providing appropriate urban spaces, infrastructure and furniture, rather than to force them by legislation, regulation or other means. Part of inviting is making it very easy and attractive to accomplish your daily needs by foot or bicycle and reducing conflicts between pedestrians and cyclists by providing adequate infrastructure for both with clearly defined space priority (Sierra Club, 2010). Gehl emphases that "you really must roll out the red carpet and show that people are just as important as vehicle traffic" (personal communication, April 21, 2008). This rule can be explained as follows:

> If the urban population is invited to use public space by walking or bicycling, the effects are highly positive…more bicycle lanes equal more bicyclists, a well-connected pedestrian network results in more pedestrians, a well-working public transport system results in more people using public transport–whereas more roads means more cars. It seems simple. (Gehl, 2009, n.p.n.)

Gehl urges urban planners and architects to "reinforce pedestrianism as an integrated city policy to develop lively, safe, sustainable and healthy cities" (2010b, p.6).

An integrated design approach: *Built environment*

The overall impression (based on visual and other sensory characteristics) is a very important aspect of the built environment which complements and enhances the walkability elements of urban design.[19] Advocating for a built environment scaled for

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[19] According to Gehl Architects: "The visual environment expresses the state of the area and is a communicator between the residents/businesses and the visitors: 'this is our community, welcome'. The vocabulary includes street furniture, planting, paving, ground floor frontages, lighting, art, water elements etc. but also a general treatment of the spaces, that is the layout for roadspace, footpath, crossings, spatial definitions, and scale…Express the identity of each space with different landscape

peoples' senses, Gehl discusses the need for human scale in the design of cities with fine proportions and small variations to enable rhythm. Through "a study of spatial proportions in old cities", patterns of human scale built environments emerge: street widths of 3, 5, 8 or 10 metres that "can easily handle pedestrian streams of between 2,400 and 7,800 people per hour" and squares approximately 40 by 80 metres square (Gehl, 2010b, p.163). Two to two and a half storey buildings "have considerably more street life and socializing per household than those with taller buildings" (2010b, p.68). In addition, Gehl determines that thriving commercial streets internationally have a façade length of five or six metres (16-20 feet), which corresponds to 15-20 shops or other eye-catching options per 100 metres (328 feet), enabling passer-bys to encounter something new approximately every few seconds (2010b, p.77).

Spaces must be appropriate for people—in size and structure. It is not about how much space you provide, but whether it is appropriate or desirable space. For years, according to Gehl, planners have been hovering over plans and reorganising 'cubicles'. The result is "funny left over" public spaces (Gehl, 2010a, n.p.n.). Gehl also advocates for small places, quoting architect Sven-Ingrar Andersson's[20] law that you always need a crowd: smaller places are better to concentrate people (personal communication, September 27, 2009). Large empty spaces cause people to feel that they are missing something more exciting elsewhere in the city (Gehl, 2010). In addition if events are dispersed then "individual activities almost never get a chance to grow together to larger, more meaningful and inspiring sequences of events. The process becomes negative: nothing happens because nothing happens" (1987, p.77). However, Gehl cautions, "life in the city is a relative concept. It is not the number of people that counts but the feeling that the place is populated and being used" (2010b, p.62, sidebar).

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elements and provide a richness in sensory experiences by including greenery, art, water features, lighting, heritage, etc. in the design. The quality of the visual environment has a great influence on the overall quality of the public realm" (2010a, p.64).

[20] Sven-Ingrar Andersson was Professor of Landscaping at the School of Architecture, Royal Danish Academy of Art from 1963 to 1994.

Importantly, "if people are tempted to remain in the public spaces for a long time, a few people and a few events can grow to a considerable activity level" (1987, p.81). Gehl and Gemzøe credit some of the success of Copenhagen's pedestrian network (see Chapter 6) with its compact mediaeval urban structure, which lends itself to an intimate scale with many doors and small buildings. They conclude that: "Copenhagen is blessed by a fine scale to which people can relate directly. Streets are narrow and squares relatively small, providing attractive relationships between building heights and ground floor areas. When space is limited, it brings everyone closer to each other and to building façades" (1996, p.32).

Gehl identifies that currently there are two scales of architecture predominate in many cities: 5 km/h architecture and 60 km/h architecture. Gehl argues that 5 km/h architecture is based on "a cornucopia of sensory impressions, spaces are small, buildings are close together and the combination of detail, faces and activities contributes to the rich and intense sensory experience" (2010b, p.44). With 60 km/h architecture, the scale has large spaces and wide roads. Buildings are seen at a distance, and only generalities are perceived. "Details and multifaceted sensory experiences disappear, and from the perspective of a pedestrian, all signs and other information are grotesquely magnified. Taking a walk in 60 km/h (37 mph) architecture is an impoverished sensory experience: uninteresting and tiring" (Gehl, 2010b, p.44).

Gehl concludes that, "if we make a people city it will have a human scale…with many details which will also be much more attractive than a 60-kilometre [large] scale" (personal communication, April 21, 2008). The importance of human scale is paramount—Gehl emphasises that if you have only enough "energy" to do one scale in the city properly (of city plan, site and human [or people] scales), it is imperative to do the "people scale" (2010a, n.p.n.).

Gehl identifies an interesting division between what is being built and the characteristics of the desirable parts of a city to be in and to spend time in. Architects need to design buildings with people and context in mind, rather than 'perfume bottles' standing alone in space. For him, what happens on the ground

floor is what really matters, not what is above. New towns get it wrong almost all the time—what Gehl calls the "The Brasilia Syndrome": city planning from the top down—planned from 5000 feet above. In these instances, plans are about architecture's aesthetics and compositions of buildings only, not about people (Gehl, personal communication, October 20-24, 2008). Gehl claims: "Many architects think that if the aesthetics are all right everybody will be happy. Not so at all. I know so many places where all the aesthetics are sort of all right and people hate to be there. I know places where people love to be and none of the aesthetics are looked after" (personal communication, April 21, 2008). Beginning with Modernism and the other movements popular in the first half of the twentieth century, architects started "building buildings without really building cities" (as cited by Jose, 2010). With new towns, there is very little you can do once the money is spent, the doors are placed and the buildings are built (Gehl as cited by Jose, 2010).

Gehl offers a 'third way' of designing new areas (as opposed to traditional 'top-down', single-building architecture or what could be seen as the 'formulistic' New Urbanist approach). This third way is designing areas by: firstly, looking at how people use spaces and what spaces they need; secondly, designing spaces to accommodate these uses; and finally, designing buildings to enclose these spaces paying particular attention to the design of the building where it meets the public space, "down where people are" (Gehl, personal communication, October 20-24, 2008). For Gehl, "the vision is very much that we should build much closer to the needs of man [*sic*.] and the abilities of man[*sic*.], [and that we build to] the design parameters which are built into our bodies" (Architekturclips, 2009).

An integrated design approach: *Centres, density, sense of place and appropriate mixed use*

Gehl's work and theories focus primarily on centres, particularly city and neighbourhood centres: largely a reflection of the dominant roles of centres. Generally, the primary public spaces within cities are located there. To promote diversity, accessibility, a lively and walkable pedestrian realm, and alternative forms of transportation, Gehl advocates for compact city centres. They would contain

appropriate (thoughtful) density, character, a diversity of land uses, both visual cohesiveness and complexity and high-quality public spaces that invite pedestrians to linger, stop and stay and a critical mass of people so that spaces are safe, interesting and viable.

Walkable centres need to have "compact, direct and logical routes, modest space dimensions, and clear hierarchy where decisions have been made about which spaces are the most important" (2010b, p.67). City centres should be approximately a kilometre square: "a walk of a kilometre or less will bring the pedestrians around to most of the functions in the city" (2010b, p.121). This calculation is based on walks of 500 metres being a reasonable 'ped-shed', although the walkable area depends on the quality of the centre, with people willing to walk further in places where the quality is good.

An important function of centres is their ability to attract people to 'stay' and spend time in them. A centre that encourages people and traffic to move through it quickly will feel considerably less lively than a centre that may have less people who move slowly and spend a significant amount of time in it. For Gehl, "slow traffic means a lively city"—"fast traffic results in lifeless cities" (2010b, p.71). To create an attractive centre requires places for people to stay and also encouraging slower modes of transport, such walking and cycling, or even slower moving cars.

Thoughtful density

Gehl's idea of *thoughtful* density of built form refers to a human scale built environment, with transparent ground floors of high-quality that relate to the street, an integration and variety of uses, with many small places, a diversity of rents, and a high-quality urban environment, where necessary, social and recreational activities can take place. Thoughtful density enables a city to create a critical mass of people and to concentrate activities, creating a lively and potentially safer city (Gehl, 2010b). This integration enables a critical mass of activities and is "a prerequisite for the integration of various types of people and activities" (Gehl, 1987, p.109), as mixes of land uses enable city life to continue during the day and night and create

more reasons for people to move through and spend time in an area (Gehl, 2010b; Jacobs, 1961).

Thoughtful density is the opposite of much of the built form we see today in many modern, western cities, which Gehl refers to as *senseless* density. Senseless density is where the built form and the land uses are out of scale with human senses. Gehl sees this type of density as lazy, calling towers the "lazy architect's solution" and calling on built environment professionals to design dense cities more in line with human needs (personal communication, October 20-24, 2008). There is a small contradiction here as Gehl admits that upper levels of buildings are not seen and do not impact on pedestrians other than by effecting the microclimate of a city centre. He also recognises the importance of density for liveliness in a city. He is mostly reacting to the Modernist tower block surrounded by unspecified space.

There are many examples of places that exhibit thoughtful density, with many older city areas built at a human scale density. For example, the city centres of Barcelona, Paris, Copenhagen and some of the older areas of US cities are all quite dense but relate to human scale. Referring to housing studies in Denmark, Gehl determines that two to two and a half storey buildings "have considerably more street life and socializing per household than those with taller buildings" (2010b, p.68). There are ways to soften very tall buildings, such as with step-backs, podium style buildings and platforms that allow human scale environments at the street with the tall portion of the building above but stepped back. This refers to the "Vancouver model" of podium-based buildings.[21]

To achieve appropriate density and human scale, cities need an integration of a variety of land use mixes, along with many small places and a diversity of rents. This integration enables a critical mass of activities. This advocacy for integration and mixing is the exact opposite of the monofunctional areas prescribed by Modernist planning and "is a prerequisite for the integration of various types of people and

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[21] For information on the Vancouver model see Boddy, T. (2004). New urbanism: "the Vancouver model". *Places*, 16(2), 14-21, amongst others. This podium style of building is very context specific and is the source of debate within planning. It is given here as one of many ways to soften the streetscape, rather than as a recommendation.

activities" (Gehl, 1987, p.109). In addition, many small places, enabled through a diversity of rents, add to the human scale of the environment, creating rhythm and interest to areas. Gehl notes that:

> …thriving commercial streets all over the world often have a façade length of five or six meters (16-20 feet), which corresponds to 15-20 shops or other eye-catching options per 100 meters (328 feet). At an ordinary walking speed…the façade rhythm on these streets means that there are new activities and sights to see about every five seconds. (2010b, p.77)

Gehl emphasises that a city's functions must be carefully located "to ensure shorter distances between them and a critical mass of people and events" and that a variety of functions need to be integrated into cities to "ensure versatility, wealth of experience, social sustainability and a feeling of security in individual city districts" (2010b, p.232).

An integrated design approach: *Public realm*

The quality of public spaces within the city is of vital importance to creating a vibrant and sustainable city. Careful consideration must be given to how buildings meet the street and other public spaces: ideally, cities need public spaces that have 'soft' active edges containing many details niches, a clear demarcation between public and private, active façades and appropriate 'furniture' (seating, lighting, amongst others) to encourage people to stay. Active façades refer to façades where the inside and the outside uses are "connected visually and thus can enrich and inspire each other" (Gehl, et al., 2004, p.4). Gehl maintains that people are predictable: if the quality is poor they go home, if the quality is good they come out, empahsing that no other element "has greater impact on the life and attractiveness of city space than active, open and lively" façades (2010b, p.88). Gehl credits Campo Sienna, Italy, as the best example of public space, fitting all of his public realm criteria.

People seek out places along the edge of spaces—a phenomenon described by Gehl as the 'edge effect'.[22] Therefore, places must have an edge in order to be attractive

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[22] The edge effect described here is different to the one used in ecology and refers specifically to a human trait of seeking out the edges of spaces. This enables people: to be out of the way of movement space; to be able to see what is happening in the space; and offers psychological support,

for people to stay. Gehl affirms that "life grows from the edge to the middle" (personal communication, October 20-24, 2008). Gehl, Kaefer and Reigstad (2004) discuss the importance of the edge as a place for walking by, for entering and exiting, for stopping, standing by, sitting next to, for providing protection from the weather, for comfort and psychological support and as a place to support activities. Along with traditional edges such as walls, other objects in the public realm can provide the 'friends'—the psychological and physical support—for staying. These 'friends' include objects that you can stand near, lean on or sit on, including primary and secondary seating options, sculptures, fountains, niches, bollards, columns and other urban furniture objects. The location of 'staying' activities is particularly related to the location of edge and transition zones (the entry and exit edges), with these spaces becoming the "natural place for the wide variety of potential activities that link the functions inside the buildings with street life in general…the more irregular the façade, the more it invites and supports activities" (Gehl, et al., 2004, pp.2-4). Gehl quotes Alexander, Ishikawa and Silverstein (1977): "if the edge fails, then the space never becomes lively"—"It can—almost—be said that simply" (2010b, p.88).

The visual qualities of streetscapes and edges are of vital importance in creating lively, interesting and safe environments. The inside and the outside uses are "connected visually and thus can enrich and inspire each other" (Gehl, et al., 2004, p.4). The ground floor façades have "a far greater emotional impact on us than our perceptions of the rest of the building or the street, which we sense from a much greater distance and with corresponding lower intensity" (Gehl, et al., 2004, p.5). No other element has "greater impact on the life and attractiveness of city space than active, open and lively" façades (2010b, p.88).

The level of interest in the façade affects walking speeds. Gehl and Associates' study of ground floor façades in Copenhagen found that pedestrian flow was slower in segments of the street with active façades (Gehl, et al., 2004; Gehl, Kaefer, et al.,

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primarily through enabling them to have their back covered so they cannot be surprised; and it offers physical support.

2006).[23] Further, "the rhythm of the opportunities offered is crucial to the richness of the pedestrian experience: the number of doors, windows, niches, columns, shop windows, display details, signs and decorations is significant" (Gehl, et al., 2004, p.4). In addition, façades with vertical articulation make walking distances seem shorter and more interesting (Gehl, 2010b). This is related to a pedestrian's perception of distance (Chapter 4).

The location and number of benches or other seating options require careful consideration. Importantly, through studies of benches in Copenhagen, Gehl determines that benches with a view of the most trafficked pedestrian routes are used most. Benches oriented toward the planted areas of the squares are used less frequently (Gehl, 1987, p.29). There is also a need to provide benches at regular intervals throughout the city for people to rest. Gehl (1987) recommends benches located approximately every 100 metres, emphasising that other activities will occur only if seating is present. Referring to Erskine's work, Gehl says that outdoor furniture must provide a 'talkscape': opportunities that support people meeting others (Gehl, 2010b). It can pave the way for other activities such as eating, reading, playing, people watching and socialising.

Successful public spaces reveal a clear demarcation between public and private spaces. Of great importance are transition zones between these spaces. On commercial streets, this demarcation can be achieved via changes in pavement, thresholds, niches, windows and doors and by placing goods and furniture on the street. In residential areas—gates, hedges, courtyard-style small gardens, level changes, vegetation, pavement materials, planting, personalisation opportunities, lighting, steps and porches—can achieve this sense of territoriality or demarcation. Spaces must also have partly public, partly private places—the niches or small holes in the city that provide a place for people to enter the public realm but also to retreat from the public if they wish. These places are important as exchange points

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[23] In a study of ground floor façades in Copenhagen in 2003, Gehl et al. found that pedestrian traffic is 13% slower in segments of the street with active façades (Gehl, Kaefer, et al., 2006, p.37). Areas with many doors, narrow units and vertical and transparent façades that create a 'soft' edge (all of which relate in scale to a person walking past them) are seven times more active than areas with passive or 'hard' edges (Gehl, et al., 2004, 2006).

between the public and the private realms (Gehl, 1987). These transition zones can make "a decisive contribution to vitalizing life in public space" if they provide both a 'soft' and a clear transition (Gehl, 2010b, p.103).

Related to thoughtful density is the need for cities that have public spaces free from fear: they must be safe, or perceived as safe, from crime, fear of crime and fear of traffic. Gehl emphasises the importance of safety through an 'eyes-on-the-street' perspective, through increasing the life on the street and being able to make eye contact with those around you, citing Jane Jacobs' (1961) work.[24] Gehl emphasises that what is fundamentally important is what mothers, children and older people think of a space—do they feel safe? If so, the place is free from fear. Low levels of these user groups indicate accessibility and safety issues within the area. This recognition of the importance of the perceptions of children and elderly of a place is related to the theory of the '8-80 test': If a child of eight and a person of 80 have a good time, it is a good place (Gehl, 2010a).[25]

A high-quality and safe public space must provide opportunities to 'play'. For Gehl, "children's play has always been an integral part of city life". However, under Modernist planning, based on the separation of uses, play has been regulated to specific zones (2010b, p.158). This issue is also about adult play and a sense of fun in public spaces, particularly for those with aging populations. Gehl argues that, "the opportunity for creative and cultural activities is also reinforced when the 'everyday city' is improved for human activity and staying". Therefore, a "good city policy should focus on improvements for the ordinary everyday city space, on integrating into everyday space some challenges and opportunities for children, older people…" (Gehl, 2010b, p.161).

Increasingly Gehl and Gehl Architects' work is focusing on the public realm of developing cities, which often have quite different issues from those of western

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[24] This approach is consistent with accepted practice in Crime Prevention though Environmental Design (CPTED) (see Chapter 3 and 4), which calls this approach 'casual surveillance' or 'natural surveillance' (Rau, 2004).

[25] Referring to the work of Canadian non-profit organization 8-80 Cities, led by Gil Peñalosa (Executive Director), the former Commissioner of Parks, Sports and Recreation in Bogotá, Colombia, and currently also a Senior Consultant for Gehl Architects. See http://www.8-80cities.org/.

cities. "Invitations to walk, bicycle and take part in city life should certainly comprise cities everywhere regardless of level of economic development". However, a number of conditions "underscore and reinforce the importance of working with the human dimension of urban planning in the rapidly growing cities in developing countries": poverty, rapid changes in mobility (particularly increased car and motorcycle use) and overcrowding. In many of these cities, while an "extensive and multifaceted outdoor life" still plays an important role, these conditions have had severe and negative impacts on the form and quality of the public space (2010b, pp.215-217). These negative impacts reinforce the need for well-functioning, respectful and dignified public spaces and public transport. Although many problems in these cities differ from those faced by modern western cities, the same patterns appear: the human dimension has been neglected; all people walk, have the same senses and the same basic movement and behaviour patterns.

An integrated design approach: *The natural environment*

The integration of natural environment into urban spaces is necessary for environmental, psychological, aesthetical and symbolic reasons. Part of Gehl's concern with reintegrating the natural environment into everyday lives is the reaction to the Modernist planned cities that have resulted in a divide between nature and people. Gehl contends that:

> If at any time planners had been asked to design cities that would make life difficult and discourage people from being outdoors, it could hardly have been done more effectively than was the case for all the cities developed in the 20th century on [a Modernist] ideological basis. (2010b, p.56)

Central to Gehl's ideas about densification is the creation of compact cities, or the 'compression of the built form' to free up land for the production of food and the protection of the surrounding natural environment. He argues that currently cities are using land aimlessly. To protect the natural environment cities must organise mobility in smarter ways and compress around transit lines (Gehl, personal communication, November 30, 2010).

Climate and provision of appropriate infrastructure to combat negative elements of the climate are key concerns, as Gehl emphasises that traditionally the built environment was designed "carefully adapted to local climate conditions, in order to reduce undesirable influences and exploit the desirable aspects of the local climate" (2010b, p.171).

5.5 Conclusions: Jan Gehl's theory

Using the eight fundamental concerns of urban design it has been demonstrated that Gehl's theory of urban design not only fits the eight categories by that his thoughts give them life and colour. Gehl's work resonates with a sense of responsibility and optimism. Architects and planners have a responsibility to create and enable sustainable lifestyles and this underlies each of Gehl's concerns outlined above. As Gehl says, "We as architects and urban planners, we have an enormous responsibility in shaping the cities so that people can have a lifestyle which is much more sustainable than the ones we have been used to" (Architekturclips, 2009). Importantly, he affirms: "I have never lost hope" (personal communication, November 29-30, 2010).

Gehl's theories are intrinsically about creating, planning and designing cities for people, for how they move and live. Although his design recommendations lean towards traditional styles of architecture, he is not advocating for neotraditionalism, or a return to a "nostalgic traditional idyll". Rather, his aim is to design contemporary cities that "invite pedestrian traffic and bicyclists for sustainability and health in society" and that "acknowledge the importance of city life as an attractive, informal and democratic meeting place for their residents in the 21st century". For him, "after almost 50 years of neglect of the human dimension, here at the beginning of the 21st century we have an urgent need and growing willingness to once again create cities for people" (Gehl, 2010b, p.29). Central to Gehl's theory is walkability in a city based on ideas of pedestrian-based transport planning and urban design. As a theorist, Gehl is explicitly humanist and pro-urban, always emphasising that we must design 'cities for people', rather than purely for vehicle movement or economics.

This Chapter has provided a brief overview of Gehl's professional history and an introduction to his urban theories. It has not offered a critique of his work; rather, it aimed at introducing his theories and ideas. An evaluation of his work is discussed in Chapter 7. The next Chapter discusses Gehl's practice, providing an overview of his methods and some of his public space surveys that provide the foundation and empirical basis for his theories.

CHAPTER 6: JAN GEHL'S URBAN DESIGN PRACTICE

Chapter 6: Jan Gehl's urban design practice

6.1 Introduction

Jan Gehl is widely acknowledged for his use of social science research methods that provide statistical analysis (the 'numbers'), while also explaining in detail how spaces are being used—and by whom. In his urban design practice, he is one of very few designers who relies heavily on empirical research. In many cases, research methods are developed, not by practitioners but by theorists and academics, who study the processes of observing people in space but do not make design recommendations because of their findings. Thus, Gehl stands out as one of the few examples of the practitioner-researcher.

Gehl's use and development of methods to study human-built environment interactions have been an integral part of his theory development. A core component of his research is a grouping of surveys collectively referred to as *Public Spaces Public Life* (PSPL) surveys. This Chapter discusses Gehl's practice (as conducted firstly at RDAFA and now at Gehl Architects). First, the Chapter introduces Gehl's PSPL surveys, followed by an overview of the PSPL surveys conducted in Copenhagen, Melbourne, New York and Perth, with the structure of the Perth survey presented in detail, providing a personal account of how these surveys are conducted based on active participatory observation (Chapter 1). This overview presents an illustration of the practice application of Gehl's theories. In addition, the Chapter discusses Gehl's *modus operandi* that has assisted the implementation of his PSPL surveys, including his language use, political, collaborative abilities and the impact of his profile. The next Chapter will offer an evaluation of Gehl's theory and practice.

6.2 Jan Gehl's methods

All components of the design of public places—the pavement, the materials used, the layout and the structure—are important aspects of public spaces. However, Gehl emphasises that often only these aspects are considered within city planning and design. Often designers ignore the actual use of a space or place. Gehl argues that,

"people have become invisible in planning" and asks, "who is looking after the human landscape" within the planning profession (2010a, n.p.n.)? He highlights that if we carefully study places where people spend time, where they walk, stop and linger, we can see a pattern of 'people qualities' emerge. The importance of these 'people qualities' in the success of a place cannot be overemphasised.

Gehl has established and developed a holistic method for appraising urban environments from the perspective of the user. His initial (and continuing) research has centred around three primary questions regarding how spaces are used:

1. What activities are occurring in the public realm?

2. Who is using the spaces and how?

3. How does the physical layout of buildings and public spaces influence activity patterns and the behaviour of the individual users? (Centre for Public Space Research, 2003, p.33).

At the heart of Gehl's method is continuous and systematic observation of how people use public space. In effect, the method revolves around examining existing issues, implementing improvements and then re-examining the area as an iterative process. The method always revolves around providing 'invitations to the city'.

The lack of knowledge on life in public spaces was the initial motivation for Gehl's PSPL surveys. His view was that most city authorities or governments do not regularly or systematically collect information about pedestrians or public life. Therefore, there is usually very little information available for planners about how people use a city's public spaces. Cities regularly collect information about motor vehicle traffic and parking patterns and therefore, traffic and parking are generally well represented in planning processes, enabling cities to adjust their infrastructure to accommodate traffic needs and justify expenditures on traffic and parking (Gehl Architects, 2004a). Gehl argues that, "when you have as much information about people as you have about other items in the city—sewers, electricity and cars—it is a very strong tool for city planning" (2010a, n.p.n.). Almost no city has a 'people' or 'public life' department or consistently studies how people use their spaces. In addition, most studies of people within cities focus on walking as a mode of transport and do not address how people relate to the public domain. Recently, he

argues, this approach is changing, with some cities developing 'public life' departments and policies. For example, the City of Copenhagen has a department for pedestrians and public life (Gehl, 2010a). Gehl is driven by the desire to see regular PSPL evaluations become a mainstream activity in cities.

Public Spaces Public Life research

Fundamental to Gehl's approach and research are his PSPL surveys. They are part data-logs about cities, part examinations, part commentaries on public life and part urban design recommendations. Gehl pioneered the PSPL method in Copenhagen in the 1960s (with his first major survey in 1968) and has since conducted these surveys in cities internationally. A full list of PSPL surveys is given in Table 5.1 Chapter 5). The PSPL surveys enable cities to collect data and information on public life, to see how people currently use city spaces, to track the results of design changes, to modify these as necessary, and to envisage solutions to enable better functioning of cities and spaces.

Gehl's PSPL method involves both qualitative and quantitative surveys of city centres primarily using observational techniques centred on quantitative pedestrian and activity counts (Appendix C presents a detailed explanation of the survey tools). The surveys are principally concerned with levels of activity in and use of the city centre spaces, the existing quality, rhythms and characteristics of the centre's public spaces. The PSPL surveys involve three parts:

1. **Public space analysis**: focus on the quality of the public space.
2. **Public life analysis**: focus on use of public space.
3. **Summary and recommendations** based on the analysis.

The surveys are focused on the walkability and urban design of the pedestrian realm and are adapted to fit the distinctive requirements, conditions and needs of individual cities. The surveys provide a 'big picture', a story, of how people are treated in the city, establishing an "objective base of knowledge on which it is possible to describe a present condition of the public space and...work out new solutions" (Gehl Architects, 2007, n.p.n.). From this base of knowledge, it is possible

to make holistic planning and transport decisions regarding public spaces, to implement and monitor changes and adapt responses as necessary.

Central to the implementation of Gehl's PSPL surveys is the collaborative nature of the surveys. For Gehl, establishing collaborations among organisations and breaking down institutional silos is very important. Firstly, it allows him to conduct the surveys holistically and secondly it helps with the implementation of any recommendations. The PSPL surveys always involve the clients, local government organisations, local businesses, educational institutions and a mix of practitioners, students and academics.[1] Gehl aims to empower people in individual cities to conduct their own surveys—imparting an in-depth understanding of the survey tools and interpretations. Additionally, he expects that local people can share their knowledge and understanding of the city with him and his survey team.

Gehl produces the PSPL reports in two different ways: either as an independent report or as a collaboration with the cities. Gehl explains the former method:

> …as we have done in Sydney and Perth and London…we write the report, we do the stuff, we do the study, and come forward with conclusions and recommendations and then the city writes a disclaimer saying these are the viewpoints [of Gehl Architects], 'we have hired a consultant who we have asked to tell his opinions which are not necessarily the opinions, the official stand, of the city council'. That gives me a freer hand and also they have a freer hand because they can say 'oh yeah, they are just these crazy guys, but anyway we paid then to be crazy because that could inspire us occasionally'. (personal communication, April 23, 2008)

In this way, Gehl Architects receive data and information from the city council but present the PSPL report as an independent report, with the recommendations developed by Gehl and Gehl Architects. The other way is as collaboration between Gehl, Gehl Architects and the city. The Melbourne PSPL 2004 survey is an example of that approach:

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[1] For example, the Perth PSPL study involved and required people from many organisations working together, including: the City of Perth; the Department of Planning and Infrastructure; Curtin University academics and students; Murdoch University students; the Urban Design Centre of Western Australia (and the University of Western Australia); the local police department; the East Perth Redevelopment Authority; LandCorp (a State Government land development organisation); the Western Australian Planning Commission; and Gehl Architects.

> …in Melbourne they insisted we do it together so there is City of Melbourne and myself on the front page….[This] means that before it is published it goes to council and they approve it, and then they say this is a plan of the future made by the two of us. And that can be done when you have [local support within the council]. (Gehl, personal communication, April 23, 2008)

Gehl does not stipulate which way he thinks is preferable, rather that it is important to work within the existing political and cultural norms.

An urban designer involved in Gehl's PSPL surveys expands on the collaborative nature of Gehl's surveys, stating:

> I hear people talking about how Jan Gehl has transformed Copenhagen and then gone on to do it in other cities in the world. My understanding is that's not at all what happened. I think if you ask Jan…he would say, 'Well, it wasn't me who transformed Copenhagen, I've simply commented on it really'…Likewise with Melbourne: Jan gave us some great techniques to quantify what we were doing and gave us a good shot in the arm to help persuade certain decision-makers and the general public. But he, with a few exceptions, did not come up with the ideas himself and he did not achieve them himself. (urban designer, male, 20090603MMA)

Gehl is able to combine sometimes two conflicting aspects of urban design practice—providing expertise and facilitating local solutions, to listen to the unfolding possibilities embedded in a place (Chapter 4; Jaworski, 1996). One aspect of his PSPL is providing vision and expertise based on world's best urban design practice, while facilitating local collaborations and providing the foundation for local solutions. This is the role of a leader outlined earlier. Part of this is an adaptive and reflective practice focused on learning and sharing knowledge (Slater & Narver, 1995).

Results of PSPL surveys

The PSPL surveys enable an understanding of how people are using a space and comparisons of city public spaces and levels of use (walkability) over space and time, allowing cities to monitor their changes, compare themselves to other cities and/or provide quantifiable results. The surveys allow quick and continuous examination of the use of cities, enabling implementation and testing of changes. An urban designer interviewed maintains:

[the method is] so useful to quantify the befores and afters…I thought if we had something like Jan's work then, we could say, 'Oh well, we have this amount of activity happening in the space already, our objectives are to have twice as much or one point five times as much or whatever'. And we can start to set ourselves some goals and see how well they are being done. (urban designer, male, 20090603MMA)

The designer continues, "before that we had some general ideas but [through the PSPL survey] we were able to see the patterns much more clearly" (urban designer, male, 20090603MMA). This idea is a common theme expressed by interviewees (see Appendix F): the PSPL surveys enable cities to 'actually see what is happening in the city so that there are no assumptions'. Further, the surveys enable the cities to see the real use as well as the gaps in use (20090213FP; 20090603MMA; 20090220FP), and allow for changes to be monitored and become visible. The surveys enable the implementation of simple, effective and logical changes which can be modified if needed.

One of the most important functions of the PSPL surveys is that they facilitate comparisons and benchmarking between cities. The benchmarking is particularly evident in a comparison of 'mainstreet' pedestrian numbers. The Perth survey showed that the City of Perth's main street, Murray Street Mall, carried 44,900 pedestrians between 10.00 and 18.00, compared to Melbourne Swanston Street's 42,490 (2004), Adelaide Rundle Mall's 59,230 (2002), London Regent Street's 43,550 (2002) and Copenhagen Strøget 56,400 (2005) (Gehl Architects, 2009). This comparison enables identification of commonalities and solutions amongst cities. Gehl confidently exclaims, "for every problem I have ever met in any city, I've seen it solved somewhere" (2010a, n.p.n.).

Gehl's PSPL surveys reveal that planning for pedestrians can influence levels of use, either increasing use (as in many of the cities) (Gehl and Gemzøe 1996; Gehl Architects 2002) or the opposite: to allow for the spreading out of use in areas of overcrowding (Gehl, 2010b). Gehl has demonstrated, particularly in Copenhagen and

Melbourne, that with each improvement to the pedestrian environment comes an increase in the level of activity (Gehl Architects, 2004a; Gehl & Gemzøe, 1996).[2]

The PSPL surveys also help to facilitate positive changes in cities and in planning and design policy. These changes have occurred in cities with governments and communities of all political persuasions and reflect what could be called a 'universality' of his approach. However, as discussed above, his approach does differ depending on the local political climate:

> In Copenhagen, they have done it utterly slowly, in Melbourne they have done it very fast…One couldn't say that one policy is better than the other. It is just that in certain cases this is what you can do and in other cases another thing would be smart. (personal communication, April 23, 2008)

There is, however, a limit to what a survey alone can achieve. As all researchers know, they place a high demand on human resources, which can result in errors and subjective judgements. A common concern that emerged through the interviews (see Appendix F) was that cities should conduct surveys on a more regular basis and at different times of the year. In addition, some components of the PSPL surveys depend on subjective judgement, opening them up to different results, observations, and other human errors such as miscounts. Researchers can overcome some of the subjective results and possible human errors by combining different surveys to provide a broader snapshot of city life (see discussion next chapter). Gehl Architects are very aware of this issue and have tried to address the shortcomings of their surveys. The surveys have been able to be reproduced by others outside of Gehl Architects and have been adaptable to varying scales and contexts, including non-western cities.

6.3 Examples of Public Spaces Public Life surveys

This section offers an overview of the findings of some of the PSPL surveys, discussing the PSPL surveys conducted by Gehl and Gehl Architects in Copenhagen,

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[2] It is in part because pedestrian surveys often show that improvements to the pedestrian environment result in increased levels of pedestrian activity why research such as this must acknowledge tones of physical determinist approaches (as discussed in the Introduction). The same can be said for the practice of Jan Gehl.

Melbourne, New York and Perth. Copenhagen is included because it was where Gehl began his research and it has now had fifty years of observation. Melbourne is included because it was a very collaborative process with the City government and has had a follow-up survey, illustrating the results of changes implemented based on the initial findings. The survey of New York is included as it is a pivotal moment in Gehl's career. Gehl argues that (referring to the immortal words of Frank Sinatra), 'if you can make it in New York, you can make it anywhere—in New York, New York'. He considers New York to be his last major survey before his retirement (although this does not yet seem to have been the case). These three cities have given "the most rewarding and interesting results" (personal communication, December 22, 2009). In addition, the Perth PSPL surveys (1994 and 2009) are also included with the 2009 survey presented in greater detail (including the organisation of the survey) to enable insight into how these surveys are conducted.

PSPL Copenhagen

First with RDAFA and then with associates at Gehl Architects, particularly Lars Gemzøe, Gehl has conducted numerous PSPL surveys within the City of Copenhagen: major surveys were conducted in 1968, 1986, 1995, and 2005, along with many smaller surveys.[3] The Danish capital is the only city in the world to have continuous documentation of public life for over fifty years. The pedestrianisation of the main shopping street (Strøget) in 1962 triggered Gehl's PSPL research. Gehl himself was not involved directly in the pedestrianisation, nor directly in the subsequent creation of the extensive pedestrian network within the city. Rather, his involvement has been in studying and documenting the incremental changes and the use of the areas (Makovsky, 2002). Gehl explains: I used that "first pedestrianised street in Copenhagen and the city itself as a laboratory for my research…As the pedestrianised street system expanded, we did more studies…" (Makovsky, 2002, p.1). However Gehl has always communicated his results very clearly to the City politicians and media, giving them a clear sense of policy direction and encouragement to keep going.

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[3] The results of the Copenhagen surveys are published in two major books: "Public Spaces-Public Life, Copenhagen 1996" (1996) and "New City Life" (2006).

The initial PSPL survey resulted in an ongoing cooperation between the City of Copenhagen and the University. The City government was encouraged in its people-oriented planning by the research from the University; whenever the City government implemented a change in the public space, as part of the University, he documented the changes to public life. Through this process, the University provided the ideology and documentation and the City government delivered the planning and 'laid the stones'. This collaboration enabled continuous testing and refinement of the City of Copenhagen's traffic-calming programme by an external reviewer.

Unlike many cities, the Copenhagen city centre was not reconfigured in the middle of the twentieth century to make room for cars. Instead, during the 1960s, the City of Copenhagen decided to implement strategies to improve the environment for bicyclists and pedestrians.[4] This decision did not happen easily. There were many demonstrations organised by civil societies including one that showed the path of a proposed freeway through the City and its lakes using large hot air balloons. The result was a public vote, resulting in the decision to stop the construction of a freeway. The City of Copenhagen then voted against it, causing the national government to withdraw all their transport funds. This meant that the City "could only afford to paint cycleways on to their roads" rather than rebuild their streets to accommodate motor vehicles (Newman, personal communication, July 20, 2011; Newman & Kenworthy, 1999).

On 17 November 1962, the City of Copenhagen converted Strøget, the traditional mainstreet that links important destinations within the city, into a pedestrian street. The conversion was highly debated, with critics asserting that Danes would never 'promenade' on the street or sit in the squares in Copenhagen's climate. The conversion, however, once implemented was popular with people and with shopkeepers. Thus, the City government has continuously and incrementally expanded the number of pedestrian streets ever since, resulting in a pedestrian network of over 100,000 metres square linking all major destinations through the

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[4] The central city of Copenhagen has predominantly retained its medieval structure and is about one square kilometre in size. The city has implemented strict building height controls within the centre, resulting in most of the buildings (even newer ones) being between four and six storeys high.

city core. Slowly and systematically, the City of Copenhagen has made it a little harder to travel by car and a little easier to travel by foot or bicycle (Gehl, 2010b). Surrounding and interweaving the pedestrian network through the city centre is a number of shared streets (discussed in Appendix B). These streets enable deliveries, bicycle access and some vehicle access. The City of Copenhagen has also created many public spaces and squares, many of which are converted surface parking lots, offering a wide variety of places to be in the public realm. The City of Copenhagen started building bicycle lanes in the 1970s and 1980s and introduced 'car-free Sundays'. In 1995, the City of Copenhagen established a free bicycle share programme called 'Bycyklen' (City of Copenhagen, 2009).

In conjunction with the other changes, the City of Copenhagen has a policy to reduce the number of surface car parking bays by 2 to 3 percent per year (Newman & Kenworthy, 1999). This slow conversion has enabled motor vehicle drivers to adjust to the changes and modify their travel habits accordingly. The inner city had 1,900 on-street parking spaces in 1995 and 1,520 in 2005, a 20 percent reduction over ten years. This reduction has occurred even though the car-ownership rates amongst inner city residents, between 1999 and 2004, increased by 11 percent.

The City of Copenhagen also implemented cycling infrastructure throughout the city metropolitan region. The number of cycle path kilometres throughout the city increased from 210 kilometres in 1960 to 356 kilometres of cycle tracks and lanes and 41 kilometres of green cycle lanes[5] in 2008. (This is the last cycle account available; City of Copenhagen, 2007, 2008a, 2010.) As of 2006, the City of Copenhagen was planning on adding 65 kilometres of cycle tracks and 71 kilometres of green cycle lanes. In addition, the City of Copenhagen increased the number of bicycle parking spaces; in 2008, there were 34,800 on-road surface bicycle parking spaces (of Copenhagen, 2007, 2008a, 2010). Recently, the City of Copenhagen has been implementing 'green-wave' cycle lanes, which enable cyclists to travel through congested roads without having to stop at traffic lights if they travel at the posted speed. The City of Copenhagen opened the first green-wave cycle lane on

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[5] Green cycle lanes are bike lanes separated were possible from the traffic and pedestrians that traverse green planted areas and parks. They are designed to provide comfortable 'green' lanes for cyclists travelling long distances and supplement—not supplant—existing on-road cycle lanes.

Nørrebrogade, one of the City's busiest streets, in 2008, timing 11 traffic lights for the speed of cyclists travelling 20 km/hr. In addition, many roadway intersections throughout the City of Copenhagen have been altered to make crossings safer for cyclists, with vehicle stop lines set back 5 metres behind the stop line for cyclists and with separate signals for cars and cyclists. At intersections with these separate signals, the go light for cyclists turns 4 to 12 seconds before the green light for cars (City of Copenhagen, 2009). These measures all create a safer cycling environment.[6]

The changes within Copenhagen have been gradual, allowing for continuous testing and time for adaption (both in use and in structural changes) and corrections. It was the incremental nature of Copenhagen's re-orientation towards people planning that enabled it to accomplish so many of the changes, allowing people to find other ways to travel through the city and discover new ways to spend time in the city. In addition, Gehl emphasises that the incremental changes also made it possible economically for the City of Copenhagen to implement so many of the changes because they are doing only a few a year.

All of these changes have altered the balance of travel modes within the city. From 1970 to 2007, the number of vehicles within the inner city dropped by 17 percent and the number of bicycles almost doubled. In 2003, the number of bicycles surpassed the number of motorized vehicles entering the inner city and in 2004, the number of cyclists travelling into the city during rush hour surpassed the number of cars. The travel to work mode split in 2005 was 36 percent cycling, 33 percent public transport, 27 percent car and five percent walking (City of Copenhagen, 2008b). The modal share for cycling increases to 55 percent cycling when counting only those that live within the municipal boundaries (City of Copenhagen, 2009). The cycling mode share equates to 1.2 million kilometres travelled by bicycle within the city every day, or 3 kilometres per inhabitant of the city per day of cycling.[7] Of the bicycle riders, 55 percent are female (Gehl Architects, 2010a), an indication of a safe cycling

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[6] Cycle lanes are painted blue and where they cross a road, cyclists have the right of way over motor vehicles. These and other elements of cycling culture in Copenhagen were subjects if educational campaigns within the City.
[7] For Denmark, the average is 1.6 kilometres per inhabitant per day. For comparison, the average in the Netherlands is 2.5 kilometres per inhabitant per day (City of Copenhagen, 2010).

environment. In addition, higher income residents are those that bicycle the most (Gehl, personal communication, April 21, 2008). The city's modal split goal is 50 percent cycling to work or education by 2015 (City of Copenhagen, 2008b, 2009, 2010).

As revealed by the PSPL surveys, the infrastructure changes within the City of Copenhagen resulted in a dramatic increase in walking and cycling, an increase in public life and a decrease in the number of cars and surface parking spaces within the inner city. The number of people present in the inner city on a Sunday (a day when most stores are not open) increased by 78 percent between the 1995 and 2005 surveys. The number of outdoor café seats increased by 47 percent between 1995 and 2005. Between 1962 and 2000, the number of pedestrian streets and squares grew from 15,800 square metres to 99,780 square metres, an increase of 532 percent (Gehl & Gemzøe, 2000). Every time the City of Copenhagen added 14 square metres of pedestrian space (about the size of a parking space), Gehl and Gemzøe calculate that another person "…turned up and set [themselves] down to enjoy what the city has to offer" (2000, p.58). With the increase of pedestrian space in the city, activities expanded to include more than simply necessary activities. The changes documented by Gehl and his colleagues through the PSPL method illustrate how small incremental changes can have a huge impact on a city's vibrancy and sustainability.

The City of Copenhagen is proud of its achievements, particularly its cycling modal split and cycling infrastructure achievements. A City of Copenhagen document poetically refers to cyclists as the city's "organic monument":[8] the City of Copenhagen does not have 'cyclists'; rather it has "people who happen to ride their bicycles" because it is easy and fast, not because it is a City of 'environmentalists' (City of Copenhagen, 2009, p.3). This document explains that the bicycle has become "the spiritual property of every citizen" and that "cycling in Copenhagen brings

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[8] The City of Copenhagen document explains it this way: "If it's monuments you're after in Copenhagen, don't look up. Look all around you, right there at street level. Our greatest monument is motion. It is a massive, constant, rhythmic and life-sized legacy. This never-ending flow of Copenhageners on bicycles is like a symphony of human power, and it's been forty years in the making…There are few places in the world where the morning rush hour is graced with such poetic motion" (City of Copenhagen, 2009, pp.2-3).

[citizens] closer to the life of the city and the people who inhabit it…fellow citizens are right there next to you, propelling themselves effortlessly through the urban landscape. We are one with our town on our bicycles" (City of Copenhagen, 2009, p.3). In addition, the City of Copenhagen views cycling infrastructure as a cost saving measure, reporting that it costs them approximately eight million Danish Kroner (DKK) to create one kilometre of cycle paths/tracks and DKK 500,000 to paint one kilometre of cycle lanes. By comparison, the City of Copenhagen determines that it would cost DKK one billion to implement one kilometre of metro (subway) transit line or DKK 70-100 million for one kilometre of 'wide motorway' (City of Copenhagen, 2010). As mention earlier, every kilometre conducted by bicycle in Copenhagen effectively gives the City of Copenhagen US25 cents, whereas every kilometre driven cost the City of Copenhagen US16 cents (American Society of Landscape Architects, 2011).

The City of Copenhagen is now focusing on the edges of the city. Since 1996, the year that Gehl and Gemzøe published *Public Spaces Public Life*, the City of Copenhagen has not made too many changes to the downtown area; rather, the focus is now on creating pedestrian and public space at the edges of the inner city and within the inner suburbs. This is based on the idea that every area and "neighbourhood should have good public spaces" not just the downtown (Makovsky, 2002, p.2).

PSPL surveys have now become part of the planning programme in the City of Copenhagen, with surveys automatically conducted every five years as part of their standard planning tools (Gehl, personal communication, December 22, 2009). Gehl considers the implementation of the PSPL surveys as a standard planning tool in Copenhagen to be one of his greatest achievements, viewing it not as though he and his firm are losing business, rather that they 'won'. He explains:

> The idea was all the time that all cities should do this without blinking. They should not have outside consultants to do it because they do the traffic thing themselves every year and they should be able to do the people thing just as automatically…That is winning—victory, victory, hooray! (personal communication, November 29-30, 2010)

The work of Gehl and others in Copenhagen has resulted in the City of Copenhagen's policy 'Metropolis for People: Visions and Goals for Urban Life in Copenhagen 2015' (2008c). It affirms the aim that Copenhagen become "the world's most liveable city: a sustainable city with urban space inviting people to a unique and varied urban life. We will become a metropolis for people" (2008c, p.2). The policy sets out the rationale and the need for increased public life within the city, how the City of Copenhagen will create better public spaces and how it will measure the changes in space and use.[9] This policy document has come about largely because of Gehl and his team's efforts. The PSPL surveys enabled policy officials, the City of Copenhagen employees and politicians to implement changes within the city, to test what works and doesn't work and to progress to a more sustainable vibrant city. The influence of Gehl's work within this policy is undeniable: he and his firm were the City of Copenhagen's primary consultants in this work.

PSPL Melbourne, 1994 and 2004

In 1992 Gehl was invited to speak at a 'City Challenge' conference in Perth (see Perth section). From this, in 1993-94, Gehl, along with the City of Melbourne, conducted a PSPL survey of Melbourne's city centre. A follow-up survey was conducted in 2004 enabling a decade of work to be evaluated. Beatley and Newman credit Gehl's PSPL surveys and the recommendations ensuing from them, as serving as an "important guide to actions needed. Every year the City implemented more of the plan, slowly converting each street to a more attractive environment" (2009, p.133). They argue that the 1993-94 study of pedestrian space and use patterns "set an important benchmark against which Melbourne's progress has been judged" (Beatley & Newman, 2009, p.136). The combination of the two surveys enables the City of Melbourne to measure and monitor the success or otherwise of changes and to

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[9] Some of the goals and corresponding initiatives laid out by the policy include: By 2015, 80 percent of Copenhageners will be satisfied with the opportunities they have for taking part in urban life; to increase the amount of pedestrian traffic by 20 percent by 2015 compared to today; to develop pocket parks and green links throughout the city; to include urban life in the thinking from the beginning of new built areas; that buildings include a mix of uses and must have active street frontages.

The policy envisions that by 2015, Copenhageners will spend 20 percent more time in urban space than they do today. See *Metropolis for People: Visions and Goals for Urban Life in Copenhagen 2015* (City of Copenhagen, 2008c) for more details.

claim on the basis of its clear success to be one of the world's most liveable and attractive cities (Adams, 2005).

Some of the major changes in the Melbourne city centre between the two surveys (1994 and 2004) include the following:

- A dramatic growth in the number of city centre residents—from 1008 in 1992 to approximately 9375 in 2002;

- An increase in pedestrian traffic: the number of pedestrians in the city centre in the evening has increased 100 percent, and daytime traffic has increased by 40 percent;

- The number of people spending time in the city has increased by 200 to 300 percent in various locations;

- An increase in public space by 71 percent via creation of new squares, promenades and parks;

- More places to sit and pause, with an increase of 275 percent in cafés and resturants, a threefold increase in café seats and an integrated street furniture collection; and

- Improved streets for public life, including the revitalization of a network of lanes and arcades (Gehl Architects, 2004a).

In addition, the City of Melbourne has taken a number of steps to restore and strengthen the city's traditional grid pattern, including activating mid-block alleys as pedestrian spaces. The City of Melbourne has placed a 40-metre height limit on its core, ensuring that the city's public spaces receive adequate sunlight and has established policies to encourage mixed use development, especially small business uses, outdoor cafés and restaurants, and to encourage buildings to appropriately and openly connect with public spaces. The City of Melbourne has actively encouraged residential development, including developing their own residential demonstration projects (Beatley & Newman, 2009, p.135), as well as implementing greening and public art strategies. The City of Melbourne also placed considerable emphasis on redesigning footpaths, including planting 500 street trees annually. Gehl Architects reported in 2010 that the results of the 2004 survey were "clear and concise": by following the 1994 report recommendations and introducing an active

design strategy Melbourne achieved "a rebirth of public life in the city" (Gehl Architects, 2011a)

The Melbourne example dramatically demonstrates the effects of the surveys and a city introducing a public space strategy. Beatley and Newman contend that Melbourne has emerged as "a remarkable case study in an emerging pedestrian city, having shown some dramatic, positive change in its pedestrian character and public sphere in the relatively short span of twenty years" (2009, p.134). The PSPL survey 'Places for People' (Gehl Architects, 2004a) is credited with increasing understanding within the City of Melbourne of the "importance of quality public open space designed and managed for people" and that "public life is essential to creating successful urban places" (urban designer, female, 20090527FM).

According to Rob Adams, one reason for the success of the Melbourne PSPL surveys was that the recommendations and goals of the surveys were approved by the City Council and integrated with their projects and strategic work, including with other initiatives to make the city more liveable (Adams, 2011). There has been, according to an urban designer interviewed, a "long-term, progressive and systematic process of implementing the recommendations at various levels and in a number of ways" from design projects to capital works projects (urban designer, female, 20090527FM). Gehl and the City of Melbourne worked together to complete the report. This partnership strengthened the institutional and implementation support, with the report incorporated into City of Melbourne planning documents. The City of Melbourne had ownership of the document and was accountable for its implementation, rather than it being a stand-alone consultant report.

In addition, the City of Melbourne has also had strong and consistent internal leadership championing the surveys and implementation of the recommendations, with the leadership of Rob Adams[10] (Beatley & Newman, 2009; City of Melbourne, 2010; Gehl, personal communication, April 23, 2008).

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[10] Professor Rob Adams was the City of Melbourne Project Director for the Melbourne 2004 survey and is the current Director of City Design at the City of Melbourne. He has been a Professorial Fellow at the University of Melbourne since 2004 and has received several awards for his leadership in urban design.

Not all places that have had a PSPL survey demonstrate such dramatic results. However, most illustrate an increased awareness about creating a friendly and inviting public realm. Melbourne has also been successful because of its focus on intimate spaces, on details and what people experience in the streets, rather than on "amazing architecture", or the Bilbao effect[11] (FORM, 2008). From all the public space changes Melbourne has become a 'brand'. It is consistently named in the top great cities of the world but not many people can say why it is famous (FORM, 2008). Now it is famous for the experience of place and celebration of urban culture. Gehl, in a StreetFilm in 2008, asserts that the "overriding lesson" from Melbourne is "that even if you are a city in the new world with wide streets, with a car culture, the whole thing geared for rushing from A to B, if you are willing to give people the space they need, give the bicycles the space they need, then you can have a complete change of behaviour" (Eckerson Jr, 2008).

The next step for Melbourne is to continue to improve the city, including increasing residential capacity (Adams, 2011). As the 2004 report points out, although Melbourne has improved dramatically in terms of street life, there is always more work to do (Gehl Architect, 2004a). An urban designer interviewed credits that: "Alongside Copenhagen, Melbourne is one of only a few cities in the world to now have a formal research programme for public life, not just recording the numbers of pedestrians but also the social activities that people engage in when not walking, such as standing and sitting…" (urban designer, female, 20090527FM).

Gehl Architects and the City of Melbourne completed a PSPL survey of the Melbourne Docklands in 2010 (Kirknæs, personal communication, January 25, 2011) and the Council is planning another city centre PSPL survey, tentatively scheduled for 2014, with intent to conduct them every ten years.

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[11] The 'Bilbao effect' refers to the impact that the Guggenheim Museum designed by architect Frank Gehry in Bilbao had to the City of Bilbao in Spain. This museum was designed to be a symbol of the city and has had a positive impact on city image and development (Smith & von Krogh Strand, 2010). See http://www.guggenheim-bilbao.es/ for more information. The Bilbao effect is a highly contentious issue and is currently much debated within the built environment research and practice. Supporters maintain that it is a positive way for a city to improve its image and receive publicity, whereas detractors maintain that it is a 'quick-fix' marketing solution and that cities need more comprehensive solutions. Often these types of buildings, art works that they may be, fail to take into account the context or public life of the city in which they are built.

PSPL New York, 2007

To assist the City of New York's aim to become a sustainable city and to accommodate an additional one million people by 2030, Gehl and Associates worked as advisors for two and a half years to the City and the Department of Transportation (NYDOT). In 2007, the City of New York and NYDOT, spearheaded by Commissioner Janette Sadik-Khan, hired Gehl Architects to conduct a PSPL survey in New York. The work informed the 'World Class Streets' report (2008) produced by NYDOT. The aim was "to improve conditions for pedestrians and promote a balance between modes of transportation including the implementation of several new public spaces and the completion of a comprehensive bicycle lane network" (Gehl Architects, 2011a).

The PSPL survey undertaken in New York differed from other PSPL surveys in that Gehl Architects also conducted surveys in areas outside of the city centre. Along with studying parts of Manhattan, they conducted surveys in parts of Brooklyn, the Bronx and Queens. In addition, as the City of New York and NYDOT wanted specific information about how to develop a cycle network and a bicycling culture within the city, extensive cycling surveys were included.[12] The products of the surveys conducted in New York were also different from other PSPL surveys, with the City of New York and NYDOT keeping the reports produced by Gehl Architects confidential and using the information to produce their own report, 'World Class Streets: Remaking New York City's Public Realm' (New York City Department of Transport, 2008). This process of Gehl and Gehl Architects providing the City of New York and NYDOT with indirect advice (as opposed to Gehl's normal process of publishing his surveys and recommendations and stimulating public debate) was adopted to enable them to navigate the political process and implement changes quickly (Gehl, personal communication, December 22, 2009). The first part of 'World Class Streets' lays out the policies and the second part provides Gehl Architect's surveys (New York City Department of Transport, 2008).

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[12] Bicycling surveys have increasingly become an important part of the work and research conducted at Gehl Architects, with the New York PSPL following this trend. During a similar timeframe Gehl Architects was also involved in a bicycle mobility plan for Mexico City (2008-2009) and consultants in the development of a bicycle parking manual (Celis & Bølling-Ladegaard, 2008) and as consultants on various cycling issues world-wide, recently in Chennai, India (Gehl Architects, 2011b).

As expected, the surveys found that New York has many pedestrians and that many of the footpaths were crowded with few places to sit and spend time. In addition, although New York has many public places, many were difficult to access and exhibited an unwelcoming environment (as measured through numbers of youth and older users). It was determined that people were primarily walking purely for transport—they were on the streets to move quickly from A to B—rather than to spend time in the public realm.

The results of the surveys gave the City of New York and NYDOT the data and information to identify where they could implement changes and also highlighted some possible quick solutions. As the surveys are an initial study, they provide a baseline to monitor the results of any changes to the public realm (rather than illustrating changes as the two previous examples of Copenhagen and Melbourne did).

Following the conclusion of the initial surveys, the City of New York and NYDOT have rapidly been implementing changes to the public realm and to the walking and cycling environment. The most visible changes include new plazas at Times Square, Herald Square, Union Square and Madison Square and, the most dramatic of all, the redevelopment of Broadway into a 'Boulevard'. In addition, the City and NYDOT have been rapidly building cycle paths throughout the city. Between June 2007 and November 2009, they added over 200 miles (321.8 kilometres) of cycle paths, including protected cycle lanes along Broadway and 8th and 9th Avenues. The NYDOT introduced a 'Summer Streets' programme, which closes a number of streets during Saturdays in summer, encouraging people to enjoy the streets, and implemented programmes such as dancing in the street and 'pop-up' swimming/wading pools (New York City Department of Transport, 2010b; Taddeo, 2010).[13] In addition, there have been numerous footpath extensions and many new seats throughout the city. Many of the changes involved quick and simple infrastructure changes, such as repainting road surfaces and separating car traffic and walking/staying spaces with bollards, planting boxes and fold-out chairs.

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[13] New York's Summer Streets is modelled after Bogotá, Colombia's 'Ciclovia' and Paris, France's 'Paris Plage'.

On May 23rd, 2009, Broadway was closed to through traffic at Times Square and Herald Square between 47th and 42nd Streets as an experiment. The trial closure was made permanent in February 2010 after follow-up surveys showed "an overall seven percent improvement in traffic flow" (Gehl Architects, 2011b, n.p.n.), with northbound taxi trips in West Midtown (as tracked by their GPS units) 17 percent faster after the Broadway shutdown (comparing Fall 2009 to Fall 2008) (New York Department of Transport, 2010a; City of New York, 2011). A survey of 600 residents by the Times Square Alliance (a local area business group) showed a 75 percent approval rate (Times Square Alliance, 2009; Humble, 2011). In addition, the closure has shown an economic benefit, with 71 percent of businesses in Times Square projecting revenue increases after the closure (City of New York, 2011; Taddeo, 2010).[14] These changes did not happen smoothly and created much controversy, however the City and NYDOT persevered and now the results are becoming evident.

The City is still surveying the changes; however, some early results are dramatic. The above squares now accomodate 100,000 pedestrians a day and have created 11 times more space for "people activities" within the city (Gehl, personal communication, December 22, 2009). Pedestrian injuries are also down in the project areas by 35 percent and 80 percent fewer pedestrians walk in the roadway in Times Square (City of New York, 2011; Taddeo, 2010).[15] Between June 2007 and November 2009, cycling to work doubled in New York, with commuter cycling increasing by 35 percent between 2007 and 2008 (New York City Department of Transport, 2010b).

NYDOT is continuing with their street reclamation plan. They have recently announced plans to introduce a pedestrian plaza at Union Square and to 34th Street between 5th and 6th Avenues in 2012 (New York City Department of Transport, 2010b). NYDOT is now advocating for 'pop-up' cafes in the curb lanes during the summer months, with a programme being piloted in lower Manhattan over the New

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[14] The closure of Broadway was also chosen as one of nine projects in 2010 to illustrate the principles behind the Philips Livable Cities Award, which looks for "individuals and community or non-governmental organizations and businesses with ideas for 'simple solutions' that will improve people's health and well-being in a city" (Koninklijke Philips Electronics N.V., 2004-2010, n.p.n.).

[15] These safety statistics are calculated from June to November 2009 compared to the averages for the same months from the three previous years.

York summer of 2010 (New York City Department of Transport, 2010b). NYDOT has also recently put out a call for 'Expressions of Interest' to implement a bicycle share scheme in New York (New York City Department of Transport, 2010b) and are starting work on a bus rapid transit corridor along 34th Street to be opened in 2012 (Taddeo, 2010). In addition, they are planning on developing an 1800-mile (2896-kilometre) bicycle network and implementing car tolls to detour driving.

The New York PSPL surveys and his role as an adviser to NYDOT have special significance to Gehl, who reflects "…I thought that when we had finished New York—and New York is about the hardest potato—it is the most difficult—I would be able to retire" (personal communication, April 23, 2008). Amanda Burden, the City of New York Planning Commissioner, relates during a public lecture in New York, "We used to say we plan at the scale of Robert Moses, but we judge ourselves by the standard of Jane Jacobs. That's not really true anymore. We judge ourselves now by Jan Gehl's standards" (Public Lecture by Burden as reported by Jose, 2010).

As the changes in New York are rapid and continuing, this discussion has aimed to present an overview of projects and changes until the beginning of 2011. The changes within the city demonstrate how quick and inexpensive changes can be made to improve the walkability and public realm. A magazine article on these changes maintains that the projects have, under the direction of Commissioner Janette Sadik-Khan, "…plucked the city from under the chassis of the automobile and distributed it, Robin Hood—like, to runners and cyclists and mothers with strollers and large men with small dogs" (Taddeo, 2010, n.p.n.). The Commissioner explains these changes: "until a few years ago, our streets [in New York] looked the same as they did fifty years ago. That's not good business…We're updating our streets to reflect the way people live now. And we're designing a city for people, not a city for vehicles" (Taddeo, 2010, n.p.n.).

PSPL Perth 1993-1994 and 2008-2009

We now turn to the PSPL surveys of Perth. I have included them for several reasons:

- The city is one of a few which have had follow-up surveys,

- The surveys have had a significant impact on local professionals, with many firms and organisations carrying out smaller versions of Gehl's PSPL surveys in various locations around Perth;[16]

- The 2008-9 PSPL survey provided me with the opportunity to be an active participate and observer in the planning and implementation of a PSPL survey; and

- The surveys highlight a different response, when compared to the City of Melbourne, within a similar political and planning context.

Gehl and Gehl Architects have conducted three PSPL surveys in Perth: in 1993-4, a very limited survey in 2004 and a follow-up survey in 2008-9. The 2008-9 survey will be discussed in greater structural detail than the previous PSPL surveys.

Introduction to the City of Perth

Discussions about cities often focus on what they should be, what they have been and their problems, not on what they currently are and how they currently operate. PSPL surveys offer an opportunity to view a city for what it is—to examine its everyday life and to focus on the present, not on the future or the past, but on what is actually happening. It is easy to walk through many parts of Perth (and many other 'modern' cities) and ask yourself, as Krieger does:

> What is it precisely about contemporary urbanity that seems so much less satisfying than the urbanity of [Piazzetta in Venice-reference to any 'great city']? Is it bigness, not of the entire city but of its individual elements? Is it the bifurcation of functions, a lack of overlapping textures and details, the compartmentalization of activities, the intrusions of the automobile? Is it too much newness or the 'lack of human scale'? (Krieger, 2009a, p.xi)

Using Rem Koolhaas' description as inspiration, I address the questions 1. what is Perth today in 2011 and 2. what is the everyday in the city (Robbins & El-Khoury, 2004)? The following are suggested elements of the City of Perth:

- It has a female Lord Mayor;

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[16] Some of these smaller surveys include a survey of Midland city centre (Roberts Day, 2010) which builds on a 2006 survey by the Midland Redevelopment Authority, amongst others. These surveys have also inspired university research including surveys of inclusion in Forrest Place and Midland Square (Del Casale, 2008) and pedestrian amenities in the Fremantle city centre (Matan, 2007).

- It is home to many major corporations, franchises and companies that can be found anywhere and are increasingly about mining and energy;

- It has the prerequisite city centre functions: a museum, a cultural district, an area of high-rise buildings, an area of open space, a shopping area;

- It is a highly segregated city in terms of functions, with almost no overlap between functions (this is changing but the change is a slow process);

- It has a history that you glimpse in flashes—you must search for it—but it can be revealed and is obvious once spotted;

- It has elements of intensity and vibrancy;

- It has vast open spaces—parks and open spaces of 'nothingness', vast surface-level car parks, transportation infrastructure, construction sites, and blank walls;

- It is disjointed. Areas are not coherently connected. Movement from one section to the other is restricted, particularly by transport infrastructure but impeded also by distance, boredom and by confusion;

- Its downtown landscape is dominated by blankness intermixed with a few elements of surprise offering delight and interest;

- A river, a freeway and a railway hug the city centre tight;

- The city has much natural beauty, many large parks, and a beautiful river foreshore;

- The city is multileveled, with a network of tunnels and overpasses for pedestrians concentrated in the centre. Generally the landscape is flat;

- It has moments of urbanism and a strongly developing art scene, expressed in glimpses down laneways, in forgotten spaces and in the occasional 'lost' shop; and

- The city has many existing and ongoing debates, particularly regarding redevelopment of the foreshore and over the railway line but also regarding shopping hours, liquor-licencing laws, the night economy and the development of small bars, along with cultural debates about how to retain skilled workers, creative industries and young adults.

The City of Perth is located on the Western Australian coast. It is the capital city for the State of Western Australia and had a population of 17,955 in 2010 (ABS estimate; population at the last census in 2006 was 12,549). It is part of a larger metropolitan region of approximately 1.8 million people (Australian Bureau of Statistics, 2010) and contains the primary concentration of employment, government and civic services for a region the size of Western Europe. The City of Perth is experiencing high levels of population growth, growing from a very small residential base.[17]

PSPL Perth 1993-1994 and 2004 surveys

In 1978, Jan Gehl wrote a book in Melbourne called *Interface*, about "how people use streets and the interface between the public and private domain" (Newman, personal communication, 21 April 2008). In 1992, he attended a conference in Perth called "City Challenges", which included the "best and brightest from around the world to see how we can improve Perth" (Newman, personal communication, April 21, 2008). From his participation in this conference, Gehl was invited by the City of Perth and the Government of Western Australia to conduct a PSPL survey of Perth. The 1993-1994 PSPL survey was the first non-Scandinavian survey of this type.

Gehl and colleagues conducted the first PSPL survey in Perth during a four-week period in January 1993. The primary surveys conducted were pedestrian counts, stationary activity counts, street frontages assessments, and test walks. The surveys determined that "waiting times in front of traffic lights will account for 35-40 percent of the total trip time" and that there was "no invitation for walking, and certainly no great invitation to walk for the pleasure of walking—to promenade through the city" (Gehl, 1994, p.9). Gehl and his researchers determined that, at the time, "the city heart of Perth is tiny...probably the smallest for a city of its size. It has the character of an over-sized department store" (Gehl, 1994, p.v). The survey revealed that the mall system used in Perth (and other Australian cities) was "conceived not as walking routes but as isolated pedestrian places in a car traffic dominated city centre". The

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[17] At the last census in 2006, it had the highest population growth of all Local governments in the Perth Metropolitan area (Dawkins & Matan, 2008a).

malls were essentially "conceived as concentrated shopping malls", rather than pedestrian networks, with the malls not really connecting important destinations (Gehl, 1994, p.9).

After the completion of the Perth survey, there was a change of State Government (who had been the major source of funding for the surveys), which caused the report to be 'shelved' until a Minister in the new Government discovered it and released it (Gehl, personal communication, May 26, 2009). In 2008, the City of Perth determined that the 1993-1994 survey had become an "influential tool in guiding decision making" (City of Perth, 2008b, p.44).

Gehl and a colleague from Gehl Architects conducted a follow-up survey on January 26th, 2004. It was a very limited survey consisting primarily of pedestrian activity counts within the core central area. The survey aimed at leading to a more extensive survey, which (for political and other reasons) the City and State Governments did not undertake at the time. The 2004 study allows some comparison with 1993 data; however, the 2004 study was very limited and the timing was deemed unsuitable for any real comparison, partly because the surveys were conducted on the day after Australia Day—the 'hung-over' effect (Gehl, personal communication, May 26, 2009).

PSPL Perth 2008-2009 survey

In April 2008, the City of Perth (the City or CoP) and the State Department for Planning and Infrastructure (DPI)[18] began negotiations with Gehl Architects to conduct a follow-up PSPL survey. On 22nd April, 2008, Gehl presented an overview of the proposed study to an informal meeting of the Elected Members of the CoP and representatives from DPI and Curtin University Sustainable Policy (CUSP) Institute. He argued that one of the most important reasons for the survey was the documentation of the progress made by a city. This aspect, he claimed, was very important for city pride, but more importantly for political leadership, as it allows for

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[18] The Department for Planning and Infrastructure became three different agencies on 1 July 2009, becoming the Department of Transport, the Department of Planning and the Department of Regional Development and Lands. References before July 2009 will be referred to in the dissertation as DPI. Any reference after this date will be attributed to the individual department.

future changes (Gehl, personal communication, April 22, 2008). The meeting ended with the Elected Members determining that there was merit in a study, and on 21 May, 2008, the Central Perth Planning Committee endorsed plans for undertaking the survey. The City, DPI and Gehl Architects then agreed on a contract in September 2008. The study was to be jointly funded by the City and DPI and the fieldwork undertaken by students and professionals enrolled in a Curtin University 'Sustainability Practicum' to be run by CUSP (I was to coordinate this fieldwork).

The objectives of the survey were to:

a) To provide an overview on the Perth city centre, foreshore and Northbridge from the perspective of people and public life based on proven research methods;

b) To compare the observations, findings and recommendations of 'Public Spaces and Public Life in Perth' (1994) to Perth in 2008;

c) To provide an external perspective on how Perth compares to other national and international cities on public space and public life;

d) To assist the City of Perth in the strategic planning of the city and identify future priorities to improve the experience of visiting, working and living in the city; and

e) To provide a platform for advocacy at all levels of government as to the importance of public space and public life to the city's economic, social and environmental well-being (City of Perth, 2008b, p.42).

The initial funding for the project was 142,000 Euros (approximately $AUD250,000 in 2008 dollars), with DPI contributing $AUD100, 000 and the City contributing $AUD150,000.[19]

The Gehl Architects team consisted of Jan Gehl, Project Manager and Anna Modin, Project Architect.[20] From the CoP, Peter Monks, Director Planning and Development,

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[19] For the City's share $AUD50,000 was allocated from "Community Amenities-Town Planning and Regional Development-Other Town Planning" and $AUD100,000 from "Transport-Traffic Control-Traffic Studies" with $AUD100,000 unbudgeted at the commencement of the project (City of Perth, 2008b, pp.43-44). This initial amount was revisited both before the commencement of the project and during the survey period, with budget allocations extended.

[20] Gehl and Modin were helped 'in-house' by Johanna Wittenmark and Louise Grassow, with student help from Elisabeth Hagströmer, Laurence Barnardo and Johanna Enhörning.

and Robert Farley, Coordinator City Projects, headed the project. From DPI, Chris Hair, Principal Urban Designer, Naomi Kavanagh and Matt Stack, both Senior Urban Designers, coordinated the project. From Curtin University, Peter Newman, Professor of Sustainability and Director CUSP, and myself[21] were the main points of contact.

Many discussions occurred about the study area and survey locations. CoP and DPI wanted a survey area larger than the one for the previous surveys with more survey locations. The argument for the larger survey area was largely to ensure data compatibility and comparability with studies in Melbourne and Sydney. The 1993-1994 study area was, therefore, extended to the north to include a TAFE (tertiary) education centre, to the west to include more of the foreshore along the Swan River, and to the east to include the East Perth Redevelopment area. These extensions resulted in the creation of two 'study' areas: the study area and the 'core' study area. The 'core' study area essentially aligned with the 1993 survey area, allowing for comparisons with that survey. Replicating the 1993 study area and locations as closely as possible was important to enable comparison and accurate representation of any changes in the Perth City Centre.

The Perth PSPL 2008-2009 surveys

By means of a workshop with participants the students and employees of CoP and DPI held at the Urban Design Centre of Western Australia (UDC),[22] the initial survey and data collection period was conducted between 20 and 25 October, 2008. The primary questions about the city's public spaces asked by this workshop were:

- What is offered?
- What is used/how?
- How can it be improved?

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[21] For the January 2009 surveys, the author also represented the City of Perth.
[22] The UDC is a non-profit organisation established in 2004 by DPI, Curtin University (then Curtin University of Technology) and the University of Western Australia. At the time of the survey, the UDC was located in central Perth (it is now based at the University of Western Australia in Crawley). See http://www.udcwa.org for more information.

- What are the changes/major achievements?[23]

In addition to the initial data collection phase, a Perth based team undertook a confirmation survey on Tuesday January 13th, 2009.[24] The follow-up surveys showed significant differences from the October surveys, with most areas showing a significant increase in pedestrian and staying numbers over the October 2008 numbers. Because of this difference in results and the fact that Gehl undertook the 1993 surveys in January, Gehl Architects and colleagues undertook an additional survey phase.[25]

Along with the pedestrian counts and the stationary activity counts, during the last part of the workshop week and the following week, participants examined many aspects of the quality of the city (Table 6.1). These surveys, combined with the use of the city (pedestrian counts and stationary activity counts) allowed for intimate examination of the central city.

The teams collected data for the Public Space Quality Analysis and illustrated their findings primarily through maps. They presented initial findings to Gehl, Modin, CoP and DPI representatives at the end of the first collection week. Gehl Architects collated and analysed these data along with additional data collected in the second week.

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[23] The workshops introduced and explained the theory and practice of the surveys and presented relevant Australian and international case studies. Participants were allocated into various survey teams, all of whom would focus on different PSPL aspects, although all would be involved in the pedestrian and activity counts. Tuesday 21st and Saturday 25th October, 2008, were major survey days with pedestrian counts and stationary activity surveys conducted from 8.00 to 24.00. Wednesday and Thursday started with lectures from Gehl, followed by afternoon field surveys. On Friday, teams conducted surveys in the morning, followed by groups presentations and discussion of preliminary findings with Gehl and Modin. Some additional surveys were conducted that next week; generally, that time was devoted to gathering City materials and examining issues in greater depth, with a final presentation on Friday 31st October 2008.
During the week there was one newspaper article.
[24] This survey consisted of pedestrian counts in six core areas from 12.00 to 16.00 to confirm the October surveys and to conduct new surveys in East Perth locations from 10.00 to 18.00.
[25] The additional surveys were conducted on Saturday 17th January 2009, from 10.00 to 18.00 (pedestrian counts and stationary activity counts) and Tuesday 20th January 2009, from 10.00 to 12.00 and from 16.00 to 20.00 at the six core locations. These were primarily pedestrian counts with a few stationary activity counts. Surveys were also conducted in East Perth at the same time.

Perth Public Spaces Public Life survey tools	
Public Life Surveys:	
	Pedestrian activity (flow) counts
	Stationary activity surveys
	8.00 to 24.00
Public Space Quality Analysis:	
Pedestrian analysis	Pedestrian routes, test walks, streetscape analysis, footpath interruptions, pavement assessments.
Stationary assessments	Square and parks, street furniture, quality of public spaces, outdoor cafes, events and streetscape elements.
Who is using the city?	Age and gender surveys, functions (land use), neighbourhood identity, students, residents, places for children, places for youth, accessibility
Visual quality of the city	Active street frontages, views, topography, commercial impact, landmarks, public art, heritage.
Safety and comfort	Safety, evening street frontages, lighting, greenspaces and parks safety, climate, noise.
Traffic, public transport and bicycling	Cycle access, public transport network, traffic, [parking, transportation mode splits, conflicts].

Table 6.1: Perth 2008 and 2009 Public Spaces Public Life survey tools. Source: Gehl Architects, personal communication, October 20-24, 2008.

Results of the PSPL Perth surveys

Before the commencement of the 2008-2009 study, employees from the CoP and DPI informally identified the following significant changes in Perth city centre from the 1993-1994 study:

- Development of a 'Public Places Enhancement Strategy' (a guiding document, a "Foreshore Action Plan" (1999), which provided guidance on how to attract activity to the foreshore (a major recommendation from the 1994 survey);

- A 'City Structure Plan' (current), which is an urban design framework concerned with movement and the built form;

- The document 'Changing the culture of movement' (2008), which laid out a movement system within the city consisting of pedestrian pockets, the conversion of many of the existing one-way streets into two way streets,[26] a

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[26] The conversion of one-way streets into two-way streets started just before the initial surveys in 2008 with a segment of William St converted in July, 2008. The pedestrian movement patterns discovered here reflect this conversion.

recommendation for light rail, establishing a hierarchy of streets and a pedestrian priority zone within the centre.

In addition, they also identified that there were many community and personal safety issues, particularly at night (City of Perth, DPI, Curtin & Jan Gehl, personal communication, April 21, 2008). Furthermore, since the 1993-4 survey, there had been a large increase in the number of residents, workers and small businesses within the city.

The findings of the survey reflected many of the identified changes, and revealed the following changes from the 1993-4 survey to the 2008-9 survey:

- Improved conditions to walk and spend time in the city, resulting in 13 percent more daytime pedestrian traffic;

- 57 percent more stationary activities during the day, with 37 percent more in the evenings;

- 15 percent more bench seats;

- 190 percent more outdoor cafes and 74 percent more café seats (a sign of a vibrant city);

- 1576 more street trees; and

- 34 percent more people traveling to work by public transport than in 1993-4.

The surveys also highlighted areas that needed improvement and established a baseline figure against which changes could be measured. Amongst other issues, the Perth surveys highlighted the absence of people walking in the city at night and on weekends. The Saturday pedestrian count was only 62 percent of weekday pedestrian count and the night-time pedestrian numbers had only increased by 3 percent in the fifteen years between the surveys, even though the numbers of residents had increased. The surveys identified a need to invite more residents and students into the city through the provision of amenities to enable the creation of a '24-hour' city (Gehl Architects, 2009). In addition, the surveys highlighted that the Perth city centre still retained the *shopping centre* concept that it had in 1993 and that this needed to be replaced with a *people centre* concept. Although the City had done much to invite pedestrians and cyclists into the city through the provision of cycle lanes and widening of many footpaths, more still needed to be done,

particularly with the creation of complete pedestrian and bicycle networks that connect to the wider reagion.

Of particular concern, the sense of placelessness (discussed in Chapter 4) within the city centre was highlighted by the field surveys, with many of the functions, land uses and built form not seen by respondents as providing a 'sense of place'. Many of the existing functions and the corresponding built form could be anywhere and many of the unique aspects of Perth (topographical, environmental and architectural) were ignored, particularly the river, the foreshore and historic buildings within the city centre. In addition, the Modernist ideology and land use patterns of separation of uses were still prevalent, with what Gehl described as beer here, culture here, shopping here and government here (Gehl Architects, 2009). The report concluded that the existing land use divisions within the city had altered only slightly in the prevailing fifteen years.

Along with the recommendations, the report acknowledged that the city's streets generally perform well in terms of accessibility for people with mobility impairments. However, the city lacked appropriate spaces for children, youth and older people, particularly in regards to spaces for 'play' and in social places for older people.

Media coverage of the launch consisted of a *West Australian* article (Thomas, 2009), a *PerthNow* article (Cordingley, 2009), an article in *Architecture and Design* (Battenbough, 2009), an ABC Radio 28th May 2009 Interview (ABC Perth, 2009), a Stateline (ABC television) walk around Perth (Boteler, 2009), and *Tran Scan*, a Department of Planning and Main Roads Western Australia newsletter, included an article in their October 2009 issue (Department of Planning and Main Roads Western Australia, 2009) (Some of these are in Appendix E). The launch of the report itself was well advertised and well attended and was perhaps more important than the media coverage of the event.

After the Perth survey launch

On 10 June, 2009, the Central Perth Planning Committee (CPPC), a subcommittee of the West Australian Planning Commission (WAPC) principally concerned with the

central city area, endorsed the key recommendations of the Perth PSPL report. The Parliamentary response to the report when questioned regarding its implementation, was that "the job of implementing the report's recommendations" was an "ongoing one" that was the responsibility of the State Government, through DPI, and the City. The response acknowledged that, "The bulk of the implementation [would] take place as part of existing government programs" and that the PSPL report would have "ongoing influence" on major projects in the central city (Government of Western Australia & Legislative Council, 2009).[27] It was acknowledged, therefore that no budget would be "isolated…to the implementation." The full response is provided in Appendix G.

Within the Perth Metropolitan Area, local city councils are responsible for the provision of pedestrian amenities and infrastructure, such as footpaths and benches and the small-scale urban design. Because of this responsibility, local government attitudes, reflected in policies and strategies and plans, are important for the provision and quality of pedestrian infrastructure and urban design in the local municipalities. The City has developed an 'Urban Design Framework' (UDF) based heavily on the PSPL surveys (City of Perth, 2010). The UDF builds a link between the State Government's policies, the City's vision document, 'City of Perth 2029: We Hear You' (2008a), and Gehl Architects' 'Perth Public Spaces and Public Life 2009' (Gehl Architects, 2009). The UDF, as a planning and design tool, does not propose concrete solutions. Rather, it provides a physical interpretation of the CoP and its residents' visions and establishes coordination for the future physical changes and enables the Council to apply for State and Federal funding.

The UDF aims to create an integrated high-quality city environment within the Perth CBD. It establishes a framework for major projects, streetscape design, building design and transport, promoting the creation of a pedestrian-oriented city through widening footpaths, high-quality paving, and parks and gardens every 400 metres

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[27] Major projects that are influenced by the PSPL report within the city include the State Government's central city planning framework and waterfront project, the City's urban design framework, the hub project for the Perth city train station and Wellington Street bus station, and the Northbridge Link project and regeneration of the Perth cultural centre both being progressed by the East Perth Redevelopment Authority

and public spaces every 250 metres. The framework also aims at introducing more city life to the streets through the promotion of active façades, street vendors, buskers and *alfresco* dining. The framework aims at creating the Perth CBD as a destination, not a through point. It promotes the City's two-way street programme, reduced speed limits, limiting long-stay car parking, higher parking fees. All these initiatives aim to support the "people first, public transport second, and cars last" approach (City of Perth, 2010, p.44). Policies such as the UDF recognise the importance of a vibrant city centre to promote a compact city, attracting people to live and work in the city.

Reflections on the Perth PSPL 2008-2009 survey

The City of Perth PSPL survey differed in some significant ways from other PSPL surveys designed and managed by Gehl and his colleagues. Thus, it is somewhat difficult to compare its success with other completed PSPL workshops, such as the City of Melbourne and more recently those in the City of Sydney or Hobart (Gehl Architects, 2007, 2010a). Its distinguishing characteristics were the following:

- The workshop participants included students, professionals, volunteers, CoP and DPI employees, and visitors; and

- Organisers did not employ participant surveyors; rather, the surveys were designed as part of a learning–exchange process.

This workshop configuration led to increased involvement by Gehl, as he enthusiastically conveyed information to participants. In addition, participants became personally involved in the process and in the collection of data and information. For them, it was not 'just a job'; it was something they were interested in and serious about. There was a strong feeling of ownership over the project. On the other hand, the different interests in the project and use of volunteers rather than paid surveyors, increased the organisational complexity of the project. Students needed to experience as many areas of the project as possible to fulfil the academic requirements. Further, many of the participants worked full-time; thus, teams' data collection had to accommodate both survey requirements and student schedules.

The CoP and DPI employees needed to work within their availability and their organisations' pay structures (overtime and time in-lieu rules).

Gehl's enthusiasm was instrumental in bringing all the complexities and different interests together into a cohesive project. In the first place, he succeeded in emphasising the importance of the surveys and the need for the project. He garnered political support. He then encouraged participants' engagement and passion for the project and the surveys. (This is a necessary component of survey research to overcome some of the more tedious parts of the process, such as counting people for many hours.) His reinforcement and encouragement were imperative to the success of the project.

During the surveys and Gehl's first two visits, the City controlled media access to Gehl, preferring to restrict media exposure until the report launch. This control resulted in very few articles regarding the surveys or Gehl's impressions of the city and its changes. Therefore, there was a lack awareness about the project and public debate about future possibilities in Perth's city centre. The launch was well received and attended; however, not having the large media presence perhaps hindered the long-term impacts of the report.[28]

The City of Perth project highlighted the need for the city to concentrate on its public spaces and the level of walking and bicycling in the city. The surveys revealed that car traffic still dominated the city, although levels of public life had increased and many public spaces had been improved.

6.4 The style of Jan Gehl's practice

This description of Jan Gehl's practice is not complete and does not adequately describe the scope of his practice and practice style. This next section provides a description of some of his presentation tools, looking first at his presentation style,

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[28] During the City of Sydney (Gehl Architects, 2007) survey period, the author counted over fifty newspaper and magazine articles regarding the surveys and the public spaces and public life of Sydney. This media debate has continued with countless articles after the survey. Articles still appeared in the newspapers three years after the event, resulting in a widespread public debate. This provides an example of a different approach and perhaps a missed opportunity for the CoP as Gehl's ability to attract good media coverage is renowned (discussed in the next section).

then at his political approach and lastly at his profile, including the role of the media in his surveys.

Presentation

One of the features of the overwhelmingly positive responses to Gehl's PSPL surveys is his ability to present the ideas. Backed up by his research, Gehl is able to discuss planning, transport and design issues in an interesting, straightforward and often humorous way, enabling people from different disciplines to see the world with different lenses, to be able to envisage solutions for more liveable urban environments and to laugh instead of falling into pessimism (Denmark Ministry of Culture, 2009). Positivity and hopefulness are values fundamental to Gehl's philosophy.

Gehl has had a major impact on how professionals and city residents view cities and how they imagine what a city could be. An urban designer interviewed articulates:

> I think probably the biggest impact it has had is in the thinking itself because what Jan Gehl has done is that he has not just challenged the way that the authorities perceived the needs of the pedestrian space, he has actually written it down on paper and…it has got the greater task or the status of written word which…so effectively [the PSPL report] is a document that is slowly changing the perception and understanding and requirements and perhaps that's the step that needs to happen before any physical work can happen on the ground. (urban designer, female, 20093006FL)

This is a common idea expressed in the interviews (Appendix F).

Part of Gehl's ability to affect people's perception of pedestrians in the city is his ability to communicate to a wide audience through both his presentations and through the PSPL reports. Gehl uses a very straightforward language,[29] thus making both his reports and presentations accessible. In particular, the PSPL reports are highly visual, presenting before-and-after images, graphs and maps illustrating the information in a graphic form along with the text, offering easily understood and presented data and information, accessible to laypeople, urban designers and the media. Generally, he is invited to conduct his surveys only in contexts where

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[29] Often Gehl suggests he has to be simple because he is not speaking in his native language, however it is clearly a strategy for communication as well.

someone recognises the value of his work and would like assistance, guidance, data and support to implement people-first planning.

One of the attractions in Gehl's presentation style is that he takes on cultural norms about the power of the automobile and its lobbies. He frequently makes strong statements about the need to stop planning a city around cars. Often this is what people want to have said but are too timid to say it themselves. Thus Gehl demonstrates his leadership through this very direct, 'say it as it is' approach to presentation.

Leadership requires vision and consistency. This idea is reinforced by the interviews. A Melbourne urban designer maintains:

> Strong and consistent leadership, such as by Gehl and…Director Prof. Adams, is important for reinforcing a long-term strategic vision, to keep urban design programmes on track and plan for regular and consistent monitoring to determine the impacts of this programme. (urban designer, female, 20090527FM)

This is reinforced by another interview:

> [Leadership is] absolutely essential—100% necessary. With all these things, with all these types of reports, if you don't have the local champions to follow through then you get nowhere. And you need the champions at the political level and you need the champions at the administrative level. Melbourne certainly had both and Adelaide lacked both. (urban designer, male, 20090603MMA)

This type of leadership requires creative thinking, effective communication skills, continual learning, collaboration, imaginative responses and dialogue to enable possibilities to emerge (Chapter 4). Gehl's leadership skills, his creativity and his process, along with his communication skills and the hope he is able to provide are instrumental to his leadership style of influence.

Politics

Part of effective leadership, and the role of the urban designer as an advocate is political abilities (Chapter 4). Gehl sees politics as an integral part of his work, and attempts to quickly assess and negotiate the political climate of a city, and then works to use this climate to be able to implement walkability changes. Gehl explains:

> …when you are an informed visitor who has seen other places, many other places and have a big experience and come with sort of fresh eyes to a place then you at once

can apply all these experiences and all these other best practices and think hey, hey, hey, what are you up to? (personal communication, April 23, 2008)

He is also able, as a visiting practitioner, to express views that may be controversial for a city or city government employee to state, maintaining:

> …being from outside…you have a freedom to say things which a local would not dare but they also hire you to do it because I can't give a damn if I trample on all the feet here. If I think that there is some reason to criticise I can trample on all the feets and take my ticket and go on my way. 'Have fun'….So generally I can be much more outspoken in Sydney and Perth than I would be in Denmark. (Gehl, personal communication, April 23, 2008)

Gehl sums up this idea—"I have a return ticket" (Australian Broadcasting Corporation, 2010). Beatley and Newman reinforce this view of the outside opinion stating "Gehl was able to say many things about what needed to be done, things that were difficult politically for city staff to say but that nonetheless needed to be said…" (Beatley & Newman, 2009, pp.133-134). Gehl has developed an ability to sense the political climate and work within those confines, pushing boundaries but not going so far as to undermine his ideas. He could achieve political change through his leadership but he is also very aware of charm. This is a fine li ne and can only be achieved if there are locals who can support him and good data to show why and how to proceed.

The PSPL surveys enable a city to acknowledge and illustrate its achievements as well as their challenge. Within a meeting with the CoP, Gehl stated that one of the most important parts of the surveys was the documentation of the progress made by a city which is very important for pride, but "more importantly" for political leadership as "it allows future changes" (personal communication, April 22, 2009). This is important, as Gehl always highlights the political side of his work and is very aware of the importance of being able to navigate political climates, which are endemic within urban design processes (urban designer, female, 20093006FL).

Jan Gehl's profile

The international profile of Gehl has become extremely important to his influence, facilitating the amount and type of work he is able to do and in garnering attention for his theories. However, it also has another side, with people being able to

discount his findings because local professionals feel that the surveys and findings might be missing the local expertise needed adequately to address the issues and recommendations needed within the local culture. These two different implications of Gehl's international profile came up repeatedly in the interviews and in the media coverage surrounding his work (Appendix F).[30] Repeatedly, the idea that 'if the city did it alone, the project would not garner the level of interest or resources than if it did it with him' surfaced through the interviews. This was particularly evident for the implementation of findings from the PSPL surveys, with many feeling that the surveys themselves could be conducted by the local city employees or by other Gehl Architect employees, but that the implementation of projects needs the presence of Gehl himself (urban designer, male, 20090603MMA). The other side of this was that as an outsider from a different culture than that of the location of the surveys he might miss some of the local nuances. Acknowledging this, Gehl and his team work with local teams to discover and understand the local environment making sure that the key issues, challenges and responses are addressed.

The role of the media

The media are instrumental in the success or otherwise of Gehl's work and in garnering support for any recommendations. Gehl is able to be controversial and gentle with the media, rousing controversy but not making enemies. In addition, the visual communications of his surveys are able to be easily understood by those outside of the field and translate well in the media (Appendix F). The use of media was extraordinary during the Sydney PSPL surveys with a newspaper article almost daily regarding the survey (with more than one article on some days). A selection of media articles is given in Appendix E.

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[30] "Having said that, at the same time when he applies his thinking in other cities…people tend to say…'[my place] is not Copenhagen and Jan is not God'. People can discount things very easily because they don't see that the person who is doing the work has that local knowledge, which I think is totally irrelevant, but it is that same problem no matter where you go around the globe—unless it comes from that local experience people can use that against the author or against the thinker in not implementing it" (urban designer, female, 20093006FL).

6.5 Conclusions

This Chapter has explored some of the dimensions of Jan Gehl's urban design practice, with a comprehensive overview of the PSPL surveys in Melbourne, New York, Copenhagen and Perth. The case studies highlight Gehl's focus on the walkability of a city, as well as touching on the other important characteristics of his urban design practice which in all the case studies was successful (in their varying ways) in their outcomes. The next Chapter offers an assessment and some conclusions on Gehl's theory and methodologies.

SECTION 4: BRINGING IT ALL TOGETHER

How can we discover the kind of world we presuppose when proceeding as we do?
…The first step in our criticism of familiar concepts and procedures, the first step in our
criticism of 'facts' must be an attempt to break the circle.
(Feyerabend 1975, p 22, citied in Cuthbert 2007, p 178)

CHAPTER 7: URBAN DESIGN EVALUATION CRITERIA AND APPLICATION

TO JAN GEHL'S THEORY AND PRACTICE

Chapter 7: Urban design evaluation criteria and application to Jan Gehl's theory and practice

7.1 Introduction

The previous Chapters introduced urban design theory and practice, teased out some of the fundamental principles of urban design, and identified some of the major questions and weaknesses of the discipline. The following principles seen to be integral to urban design were identified:

- Vision;

- Integration (wholeness);

- Vibrancy;

- Robustness and efficiency;

- Richness (complexity) and variety;

- Personalisation;

- Visual order (unity);

- Enclosure;

- Accessibility;

- Permeability, legibility (cohesiveness) and appropriateness;

- Instrumentalism and sensitivity to existing context; and

- Safety.

The major concerns identified were the following:

- Walkability;

- Built environment;

- Centres;

- Density;

- Mixed and compatible uses;

- Public space and realm;

- Sense of place; and

- Natural environment.

Building on the analysis conducted in the previous Chapters, I have determined that above all, urban design is about creating cities (or improving existing ones) to be

vibrant and sustainable places that relate to people's use and needs in public spaces, especially those of pedestrians. Its core work is the creation of hopeful, resilient, walkable places that are able to adapt and respond to varying social, environmental and economic needs. This determination change the focus of much standardised urban design theory and practice, refocusing this work on people and the environment, rather than simply form or aesthetics, and in particular, highlights the centrality of walkability. This Chapter provides an evaluation framework to help enable this different approach to urban design.

Along with discussing urban design theory and practice, the previous Chapters introduced the work and practice of Jan Gehl, with the aim of providing an overview of his organic humanistic urban design theory and his practice aimed at creating more walkable cities. After introducing the set of evaluation criteria, this Chapter then applies this evaluation framework to Gehl's theory and practice as a case study to determine how it has influenced urban design theory and practice and how it could continue to contribute to a more sustainable, humanistic, responsive and effective field of urban design.

The Chapter concludes with a broader deliberation on how the evaluation criteria and on how the work of Jan Gehl and the findings from the previous Chapters on the general theory and practice discussion could coalesce to answer the questions guiding this thesis:

- How can urban design theory and practice be more responsive?
- What is the significance of Gehl's work to urban design theory and practice?

7.2 An urban design evaluation framework

The evaluation framework presented below responds to Jon Lang's (1994) call for a 'more encompassing approach' to urban design and the established principles and characteristics considered within urban design from a humanistic and sustainability perspective. It uses his perceptive work to address some of the shortcomings of the discipline, providing the necessary framework for evaluating urban design and from there evaluating the work of Jan Gehl.

I believe that an urban design evaluation framework should consist of five basic principles. It should:

1. Contribute positively to changing urban conditions;

2. Respond to present conditions from a sound knowledge base;

3. Recognise forces that influence and affect city design and its implementation and be able to inform, follow and challenge these forces;

4. Provide leadership and be able to work collaboratively; and

5. Consider established urban design concerns and principles.

Following Lang's lead, the framework developed will address some of the inherent weaknesses ameliorated within current urban design theory and practice and provide a way for urban design to become a more sustainable, humanistic, responsive and effective theory and practice. Each of these principles is described below.

Criterion 1: Contribute positively to changing urban conditions

To 'contribute positively to changing urban conditions' depends, firstly, on what is considered to be positive and secondly, the nature of the changing urban conditions. This criterion requires an understanding of changing social, cultural, environmental and economic conditions.

Being positive—leaving a positive legacy--implies that urban designers must conduct all theory and proceed from an ethical base that enables the city to be a better place socially, environmentally and economically. All theory and practice within urban design must consider economic viability, environmental improvement and social justice issues, particularly inclusive design. The criterion requires that all urban design projects must be seen as acts of will in creating positive changes for a positive future. This requires that urban design be seen as part of a product, as well as a process—it is part of other activities that progress, adapt and respond to changing conditions. However, as urban design is a design profession, this criterion requires that urban design responses directly address the design and condition of urban and built environments. The need to be positive reflects a value stance: the urban

designer's contribution must be seen as a deliberate statement firmly advocating for a better city.

Urban design, in both theory and practice, must respond to changing social values and the changing use of places, including changing transportation. As discussed throughout this dissertation, the use of cities is constantly in flux; thus, a major component of urban design practice is responding to these changing and evolving needs and enabling and enhancing, at least in the public realm, effective and community based creative responses.

This criterion also requires the designer to work within existing political, social and economic systems. This requirement means, particularly for those projects in the US and in Australia, that urban design has to work within capitalist frameworks. Therefore, all urban design projects, theory and acts must encourage economic growth and be marketable, helping to support a competitive milieu. This requires a recognition that the quality of urban places has become a prerequisite for the economic development of cities; and urban design is necessary for this.

Thus, the first criterion positions the urban designer as one who positively contributes to cities. The urban designer must do much more than analyse cities, describe problems and elucidate them. He or she must contribute to an improved environment, community and economy in cities. Urban designers must be change agents.

Criterion 2: Responding to present conditions from a sound knowledge base

This criterion is generated by the need to respond positively to changing urban conditions (Criterion 1) by requiring that urban designers, in their theory and practice, work from a strong experiential knowledge base. 'Responding to present conditions' requires, further, that urban design projects and theory recognise the urban, environmental and social histories of a place, as well as any existing problems. This criterion requires that projects and responses enhance the local sense of place and help to transform any 'placeless' landscapes into places that reflect the stories—and the needs, values, histories and future aspirations—of the

local residents, community members and business owners. This criterion means urban designers need to help to establish significant demonstration or iconic projects and, more importantly, to contribute positively to the creation of 'everyday' spaces and environments that are meaningful.

Addressing this criterion also requires that urban design projects, methods and solutions recognise the complexity of existing conditions. This criterion builds on Criterion 1 in establishing that projects and methods are part of a change process, as well as an end.

From all the literature review and analysis it became clear that the one process for change above all others that are required to be addressed is to create a more walkable city. This requires a positive, responsive approach as the automobile and its planning are so entrenched in most cities. The second part of this criterion is that urban design theory and practice must work from a sound knowledge base. This necessitates the use of experiential knowledge and design solutions that follow from a knowledge-based approach, requiring research and analysis methods that are able to discern local conditions, that are practical and that focus on human-environment interactions for a more walkable environment. This criterion makes it clear that there are no simple formulae that can be applied everywhere ('the one best way'). Rather, urban designers will need to grow the city organically from a knowledge of what exists and what people are communicating about their future. There are clearly no 'instant' solutions to urban design problems.

Criterion 3: Recognise forces that influence and affect city design and its implementation and be able to inform, follow and challenge these forces

Cities are not simply composed of people with wishes and desires for better public spaces. Cities are also made up of political forces that shape infrastructure and buildings. To 'recognise forces' requires the urban designer to extend the experiential knowledge base (required by Criterion 2). Rather, the designer must be politically astute, be aware of and responsive to local decision-making processes (political and economic systems, along with any established social/cultural protocols and norms that shape these processes). As well there is always the 'bottom line'

force, the financial considerations (including implementation, construction and maintenance). An urban designer must work within existing constraints and be able to 'challenge' them.

For any urban designer in the late twentieth century, this Criterion 3 requires recognition of (and commitment to combat) the force that the automobile exerts on the city.

Criterion 3 also requires recognition of the local political forces arising not simply from particular interests but also from the place's built and environmental contexts. This criterion requires a detailed consideration of topography, climate, geography, history (particularly any historical preservation requirements), existing built environment (especially existing public spaces—streets, plazas, parks, amongst others—and their conditions), existing transport infrastructure, any natural environment considerations and constraints (including the human need for natural environment within the built environment), amongst other local physical conditions. All of these requirements and processes shape the character of the city and are fundamental to enabling an urban designer to recognise the 'forces' and 'challenge' them.

Criterion 3 also requires recognition of local cultural norms, including built forms, material and style preferences, requirements for space, local travel modes and preferences, local behaviours and other cultural considerations. Thus an urban designer 'contributes positively' by understanding the city, recognising 'forces' and 'challenging' them.

Criterion 4: Provide leadership and be able to work collaboratively

This criterion challenges the urban designer to take a leadership role in contributing to positive changes and challenging the forces that shape a city. Criterion 4 builds on the previous three and illustrates the two-tiered nature of urban design work: 1. help create an improved city environment and 2. Work from a solid research base using proven mechanisms for design, communication and advocacy. This principle encourages and fosters ideas of sustainable leadership theory, particularly those of

Joseph Jaworski (established in Chapter 44A.2.1 and Table 4A.1), which is fundamentally different from the conventional view that generally emphasises positional power and accomplishment.

The principle of leadership within Criterion 4 is linked to influence, creativity and process. Following Criterion 4, urban design theory and practice (and therefore tis practitioners) must:

- Promote collaboration (work with other people, form partnerships, recognise synergies, and be able to recognise and facilitate the skills of others);
- Work from the notions of possibility and adaptability, rather than from resignation or despondency;
- Use scenarios (stories) to enable people to visualise and actualise new possibilities and futures;
- Be able to sense timing of the political and culture readiness and requirements; and
- Acknowledge that the future reality is already in the system and be able to facilitate the steps necessary to realise this future reality (Chapter 4).

Leadership provides a platform to listen to what wants to emerge in the world, an opening to create visions and stories that emerge from the collective will. In this understanding of leadership, it requires the courage to progress these visions, an understanding of incrementalism and it provides a domain to learn.

Fundamental to this criterion is the ability to be able to communicate complex issues in a shared language. A leader is always very clear about a way forward. Urban design needs its own professional language distinct from architecture and planning to be considered a discipline and to be able to express its unique concepts. However, to be effective and encourage collaboration, urban design language needs to be understood by everyone, rather than alienate, and it needs to be a tool for creating positive change, to enable an urban designer to challenge the forces that shape a city.

Thus, Criterion 4 requires the recognition of the organic nature of mental models of the city: it is open, dynamic, interconnected, and full of living qualities and

possibilities with relationships as an organising principle. Criterion 4 stands in direct opposition to a formulistic mental model (Jaworski, 1996). This organic mental model simply does not permit formulistic solutions: no formula can encompass a city's values.

This kind of leadership is the quality that enables an urban designer to fulfil the other criteria—it enables a positive, knowledge-based contribution that challenges the forces shaping a city.

Criterion 5: Consider established urban design concerns and principles

Criterion 5 requires the urban designer to take a step back from Criterion 4, which recommends a role for a somewhat 'crusading' urban designer. To meet Criterion 5 the urban designer must be respectful of lineages and traditions and work within the history and established disciplinary traditions of urban design. Therefore, Criterion 5 requires consideration of the established design principles and considerations of urban design practice. As discussed above in Chapter 4, these established considerations include:

- Walkability;
- Centres;
- Density;
- Mixed uses;
- Public space and realm;
- Sense of place;
- Built environment; and
- Natural environment.

To meet the requirements of Criterion 5, urban designers must address these concerns from a foundation built on the established urban design principles, as discussed in Chapter 3:

- Vision;
- Integration (wholeness);
- Vitality (vibrancy);
- Robustness and efficiency;

- Richness (complexity) and variety;

- Personalisation;

- Visual order (unity);

- Enclosure;

- Accessibility;

- Permeability, legibility (cohesiveness) and appropriateness;

- Incrementalism and sensitivity to existing context; and

- Safety.

Thus, responding to the requirements of Criterion 5, urban designers will not neglect these traditions but will build on them. They will show leadership and challenge the forces shaping a city by appealing to these deeper aspects of the common good that urban designers have struggled with for generations, while still working within established traditions.

7.3 Discussion regarding the evaluation framework

The urban design evaluation framework proposed above aims to provide a way for urban design to become more responsive to the evolving needs for a more sustainable city, to address some of the inherent weaknesses within current urban design theory and practice and to provide a way for urban design to escape some of the formulistic Modernist approaches. It enables us to review and assess the contributions of any urban designer or urban design practice, rather than the success or otherwise of projects, as is traditionally the case within urban design. The evaluation framework is primarily aimed at bringing the human element to the forefront within urban design practice and to enable urban designers to challenge those forces in a city that could dehumanise places. The framework also provides a way to assess urban design theory and practice, in this case that of Jan Gehl.

The next section of this Chapter applies the five criteria of this evaluation framework to Gehl's theory and practice. Following that is a summary and discussion of urban design theory and practice based on these criteria.

7.4 Assessment of Jan Gehl's theory and practice. Can his work contribute to a more humanistic, sustainable, responsive and effective field?

This section applies each of the five evaluation criteria to Gehl's theory and practice.

Criterion 1: Contribute positively to changing urban conditions

As established, this criterion must be conducted from an ethical base, considering social and environmental justice issues, changing social values and changing use of places and enhancing (at least in the public realm) the creative face of the city. This is the recognition that urban design is not only a product but it is also part of other acts that progress, adapt and respond to changing urban, social and environmental conditions. Being 'positive' means that an urban designer will go beyond analysing and understanding cities to being able to help show the way forward.

As a theorist, Gehl is explicitly humanist and pro-urban, always emphasising that we must design spaces for people, rather than purely for vehicle movement or economics. Gehl's approach highlights the power of urban design to make positive changes towards creating friendlier, more human-oriented sustainable cities. However, many other urban designers with the same value base have not made the positive contributions that Gehl has. This observation may reveal that his approach is different from theirs. Gehl's work provides a basis for understanding pedestrian behaviour and thus the evolving use of cities towards a more walkable city. He offers inspiration implementing and influencing changes within a city along these lines. However, to be able to make a positive contribution to the pedestrian environment and the quality of the pedestrian experience in cities, Gehl also understood that he had to challenge the established formulistic, motor vehicle and mobility-focused planning and the political environment in each city in which he worked (discussed further in Criterion 3). He did this by tapping into a larger collective movement of people eager to see a different form of urbanism.

Gehl does not try to accommodate automobiles in the ways that many other urban practitioners do. He unashamedly recommends incrementally taking away car parking, slowing down traffic, enhancing transit and bicycling and in the process

looking after pedestrians (as seen through the Copenhagen example) as part of a larger process of change within cities and society. This shift is illustrated in many of the cities where he has worked. To accomplish such ambitious goals, he needed the support of the public and politicians. He was fortunate in being part of a resurgent urbanism seeking leadership to support pedestrian rights and reduce automobile dependence (discussed further in Criterion 4). Gehl works from the basis that public life is having a resurgence and is needed in today's modern cities (See Table 1.1).

As established previously, Criterion 1 requires that urban design theories and practice work within existing political and economic systems; thus, all urban design projects, theory and practice must encourage economic growth and be marketable, helping to support a competitive milieu and the city's economic viability. Gehl's work concentrates on the 'softer' side of cities—on society, people as pedestrians and the micro-scale environment—and on the city centre, which he sees as 'the creative face' of the city. However, there is no question that he also brings the business community along with him. Many of his responses reflect his concern for marketability and increasing the profile of public spaces (discussed further below) as a way of attracting financial capital. Thus, his positive legacy is based on his ability to make available politically challenging but practical options for how to revive city centres—economically, socially and environmentally.

Gehl's work, both academically and as a practitioner, has continued to focus on the core premise of urban design: that it is a humanistic discipline. Gehl has worked from this core premise and has based his theory on a recognition of the resurgence of urbanism through sustainable transport modes. This is his 'positive contribution'.

Criterion 2: Respond to present conditions from a sound knowledge base

As established, within this criterion, urban design projects and theory must work from a recognition of the existing problems of each place, from recognition of the urban, environmental and social history of the city and be built on a sound and experiential knowledge foundation. This criterion requires localised responses that work to enhance and contribute positively to everyday spaces and to the local sense of place and identity. In addition, this criterion requires that urban designers collect

and understand information on the particular area they are studying, enabling perspective on the urban, environmental and social history of how the area has evolved and how people are using it today. This is the basis of Gehl's PSPL methodology.

The substantial amount of information and data collected by Gehl clearly demonstrates a sound knowledge base that can enable changes to the built environment. However, Gehl does not subscribe to the idea that changes in the built environment will necessarily leverage social transformation, i.e. physical determinism. Rather, he believes that that these changes are responding to a global and local human need identified through experiential knowledge and are part of a process of evolution within cities. He believes people want to meet together in a conductive environment and that walkability enables that to occur. In addition, public space changes can encourage and enable different forms of social use and behaviours that can be discovered by people or rejected. Collecting data and studying city life does not in itself imply support for the ideas of physical determinism. It is possible to collect material in a way that enables design to follow the needs of people, especially pedestrians, in the city—and then become the political ally of such ideas by highlighting imbalances within the system. As Gehl himself states, most of the actual physical changes that have occurred within the cities where he has worked were not implemented by him. Rather, he provided recommendations, vision, direction and, most importantly, the tools, the quantitative and qualitative information on the existing city life within the city and the theory to understand its implications. These contributions allowed urban designers, city planners, politicians and others to make the necessary changes to the physical environment to respond to the identified local human needs.

Possibly, Gehl's greatest role (and that of his colleagues at RDAFA and Gehl Architects) lies in the progression and substantiation of quantitative methods to study human interactions with the built environment and in enabling these people-focused studies to be politically recognised as a necessity in city design and planning (as in Copenhagen, New York and Melbourne). Gehl has developed these surveys, though they are also practiced by others in varying ways (Appendix C), into a

complete set of surveys that enable comparisons within and between cities over space and time. They are adaptable to different contexts and requirements but are recognisably comparable. They have thus enabled practitioners to be able to compare human use of the city in the planning and political decision-making process (see Criterion 2). They have enabled a social movement with political influence by providing supportive data for information not normally collected in a city, thus empowering local decision makers to enable their city to come to life.

From this knowledge base, Gehl progresses a 'people first, then space, then buildings' process, that demonstrates that it is not the aesthetics of a place that is important. Rather, it is that the built environment and form relates to people and is inclusive, adaptive, interesting, comfortable and supportive of a range of uses. Gehl's philosophy is simple, straightforward and commonsensical: find out what people like to do in public spaces and then make it possible for these uses to happen. It makes cities and urban design to be about people, breaking theory down to the core questions about why cities exist in the first place. It facilitates local context-specific solutions. Most of all it enables the pedestrian focus of a city to have a voice.

Gehl's theory is ultimately people-oriented, firmly grounded in his surveys. He demonstrates an experiential approach that is more organic, less academic and 'top-down' than most current urban design theories. It is clearly a product of its time and part of a larger collective movement towards sustainable urbanism (see Criterion 1). In addition, his theory is clearly grounded in practise-based application and experience, rather than more academic environment and behaviour studies. His approach has ultimately shown its endurance: his surveys have been adaptable, integrating new ideas on the use of cities, new survey techniques but underneath they are probing the same material—how do you make public spaces more pedestrian friendly? Gehl and others have used them in a wide variety of contexts to enable this knowledge base to be used as a responsive tool.

In order to respond to changing use of cities and ideas about cities and varying conditions, the suite of PSPL surveys has been kept simple, efficient and adaptable. A number of surveys has been deliberately adapted to be able to determine

characteristics about users of spaces and enable these characteristics to come to the forefront, particularly issues of gender, safety and spaces for youth. In addition, Gehl and others have used the group of surveys internationally, now using them in non-western localities and cities with very different cultural contexts: Brazil, China, India and Jordan. The expansion would indicate that they are not a deterministic 'one-size-fits-all' model and solution. They also indicate that his ideas are fundamentally about human needs which cross all cultures.

The methodologies used by Gehl have been generally well received by the cities they have surveyed, as seen through the interviews and the media coverage (Appendices E and F), enabling cities to be aware and to be able to plan for how people can use public spaces beyond vehicle movement. One primary response to the surveys is that they are "low-tech" and that any city of any wealth level can apply them.

The primary criticism of the PSPL surveys is that the primary product of the surveys within cities has been to have Gehl produce the report as a separate consultant report, rather than being integrated into the City's policy documents, which would necessitate targets and implementation strategies for the recommendations. This last criticism is very context-specific, however, as illustrated by the results of the Melbourne report, produced as a City of Melbourne document and integrated into the City's plans and policies and New York, where the report was internal and used as a basis for the City and NYDOT to produce their plan. The products (and ultimately the results) of the surveys are very much embedded in localised political systems; however, as a general observation when the report is integrated into the city's plans, Gehl finds that recommendations are more likely to be implemented. This is partly why implementation of the recommendations from the PSPL surveys in Melbourne and New York is so remarkable and why the implementation of the recommendations from the PSPL surveys in Perth (1994 and 2009), London (2004) and Adelaide (2002) was slower. While these reports challenged the *status quo* in transport planning and provided support and recommendations for localised plans and policies, the recommendations alone had no implementation power unless they were championed internally. This a localised response: the definitive phase is to deliver surveys, recommendations and subsequent reports that are integrated with

and into the city's plans. The recommendations and actions that become apparent from the PSPL surveys therefore would become a measureable obligation, akin to providing parking or rubbish collection. This integration will enable them to become endemic in everyday city decision-making—as is the case with traffic planning. This integration has happened in the Copenhagen and Melbourne examples, and is Gehl's ultimate aspiration.

In addition, for the PSPL surveys to become endemic in city planning they need to include calculations of economic benefit to urban areas. The surveys imply the economic benefit but it needs to become explicit in modern capitalist systems, with articulation of the economic benefit to centres of improving their walkability. The marketability of Gehl's theories and practice is there—as seen through Melbourne and New York (previous Chapter)—but actual financial values are rarely provided. Traffic engineering has been very successful at equating traffic time savings with economic value. Gehl's recommendations need to be adequately attributed to increasing economic value in cities. Improving public life does improve economic value but Gehl does not demonstrate this improved economic value within the analysis. Rather, it is implied. Surveys that produce quantifiable economic benefits based on a simple mathematical tool would enable direct obligations and targets of city planners to be written into mainstream plans and policies as effectively as traffic engineers have been able to (see Chapter 2).

Gehl's PSPL surveys provide an example of effective methodology to study human-built environment interactions, the importance of continuously documenting changes to enable future changes and evaluation and how caring for the needs of pedestrians can increase city safety, sustainability, vibrancy and life. However, although the approaches to the surveys differ with individual city requirements, many of the survey instruments are subjective and rely on surveyor judgements. The easiest way to improve this, by averaging more assessments, would require more resources however. These resources are more likely to be attained by urban design sections of government if a clear economic gain can be demonstrated from their results.

Many respondents in this study's interviews suggested that if these surveys were combined with additional surveys that use different tools, for instance Space Syntax techniques or economic assessments, it might provide a wider picture. In addition, conducting the surveys at different times of the year, in different conditions and perhaps rotating individual collection times at different locations to compensate for regular cycles, such as flows from transport stations, would also provide a more comprehensive view of the city. Gehl maintains that the surveys provide a little more than a 'snapshot' of an area in time; he did not design the surveys to be a statistical representation of city life. Rather, they aim to provide an impression of how people are using the city on a daily basis. However, it is the quantifiable nature of the surveys that gives them power for decision makers. A more statistically valid approach will be needed in future in order to generate reliable economic assessments.

There is a need to improve the statistical effectiveness of Gehl's survey techniques, and there is much literature on critical assessments of survey methods (see Bryman, 2008; Denzin, & Lincoln, 2003; Kithcin, & Tate, 2000; Sarantakos, 1998; amongst others). However, despite their inadequacies, they have been very widely accepted. Why is this? My assessment is that Gehl's approach is able to provide a quick 'quantifiable' impression of how the city is being used every day, giving sufficient experiential knowledge from which conclusions can be determined. This is a great deal more than has been available before and clearly they have been part of a package that overall is attractive and compelling. Thus, Gehl is able to deliver his findings and theories within the political arena with an approach and conviction that delivers results. Jan Gehl's contribution to urban design's 'sound knowledge base' is the PSPL survey but it is set within a context of powerful and relevant ideas that speak to a need within each city.

Criterion 3: Recognise forces that influence and affect city design and its implementation and be able to inform, follow and challenge these forces

Understanding the forces that influence and affect urban design implementation, particularly the political, physical and cultural elements of the place, is important for

being 'effective' in urban design. To challenge the forces that affect city design, urban designers must first understand them. This requires a comprehension of local decision-making processes (political and economic systems, along with any established social/cultural protocols), financial considerations, and understanding local physical conditions: both built and environmental.

Gehl's ability to 'challenge' the forces shaping each of the cities is one of his greatest successes. He pushes cities to change; he challenges them to tackle the dominance of automobile-based design and development. To do this, Gehl must be very aware of the political decision-making processes and the necessity to work within the local political systems if his ideas are to be heard. The surveys highlight the political nature of Gehl's work. A political ability is very important in enabling him to get the employment for a start and then garnering support and publicity for his theories and surveys. Gehl's data and theories have enabled the cities he assists to challenge the embedded cultural norms and the automobile-oriented lobbies that have neglected the value of people-oriented streets. He has had an important impact on the cities he has worked in, enabling them to implement effective policies and plans, through documenting public life and urban design changes in cities, giving cities the quantitative information they need to establish policies. His reports provide political support for the local actors who brought him to the city, providing the 'numbers', demonstrating responses and stories from around the world, all of which allow existing possibilities to surface. Further studies provide evaluations of success and failure of design changes to the public life in a city, enabling the city to celebrate their successes and adapt their urban policy for any negatives accordingly.

Gehl designs his comparative work to break taboos and demonstrate that pedestrian-oriented design can work. The strength of the surveys is enabling this knowledge of people's use of public space and planning for accessibility to come to the forefront, rather than simply automobile-based mobility planning that proceeds in a largely hidden way. The surveys give decision makers the tools needed to implement changes. This illustrates a recognition and ability to work within the existing political arenas and is the basis of his effectiveness.

In order to 'challenge forces' in a city, an urban designer must be able to garner local support. Facilitating local solutions is a large part of Gehl's work, partly a recognition that he is often a foreigner visiting a place, and therefore generally not the expert on the place nor responsible for the implementation of individual projects. Rather, his focus is articulating issues, enabling localised responses that are often already embedded in the conscious life of a place to emerge (discussed further in the next criterion). Gehl is very aware of the need for local champions in the civil society and the local governments where he works as these people are the basis of delivering the necessary outcomes, and were often the reason he was invited to the city.

A part of the success of Gehl's method is its quickness, its simplicity and its cost-effectiveness. Others can implement the surveys, which can be extensive or very small and localised depending on the need, the political climate and structure of a place. Gehl's approach enables fast, implementable changes within cities and for subsequent evaluations. The follow-up evaluations in Melbourne after ten years and Perth after fourteen years were beyond the scope of most local politicians but still within the professional timespan of most city professionals and civil society groups. These people were able to confirm the power of the Gehl approach in enabling positive changes to their city. Few areas of public policy can deliver such positive changes in such a short period.

The local physical conditions of place, particularly the built environment considerations are a primary focus of Gehl's theories and work, principally as seen through the public space portion of his PSPL surveys. These considerations regarding the local place conditions can be turned into a politically acceptable set of policy options through Gehl's communication skills (Criterion 4).

Gehl's contribution to urban design practice begins by attempting to make urban design a mainstream activity in cities. His work clearly articulates the need for a more walkable city and involves regular evaluations of these qualities using a well-developed method, centred on the PSPL surveys. The importance of Gehl's approach can be seen in the extent to which they have led to positive changes on the ground and in planning policy in cities (e.g. favouring sustainable transport modes). He is

able to achieve Criterion 3 because he recognises the deeper forces shaping the city and is able to challenge them with conviction and evidence.

Criterion 4: Provide leadership and be able to work collaboratively

Effective leadership and collaboration are essential in contributing to positive changes. Fundamental to this criterion is communication—the ability to communicate complex ideas and to imbue the future with hope—the recognition and enabling of possibilities. Gehl is very conscious of language. One reason for the positive responses to Gehl's theories is his ability to present and communicate ideas in simple, frank and energetic language. Gehl's language can be understood across professions and by the public and provides a straightforward explanation and description of the world around us. Gehl clearly communicates that we do not need to use the language of experts. Further, he is able to enthuse and discuss design and planning issues with the public and with the media, in a humorous and non-discipline specific language (see Appendix E).

Hopefulness is another characteristic of Gehl's language. Indeed, it is foundational to his philosophy. He is able to sense the choices that can provide a city with a clear path to a better future. He is not simply describing the city, he is changing perceptions of its possibilities and therefore foreshadowing physical changes within it. Gehl's philosophy is positive. While some of his recommendations or views of a place or city may not be positive, Gehl always manages to make his criticism seem a positive contribution, or at least is able to give it a positive and often humorous layer (See media clippings, Appendix E).

Gehl's theories and approach offer hope: to disenfranchised locals through political weight and priority, by vocalising and documenting what people instinctively know is wrong in their city, but is not often understood or easily articulated. He demonstrates with hopeful pronouncements that they can challenge automobile-based city planning and that a people-oriented city centre can emerge. Gehl is able to see the possibilities and through articulating them and then and supporting his possibilities with evidence, he can help to convert the possibilities into realities. Hope, unfolding possibilities and willingness (commitment) are at the heart of Gehl's

personality and his work. These leadership traits attract people hoping to improve their cities and enable their voices to be heard within the design and planning process. From this, synchronicities are able to happen, leading to change.

Gehl presents an urban model that is open, dynamic, interconnected, and full of living qualities, enabling possibilities and visions to emerge and demonstrating a degree of willingness to change in the system (Chapter 4). This urban model taps into public imagination and enables a resurgent belief that people can have a voice about a less automobile-dominated urbanism. This idea was articulated through the interviews: "…the greatest attribute is Jan's great ability to enthuse people and to communicate the worth of lively public spaces—'the city as a party'… backed up by these surveys but ultimately he could almost do the same thing without any of that quantification" (urban designer, male, 20090603MMA).[1]

Primarily, Gehl conducts the surveys collaboratively, involving local businesses, city and government employees, civil society and students. As expressed through the interviews, the collaborations enable participants to see how comprehensively the city, its components and attributes are analysed, broadening the scope of public space considerations within planning. Local community and advocacy groups often participate in Gehl's surveys and are instrumental in enabling PSPL surveys to occur in their city. Examples include the pro-urban community group, CityVision, in Perth, the apolitical network of business leaders, Committee for Melbourne in Melbourne, and bicycle advocacy groups in New York. This collaboration facilitates the Gehl studies and empowers the local groups. They are able to tap into Gehl's leadership through their collaboration with him.

Criterion 5: Consider established urban design concerns and principles

Criterion 5 stipulates that an urban design theory and practice must work within established urban design protocols. Gehl's work essentially considers pedestrian behaviour within urban design parameters and is fundamentally a recognition that

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[1] This kind of statement is very confirming of the policy options Gehl articulates but achieving change in a city requires the quantitative evidence of his PSPL surveys before budgets can be reallocated to enable it to be carried out.

pedestrian-oriented urban design is a new form of transport planning and that changing the character and focus of transport shapes the city. Essentially, he uses established urban design characteristics based around the sensibilities of pedestrians and people in public spaces, but gives it a new purpose—to re-establish pedestrian-based city planning over automobile-based city planning. Perhaps urban design was always about humanising public spaces, but in the era of Modernism and automobile-dominated transport planning, Gehl has rehumanised urban design by challenging and denouncing automobile-based urban design.

Gehl bases his emphasis on the human element in the city and on an understanding that the city has traditionally had three primary uses: "as meeting place, marketplace and thoroughfare" (Gehl & Gemzøe, 2001, p.116). These established urban design concerns and principles have been lost in the era of the automobile. Meeting places, market places and thoroughfares have always been changing but must always involve pedestrians. Gehl has established a theory and practice of how to involve pedestrians as an alternative to the theory and practice of accommodating the automobile in these spaces. This theory and practice involves more than urban design principles and practices; it involves finding new roles for our city centres, particularly recognising the need for city centres as a place for recreational and social activities. The recreational role increases the need for cities to be compact and of a human scale, with appropriate public spaces and densities, rather than a place where automobiles consume much urban space. Human senses must be at the forefront of urban design; therefore, all design must relate to body heights, movement speeds, visual needs (such as cohesion and variance) and, above all, to how the places designed will be used by people as pedestrians and users of public space rather than automobiles.

Gehl's surveys and their resulting observations provide information on the present state of public life in a city. Later studies enable evaluations of success and failure of any design changes implemented so that the city can celebrate successes and adapt urban policy to address any shortcomings. The surveys provide a basis for urban design policy and practice, permitting normative ideas about city design, the established considerations, to be supported by substantive research. In every case,

the follow-up surveys have shown that cities can measure success by greater pedestrian and stationary activities and by reduced automobile activity. These have led city leaders in all the case studies examined as part of this dissertation, to see that historic urban design concepts can lead to a rejuvenation of their city. Thus, there is a rediscovery of urban design happening as cities rediscover their walkability.

7.5 Conclusions

Urban design theory became embedded in Modernism despite having been established to help address some of its shortcomings. Part of its relationship to Modernism is that the professional responses that urban design developed for managing cities were in the same formulistic and simplistic ways, with focuses on guidelines and 'one-size-fits-all' solutions, especially in enabling automobile-based solutions and guidelines to dominate in our cities. Urban design did not promulgate these guidelines, however they went unchallenged for decades. Urban design theory and practice became subservient to a form of city planning and architecture based around the automobile. It was a vacuum that was filled by traffic engineering.

This conclusion returns us to the questions: 'is urban design a discipline?' and 'Does it have a theory?' This dissertation has argued that urban design theory was essentially lacking in coherence and focus and thus was not delivering. All urban design theories are partial and are split by different factions, primarily they establish generalized statements of what a 'good' city is, but with theory, according to Cuthbert, "we are not looking for some immutable or unchanging truth" of 'good' urban form, rather "a *satisficing*[2] summary…that can be debated and tested, so that another horizon in the development of knowledge can be established" (Cuthbert, 2007b, p.185, original emphasis). The urban design of the second half of the twentieth century was not able to move beyond generalizable statements. It did not produce 'satisficing' solutions. The political reality in cities was that planners were

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[2] Satisficing is a decision-making process that maintains people will accept the solution that is 'close' or 'good' enough or the solution that seems to address most of the needs identified to solve the identified need rather than keep searching for the best possible solution if the costs (time and/or economics) are greater. This idea is opposed to rationalist decision-making that assumes that people will always seek the optimal solution.

constantly assigning public space to the automobile and urban design theory was still based within formulistic solutions and became project-oriented. Urban design theory essentially failed adequately to address the weaknesses of Modernism and traffic planning. It did not adequately advance from description, lacking the principles necessary to enable walkable, human-oriented cities.

In the past few decades this has begun to change. Cities are seeing a new, more humanistic and responsive urban design. At the centre of this revival has been the work of Jan Gehl. How he did this has been the focus of this Chapter. The evaluation framework developed in this Chapter and applied to Gehl helped us to see how he has achieved this change. The framework has theoretical validity as an evaluation tool of urban design ideas and projects only if it can cast light on the process, motivations and outcomes associated with urban design and its practitioners. However, in the end only history can truly evaluate the life and work of someone like Jan Gehl.

This dissertation has not attempted to develop a complete theory of urban design. It has, rather, attempted to move urban design theory forward one small step to become a more humanistic, sustainable, responsive and effective theory—through enabling the urban designer to be an advocate for walkability based on principles of humanistic urban design. By focusing on Gehl, it has found a practitioner of urban design that can demonstrate how this approach can really work and has achieved results.

This dissertation has examined Jan Gehl's theory and practice in detail to try to determine why his work has been so effective and prominent in cities around the world. In conclusion, Gehl's work and theory can be summed up by these characteristics. He has developed:

- **URBAN DESIGN THEORY:** An urban design theory that addresses human needs, particularly those of pedestrians through challenging the dominance of automobile-based urban planning and practice;
- **URBAN DESIGN PRACTICE:** An urban design practice that provides a quick, efficient, universal and effective evaluation technique for assessing

pedestrian needs and use in city centres based on follow-up surveys that have universally demonstrated success and that have promoted further application of his ideas;

- **POLICY RELEVANT ANALYSIS:** A clear policy relevant analysis in reports on over 40 cities that highlights the imbalance caused by automobile-oriented city design and how to move towards a more walkable city;

- **LEADERSHIP STYLE:** An effective and creative leadership style, enabling possibilities to emerge through collaboration, especially with civil society; and

- **COMMUNICATION SKILLS:** A powerful set of communication skills that are translated into politically effective outcomes.

Gehl's approach, his leadership skills and positive intent, combined with his data and theories have enabled the cities he assists to challenge the cultural norms that can be seen as remnants of the Modernist movement that neglected the value of people-oriented streets. Gehl has effectively demonstrated that urban design theory can be based within organic city theory, which is essentially anti-Modernist, and can be ethical, reasserting that urban design can contribute to the design of cities at the human scale. He has had an important impact on the cities he has worked in, enabling them to implement effective policies and plans, through documenting public life and urban design changes and providing political opportunities to challenge automobile-based planning and design. This has been a major contribution, as he has been able to empower the forces of civil society, governments and in many cases, business interests, to see that they can reclaim their city centres from the automobile. His skill has been in showing that urban design for pedestrians was the missing link in cities and that by re-invigorating the role of urban design, it is possible to replace the automobile-based, traffic engineering role that has long dominated our cities.

The conflicting definitions, views and ideas about urban design discussed in the previous Chapters bring the human element of urban design to the forefront. Urban design is not primarily about 'projects' or 'landscape'. Rather, Gehl's work asks us to consider whether the environment is attractive, appropriate and sustainable for use

by people who are walking. At the heart of sustainable urban design, as enabled by Gehl, is walkability: simply making cities more walkable. The other primary concerns of urban design are all important but essentially they all relate to inviting people to walk more in their daily lives. Gehl's work provides a successful case study of walkability. Urban design theory, if it is to become robust and respond to current demands of the city, unique to this period, requires an adoption of a reflective, responsive and experiential approach within urban design, building on solid practice-oriented theory and planning—all for pedestrians. Planning for pedestrians allows the human element of cities to be at the forefront.

This Chapter has provided a framework for assessing urban design theory and practice and has applied this evaluative framework to the work of Jan Gehl. I reviewed his work according to each criterion. The evaluation framework provides one method of assessing urban design. It offers a new way of looking at urban design theory and projects and it suggests that Gehl has made a significant contribution to urban design. The next Chapter concludes the dissertation, identifying the limitations of the research and speculating about future research directions.

CHAPTER 8: CONCLUSIONS AND SUGGESTED FUTURE RESEARCH

Chapter 8: Conclusions and suggested future research

8.1 Introduction

The world is becoming increasingly urbanised, this accept fact necessitates an approach to cities that can study cities holistically, not merely examining a city's various components (such as its transportation network, commercial and civic uses, industrial areas and recreational areas amongst others), but also focusing on the integrated use of these components. Urban design can achieve this objective, especially if it expands beyond aesthetics to include the use of the environment, how people move through and stay in spaces and how this environment can be improved for all users of the system. This approach requires a rediscovery of urban design with a greater focus on urban design for walkability. This may have been the historic purpose of urban design but it has been lost in the age of the traffic engineer and the power of Modernist manuals that determined how streets and public space needed to provide for automobiles. There is a need to examine our cities from the perspective of the pedestrian on the street and determine a practice that brings them to the forefront of concerns. This study has considered the city centre and urban design theory from such an integrated perspective.

This dissertation attempted a review and analysis of urban design theory and practice (as well as insights from other disciplines in the built environment and transport professions) from a humanistic and walkability perspective. I included an assessment of some of the considerations and shortcomings identified in the field of urban design. That investigation laid the groundwork for the development of an evaluation framework to facilitate appraisal of urban design projects and theories. The evaluation framework was then used to assess the philosophy, theory, work and practice of Jan Gehl, as he is an urban designer who has constantly focused on addressing the needs of people in streets, bringing forward these urban concerns into the practical reality of city politics.

The dissertation asked the questions:
1.   How can urban design theory and practice be more responsive?
2.   What is the significance of Gehl's work and theory to urban design?

In exploring these questions, the dissertation examined existing urban design theory and practice, focusing on how urban design developed from Modernist planning theory through the involvement of environment-behaviour methods that focused on observational techniques (Chapters 2, 3 and Appendix C). This section determined that urban design lost its way in the Modernist era and created a vacuum that was largely filled by automobile-based urban planning and design dominated by traffic engineering. This left urban design as formulistic and project based. The dissertation then examined the current practices of urban design: what urban designers actually do (or should do based on historic urbanism), as well as the primary values and concerns of urban design from the perspective of the requirements of people in public spaces, as pedestrians (Chapter 4 and Appendix B). These enquiries led to the development of an urban design evaluation framework building on Jon Lang's (1994) requirements for a more encompassing practice, the findings from the literature (Chapter 2, 3 and 4) and from sustainable leadership theory (Chapter 4).

The dissertation attempted to address the question of how urban design theory and practice can be more responsive to the needs of people in cities and especially to the needs of pedestrians by applying this evaluative framework to the theory and practice of urban designer Jan Gehl (Chapter 7). First, I introduced Gehl and his theories (Chapter 5), followed by a discussion of some of his primary works and methods (Chapter 6). The dissertation then examined how Gehl's work, and ultimately urban design work in general, could be evaluated and how the findings could be connected to enrich urban design and make it more responsive to the everyday needs of people in cities.

8.2 Findings of the dissertation

The objective of this dissertation was to rediscover and progress urban design theory through a greater understanding of walkability in cities. It did this through teasing out the core values and concerns of urban design, and through the synthesis of an urban design evaluative framework. This objective was then illustrated through the description and assessment of the contributions of Jan Gehl to urban design theory and practice. Gehl's achievements in highlighting the potential walkability of over 40

cities are now being documented. The evaluation framework shows that he has the six characteristics required for rediscovering a more effective, sustainable, humanistic and responsive urban design. Only history can tell if this will be enduring but at this moment in history the evidence is potent.

This research reinforces the need to examine not only the theory, design and planning of our urban centres and developments but how the built environment relates to people (especially to a pedestrian's use of a city). The dissertation found support to encourage development of policies that are integrated and holistic. An effective approach, according to Gehl, is to focus on 'people' first, then 'space' and lastly 'buildings'. Essential to ensuring that this approach is taken are policies that integrate accessibility, efficiency and aesthetic requirements within transport planning, while taking every opportunity to support the possibility of shared street environments in urban centres.

Conclusions on urban design theory and practice

As established in Chapters 2, 3 and 4, the research highlights that urban design has progressed from Modernism but is still essentially entrenched within its systems. The dominant approach still views urban environments and professions as functions and prescriptions. I found that urban design is lacking concrete theory necessary to guide praxis and that, as a field (and as a generalisation), it relates only sporadically and selectively to theory and experiential knowledge. These shortcomings have limited its ability as a field to respond to evolving urban conditions and particularly to respond to the need for sustainable, vibrant and inclusive urban environments. In particular, it appears that urban design has failed to address the force and power of automobile-based planning, which developed the new profession of traffic engineering that displaced the role of urban designers.

In addition, the research determined that urban design as practiced has generally been relegated to a design profession, focused on aesthetics, abstract design concepts and individual projects without playing a major part in mainstream city-shaping processes. However, the research revealed both a need and a scope within urban environments for the urban designer as advocate for people on streets. Urban

design has potential: it can be a profession and theory that can care for the needs of pedestrians and also consider a city holistically and systemically. To do this work, urban designers must be conversant with considerations of politics, economics, place and culture. They need to respect the need for the urban environment to contribute positively to changing conditions. And they need to honour their traditional roots: aesthetics and design are also important. The emphasis at all times should be on pedestrians. In particular, there is scope for the urban designer to contest the pre-eminence of the traffic engineer as shapers of our cities. For this the urban designer must be a leader, one who challenges the status quo and refuses to accept that car-based planning is inevitable.

This research revealed that urban design projects and research need to progress beyond formulistic solutions of traffic and city planning. The new way to see urban design is as a process, with practitioners, academics, students and communities firmly grounded in experiential knowledge about the city and its use. Part of this process is enabling the emergence of stories of place and possibilities, facilitating sustainable urban places, environmentally, socially and economically. But the most powerful tool in this new approach to urban design is the potential to collect data on how people use streets and public spaces, and how they want this changed, to generate a new set of guidelines (that will be different in different cities) that enable people-oriented public spaces to replace automobile-oriented public spaces.

The research identified walkability as the primary concern for urban design as a process. All of the other concerns and principles should be based on the needs of people as pedestrians. It is fairly easy and inexpensive for cities to implement more responsive pedestrian environments that are congruent or 'fit' the needs of their users (of all descriptions). This critical work can be achieved through small changes as part of a process responding to issues of place, economics and social and environmental sustainability. These systematic, small-scale and iterative approaches characterise the work of Jan Gehl.

Conclusions on the theory and practice of Jan Gehl

Jan Gehl's work, both academically and as a practitioner, has promoted urban design as a humanistic movement. Gehl's influence, as discussed in Chapter 7, can be summarised as having five primary characteristics:

- An **urban design theory** that addresses human needs, particularly those of pedestrians through challenging the dominance of automobile-based urban planning and practice;

- An **urban design practice** that provides a quick, efficient, universal and effective evaluation technique for assessing pedestrian needs and use in city centres based on follow-up surveys that have universally demonstrated success and that have promoted further application of his ideas;

- A clear **policy relevant analysis** in reports on over 40 cities that highlights the imbalance caused by automobile-oriented city design and how to move towards a more walkable city;

- An effective and creative **leadership style**, enabling possibilities to emerge through collaboration, especially with civil society; and

- A powerful set of **communication skills** that are translated into politically effective outcomes.

As a practitioner, Gehl has used methods to bring experiential knowledge to the forefront of urban design concerns. He has continued the development of quantitative methods to study human interactions with the built environment that allow comparisons over space and time. As a theorist, Gehl is explicitly humanist and pro-urban, always emphasising that we must design 'cities for people', for walkability, rather than purely for vehicle movement or economics. Theory based on a sound knowledge base enables urban design to respond to changing and present urban conditions. In particular, his focus on the need to overcome formulistic and automobile-dominated urban planning singles out his work from that of most other urban designers (many of whom have uncritically accepted the dominance of the automobile).

A major component of Gehl's work is his leadership approach and ability to navigate, influence and work within existing political and economic systems. He has achieved

success by working with civil society (civic) groups, urban planners, staff and elected members of local governments and business representatives–all of whom have recognised the value of reaffirming a stronger urbanism based on pedestrians. In the process, he has become their champion. Gehl is able to communicate complex urban issues in a straightforward and positive manner, progressing humanistic urban ideas supported by a knowledge base. This approach has enabled the cities he assists to challenge the cultural remnants of the Modernist movement and its expression in traffic engineering and planning and to implement highly effective, positive changes.

Gehl has provided coherence to urban design theory and practice that it probably never had in the past. He has brought from transport planning an understanding of what makes cities work. This understanding imbues urban design's aesthetic and prescriptive-based theories with a new and deeper meaning: cities cannot function effectively without rehumanising public spaces not merely because they are nicer but because the walkability of a city is an essential human quality built on the biology, psychology and health of human being's need to walk.

In the same way as Gehl's urban design theory and practice have contributed new coherence to urban design theory (by means of a re-invented pedestrian-oriented transport planning theory), Gehl has given new coherence to transport planning theory through urban design theory and practice. Transport planning theory has been largely mechanical based on the notion of a fixed travel time budget of around one hour that shapes cities (Chapter 1, 2 and 4). Following Gehl's influence, transport planners now have access to a deeper understanding of how cities work: the aesthetics, efficiency and accessibility of city form also matter. The physical constraints of walkability require an appropriate density and a mix of land uses to ensure the walking function in cities. Everyone can benefit from these new insights, however, transport (and urban) planners can appreciate the multifarious ways in which high-quality urban design—the 'life between buildings', the footpaths, the squares, the active building frontages, the form of buildings, the integration of the natural environment—make walking more attractive and hence more functional. Thus, Gehl is rehumanising transport planning as well as urban design, breathing life into cities that make walking easier, more fun, more economic, more

environmentally appealing and more beautiful. Gehl brings the aesthetics and the engineering of cities together. In his theory and practice, form and the function are unified by a basic and abiding understanding of the deep human need to walk.

8.3 Limitations of the research and future research needs

This dissertation has fashioned an evaluation framework, based on the literature that enables a holistic appraisal of urban design theory and practice. I have applied this approach to the theory and practice of Jan Gehl. Urban design and walkability literature is a rapidly expanding field emerging from many other disciplines and focuses including architecture, urban planning and health literature and now increasingly through the sustainable cities literature.

This research project is an initial step in developing a framework to progress urban design theory and practice towards a humanistic and walkability perspective. A future research direction could explore the territory of aspects of pedestrian uses of cities that were outside of the scope of the present project:

- The focus of pedestrian-oriented urban design has been on the historic city centre, both in the urban design tradition and with Jan Gehl. Future research could focus on the suburbs and the potential for an increased role for walkability in the design and redevelopment of these areas, especially within the context of healthy environments and inclusive design.

- Future research is needed into implementation. The rapid changes seen in Melbourne and New York could be examined in greater detail to see how they happened so quickly. The next steps required to make sustainable, vibrant, healthy cities will require an awareness of what works in different cities. This work could involve exploring ways to quantify changes in pedestrian and public spaces within a city to support a city's economic viability. For example, it is quite possible that a walkability benefit-cost ratio will be as easy to produce as the freeway benefit-cost ratios.

- More research into leadership theory is needed than was achievable within the scope of this research. There are many lessons from Gehl's work that could be explored in this research, including the ability to translate ideas into

effective action. A deeper understanding of the complex communications dynamics that make Gehl (and other graphic and effective communicators) so effective would be a valuable focus of future research, as well as a helpful contribution to leadership theory.

- Because of time constraints, this research was unable to explore the dimensions of many methodologies that have been developed to study human-built environment interactions. While this dissertation primarily focused on the user-based methods, future research might explore the potential of creating a more complete compendium or 'toolbox' for urban designers, incorporating some methodologies and methods used in engineering and economics, to achieve walkable cities.

- Future research is needed into urban design curricula to explore the 'human dimension' of urban design looking at what could be incorporated into the broader educational curriculum from the theory and practice of Gehl as well as the classic urban design texts in Appendix A.

- Future research could explore how some of these theories which are currently applied in western cites might be applied in a wider variety of cities, including those in the rapidly growing and crowded urban areas of Asia. I acknowledge that the research in this dissertation reports on an approach that is western; the author's approach, while attempting to be interdisciplinary, is also Australian. Gehl emphasises the need for new work in the rapidly growing cities of the developing world, which have quite different contexts to Australian, Western European and American cities. His firm is now moving in this direction. An evaluation of their work in perhaps five to ten years could be highly valuable to theoreticians and practitioners alike.

- Future research could explore how the natural environment can be better incorporated into urban design concerns. Walkability needs better guidelines on how the natural environment improves the amenity for pedestrians. Biophilic urban design (discussed in Chapter 4) has made great headway in this regard and could lead to specific practice outcomes. More research is needed into how this approach can be implemented into the current urban

fabric and become part of pedestrian-friendly urban design in a rapidly warming environment.

- How some of these people-oriented urban design principles might be combined with mainstream transport planning and how some of transport planning's requirements might be merged with pedestrian-oriented urban design are rich fields for future research using an interdisciplinary or multidisciplinary format. This dissertation made some attempts to achieve this but I am aware that further research is required to explore the potential synergies and complementarities of pedestrian infrastructure requirements and urban design principles and how different modes of transport can be considered from an accessibility, rather than a mobility perspective. More research into the age-old issue of what constitutes urban design and planning would assist debates about the spatial requirements, aesthetics and priorities of the pedestrian. The rediscovery of urban design through walkability may now need urban planning to rediscover urban design.

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- Demographic changes 1900 to 2000. Source: Gehl, *Cities for people (2010)*, p. 66.
- Ten principles for sustainable transport. Source: *Our Cities Ourselves*, Gehl Architects & Institute for Transportation and Development Policy (ITDP), 2010.

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APPENDICES

Appendix A: Table of Classic Texts in Urban Design

The table contains a list of texts considered to be classic urban design texts (as determined for the literature review by the Author).[1] Some of these are more architectural design, landscape architecture and urban planning in focus and as such have been included in the list but are not so relevant for this humanistic explanation and exploration of urban design and as such are not discussed.

Classic Authors in Urban Design (Alphabetical)
Alexander, C. (1977, with Ishikawa, S., and Silverstein, M) *A Pattern Language*, (1987, with Neis, H., Anninou, A., & King, I) *A New Theory of Urban Design*[2]
Appleyard, D. (198*1) Livable Streets*
Bacon, E. (1976) *The Design of Cities*
Banham, R. (1971) *Los Angeles: The Architecture of Four Ecologies*
Barnett, J. (1973) *Urban Design as Public Policy*, (1982) *An Introduction to Urban Design*, (1986) *The Elusive City,* (2003) *Redesigning Cities: Principles, Practice, Implementation*
Beatley, T. (2004) *Native to Nowhere: Sustaining home and community in a global age*
Bentley, I., Alcock, A., Murrain, P., McGlynn, S., and Smith, G. (1985) *Responsive Environments. A Manual for Designers*
Bosselmann, P. (1998) *Representation of places: Reality and realism in city design,* (2008) *Urban Transformation: Understanding City Design and Form.*
Boyer, C. (1994) *The City of Collective Memory*
Broadbent, G. (1990) *Emerging Concepts in Urban Space Design*
Buchanan, C. (1963) *Traffic in Towns*
Calthorpe, P. and Fulton, W. (2000) *The Regional City*
Carmona M., Heath, T., Oc, T., and Tiesdell, S. (2003) *Public Places Urban Spaces: The Dimensions of Urban Design*
Carr, S., Francis, M., Rivlin, L. G., and Stone, A. M. (1992). *Public Space*
Chermayeff, S. and Alexander, C. (1963) *Community and Privacy*
Clay, G. (1973) *Close Up: How to read the American City*
Cooper Marcus, C., and Francis, C. (Eds.) (1998) *People Places: Design Guidelines for Urban Open Space*
Cullen, G. (1961) *Townscape* (1971) *The Concise Townscape*
Dovey, K. (1999) *Framing Places*
Ellin, N. (1996) *Postmodern Urbanism,* (2006) *Integral Urbanism*
Florida, R. (2002) *The Rise of the Creative Class*
Gehl, J. (1971, 1987 English) *Life Between Buildings – Using Public Space*
Gosling, D. (2002) *The Evolution of American Urban Design*
Halprin, L. (1963) *Cities*
Hedman, R. and A. Jaszewski (1984) *Fundamentals of Urban Design*
Hillier, B. (1996) *Space is the Machine.*
Hillier, B. and Hansen, J. (1984) *The Social Logic of Space*
Jackson, J. (1984) *Discovering the Vernacular Landscape*
Jacobs, A. (1985) *Looking at Cities*, (1993) *Great Streets*
Jacobs, J. (1961) *The Death and Life of Great American Cities*

Katz, P. (1994) *The New Urbanism*
Kostof, S. (1992) *The City Assembled: The Elements of Urban Form Through History*
Krier, R. (1979) *Urban Space*
Lang , J. (1994) *Urban Design: The American Experience,* (2005) *Urban Design: A Typology of Procedures and Products*
Lynch, K. (1960) *Image of the City*, (with Hack, 1971) *Site Planning*, (1981) *A Theory of Good City Form*
March, L. and Steadman, P. (1972) *The Geometry of Environment*
McHarg, I. (1969) *Design with Nature*
Mumford, L. (1961) *The City in History*
Newman, O. (1972) *Defensible Space*
Newman, P. and Kenworthy, J. (1999) *Sustainability and Cities: Overcoming Automobile*
Norberg-Schulz, C. (1979) *Genius Loci*
Proshansky, H., Ittelson, W. and Rivlin, L. (1970) *Environmental Psychology:* M*an and his Physical Setting*
Rapoport, A. (1977) *Human Aspects of Urban Form*
Rowe, C. and Koetter, F. (1978) *Collage City*
Rudofsky, B. (1969) *Streets for People*
Rykwert, J. (2000) *The Seduction of Place*
Sennett, R. (1970) *The Uses of Disorder*
Sitte, C. (1889) *City Planning According to Artistic Principles*
Sommer, R. (1969) *Personal Space,* (1983) *Creating Buildings with People in Mind*
Spirn, A. (1984) *The Granite Garden*
Spreiregen, P. (1965) *Urban Design Architecture of Towns and Cities*
Trancik, R. (1986) *Finding Lost Space*
Venturi , R., Scott-Brown, D. and Izenour, S. (1977) *Learning from Las Vegas*
Webber, M. (1963) *The Place and Non-Place Urban Realm*
Whyte, W. (1980) *The Social Life of Small Urban Spaces*, (1988) *City: Rediscovering the Centre*
Notes: [1] For more information and other authors lists please see Anne Vernez Moudon (1992), Alexander Cuthbert (2006; 2007b), Alex Krieger (2009) amongst other sources such as the American Planning Association '100 Essential Books of Planning,' and Harvard University's Urban Design Magazine. [2] Additionally Alexander published a series of four essays collectively titled *The Nature of Order* that are also of interest, but are not generally considered 'classic' urban design texts. Individually they are: *The Phenomenon of Life; The Process of Creating Life; A Vision of a Living; and The Luminous Ground* (referencing 2002 publication).

Table A.1: Table of classic texts in urban design. Source: Author

Appendix B. Current planning and urban design theories

B.1 Introduction

This Appendix is designed to support the urban design theory discussion in Chapters 2, 3 and 4 by providing examples of current urban design theories practiced, focusing on New Urbanism, Place Making and Shared Space.

While much planning and urban design is still untaken following the rationalist approach of Modernist planning principles, other theories have come to prominence challenging established norms and providing new ways for planners and urbanists to design cities.[1] These theories and the movements that embody them proceeded from a reaction to widespread highway building and to the processes and results of urban renewal during the 1960s and 1970s all of which served to fragment societies. Fainstein maintains that these reactions were based not on "opposition…to general goals of urban and transportation improvement". Rather, she emphasises that the opposition "was to the particular impacts of public programs on affected communities" (Fainstein, 2005, p.123). Those of particular importance to urban design include New Urbanism (neotraditionalism), Place Making and Shared Space.

B.2 New Urbanism

New Urbanism[2] is perhaps the most vocal and well known of the recent planning and urban design theories. New Urbanism is primarily a design based philosophy based on the "urban ideal" that spatial relationships and traditional urban design can create community (Brain, 2006, p.21), using a syntax that provides "for a

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[1] Fainstein highlights three dominant current planning theories, namely the communicative/collaborative model, Neotraditionalism (of which New Urbanism is part), and what she calls Just City, a theory based on equity. She explains that subscribers "within all three schools doubt the applicability of the scientific method to urban questions; none of the three approaches relies on scientific justification as the rationale for its vision. Whatever their differences, they are all three postpositivist" (2000, p.453). While the communicative model and theories of the just city influence current urban design theory, in order to keep this discussion concise they will not be discussed. Many of their ideas do however underpin much of the following discussion.

[2] Also referred to as neotraditionalism and The New Urbanism. New Urbanism is written both with capitals and without. For consistency I have chosen to capitalise. In any quotes, I use the original authors' choice.

wide range of density preferences and architectural styles while maintaining the baseline rules that make for walkable, diverse communities" (Talen & Ellis, 2002, p.41). The Congress for The New Urbanism was founded in 1993 by architects of which Peter Calthorpe and Andrés Duany are the best known.[3] The movement has been popular and continues to be influential in the US, Canada, England and Australia.

The *new* in New Urbanism is not a new form of urbanism, but rather a revisiting of traditional urbanism. Krieger, Professor at the Harvard Graduate School of Design, explains:

> [F]or the New Urbanists what is referred to by the new is a renewed appreciation for traditional urbanism…for others the new…might refer to a repositioning of urbanism, an acceptance (in the face of overwhelming evidence) that low density, peripheral spread, motorized mobility, and decentralized functions are here to stay. Thus, the new can refer to unique conditions of contemporary urbanism: shopping malls, office parks, 'edge cities,' theme retail and entertainment complexes, and other such historically unfamiliar environments that must be addressed creatively rather than dismissed as aberrations. One might surmise that such diversity of meaning was intended…and is responsible for its success as a slogan. It combines the allure of the new with an opposite tendency: keeping what is less new but more comforting. (2009a, p.xi)

The urbanism advocated by New Urbanism is not new in a design sense but does attempt adapt traditional design solutions to new contemporary issues.

New Urbanism promotes a return to traditional street, town and neighbourhood design, "replicating traditional patterns in cities and suburbs before World War II" (Barnett, 2009, p.107), primarily replicating those from the 1900-1920 (Beatley, 2004; Falconer, Newman, & Giles-Corti, 2010). This is primarily on built environments that incorporate a mix of uses and building types and an emphasis on the public realm (Katz, 1994). For New Urbanist urban designers the "basic unit of planning is the neighbourhood, which is limited in physical size, has a well-defined edge, and has a focused centre" (Fainstein, 2000, p.462). Designs

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[3] Other founders were Daniel Solomon, Elizabeth Moule, Elizabeth Plater-Zyberk and Stephanos Polyzoides.

are often based on British garden city models, the inner urban areas of American cities and Cullen's *Townscape* (1961) ideals.

In addition, New Urbanism is concerned with how transport choices influence the design of local places, particularly the design of "local street network connectivity and provision of sidewalks" (Falconer, et al., 2010, p.287), as well as people's small and everyday movements (T.Hall, 2009). New Urbanists are particularly concerned with the provision of infrastructure and appropriate design for pedestrians. Hall elaborates that New Urbanism is concerned with "decidedly local" fluidity and "the small and (seemingly) trivial practices and movements that constitute the urban everyday" (T.Hall, 2009, p.574). New Urbanism also calls for an increase in residential densities and a mixing of land uses. The transport priorities, densities and mixed land uses are all aimed at reducing car dependence and sprawl (Falconer, et al., 2010, p.287).

New Urbanism advocates for the design of complete neighbourhood units, with a mixture of housing types, incomes and land uses centred around subcentres (or neighbourhood centres) and for centres that offer meaningful symbols and cater to everyday needs. Their theories and ideas are clearly a reaction to the conventional suburbs designed under Modernist principles of separation of uses and built using modern mass-production methods and focussed on the car (criticised for creating sprawl and the breakdown of community), and exacerbating the alienation of modern life. New Urbanism offers a hopeful alternative. Brain, Professor of Sociology at the New College of Florida and a practitioner within New Urbanism, explains this, stating that New Urbanism offers the neighbourhood unit as:

> a paradigmatic representation of the core value of urbanism as a particular normative condition: the extent to which each house, each project built in a community, contributes to the completion of a street, neighbourhood or town; to the achievement of emergent possibilities; to a history that gives the place depth and meaning; and to the richness, variety, amenity, functionality, and pleasure of a shared world. (2006, p.21)

The ideas are seeking to return to traditional 'community' design.

Part of New Urbanist theories is the idea that public space is a place for people to meet, and through design, they try to create appropriate public spaces that offer opportunities for social interaction (Talen, 2002). Vocal New Urbanist Duany asserts that architecture has the ability "to transform society, to be of genuine social benefit" ("Urban or Suburban?," 1997, p.60). In order to enable public space to be of social benefit, Shane, author of *Recombinant Urbanism*, explains that "the New Urbanists have placed a great emphasis on symbolic intermediaries representing a utopian, public, communal life" (2005, p.189) and on providing symbolic spaces designed at enabling this community. This part of New Urbanist theories have been hotly debated, with critics stating that this equates to physical determinism and that it is not possible to design in 'community'. Emily Talen, a supporter of New Urbanism, explains that New Urbanism acknowledges that 'community' "is much too complex to be designed…The best that can be done is, first, to make sure that design doesn't actively get in the way of social interaction and, second, provide venues that allow for a variety of types of civic engagement" (2002, p.69).[4] Regardless on which side of these arguments one falls, what it clear is that New Urbanist's are actively trying through their designs to provide developments that do not prevent the possibility of life in public spaces.

New Urbanism builds upon the work of Jane Jacobs and others as a reaction to Modernism. It is, to quote Duany, a "reform movement recoiling from the failures of the 1960s" (2004, p.78). However, New Urbanism clearly is shaped by Modernism and rationalist thinking principles.[5] American architectural critic, Sorkin specifies:

> The ideological convergence of Modernist and 'New' Urbanism is striking. Both are invested in an idea of a universal, 'correct' architecture. Both are hostile to anomaly and deviance. Both have an extremely constrained relationship to human subjectivity and little patience for the exercise of difference. Both claim to have solutions for the urban crisis, which is identified largely with formal

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[4] This idea, as common with many New Urbanist assertions, is much debated, most notably by Clare Cooper Marcus (2003b) who asserts that we need to have a better understanding of community life from a variety of methods in order to seek more appropriate built forms.

[5] As discussed in the Introduction, rationalist thinking works from logical steps proceeding from established 'first' principles.

issues. Both purport to have an agenda that embraces an idea of social justice… Finally, both are persuaded that architecture can independently leverage social transformation… (2009, p. 176)

Social theorist and geographer, David Harvey[6] furthers this, stating:

> …my real worry is that the movement repeats at a fundamental level the same fallacy of the architectural and planning styles it criticizes. Put simply, does it not perpetuate the idea that the shaping of spatial order is or can be the foundation for a new moral and aesthetic order?…Few supporters of the movement would state so crude a thesis…Yet this presumption pervades the writings of the new urbanists as a kind of subliminal subtext. The movement does not recognize that the fundamental difficulty with modernism was its persistent habit of privileging spatial forms over social processes…The new urbanism changes the spatial frame, but not the presumption of spatial order as a vehicle for controlling history and process. (1997, p.2)

Harvey is not all critical of the theory, praising its mixed-use and quality public space ideals. However, he does raise a fundamental problem prevalent in much urban design and urban planning theory: that of urban design privileging form and aesthetics over social requirements. This idea is established in the debate regarding the development of a solid theory or definition of urban design discussed in Chapter 3. The similarity in operation between New Urbanism and Modernism is in part a reflection of the current norms within western planning systems to have guidelines and formalistic solutions, following positivist planning structures.

From this arises another fundamental question within urban theories, as asked by Fainstein: "Is planned diversity an oxymoron?" (2000, p.464). She maintains, however that:

> …relying on the market for an alternative to planning will not overcome the problem of homogeneity. The failure of the market to provide diversity in most places means that if planners do not attempt to foster it, the outcome will be increasingly segregated neighbourhoods and municipalities. (2000, pp.464-465)

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[6] David Harvey is also a leading proponent of ideas of 'the right to the city', building on the ideas of French Neo-Marxist and sociologist Henri Lefebvre (1901–1991), and is widely published predominantly on issues regarding urbanisation and social issues. See http://davidharvey.org/ for a biography.

This is due to Modernism shaping the market through professional practice. Gerner, in his doctoral thesis, specifies that New Urbanist design "should be the subject of continuing social analysis to see if the Rationalist planning imprint and the detailed design guidelines that accompany the plans have been suitable instruments in contributing to the desired small town community outcome" (c2002, p.8).

In addition, New Urbanist developments are often criticised for creating unimaginative and sterile environments. This criticism is highlighted in a roundtable conversation at the Harvard School of Design about 'urban design now'. During this discussion, Urbanski asserts "what the New Urbanists have wrong is trying to make all streets nice" (Crawford et al., 2007, p.324). Goldberger responds that, "the reality of any urban condition is everything is imperfect. The absence of something wrong is what's totally wrong" (Crawford, et al., 2007, p.324). This idea is expanded on by Australian urban design academic Cuthbert, who maintains "at best, the New Urbanism can be seen as a serious attempt to replace the anarchy of capitalist urbanisation with more humane, safe and aesthetic environments. At worst, it represents the final commodification of history and social space" (2003, p.249). This is particularly evident with some of the original New Urbanist developments such as Seaside, Florida.[7]

Furthermore, New Urbanism has been criticised for being modern suburban developments "dressed in folk dance costumes" (Gehl, personal communication, September 27, 2009), for being sales people (which Duany unabashedly admits) and for developing primarily car-based suburban developments not tied into public transport and enclaves for the wealthy (Falconer, et al., 2010). Falconer, Newman and Giles-Corti's research on New Urbanism's application in the Perth Metropolitan Region, Western Australia, found that, while New Urbanist designed suburbs do increase local leisure walking and the walkability of the area (compared to conventional suburbs), they are no different from conventional

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[7] See The Seaside Institute http://www.seasideinstitute.org/

suburbs in terms of dependence on cars (Falconer, et al., 2010). This is because they are isolated primarily residential suburbs within a larger car-dependant urban structure, and lack local facilities. As with all developments, context and multifaceted solutions are extremely important, primarily more integrated urban and transport solutions required and walkable destinations.

One of the primary problems with New Urbanism is that it lacks the 'urban minded' part of urban design, rather designing and "approaching every urban project as an exercise in small-town planning" (Sommer, 2009, 137). This is the link back to architecture. Rather than viewing the city as a whole, New Urbanism views cities as a series of projects. Barnett sees New Urbanism style architecture and planning as "likely a transitional phase" (2009, p.107).

As a theory New Urbanism has been criticised for its lack of "theoretical rigor" (Fainstein, 2000, p.462) and its reliance on physical (or spatial or environmental) determinism. Fainstein explains that "New Urbanism is vulnerable to the accusation that its proponents oversell their product, promoting an unrealistic environmental determinism that has threaded its way throughout the history of physical planning" (2000, p.463), linking back to Sorkin and Harvey's criticisms provided above and to the idea of 'can diversity be planned?'

Despite the short comings in regards to community, design and outputs, New Urbanism planning theory's primary aim is a "better quality of life" and is inherantley based in "hopefulness" (Fainstein 2000, p 465) and are focused on outputs, rather than on process. Part of New Urbanism's success is its ability to inspire and provoke interest in the general public. Some of this is the ability to work within consumer society—they have a vision and product (Fainstein, 2005). The Charter of the New Urbanism specifies:

> We stand for the restoration of existing urban centers and towns within coherent metropolitan regions, the reconfiguration of sprawling suburbs into communities of real neighborhoods and diverse districts, the conservation of natural environments, and the preservation of our built legacy…

> We dedicate ourselves to reclaiming our homes, blocks, streets, parks, neighborhoods, districts, towns, cities, regions, and environment. (Bressi, 2002, p.40; The Congress for the New Urbanism, 1996, p.1)

Through the Charter they clearly lay out their vision and concerns with something that most people would desire for their neighbourhood or city—that it be a better and 'good' place. New Urbanism does bring planning and community attention to the need to plan cities with people and community in mind, and cities where people could reach their daily needs on foot (Kunstler, 1998).

B.3 Place Making

> "It is difficult to design a space that will not attract people. What is remarkable is how often this has been accomplished" (Whyte, 1988, p.109)

Place Making[8] is increasingly emerging as an activity within planning and urban design. It is about enhancing the elements of a place that reflect the use of the space, reflect the shared history of the place and enable the creation (or continuation or enhancement) of a sense of place. Place Making is progressively emerging as a way to highlight the soul of soulless places. In the face of current modern cities, this is of utmost importance. It is the "art of creating memorable experiences" and is the turning of a "space into a place" (Engwicht, personal communication, November 13, 2009, p.1) and focuses on the "provision of distinctive, lively, appealing centers for congregation to alleviate the perceived homogeneity of many large contemporary urban areas" (Krieger, 2009b, p.120) and occurs "when multiple layers of design and utility are integrated into a plan that creates an attractive and functional environment for the people it serves" (Schmitz & Scully, 2006, p.25). Project for Public Spaces (PPS) explain that "place making is a dynamic human function: it is an act of liberation, of staking claim, and of beautification; it is true human empowerment," that it is "the art of creating public 'places of the soul,' that uplift and help us connect to each other" and that Place Making is "making a Public Space a Living Space" (2010).

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[8] Place Making is also written as placemaking, PlaceMaking and place-making. For ease, I use Place Making but will use the original authors' preference in quotes.

The concepts behind Place Making originated in the 1960s, when visionaries like (Jane) Jacobs, Gehl, Cooper Marcus and Whyte studied how people used places, and offered ideas about designing cities that catered to people, not just to cars and shopping centres. Their work centred around the idea that it was important to create and maintain lively neighbourhoods and inviting public spaces. From there, Place Making evolved in the 1970s as a form of architecture and urban design that was involved with the creation of public spaces that would encourage people to visit and stay because they were interesting or pleasurable. Place Making now is focused primarily on the 'design' part of public space particularly in TODs.

Place Making is often viewed as being used only in the creation of new places. However, it is of particular importance to the revitalisation of existing places, especially in a future with limited resources where it is of vital importance that we work with what we have (Newman, Beatley, & Boyer, 2008). Australian traffic-calming community cultural development specialist, David Engwicht, asserts that "there is a fundamental assumption in most Place Making– that the 'grand scheme' (master plans) will turn a place around. However, spaces usually decline from small actions…" and "at least half of all Place Making activity should be focused on micro-level actions" and the "low hanging fruit" or easy tasks (Engwicht, personal communication, November 13, 2009, p.1).

Place Making is particularly valuable in the redevelopment of 'soulless' places as a way to reconnect residents to their local areas. PPS, who specialise in Place Making, assert:

> Place making is not just the act of building or fixing up a space, but a whole process that fosters the creation of vital public destinations: the kind of places where people feel a strong stake in their communities and a commitment to making things better. Simply put, Place making capitalizes on a **local community's assets**, **inspiration**, and **potential**, ultimately creating good public spaces that promote people's health, happiness, and well being. (2010, original emphasis)

As part of the revitalisation of existing places, and the recognition that we need to live within existing places and within limited resources (both environmentally

and economically), Place Making is deliberately coming out of the formal design arena and is taking the form of community activism, where community groups are conducting localised forms of Place Making. Often this Place Making is aimed at introducing new ways for people to spend time in the public realm and to reintroduce local sense of place and community. This trend has been titled by architect and writer Mimi Zeiger: "Provisional, Opportunistic, Ubiquitous, and Odd Tactics in Guerilla and DIY Practice and Urbanism" with the hope that it captures "the tactical multiplicity and inventive thinking that have cropped up in the vacuum of more conventional commissions" brought about particularly in the US by the financial downturn of the last few years (Zeiger, 2011, n.p.n.). Some examples of this type of Place Making include reclaiming activities such as 'park(ing)' which started in San Francisco by turning on-street surface parking spots into mini parks[9] and other activities such as guerrilla gardening in empty lots and road verges, converting empty store fronts into temporary exhibition spaces and groups that introduce play through art into city spaces such as Greyworld[10] or guerrilla knitting groups.

PPS offer 11 steps or principles for creating great community places:

1. The community is the expert.

2. Create a place, not a design.

3. Look for partners.

4. You can see a lot just by observing.

5. Have a vision.

6. Start with the petunias: experiment…experiment…experiment.

7. Triangulate.

8. They always say 'it can't be done'.

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[9] Park(ing) has now turned into an annual event that inspires worldwide participation. It was started in 2005 by Rebar, a San Francisco art and design studio, when they converted a metered parking space into a temporary public park in downtown San Francisco. The original park was erected for two hours, which was all the metered parking spot allowed. The aim of the original park and the subsequent park(ing) day was "to call attention to the need for more urban open space, to generate critical debate around how public space is created and allocated, and to improve the quality of urban human habitat … at least until the meter runs out!" (Rebar & Park(ing) Day, 2011). Please see http://parkingday.org/ for more information.

[10] Greyworld are group of artist that work in public spaces with the aim of introducing play and fun into urban spaces. Please see http://greyworld.org/ for more information.

9. Form supports function.

10. Money is not the issue.

11. You are never finished (Project for Public Spaces, 2010).

Place Making differs from sense of place as it is the deliberate creation of a place, or the deliberate teasing out of a sense of place. Place Making says "urbanism has now strongly re-established its intellectual and professional abilities" (Busquets, 2009, p.131).

Caring for Places: What Does it Take to Make Place?

It takes the mind of the beholder
    Wondering
    Imagining
    Caring how things are
      and might be
It takes circumstance and promise and
    Companionable surroundings
That is to say it takes being alert among things
    Standing beside them
    Moving among them
    Being enfolded
    Discovering positions in a larger pattern
    Choosing among paths and vantage points
    Investing attention
It takes events
    Everyday and momentous
    Spontaneous and contrived
which fill the spaces between and bring them to life
which engage the senses and prompt the mind
    Magic rings of silence
    Sounds that touch the nerves of being, echo and spur recollection
    The flows of social action
It takes marking the things that surround us in ways that call out and recall events that take
    place
    Inscribing thought in matter
    Tracing the acts of conception and construction
    Embedding ornament that intrigues and offers to narrate
    Reflecting the joy of seasons and of ritualized time
    Forging libraries of aspiration
    Indexing paths through the repository of the city
It takes Companions
    Faces that challenge
    Faces that confirm
    Faces that dance
    The many great faces that help to bring places into being
    And yes, the face of the unfamiliar

Table B.1: Caring for places: What does it take to make place? Source: Lyndon, D., 2008, p.3.

B.4 Shared Space

A major component of urban design practice is the creation of pedestrian guidelines.[11] Shared Space[12] is a currently popular urban design and transport planning method, developed by Hans Monderman, a Dutch traffic engineer. It is based on what de Vasconcellos (2004) labels 'spatially based utopia'. This is the idea that it is possible to eliminate conflicts between different space users by constructing "a conflict-free physical circulation space" (de Vasconcellos, 2004, p.20).

It is not a new concept as "informal, negotiated use of public space on the basis of conventions and social protocols was the status quo ante for streets and spaces from the earliest settlements" (Shared Space, 2008, p.5). Monderman, putting this concept into practice in the Netherlands, discovered that the removal of clutter—excess street signs, traffic lights, road markings, barriers, etc.—slowed down traffic. He first used this technique around towns and cities in the Netherlands, which he labelled 'Woonerf streets', or living streets.

The method prioritises the social functions of the street, while still accommodating vehicles through the blurring of the distinctions of the space, introducing uncertainty and unpredictability, forcing drivers to 'ignite' what Engwicht refers to as the 'story teller'. As a result, they need to slow down to process information—where they can drive is not a given (Engwicht, 2005; Engwicht, personal communication, November 13, 2009). It is forced negotiation. Shared Space works on the concept that, "it is only when the road is made more dangerous, when drivers stop looking at signs and start looking at other people, that driving becomes safer" (Lyall, 2005, n.p.n.). Monderman, in an interview with the *New York Times* in 2005, claims "All those signs are saying to cars, 'This is your space', and we have organized your behaviour so that as long as you

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[11] Please see 'Pedestrian Planning and Design Guide' (Land Transport New Zealand, 2007) and 'Perth Walking: The Metropolitan Region Pedestrian Strategy' (Department of Transport, 2000) as two examples.

[12] Shared Space is also referred to as Woonerf, Winkelerf, Naked Streets, Home Zone, Living Yard, Living Streets, Silent Streets, Shared Streets, DIY Streets, or pedestrian priority streets depending on the context.

behave this way, nothing can happen to you" (Lyall, 2005, n.p.n.). According to Engwicht, Shared Space inserts "uncertainty about the rules of engagement," causing car drivers to drive more slowly (Engwicht, 2005, p.32).

The theory behind Shared Space builds on the notion that pedestrian infrastructure is primarily established to stop the pedestrian from interrupting the flow of motor vehicles and pedestrian/vehicle accidents, rather than from perspective of respect for the pedestrian (Niven, 2002). We can see this philosophy reflected in the use of guardrails, grade separations, bollards and other barriers to restrict pedestrian movements, and through the placement of traffic infrastructure in footpaths. Additionally, traffic signals are timed for the benefit of motor traffic throughput, not for the free flow of pedestrians (S. Davis 1982; Whyte, 1988; Gehl 1994; Romer and Sathisan 1997; Gehl Architects 2004).

Primarily the concepts behind Shared Space are not about design but rather about psychology and community development (Engwicht, personal communication, November 13, 2009; Shared Space, 2008). For Monderman the "primary design challenge was to force other drivers into eye contact with other users of the space and change them from motorist to citizen" (Engwicht, personal communication, November 13, 2009) and therefore the reduction of traffic speed and risk are the most important measure of Shared Space. Monderman, himself a traffic engineer, questioned:

> Why do engineers believe they must forecast every potential community conflict and resolve that conflict, in advance, with a traffic device or new regulation, when facing and overcoming conflict is at the very heart of building robust communities. Every time we resolve a conflict for a community we deskill that community. (Monderman, as cited in Engwicht, personal communication, November 13, 2009)

This is because, as Engwicht explains, "if you treat traffic problems as a traffic problem you will only get traffic solutions". Engwicht further Monerman's idea calling for an "outbreak of civility" amongst different uses of the street" (personal communication, November 13, 2009).

Engwicht and Monderman have clearly been discussing this matter for some time and their insights are valuable to the study of urban walkability and Shared Spaces. Engwicht, building on Monderman's ideas, contends that there are 'two worlds' interacting on a street—the traffic world and the social world. And what is critical is that the "rules of engagement are exact opposite in these two worlds" (see Table B.2 below). This has massive implications for the design of cities and for urban design in general.

TRAFFIC WORLD	SOCIAL WORLD
Uniform	Diverse
Predictable	Unpredictable
Planned	Spontaneous
Compulsory	Voluntary
Anonymous	Personal
Vehicle-Oriented	People Oriented
Technical-Oriented	Relationship-Oriented
Government Oriented	Community-Oriented
Avoids Conflict	Embraces Conflict
Speed-Oriented	Savors the Moment

Table B.2: The traffic world and the social world. Source: Redrawn from Engwicht, 2005, p.43.

Monderman believed strongly that there was a place for the traffic world, such as on freeways between cities. In that context, traditional traffic engineering works very well. However, the moment vehicles cross the threshold into a town or city, they enter and become part of the social world where the rules of engagement are "the absolute inverse of what they were in the traffic world" (Monderman, as cited in Engwicht, 2005, pp.44-45).[13] Monderman sought to re-democratise communities through forced eye contact and forced discussion between all users of space. As Hamilton-Baillie contends "in the absence of rules, predictability and certainty, drivers have to rely on cultural signals and informal social protocols" (Hamilton-Baillie, 2008, p.133). Shared Space also transfers the responsibility of safety and rules from the state to the citizens, the individual and the community, recognising that, in Engwicht's words, if you treat people like

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[13] The full reference for this is: Monderman in a discussion with Engwicht, as cited in Engwicht, 2005, pp.44-45.

'idiots' they will "usually fulfil your expectations" (Engwicht, 2005, p.33). Engwicht strongly believes that people can make their own decisions and do the humane thing.

Shared Space calms traffic and reduces pedestrian motor vehicle conflicts through the removal of traffic signs, traffic lights, road markings and barriers between cars and pedestrians on streets and footpaths, following a 'village' design concept (Carmona et al., 2003; Hamiton-Baillie 2005; Hamilton-Baillie & Jones, 2005; Shared Space 2005). This removal of 'clutter' creates a space that does not have clear demarcations of space priority of one mode (or activity) over the other and relys on simplicity of space. For Monderman, it works this way: "the surroundings…tell the story of whether you should act as motorist or social beings. Signs and traffic control devices (including traffic calming devices) destroy the social context" (Monderman in a discussion with Engwicht, as cited in Engwicht, 2005, p.49). Thus, "the strongest form of communication in the social world is eye contact." To make motorists part of the social world, you must "force motorists into eye contact with the other users of the space. Traffic control devices remove the need to make eye contact" (Monderman in a discussion with Engwicht, as cited in Engwicht, 2005, p.49).

In addition Shared Space slows the speed of travel through the roadway through the uncertainty of space. The European Shared Space research project, undertaken between 2004 and 2008 in five countries[14] discovered that there was a "critical qualitative change in the use and quality of public space at speeds around 30 kph (19 mph)" (Shared Space, 2008, p.9). The concept of Shared Space requires that the urban space "must give a message that can be read only one way" (Shared Space, 2005, p.17) both by pedestrians and people driving vehicles and this requires travelling at slow speeds. Convention traffic planning which favours straight roads and a clear demarcation of space encourages faster car speeds (Hedman & Jaszewski, 1984). However, if you blur those distinctions through the removal of the demarcation of space drivers must slow down to

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[14] The European Shared Space research project involved the countries of The Netherlands, Belgium, Denmark, Germany and the United Kingdom.

negotiate the space. To Monderman, it was the quality of the public space that was important, not the traffic solutions, as the quality of the public space determined its use and message.

This philosophy has been applied with great success in the United Kingdom particularly along Kensington High Street in London, and New Road in Brighton, and in the Netherlands and Denmark. Its application can be seen in many cities and residential areas throughout the world. Shared Space has been discovered to reduce traffic speed by about 50 percent (Engwicht, personal communication, November 13, 2009). Using this approach has been found to reduce the number of pedestrian motor vehicle accidents, with Kensington High Street reporting a reduction of 40 to 60 percent after the removal of pedestrian barriers based on research conducted two years before the redesign of the space (1998-2000) and two years after the redesign (2003-2005) (Hamilton-Baillie, 2005). New Road, in Brighton, was converted into a Shared Space in 2007 with no changes in pavement between roadway and pedestrian infrastructure resulting in a 93 percent reduction in motor vehicle trips through the space, lower driving speeds and a major increase in pedestrian activity, with 62 percent more people walking through the space, 22 percent more cycling activity and 600 percent more staying activities after the project was implemented (2007) (Gehl Architects, 2011). The policy is still also used in The Netherlands (Shared Space, 2005). Shared Space provides a way for urban centres to reduce the conflict between pedestrians and cars, and create a space that is shared equally by both.

Appendix C: Toolbox

C.1 Introduction

Appendix C provides tools and methods that urban designers and others use to determine the use of public spaces and the interactions between people and built environments.

Part 1 provides a list of walkability questions and considerations to examine if an area is walkable.

Part 2 provides an overview of methods of study human built environment interactions. It then provides a discussion of the methods and provides some examples of each of these methods. (See note at the end of the toolbox for a discussion of the classification system of the toolbox, part 2)

Part 3 provides an overview of the tools and methods Jan Gehl and Gehl Architects' use as part of their Public Spaces Public Life work.

This toolbox is designed to accompany much of the theory and practice discussion in the dissertation. It does not provide 'design' methods, rather the focus is on methods that examine human-built environment interactions. There are many 'design' manuals available. Please see (amongst others):

- Bentley, I., Alcock, A., Murrain, P., McGlynn, S., & Smith, G. (1985). Responsive Environments. A manual for designers (2008 ed.). Oxford: Architectural Press.
- Talen, E. (2009). Urban Design Reclaimed: Tools, Techniques, and Strategies for Planners. Chicago: American Planning Association.

some of these methods, particularly methods used in urban design context analysis.

Appendix C, Toolbox 1: Is my area walkable? Some questions to help you assess the walkability of a locality and how it can be improved.

Use/Network
What is the volume of pedestrian traffic on this street? (pedestrian counts)
Who are the people using this street? Do they have special walking needs given their age or disability?
What is the pedestrian density of particular footpaths (numbers of pedestrians per metre width of footpath per minute)?
What are the main pedestrian routes in the area (day time and night time)?
What types of pedestrian facilities are in the area (dirt paths, paved footpaths/sidewalks, shared streets, pedestrian only streets, plazas, squares)?
What is the length and area of these pedestrian facilities?
What are the main arrival and exit points to the area? Are they connected via walkways?
How easy is it to walk through the area? (Do test walks to establish this.)
How adequate are footpaths/sidewalks in the area?(Some possible problems: no footpaths, discontinuous, too narrow)
What proportion of streets have footpaths/sidewalks?
Are the footpaths/sidewalks complete on both sides of streets?
Is the footpath/sidewalk provision satisfactory in both major and smaller streets?
Are footpaths wide enough to cater for the number of people who walk on them?
What are the footpaths/sidewalks made from? (asphalt, concrete, paving bricks, flagstones, dirt, gravel, etc)
Are the footpaths/sidewalks well-maintained? (free from cracks, holes, rubbish, etc)
Are the block lengths short? (If they are long there may need to be walkways through the block.)
Does the pedestrian network connect major areas/destinations in the city?
Does the pedestrian network connect to primary destinations such as schools, hospitals, transit stations?
Is the pedestrian network itself well-connected (with, for example, few pedestrian cul-de-sacs)?

Barriers
Is the area accessible to those with disabilities? Are there ramps instead of steps where possible?
Are there obstacles on the footpaths (for example, street trade, shanty dwellings, piles of rubbish, parked cars, animals, road or building construction materials, or a large number of poles and signs)?
Are there buffers between the road and the footpath, such as fences, bollards, trees, hedges, parked cars and landscaping? (Buffers have advantages and disadvantages, but they can screen walkways from traffic and prevent parking on the walkways.)
Are there many small interruptions to the pedestrian networks (e.g., minor road crossings, parking lot crossings, driveway crossings)?
Are there other major barriers to walking in the area (major roads, train tracks, rivers, hills, gated land uses, etc)?

Does the slope of the area make it hard to walk?

Intersections

How convenient is it to cross the street? Where are the pedestrian crossings?
What type of traffic intersections are used?
Are pedestrians given priority at intersections?
What are the crossing aides used at traffic intersections (pavement markings, different road surface or paving, signs, traffic lights, median traffic islands, curb bulbouts, underpasses, overpasses, etc.)?
Is crossing made easier either by curb cuts or road raising?
How safe is it to cross the street (at designated pedestrian crossings)? Do drivers obey road laws and traffic signals?
Are pedestrian crossings clearly marked?
Do traffic signals indicate how long you need to wait before crossing, and how much remaining time you have to complete the crossing? Do you need to press a button for a pedestrian signal to permit you to cross?
Are there any mid-block crossings? Are these adequate?

Public Transport connection

Is the area connected to public transport? Where are the public transport nodes?
Are the public transport waiting areas of high-quality (weather protection, information, signage, seating, waste receptacles. etc)?

Land use

What are the primary land uses of the area? (This will suggest the numbers of pedestrians at different times of the day.)
What are the primary destinations (industrial, commercial, governmental, recreational, community) in the area? What is the population of residents and workers in the area?

Enjoyment

What are the main public areas (square, parks, plazas, etc)? Are they public (open to everyone) or private (limited access, controlled use)?
What is the quality of the public spaces (comfort, appearance, maintenance, possibilities for use)?
How many people are using these spaces? How are they using this space? (can be assessed through stationary activity counts or behavioural mapping)
Are there any spaces for children/elderly/youth within the city?
Does the area allow for physical activity, play, interaction and/or entertainment?
Are there any identifying features in the area (monuments, land marks, neighbourhood character)?
Is there any indication that one is entering a special district or area? (It's good to have the neighbourhood character indicated in some way along the walkway.)
Are the walking areas interesting?
Are there interesting views?
Are there temporary activities in the area (markets, festivals, buskers, street performers, etc)?
Does the area allow for resting, for meeting others, for social interaction?
Is there adequate greening in the area (plants, trees, etc)?
Is the area of a high visual quality (pavements, facades, art, etc)?

Streetscapes

Where buildings meet the street, is it clear what is private and what is public space?

Are the dimensions of the buildings lining the footpaths at human scale?
Are the facades of the buildings lining the street transparent/active (i.e., do the buildings have many doors and windows opening onto the street, 'soft edges', with many niches, detailed facades)? (see Gehl, 2009 below)

Infrastructure
What is the amount of seating available?
Is the seating in the right place (with regard to views, comfort and protection from climatic conditions, located at the edge of spaces)? Does the seating maximise the natural advantages of the area?
Are the seating arrangements appropriate (can you talk to friends)?
What is the quality of the seating?
Are there places to stand? To lean against? Attractive edges?
Are waiting areas adequate, providing comfort and protection to pedestrians waiting for transit or to cross the street?
Are there enough rubbish bins?
Is there any public art?
Are there water fountains?
Are there wayfinding devices?
Are there public toilets?

Comfort
Is there adequate protection from the sun, rain and wind?
Is there adequate protection from negative aspects of vehicle traffic (pollution, noise etc)?
Are the ambient noise levels low and comfortable?
Do the sitelines allow you to see where you are going?
Is the area well maintained (footpaths, buildings lining the footpaths, etc)?
Is the area clean (free from rubbish, broken glass, inappropriate graffiti)?

Safety
Is the area lively and active?
Is there street life?
Is there passive surveillance of the area? In other words, are there people around to watch out for each other? (This is especially important when it comes to night-time usage.)
Is the area safe? (both perceived and real)
Is the lighting from street lights and buildings adequate at night time?
Are there signs of other people at night time?
Are there night time uses of the area?
Is there a mix of land uses in the area?
Are there many small land uses?
Are the facades of buildings 'closed' at night?
Is there adequate visibility between modes of transport?
Is there protection from vehicle traffic?

Vehicle traffic
What is the traffic volume of the street? Does it make it hard/unpleasant for walking?
Is there street parking (on/off street)
What is the speed limit of the street? Does this make it hard/unpleasant for walking?
Are there any traffic calming or traffic control devices in the area?
How many lanes of traffic are there?

What are the traffic control devices used (traffic lights, stop signs, roundabouts, speed bumps, etc)?
Perception of the area   C6
Is the area perceived as safe?
Is the area perceived as pleasant?
References: Gehl, J. (2010), Cities for People, Island Press, Washington DC. Pedestrian environmental data scan (PEDS) Audit Instrument. Parks, J., & Schofer, J. (2006), 'Characterizing Neighbourhood Pedestrian Environments with Secondary Data', Transportation Research Part D (11), pp. 250-263. Irvine Minnesota Inventory. Saint Louis University School of Public Health, 2003, Audit tool.

Table C1.1: Is my area walkable? Source: as above.

A version of these walkability questions appear in the UNEP Low Carbon Transport guidebook. See: Matan, A. (2011). Is my area walkable? In R. Salter, S. Dhar & P. Newman (Eds.), *Technologies for Climate Change Mitigation: Transport Sector* (pp. 228-231). Roskilde, Denmark: UNEP Risø Centre.

Appendix C, Toolbox Part 2: Urban design methods to study human and built environment interactions.

This toolbox provides an overview of some of the methods used by urban designers and others to determine the use (or potential use) of an area. These methods all tackle the important questions of how cities are experienced, used or could be used, how the built environment is comprehended and experienced and how it influences use of an area. This toolbox describes some of the major empirical methods used in urban design to study human and built environment interactions by three themes:

1. Observational methods;
2. Interview methods; and
3. Infrastructure and built form methods.

Table C2.1 provides an overview of the methods discussed by this toolbox. (see note at the end of the toolbox for an explanation of classification of methods) Many standard design methods, while very important to the field of urban design, are not discussed. When using methods to study human and built environment interaction it is important to remember that the movements of people are complex. Often what people do when they are not walking is of the most of interest to urban design studies. Therefore the methods used to study people have to be somewhat flexible and 'loose'.

Although the methods are classified as above, combining these methods is encouraged in order to obtain a more complete picture of an area; in particular, the combining of observational methods with interview methods and combining space syntax methods with observational methods.

Approach	Method	

Observation

Qualitative	Tracking and tracing Diary Method Direct observation Walking observation
Quantitative	Systematic observation Test walks
	Behavioural mapping Pedestrian flow Tracking 　　　　　GPS/GSM/RF

Interview

Qualitative	Self Reporting Interviews (Unstructured)
Quantitative	Self reporting (Travel/behavioural diaries) Interviews (Structured)
	Interviews (Surveys & questionnaires)

Infrastructure and observation

Qualitative	Altered photos Computer simulation
Quantitative	Pedestrian modelling Space Syntax Environment and walkability audits Urban design context analysis

Table C2.1: Overview of the methods to study human built environment interactions discussed in Toolbox 2. Source: Author

C2.1 Observational methods

Some of the major observational methods used to study human-environment interactions include:

- Observation:
    - Casual (unstructured) observation;
    - Direct (structured, systematic) observation;
    - Behavioural mapping;
    - Walk-by observation; and
    - Diary method.
- Tracking and tracing methods:
    - Tracking, movement lines and traces;
    - Photo tracking; and
    - GPS/GIS tracking.
- Test walks;
- Streetscape surveys; and
- Pedestrian flow counts.

This section provides a discussion of observational methods.

Observation

Observational methods can be broken primarily into casual (unstructured) or direct (also called structured or systematic) observational methods. Casual observation methods are primarily 'people watching': watching the behaviour of people, or making observations of places. Direct observational methods usually involve systematic, or planned observation, often using predetermined criteria. In direct observation what is to be observed and when is carefully planned before the observation starts, i.e. a block segment or space is identified as is the behaviour or matter to be observed. This type of observation tries to avoid some of the bias or inferences that can be made from casual observation. Systematic or direct observational methods include: behavioural mapping, walk-by observation, diary methods, tracking methods, test walks, streetscape surveys and pedestrian flow counts, amongst others. These will be discussed below.

Bosselmann, using the transformation and changes in Copenhagen's city centre as an example, discovers through his research that "direct experience gained by walking through a city is necessary in making informed decisions about the future of the city" and that "through direct observation urban design principles are discovered that can lead to a better integration of new and old" (2008, p.118). Bosselmann concludes that along with direct observation, one needs to observe the past of a place and envision the future in order to develop principles that allow for change without losing the sense of place, believing that "a mirror is held up to our own eyes whenever we examine things of the past" (2008, p.138). Observational methods are important as they enable the inclusion of perceived qualities along with objectively measured environmental features within the same study (Bosselmann, 1998b; McCormack et al., 2004), and enable actual use, which is often in conflict or of surprised to the planned or 'correct' uses, of a place to be quantified. Examples of observational methods are given in Table C2.2.

Much observational work is conducted using techniques grouped as Post Occupancy Evaluations (POE). POE's use a number of observational survey techniques along with interviews and is adapted from environment-behaviour research to focused on building evaluations to the public space. The details of POE are given in Table C2.3.

Direct observation examples
Mehta (2007, 2009) conducted structured and unstructured direct observations on three neighbourhood commercial streets. The three areas chosen were in the Boston metropolitan area. The street blocks were broken into segments (Mehta, 2007, 2009). Each block segment was observed for 15 minutes, seven times on weekdays and weekends. The observations of the stationary activities were recorded on a map as per the walk-by observations (discussed below), except that the duration of the activity was also recorded. Mehta conducted unstructured direct observations of each block, taking field notes, photos and short videos, and as a participatory observer.
Rivlin (2007) conducted systematic direct observational studies of behaviour in 'found' or 'loose' spaces in New York City (Manhattan and Brooklyn), including the steps of the New York Public Library. The steps were divided into 15 sections and were studied weekdays 10.00 to 16.00 between July to August, and November to December.
William H. Whyte was interested in the everyday behaviour of people using streets and squares in New York City. In Whyte's Street Life Project, 1970, he studied the imbalance of space use in cities, why some areas, plazas and streets attracted people and were crowded and why others did not. In order to study the life in plazas, Whyte used time lapse videos (mounted above the area), interviews, direct observation and behavioural maps. The study took three years and covered 16 plazas, 3 small parks and "a number of odds and ends" (Whyte, 1980, p.15). At the heart of Whyte's methodology was direct observation. Whyte used other methods to complement his observations such as aerial photos, time lapse videos and interviews, "mostly we watched people" (Whyte, 1988, p.4). Whyte emphasises that "you have to know what to look for or you will not see it. Direct observation is the prerequisite" (Whyte, 1980, p.110). Whyte conducted intensive studies of plazas and squares around New York in order to determine why some places were used more than others were. In these studies, Whyte examined the location and amount of: • Sitting space (the amount of space available, including spaces that were not meant for sitting but were used as seating, i.e., ledges and steps); • Sun; • Total space available for use; • Proximity of the square to the street; and • The location of food stores (i.e. the number of vendors and the proximity of the square to food selling establishments). Along with direct observation, Whyte often used time lapse cameras and maintains that with a time lapse camera you "can multiply yourself as an observer, study many areas simultaneously, and do it with accuracy and stamina few humans could match. You can store time, retrieve it for a later study, replay it to others, in dramatic and compelling form" (Whyte, 1980, p.102). Whyte used ten second intervals to record sitting patterns and two second intervals to record pedestrian movements. Whyte cautions; however; that "time lapse does not save time; it stores it" (Whyte, 1980, p.109) and that time lapse photos requires large amounts of time to view and process. Whyte maintains that you need to observe a place first before viewing videos or still images of a place as it will enable you to "see many more things in a time-lapse film of the place than you would otherwise" (Whyte, 1980, p.110).

Table C2.2: Examples of direct observation. Source: Author.

Post Occupancy Evaluation (POE)
Post Occupancy Evaluation (POE), as adapted from environment-behaviour research, includes various survey techniques to evaluate the use of the existing public space, "enabling creation of a multidimensional picture of patterns of use, misuse, and nonuse with the studied setting" (Cooper Marcus & Francis, 1998, p.348). Some of the tools used in POE include: • Participant observation: Cooper Marcus and Francis recommend starting with casual participant observation—just being in the place and observing what you sense/feel about the site. Following this casual observation make notes regarding your observation of the site as related to your senses—what you can see and how this makes you feel, what you can hear, what you can touch(including temperature) and how these make you feel, what you can smell and can you eat there (taste). • Analysis of the site (usually through a site plan): This includes drawing all features of the site, including the location, materials, and the function of various areas of the site. The analysis of the site includes recording messages from the managers of the space. Messages include written, for examples signs posted restricting use, and unwritten, visual messages, such as fences or bollards restricting use (perceived or actual). In addition, the site analysis includes a context analysis focused on surrounding land uses. • Tracing: Tracing includes walking around the space looking for clues on how people use the space (for example locations of rubbish, and type of rubbish, locations of worn lawn etc.). • Behavioural mapping: This is observation of activities happening in the space, including age, gender, ethnicity, type of activity and location, recorded onto a site map, moving through the space. • Informal interviews: Informal interviews conducted during site visits with two or three typical users of the space (based on the behavioural map). This interview should be conducted as a 'casual conversation' focusing on previously formulated questions centred on use of the space (for example: 'often do you visit?' what do you do here?'). Record the characteristics of the interviewee (gender, ethnicity, approximate age, other as required). These are followed by an analysis of the site based on the results of these tools (and a redesign and recommendations if required by the project). Adapted from Cooper Marcus and Francis (1998, pp.345-355).

Table C2.3: Post Occupancy Evaluation. Source: Cooper Marcus and Francis, 1998.

Behavioural mapping

Behavioural mapping, also known as behaviour mapping and activity mapping was originally conceived by Ittelson, Rivlin, and Proshansky in 1970 to provide descriptions of observed behaviour in the controlled environments of psychiatric ward. This technique can be used for various purposes and as such the data needed and collected can vary.

Mapping is an important tool that can convey complex information in an easily understood medium. Mapping as a methodological tool has been used extensively within the fields of social science, including urban planning and architecture and enables spatial relationships, behaviours and movement patterns to be documented and understood (Powell, 2010). Behavioural mapping

has been determined by many users to be one of the most valuable tools to understand the use of space.

Behavioural mapping generally has two parts:

1. A map of the area: including the structure and features of the area (trees, fountains, seatings, including informal seating, cafes, plantings etc.); and

2. A table to record required information (This information can vary depending on the purpose of the study but usually includes various activities).

Behavioural mapping is most suited for stationary activities (for example: sitting, sleeping, eating, playing, smoking, talking, reading) rather than movement activities (such as: walking, running, biking). The activities to be recorded on the map are decided in advance and depend on the context of both the place and the research.

Once these two parts are organised, a researcher records the activities on the map in a systematic manner, recording the precise location and quantities of the predetermined activities. For example, a researcher walks through a park and records every activity observed, including its precise location. Behavioural mapping needs to be conducted in a consistent manner at various times of the day and week. Some examples of behavioural mapping are discussed in Table C2.4.

Behavioural mapping techniques allow for a snap shot in time of a place, and if done over a period of time, show patterns of use. It is a useful tool to test changes to a public space.

It is important to be aware of some of the logistical difficulties of behavioural mapping in large urban environments, primarily, the time needed to observe areas consistently and over periods of time. Also large numbers of observers are needed to cover a large area (i.e., a large square or the whole city centre). In addition, unless combined with other studies, behavioural maps are unable to illustrate a complete pattern of use for the area. Therefore, the tool is often

combined with other observational methods such as pedestrian flow counts and tracing methods to determine trip lengths, route choice and duration.

Examples of behavioural mapping
Mehta (2007, 2009) studied the behaviour of people on three neighbourhood commercial streets in the Boston Metropolitan Area using structured and semi-structure observations of the area, recording activities and the streetscape characteristics. The purpose of the study was to "determine relationships between microscale physical characteristics and uses and people's patterns of social activities on neighbourhood commercial streets" (Mehta, 2007, p.166). As part of this study, Mehta created maps of user behaviour accompanied by field notes, photographs and images of the area. Mehta collected the data "at two levels—the street block and segments of the street block approximately fifty to sixty feet in length—within the three study areas" (Mehta, 2007, p.172). Observations were carried out on weekdays and weekends between 7.00 a.m. and 11.00 p.m. Blocks and block segments were surveyed randomly. Walk-by observations were used to record the location and number of people and to identify the activities they engage in. Structured direct observations were used to record the length of stay of people at various block segments. Unstructured direct observations were used to identify how people engaged with the characteristics of the street" (2007, p.173).
Whyte used behavioural mapping to discover the location of conversations on street corners. For two weeks, Whyte filmed a number of street corners in New York and then plotted the location of conversations lasting a minute or more. This enabled Whyte to look at the location and duration of the conversations. Whyte established that the majority the conversations took place in the bulk of the pedestrian flow, or, as termed by Whyte, the "100 percent location" (1988, p.8).
Trudy Schmidt (1998) used behavioural mapping in two public squares in Brisbane, Queensland, Australia. Her method involved "observing/recording the activities movements and behaviours of users in each space for one hour period, across four different time periods of the week (weekday morning, lunch, evening, and weekend afternoon)" (T. Schmidt, 1998, p.241). Activities were classified into six major groups: • Sitting/standing; • Meeting people/congregating; • Active recreational activities; • Passive recreational activities; • Thoroughfaring; and • Other (eating, smoking and sunbathing).

Table C2.4: Examples of behavioural mapping. Source: Author.

Walk-by observation

Walk-by observation is walking past the place you are observing and recording these observations. Walking observation can be both systematic or casual, however regardless of which method chosen, it requires purposeful and careful observation, continuous questioning and analysis of what is observed.

Walking observation is often conducted in conjunction with other research tools, and can be helpful in providing some of the more ephemeral and atmosphere based observations of a place. With walking observation, it is recommended that

the observer take photos after observing the area, and that often two observers are better than one.

A favourite method of Allan Jacobs from the University of California, Berkeley, Jacobs (1985) used the walking observation method to understand what different residential areas 'said' about their residents by observing the built form. Examples of walking observation are included in Table C2.5.

Examples of 'walking' observation
Appleyard conducted walking surveys of 21 residential streets in San Francisco chosen according to traffic volumes. The streets were chosen in groups so as to balance location and economic factors, and to discover the effects of traffic within the same areas. The streets were characterised as light, medium, heavy and very heavy traffic. The survey conducted interviews with residents and observations of the streets in the survey. Data collected from the observations includes: Street widths, number of traffic lanes, building heights, traffic volumes, mean traffic speed, dwelling types, footpath widths, setback of buildings, number of street trees, distance to food stores, activities on the street, and information about the occupants of the houses including number of residents, occupation type, ethnicity, age, homeowner or renter, time of occupancy, car ownership and use. Systematic observation of 10 houses on each street in the study was also conducted. These observations included recording: if windows were open or closed, if curtains were open or closed, if garage doors were open or closed, if front doors were open or closed, the type, amount and maintenance of plantings, the amount and location of protective devices, the location of signs (including security signs and any graffiti) and if houses with front yards had hedges or fences.
Mehta (2007, 2009) studied the behaviour of people on three neighbourhood commercial streets using walk-by observations. These involved walking the length of each block recording the number, location and type of stationary activities, recording sitting, standing, lying and sleeping. The age classification (child, teen, adult, older) and the gender of the person were also recorded. The walk-by observations were conducted every hour between 07.00 and 22.00 on weekdays and 8.00 and 23.00 on weekends, and there were 15 observations per block on weekdays and weekends for each study area.

Table C2.5: Examples of 'walking' observation. Source: Author.

Tracking methods (tracking, movement lines, traces) and tracking using GPS systems

Tracking is an observation tool that discovers how people move through a space. It is a simple observation based technique where the observer carefully tracks a user of a space in order to determine how the place is used, particularly the primary circulation routes and the attractors. Tracking can be done primarily in two ways:

1. Stationary observation, where the observation is conducted either directly or indirectly through photo or video images (phototracking), and records of people's movements through the space are made (i.e., movements through an intersection). This is increasingly being done remotely through tracking people with the use of remote technology (usually through hand held global positioning systems (GPS) units or through GPS tracking in mobile phones) (discussed below).

2. Following people and recording their movements.

The lines of movement are then often overlaid over the place to show the movement through a space. Examples of research using tracking are given in Table C2.6.

Tracing is an observational method that looks for and records signs of activity or movement. This includes observing and recording movement lines on a surface (i.e., trails across a lawn), or signs of activity (e.g., rubbish in certain areas of a park).

Example of tracking methods
Whyte (1988) used tracking methods to study how pedestrians move through space and make decisions. To do this Whyte studied ninety-five pedestrians walking north on Lexington Avenue in New York City using photographs taken from above the street. He tracked the pedestrians movements from a predetermined A location to a predetermined B location. Whyte found that 16 pedestrians "went into one of the stores on the block; one turned around and walked back south; two stopped for a mid block conversation lasting five minutes; seventy-six completed the journey, with an average elapsed time of fifty-eight seconds" (Whyte, 1988, p.356).
Schmidt (1998) used physical trace analysis' in her environment behaviour surveys of two Brisbane public spaces. This involved recording the locations of patterns of use left in the environment, such as traces of litter and footprints. Schmidt used this method to complement the information recorded through the behavioural maps of each locale.
Pushkarev and Zupan used phototracking, conducted via aerial counts of pedestrians to establish a space allocation rate (how much space is given to pedestrian and how much space is given to motor vehicles), pedestrian flow rates, and the amount of space per pedestrian. They took aerial photos of midtown Manhattan, with a study area of 1.2 square miles. The daytime photos were taken between 13.28 and 13.59 on several weekdays between April 29 and May 21. The evening photos were taken between 17.02 and 17.30 between May 1 and June 4. The photos were taken from helicopter flying at 2000 ft at a speed of 50 miles per hour, with a Hasselblad camera using 70mm colour film.

Table C2.6: Examples of tracking observation. Source: Author.

Global positioning systems (GPS)[1] are increasingly being used to observe how people use places, particularly at a city centre scale. The primary use of this type of observation has been in the tracking of pedestrians to observe their route choice, origin and destination choices, and the duration of their trips. GPS tracking enables researchers to discover where and how people are moving through an area and where they stop and spend time. Examples are provided in Table C2.7.

This type of tracking provides a registration of the location of the person at a given time. The many individual observations can then be combined to get generalised movement patterns of a place. The accuracy of commercial and public GPS systems is generally around 3 to 5 meters depending on the terrain, topography and built form, the weather and the receiver's exposure to the satellite. This type of tracking is increasing as the cost of the devices decreases and the software required is becoming more and more user friendly.

In addition tracking has also been conducted through mobile phones using GSM (Global system for mobile) network, which enables registration of a location and time (track). This type of tracking has only so far had limited accuracy and application. However, the use of phones for tracking will probably increase with more and more mobile phones having GPS capabilities ('smart phones') and as the GPS capacity of these phones increases and becomes easier to use (Jones, Drury & McBeath, 2011). There are privacy issues here.

The track (the individual position and time recordings) is then uploaded into a geographic information system (GIS), where it is layered with a geographical map to produce visual representations of the information. The GIS systems can also be used to perform calculations and contain a database program in conjunction

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[1] A global positioning system (GPS) "is primarily a system for navigation and orientation. The GPS system makes use of a network of satellites in orbit which send signals to earth" (van der Spek, 2008, p.87). GPS systems generally need to receive data from at least three to four satellites, and then through triangulation can provide the geographical location of the receiver (Shoval & Isaacson, 2006). It is a one way system, where satellites send a signal that can be picked up by an almost unlimited number of receivers simultaneously (Shoval & Isaacson, 2006). The system was developed by the US for military purposes and was opened for general use in 2000. GPS has been increasingly gaining public and commercial use, particularly in private vehicles as a navigation system.

with the geographic (mapping) system and can be combined with other field work or research to provide analysis of the results.

The use of GPS is increasing however it is important to be aware that not all tracked trips result in a consistent reading, particularly in dense urban areas or if the participant enters a building as the units require a direct line of vision between the receiver's antenna and the sky at all times. If not it can result in missing track data, inconsistent track data or unreadable data. This means that it is important to have a large number of participants and to combine the use of GPS tracking with other survey methods such as questionnaires. In addition, the units usually require batteries or charging, limiting their use for long periods of time. It is important that all participants receive some instruction on how to use the device.

One of the emerging technologies is called Assisted GPS (AGPS), which combines GPS with a land-based antenna. This helps overcome the signal disruption when inside buildings. In addition, storing location information at quick intervals can help to overcome some of the missing data, especially when recording route choice.

The use of GPS and mobile phone tracking technology enables insight into the use of a cities network, providing, through the layering of individual tracks, ideas of intensity of use of routes through the network across time. GPS data can be combined with other data collection techniques to overcome some of its limitations and also to gather a more complete picture of use. The other surveys usually combined with GPS tracking are personal recordings of journeys by participants through surveys or questionnaires. These can also be recorded electronically through personal digital assistant (PDA) devices. In addition, combining GPS tracking with observational techniques would allow for insights into user behaviour and perceptions while they are on route.

In order for either the GPS tracking devices or the land based tracking systems to work accurately, they must not hinder or alter a participant's journey or behaviour, meaning they must be small and unobtrusive. This limits the use of

hand held receivers, as a participant would be constantly aware of the device which might result in a change of behaviour. Even if the device is unobtrusive, there is still a concern that participants might alter their behaviour when they know they are being tracked.

A major research possibility for GPS devices is to track changes in accessibility before and after spatial interventions.

Example of tracking with GPS/GIS

The Spatial Metro project was a transnational European group looking at ways to improve city centres for pedestrians (van der Spek, 2007, 2008; van der Spek & van Schaick, 2007). The project combines ten organisations: Cities of Norwich, Rouen, Koblenz, Bristol and Biel (Bienne), the University of East Anglia, Delft University of Technology, University of Koblenz and the Swiss Pedestrian Association. The aim of the project is to assess visitor experience in city centres and their spatial use before and after interventions. The project uses three methods: GPS tracking, video observation and questionnaires.

One of the major studies carried out by the project was observing pedestrian walking patterns (route choice) in the medieval city centres of Norwich, Rouen and Koblenz in 2007, through the use of GPS devices and a questionnaire. The GPS units used in this study recorded participants locations every five seconds. This created a place-time log or a track log, resulting in temporal-geographical quantitative information that can be projected onto maps through the use of a GIS program, creating a visual representation of the route walked. The project determined that the use of GPS tracking enabled "detailed insights into actual behaviour" including "the exact departure and return time, time spent at specific locations, destinations, the walked route or geographical route of the journey, the speed and the mode of transport" (van der Spek, 2008, p.87).

The study was limited to people arriving at the city by car, and to the parking garages used. Participants in the study carried the GPS unit in return for free parking, distributed from 10.00 to 17.00, and were able to be returned at any time.

The data collection was carried out from two different parking garages at the same time that were primarily on opposite sides of the city centre. People leaving the parking garage (on foot after having parked their car) were given an information sheet and asked to participate in the survey in exchange for free parking. Only those that were in the city for shopping or leisure were able to participate and were given a GPS unit. A code was assigned to every entry. Upon returning the unit, participants were required to complete a questionnaire. The results of the GPS tracking log and the questionnaire where then processed using five steps: validation; cleaning, filtering and repairing; individual analysis; collective analysis based on the questionnaire; and findings and conclusions. The processed data is "layered analysis drawings in GIS, Photoshop and Illustrator" (van der Spek, 2008, p.88) that can be used to visually show the results of the survey.

Shoval and Isaacson (2006) tested the use of GPS and a Time Difference of Arrival (TDOA) tracking algorithm technologies in a study of pedestrian behaviour in the historical city centre of the Town of Jaffa, which is part of the City of Tel Aviv-Jaffa in Israel. The city centre contained a diverse terrain, including alleys, open areas, water and a covered and uncovered market. This allowed for the testing of the technology in different environments. The GPS system used was a Magellan GPS device with an external antenna. The device was placed in a bag and the antenna was clipped to the outside. The GPS recorded a location every ten meters. The TDOA system used was a small hand held device that was placed in a bag and recorded a location every ten seconds. The same person carried both units at the same time, creating identical situations. The participant walked for 2 hours and 45 mins on a 2.35 km route. The procedure was repeated. It

Example of tracking with GPS/GIS
was found that the TDOA system had trouble recording locations at the waterfront where it recorded inaccurate locations. The GPS system was overall considered reasonably accurate (90 percent of the time, it was accurate within 20 meters) except in the covered market place, where the results were off sometimes by about 50 meters.
Shoval (2007) recorded pedestrian use in the Old City of Akko. The study was limited to first time visitors seeing the archaeological sites. Participants were given a GPS device and a pocket personal computer (PC) at the main entrance to the city. The participants were required to carry the GPS device for their entire trip and to complete a questionnaire upon return. The GPS device used was an Emtac CruxII Blue Tooth GPS receiver. The GPS recorded a location every second and was attached to a harness, which positioned the GPS receiver just below the shoulder of the participant. The GPS device, through wireless Bluetooth, sent the location of the wearer to the PC, which created a log. The data was collected in June and August 2004 for 19 non consecutive days. A total of 246 tracks were recorded, of which 134 were usable. Some of the technical problems encountered were that the GPS device failed to log the entire journey, the participant returned the device before they had completed their trip or the participant refused to complete the questionnaire and therefore their trip was not used. The study used a high level of spatial-temporal logging (logs every second) to try to combat the signal problems encountered in a dense urban environment, allowing for reconnection to the satellite within a quick time frame and for minimal breaks in the recorded track.
Nielsen and Hovgesen (2004) studied travel behaviour in Copenhagen. The study used a Garmin Navtalk GSM unit, which is a mobile phone with GPS receiver. The receiver continuously recorded tracks. The device was small and could be carried as one would carry a mobile phone (i.e., in a bag or pocket). Seven participants carried the GPS device with them whenever they were outside of a building for one week. This was for all trips, not just walking trips. The trips were mapped and a 'kernel density' was created. A 'kernel density' is a visual representation of the trips that show the continuous pattern as colours, rather than each data point, which enabled a basic reconstruction of missing data points on tracks (matching the missing movements to the road or pedestrian network).
A GIS pedestrian survey was conducted in four parks in Aalborg, Denmark, in 2007 with 4462 respondents (Harder, Nielsen, Bro, & Tradisauskas, 2008). The aim of the project was to experience and test collecting data in a large-scale study using GIS, and to examine the use of real-time visualisation of the results offered by Google Earth. The study also involved a survey of participants. The studies were carried out on various days in August, 2007. Participants were invited to participate as they entered one of the four parks, and were given a GPS unit which they carried for the whole of their journey. Upon exiting the park they were asked to complete a survey. The GPS unit used was a GPRS-based hardware unit called Flextrack Lommy © with a built in GPS receiver. The unit is small and light weight and able to be followed online and in real-time. This enabled tracking of the device and the ability to find people who left the park without returning the receiver. Out of 50 GPS units used 3 were lost.

Table C2.7: Examples of tracking with GPS/GIS. Source: Author.

Test walks

Test walks are ways to 'discover' or 'test' the environment that a pedestrian experiences within a city. They can be used to discover walking and waiting times or to discover a pedestrian's perception of a place or what difficulty or pleasures a pedestrian may encounter. An example of a test walk is provided in Table C2.8.

Streetscape surveys

Streetscape surveys[2] are a type of systematic direct observation and can involve many components, such as a direct rating system of the builds that line the street (i.e., Gehl's 'A thru E' rating system, discussed in Toolbox 3) or an analysis of the infrastructure for pedestrians. Table C2.9. provides an example of a streetscape survey.

Example of a test walk
Bosselmann (1998b) conducted four minute walks through the centre of 14 cities to test a pedestrian's perception of time, seeing what physical spaces are encountered and how long the 4 minute walk appears to take, based on the spaces encountered. The cities were selected to represent a variety of scales and include: 1. Venice,   2. University of California Berkeley campus,   3. two locations in San Francisco,   4. Times Square, New York,   5. Copenhagen Strøget area,   6. Washington D.C.,   7. Toronto,   8. the old city of Kyoto,   9. Piazza Navona, Rome,   10. London,   11. Paris,   12. Barcelona,   13. Laguna Niguel (Orange County, California), and   14. Stanford Shopping Centre (Palo Alto, California).   From this survey Bosselmann determined that "pedestrians tell the length of their walks by the rhythmic spacing of recurring elements. The Venice walk has frequent and different types of rhythmic spacing. Other environments have produced fewer types of spacing, and the visible information engages walkers less frequently…Pedestrians perceive change successively and adjust their knowledge…to what they have already learned…(1998b, p.90). Therefore, Bosselmann concludes that "a consideration of rhythm in city design is valuable" (Bosselmann, 1998b, p.91). Bosselmann's discussion of pedestrian's perceptions of time provides an explanation of why some walks seem to take longer than others.

Table C2.8. Example of a test walk. Source: Author.

Example of a streetscape survey
Allan Jacobs (1996) compared the layout of 'great' streets from around the world, examining their position within the urban environment and their composition. For his study, Jacobs measured building heights, building lengths, frequency of doorways, store sizes, numbers of people that pass, the layout, the scale of the road and building and the amenities present. From these examinations, Jacobs' establishes the attributes that all of the great streets he studied share.

Table C2.9. Example of a streetscape survey. Source: Author.

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[2] A streetscape survey in this context concentrates on how the street would relate to people, so while it is primarily look at "structure" it is a form of direct observation that takes place at the location (rather than removed) and concentrates on the intimate scale that a pedestrian would experience. For this reason it has been included in the observation category but could easily be placed with infrastructure.

Generally streetscapes surveys observe predetermined characteristics of the street and record these on a map. The characteristics recorded depend on the purpose of the study, but some could include: footpath widths, number of windows and doors, maintenance, location of obstructions amongst others. Streetscape surveys can provide valuable information about the streets attractiveness and provision for pedestrians.

Pedestrian flow counts

Pedestrian Flow counts (also called pedestrian cordon counts, movement surveys, gate counts and pedestrian flow surveys) is counting the number of people who cross a spot in a given time period. It is a common technique used by many researchers (see Cunningham & Cullen, 1993; S. Davis, 1982; Desyllas & Duxbury, 2001; Fruin, 1970, 1987; Peponis, Ross, & Rashid, 1997; Pushkarev & Zupan, 1975; Whyte, 1988; Zook, Glanz, & Zimring, 2011; amongst others).

Pedestrian flow counts are a quantitative method, involving counting the number of pedestrians that cross a certain location, or 'gate', over a designated period. The counts are usually conducted through manual field counts or photography. Manual counts are conducted are generally counted for five, ten or fifteen minutes of an hour and then expanded to gain an hourly count.[3]

The times that the gate counts are conducted usually depend on the purpose of the survey; however they need to be made on ordinary days, free of unusual events, such as weather or festivals. Generally counts are conducted at mid block locations. Counts at major intersections can be difficult because of the variety of directional choice available to the pedestrian and therefore require a greater number of data collectors although Whyte asserts that this is the best place to observe people (Whyte, 1988). If a study is conducted on different days at different locations, a control point needs to be selected and maintained as a base line to establish if the different days are similar.

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[3] Peponis, Ross and Rashid, in their study of urban space in Atlanta used 5 minutes counts conducted at various times of the day for an average of 20 counts per location (Peponis, et al., 1997). Desyllas and Duxbury used counts of 5 minutes every hour (Desyllas & Duxbury, 2001). Fruin used counts of 12 minutes (Fruin, 1987).

Pedestrian flow counts enable simple access to information on how a place is being used, what routes are preferable in a city, and can be used as a measure of vitality and accessibility. Primarily pedestrian flow counts are used to count pedestrians but what is recorded can be varied, and the method can be used to count other forms of transport such as bikes or rollerblades. In addition to recording the numbers of people, other characteristics can also be recorded, for example the number of males and female, by different age groups or people with prams.

Pedestrian flow counts provide a good method to establish levels of use of a space however they need to be used in conjunction with other methods as high level of use does not necessarily mean a people friendly environment.

C2.2 Interview methods

Urban design techniques grouped here under interview methods refer to methods that gather information directly from the people using (or not using) the built environment. Techniques here include interviews and self-reporting methods (i.e., travel and behaviour diaries).

Interviews

Interviews are a popular method used by many researchers interested in environment and behaviour, and consist of three primary types structured, unstructured and self-reporting (generally surveys). These include:

- *Informal interviews:* Informal interviews are usually a 'conversation'. They are useful in finding out how people perceive and use a space, rather than for gaining numerical information, and can be as simple as a quick question within a conversation.

- *Guided interviews:* Are structured interviews with set questions that are often provided to the participant beforehand and during the interview. Guided interviews are useful for gaining comparable information. Guided interviews do allow for some flexibility as the interviewer can rephrase questions, ask additional questions, skip questions and clarify points.

- *Questionnaires:* Also known as surveys. These are structured, set questions that are carefully phrased and ordered. The questions can be yes/no, multiple-choice or open-ended questions. Questionaries are useful in gaining easily comparable information. Project for Public Spaces provides recommendations for constructing questionnaires. These, from Project for Public Spaces (2002, p.112) are listed below.
    - Use simple language;
    - Avoid embarrassing, potentially embarrassing, ambiguous and leading questions;
    - Leading questions;
    - Develop questions that will help in making design and/or management recommendations; and
    - Cluster questions on a single topic and ask general and easier questions before the more specific ones.

An example of research that used interviews is provided in Table C2.10.

Interviews are a good method to gather in depth data and personal responses, particularly in the case of walkability studies, information on the purpose of trips and use.

Surveys are usually conducted by a home interview, either in person or via the telephone, by a mailed questionnaire, or by field-distributed questionnaires. Surveys need to be well formatted, concise, cheerful and attractive, containing questions about the participant's route choice, mode of travel, and their frequency of travel. It is important to remember that there is a low return rate on take home surveys and questionaries.

When using interview techniques it is important to be aware that they are time consuming for both the interviewers and the participants and that interviewers need to be very careful that they do not to bias the results.

Example of interviews: Donald Appleyard's liveability surveys
Donald Appleyard, along with Lintell, conducted interviews with residents on three streets in San Francisco as part of his Street Liveability Study to tested the effects of traffic on residential street life (Appleyard, 1981). The streets used were Franklin, Gough and Octavia. The streets were identical in appearance but different in traffic volumes, which were classified as heavy (Franklin, 16,000 cars), medium (Gough, 8,000 cars) and light (Octavia, less than 2,000 cars). The survey involved 1 hour-long interviews with 12 residents on each block from 3 age categories: young (<25), middle-aged (25-55) and elderly (>55), making a sample size of about 30 percent of the total residents on each block. The interviews explored five issues: traffic hazards, stress, neighbouring and visiting, privacy and sense of territory, and environment awareness. In addition, Appleyard asked the participants to create an image map of their street, to record visually their feelings of territory and neighbouring.
Bosselmann and MacDonald conducted a liveability study of 3 residential boulevards based on Appleyard and Lintell's 1969 Livable streets project. The study looked at three heavy traffic boulevards: • Eastern Parkway, Brooklyn, New York: net density 30 dw/acre, 44440 cars per day • Ocean Parkway, Brooklyn, New York, 11 dw/acre, 42040 cars per day • The Esplanade, Chico, California: 4 dw/acre, 24200 cars per day All three boulevards had a central arterial road for heavy through traffic, then a medium with landscaping, then local access streets, footpaths and trees, and houses with front yards. In addition to the boulevards, Bosselmann and MacDonald selected two residential streets in the immediate vicinity with the same density but varying traffic levels (medium and low) in order to compare the liveability of the boulevards. Bosselmann and MacDonald conducted a door-to-door survey with 99 residents from the three survey areas (35 from Chico, 31 from Ocean Parkway area and 33 from Eastern Parkway area). The survey questions included several open-ended questions asking residents to describe their street, several scaled (or rating) questions, and two questions requiring participants to answer with simple diagrams or maps (Bosselmann & MacDonald, 1999). The map questions asked participants where they had acquaintances and what they considered their territory. In addition to the survey, the study collected information on traffic volumes, traffic speed and noise levels (recorded as percent of time greater than 65 decibels).
Appleyard (1969, 1970) also conducted interviews in Ciudad Guayana, Venezuela where he had participants draw free recall maps of their local area and of the whole city. 320 people participated in the survey. About half of these completed the mapping portion of the survey. Participants were asked to recall and describe what buildings and places in the city they could remember. They were then asked to draw a map of these buildings and places, along with any other places that came to mind, and a map of their local area.
Appleyard's livability survey has recently been reproduced in a United Kingdom context with similar results. See Hart (2008).

Table C2.10: Example of interviews: Donald Appleyard's liveability surveys. Source: Author

Self reporting techniques

Many urban designers use self reporting methods to establish the needs, wants and preferences of people. Self reporting methods include image maps, surveys, and diaries. Examples of self-reporting techniques are provided in Table C2.11.

Travel and behaviour diaries are a common self-reporting method requiring participants to record their travel over a designated period of time (usually for 7 days). Travel and behaviour diaries are a widely utilized method and are often included as part of transportation studies or plans conducted by cities.

Examples of self reporting techniques
Michael Hill (1984) used surveys to test the accuracy of self recorded data by randomly selecting 200 pedestrians and tracking them to their destination, recording the route they used. The pedestrians were unaware they were being tracked and were approached at the end of their trip with a survey form asking them to record their route. 158 people accepted the surveys, and 97 returned them. Of the surveys returned, 87 percent accurately described their trips.
Donald Appleyard, as part of his Street Liveability Study (Table C2.10) asked participants to create an image map of their street, to record visually their feelings of territory and neighbouring. During the interviews, Appleyard used image mapping to enable residents to express their feelings about their street. The mapping involved a base map of the street (building footprints and road way) covered with tracing paper. This enabled the participant to express visually their feelings of territory and neighbouring amongst other issues. The base maps were accompanied by a photo of the streetscape of the participant's street.

Table C2.11: Example of self reporting techniques. Source: Author

In addition, self reported image mapping (also referred to as cultural mapping) requires participants to map or draw particular elements of their area. For example drawing their travel route on a map or drawing elements they pass on the way somewhere. Image mapping illustrates the participants' perceptions of an area. Grogan, Mercer and Engwicht maintain that the "maps are representations of how people see the relationships of various elements in an environment" (1995, p.73). The maps can be created literally or symbolically but that all maps, regardless of how objective they appear, are perceptual maps, meaning that the drawer had to make decisions about what to include, what was important and what not to include. This idea is true of all maps—no map is completely objective. Self reported image mapping can be effective at enabling people to represent their feeling, views and perceptions of the place under scrutiny. In addition, the maps can be combined and then convey the collective ideas of a place.

It is important to recognise that self reported data, such as questionnaires and diaries, are often subject to reporting errors, require careful wording of required tasks, and are open to many different responses.

C2.3 Introduction to methods that focus of the possibilities of an area to support positive human-environment interactions

Many methods to study human-built environment interactions focus primarily on the infrastructure or form (or layout) of the city rather than the use of the area. This is because the "design of a place affects the choices people can make" (Bently, Alcock, Murrain, McGlynn, & Smith, 1985, p.9). Some of these methods are aimed primarily at pedestrians and the potential for the environment to relate to pedestrians and to be lively areas. These methods include context analysis, environment and walkability audits, simulation of environments, Space Syntax and pedestrian modelling.[4]

Urban Design Context analysis

Urban design context analysis, or sometimes referred to as urban fabric indicators or Formal Indicators Concept (Porta & Renne, 2005), are a set of standard urban design tools, that designers use to assess the potential of the area for use. They often focus on the potential of the area with the focus being a particular building, site or a city level centre analysis (usually 800 or 400 meters radius from a defined centre, referred to as a 'ped-shed'). Some of the tools here include:

- *District structuring:* This involves assessing how the area is positioned in the greater urban area, and the context of the area to other areas.

- *Legibility analysis:* This includes looking at the paths, nodes, landmarks, edges, and districts surrounding the area of concern. It can also include an environmental and walkability audit, such as the SAFE assessment, discussed below.

- *Permeability/accessibility analysis*: Involves looking at the connections to the site, or through an area.

  - *'Ped-shed' mapping:* From a predetermined centre a 400 metre or 800 metre radii is drawn around. This is the established walkable

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[4] There are numerous other survey techniques looking at built form however due to the prevalence of these surveys the discussion will focus on them, however the PlaceMaker method (Sepe, 2009) is of interest.

area, i.e., a 'ped-shed'. Then the actual walkable area is measured using the streets and paths and taking into account factors such as heavily trafficked roads which can only be crossed safely at certain points, pedestrian can take shortcuts through parks, laneways and other spaces but that only safe ones can be taken into account. The measured area is a measure of how permeable the area is.

- *Street connectivity mapping:* This involves mapping the number of four-way, three-way and two-way intersections and dead end streets in your selected area. Each is scored and the resulting score is a measure of permeability (i.e., the ability to travel through an area).

- *Variety:* This measures the variety of an area by measuring:
  - *Land Use Mapping:* This involves mapping the different land uses in a predetermined area and with pre-established categories.
  - *Lot Size Mapping:* This involves mapping different lot sizes in the predetermined area.
  - *Park Access Mapping:* This involves mapping the amount of park space/public open space as a percentage of total area.
  - *Dwelling and residential density*: This involves mapping the number of dwellings in the area.
  - *Employment density*: This involves mapping the number of jobs in the area.
  - *Public private realm mapping:* This involves analysis of the area in terms of public access and can be done in a number of different ways, including mapping public spaces and buildings compared to private buildings, or the number of doors open to the public.

- *Public transport access:* This involves mapping the public transport routes that operate at a predetermined frequency (usually at least every thirty minutes or less) considered appropriate for accessibility.

- *Robustness:* This measures the flexibility of buildings and the urban structure, an active public realm, and the ability for the environment to respond to change, including measures of:

- *Building Frontage:* This involves mapping the active frontages that line the street.

- *Open Space:* This involves mapping the amount of open space in an area and is usually expressed as a percentage of total space.

- *Solar Orientation:* This involves mapping the orientation of the buildings in an area as north/south or east/west, and highlights the areas ability to be energy efficient.

- *Robust Built Form Assessment*: This measures the ability of the built form to accommodate other uses over time.

- *Richness and Visual Appropriateness:* This relates to legibility of form and use, variety and compatibility, and includes measures of:

  - *Neighbourhood Character Assessment:* This involves direct observation of the built form of the area assessing the built character (see Allan Jacobs' walking observation discussed previously).

  - *Day and Night Use Mapping:* This is an assessment of the land use of the area by classifying uses by their opening hours, and is related to safely the safety and vibrancy of an area.

- *Personality of the area*: This involves looking at the qualities that make the area unique and includes measures of:

  - *Genius Loci assessment:* This is an assessment of the attractions, significant land marks, personalising aspects etc. of the area and is related to sense of place.

  - *City space quality assessment:* This is an assessment of the quality of the open space of the area using criteria established prior such as protection or comfort.

Urban design context analysis can be a good way to assess the area in terms of its ability to be vibrant and friendly. The measures provide a clear picture of the potential for use of the area and enable clear visual assessment of changes made to the area. That said, however, the measures can be a little broad and many can be done through mapping programs and as such are removed from the area and can miss what is actually happening on the ground.

Environmental and walkability audits

Environmental audits and walkability audits measure the landscape features of an area to assess its walkability and pedestrian friendliness. They are audits to assess the potential of an environment to encourage walking and usually measure things like accessibility, safety and enjoyment in the surroundings, although they vary in focus and complexity. Most audits usually include a rating system (although not always, sometimes they are more 'holistic'). Audits usually require some knowledge of the assessment tool, and can be undertaken by urban designers or by trained 'lay' people. Increasingly these audits are being conducted via GIS programs. Some examples of environment and walkability audits are given in Table C2.12.

Pedestrian and environmental audits are useful to create a non-subjective study of the built environments and enable repeatable and comparable surveys; however, it is important that they are combined with use surveys as they only show 'potential' for use. In addition, the audits often miss the small scale micro elements of the environments. Audits are useful measures of environments in plan stage and as a complement to observational methods.

Examples of environment and walkability audits
Pedestrian environmental data scan (PEDS) is a one page audit of the pedestrian environment designed to be completed in the field. Each audit item assesses elements of the environment from a user's perspective. The audit contains 40 questions, including a subjective rating question and is designed to assess segments of pedestrian space, such as a path. The audit and its training materials were tested in Chapel Hill and College Park, Maryland in 2004 (Clifton, Smith, & Rodriguez, 2007). In pairs, the auditors evaluated both sides of the street simultaneously, except in areas of high-traffic. For the College Park audit 995 segments were analysed by 12 auditors (averaging 100 segments a day, including one test day). The audit found that the results from different auditors were primarily consistent, except for the subjective questions and the more abstract measures such as enclosure. The audit was found to take between 6 to 10 minutes to complete per 400 ft of segment with two auditors, and can be conducted via a personal digital assistant (PDA) or via pen and paper.
Parks and Schofer (2006) developed an audit of the pedestrian environment that relies primarily on data gathered from GIS and aerial photography and does not require site visits. The audit was tested in 23 Chicago neighbourhoods, using TIGER maps (US Census maps). The audit considers 6 factors: footpaths, parking areas, building setbacks, average block lengths, intersection types and block density (by census block). All of the measures are analysed looking at a predetermined neighbourhood (in this case defined as a 2000 ft radius around a centre point) through a GIS program. Intersection types are measured as a density of four-way intersections per square mile and as a ratio to all other intersections. Footpaths are measured as a ratio to road space. Setbacks are measured as an average setback. Parking is measured as a ratio to amount of road space. Blocks are analysed as a number of blocks to street length. Parks and Schofer compared

the audit analysis to a field visit analysis, and found that apart from the parking ratio, the correlations between the two analyses were high, concluding that "laboratory collected variables can be used to create pedestrian environment indices that accurately reflect the field ratings on which they are based at a fraction of the cost of collecting data in the field" (2006, pp.262-263).

Irvine-Minnesota inventory (IMI) is an audit tool developed by the University of California, Irvine and the University of Minnesota. It is a 162-item inventory which examines the built environment at street scale (Boarnet, Forsyth, Day & Oakes, 2011; Forsyth, Jacobson & Thering, 2010), identifying four classes of features: traffic safety (infrastructure), crime safety, accessibility and pleasureability. The accessibility category includes four parts: density, land use, amenities and access. Pleasureability has two categorizations: natural features and urban design. The audit results in weighted scores. The inventory has been found to be comprehensive, easy to learn and use, if a little long, and flexible for varying urban environments. Boarnet et al. (2011) have developed a shorter version of the inventory aimed at those interested primarily in physical activity.

Other Audits:
SPACES, Systematic Pedestrian and Cycling Environment Scan, was developed by the University of Western Australia. SPACES is concerned with four characteristics of walking: functionality, safely, aesthetics and destinations.
Pedestrian Environment Factor (PEF) is based on footpath connectivity and continuity, street crossings, streetscape and topography. This audit has been used in Portland, Oregon.
Pedestrian Friendliness Index (PFI) developed by Replogle in 1990 for the Maryland National capital Parks and Planning Commission. This assessment rates pedestrian and bicycle suitability from 0-1 based on five characteristics.
A *pedestrian level of service* (LOS) has been developed and attempted by numerous studies, including Fruin (1987) and Sarkar (1993).
Walking Suitability Assessment Form (WSAF), University of North Carolina, is primarily concerned with pedestrian safety
Walkable Places Survey (WPS), Baltimore Metropolitan Council
SLU Analytic Audit Tool, Saint Louise University
SAFE assessment, Murdoch University (Safety, Attractiveness, Friendliness, Efficiency)
Pedestrian Bicycle Information Centre (PBIC) checklist, Partnership for Walkable America, is essentially a checklist to rate participant satisfaction of the walking environment.

Table C2.12: Examples of environment and walkability audits. Source: Author.

Simulation

Simulation through creating new environments or altering existing environments digitally, through models or altered photos is used to test how people respond to different changes and to different parts of the environment. Examples are provided in Table C2.13. A common form of simulation is through using altered photographs to decipher how pedestrians make choices, particularly route choices.

Space Syntax

Space Syntax investigates configurational relationships of urban space, particularly road space and is based on the idea that societies use space as a key way of organising relationships. Space Syntax looks at urban morphology through

a series of graphs with the idea that spaces that are directly linked to other spaces (either physically or through site lines) will have greater levels of movement than other spaces.

Space Syntax was developed at University College in London by Bill Hillier, amongst others. It analyses connection patterns of the urban form, looking at differentiation and centrality and the relationship of the urban parts to each other. Space Syntax illustrates the urban environment as a graph of relationships, turning continuous space into a connected set of discrete units. The idea is that society and space both influence and alter each other, and that visual corridors and the urban structure (without taking into account attractors) play a significant role in pedestrian movements. Space Syntax studies maintain that it is not metric distance that determines movement (trip length and route choice) in cities rather it is the properties of networks. Space Syntax studies differentiate between to and from movement and through movement, the first of which is attributed to land use and the second to the configuration of the city.

A number of studies, mostly on European cities, have demonstrated significant correlations between integration and the density of pedestrian movement (see Bafna, 2003; Baran, Rodriguez, & Khattak, 2008; Desyllas & Duxbury, 2001; Foltête & Piombini, 2007; Hillier & Hanson, 1984; Hillier & Iida, 2005; Hillier, Penn, Hanson, Grajewski, & Xu, 1993; Peponis, Ross & Rashid, 1997).

In order to ascertain the walkability of an area, Space Syntax creates maps of the spatial configurations of roads in a given area. The common maps used include:

- *Convex map*: map of the given spatial configuration (connections).
- *Axial (linear) map*: map of the movement possibilities, and are used to calculate measures of connectivity, control and integration.
- *All line axial map*: represents the longest line of sight, using Spacebox software.

Some of the important concepts in Space Syntax are:

- *Real relative asymmetry (RRA):* a ratio of integration. The average depth of each node from all other nodes in the graph (mean depth)

is expressed as a fraction to the maximum possible range of depth values for any node in the graph with the same number of nodes.

- *Integration value*: the inverse of the RRA value. Integration value shows a locations integration with the system.
- *Isovists*: the 360° area visible to the observer from a given position.
- *Visibility graph analysis.*
- *Connectivity*: the number of units/nodes connected linked to each other.
- *Configuration:* the relation of spaces to other spaces.
- *Control value:* the degree to which a line is important for accessing neighbouring lines.
- *Closeness:* integration, or the lengths of the shortest paths between nodes.
- *Betweenness*: a measure of choice.
- *Intelligibility:* a system where spaces are well-connected (integrated).

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Examples of simulation
In *The View From the Road*, Appleyard, Lynch and Myer used spatial sequences to reveal what a person would see as they approach objects (1996). Appleyard, in conjunction with Kenneth Craik, established the Environmental Simulation Laboratory at UC Berkeley. The lab used a moving camera that passed over scale models of urban environments to try to recreate the experience of walking, driving or flying through the area. The intent was to develop tools to express changes in urban environments to people in a better way. This study is discussed in Bosselmann (1998b). Bosselmann asserts that the major problem with computer stimulation of urban environments is that they are missing the realism of everyday life. They are missing the "tarnish of everyday street scenes" (1998b, p.98). The advantage of computer stimulation is that the experience can enable viewers to better understand the environment and can be "experienced as a substitute for reality" (Bosselmann, 1998b, p.185).
Zacharias is concerned with route choice and what impacts on that decision (1999, 2001a, 2001b, 2005). He has studied the spatial behaviour of pedestrians focusing on path choice and how it is affected by visual stimuli in urban pedestrian environments. Zacharias has tested the effect of path choice by using altered photographs of an urban landscape (Zacharias, 2001a). His study moved visual stimuli to different locations and to places that would have otherwise been undesirable and found that it was not the quantity of the human elements but the quality of them that attracted the participants to that path. The study used photos of Montpellier. Photos were taken of each path choice "with a 50mm lens at the mid-point of the intersection, bisecting the path in question and pointing directly down a straight line centred on the path" (Zacharias, 2001a, p.343). The light of each picture was controlled to stop the effect of light on path choice. The "photos were taken such that a line subtended from the camera to the centre of the picture plan was parallel to a level surface at the point of observation" (Zacharias, 2001a, p.344). The photos were displayed to the participants on a 17" computer monitor at the same resolution and size. The study was broken up into two parts with different participants. None of the participants were familiar with Montpellier. The first part showed 45 participants photos of intersections to establish their route choice and which of the options were the most preferred and which were the least preferred. The participants were shown the photos of the path choices for each intersection simultaneously (usually a set of four to six photos). The chosen path then led to another set of photos of another path choice. Each participant explored for a total of 13 choices, which on average took half an hour. A research assistant recorded comments on the path choice made by the participants. The most and least preferred photo choices then became the altered photos shown to group two. The photos were altered in Photoshop by moving elements such as awnings, signs and people from the most preferred choices to the least preferred choices. Group two consisted of 45 new participants, whose comments and path choices were recorded by a research assistant.

One of the major purposes of Zacharias' study is the belief that "public appreciation of visual order may be related to ability to understand and appreciate how one can become personally involved in the landscape" (Zacharias, 2001b, p.11). Through his survey, Zacharias establishes that the environment has to be meaningful and attractive to the pedestrian. The path choice of the participants leaned towards the paths with "the presence of people, signs, awnings and potted plants" (Zacharias, 2001a, p.349). He found that "the appeal of the area depended strongly on the maintenance of the whole area and the appearance of the shop fronts" as well as presumed choice motivating forces such as street activities and entertainment/ food venues (2001b, p.11) and the presence of "signs, awnings, and furnishings" (Zacharias 1997, as cited in 2001a, p.13). Zacharias' study was limited to first time visitors of an urban environment, who would naturally be attracted to places where they see signs of other people and of activity, and that generally have a more exploratory than purpose oriented goal. It would need to be further explored in a 'typical' urban environment. In addition, his studies are often confined to smaller spaces, not to the whole city centre and they are removed from the environment and therefore his research is primarily on participants' reactions to urban design and signs of other human activity, and not how they might necessarily react in the real environment. |

Table C2.13: Examples of simulation. Source: Author

Space syntax is a very useful measure of evaluating the connectivity of different design options, and has been used to measure the above principles in design of urban form along with building designs.

It is important to use Syntax surveys along with observational techniques as Space Syntax does not measure actual use, nor the qualitative or small scale aspects of the urban landscape. It does not yet have a clearly developed methodology of creating axial maps and therefore there is a problem of reliability and interpretation is needed to convert urban space into convex spaces linked to axial lines. In addition, Space Syntax is not been able to explain behavioural aspects of individuals, such as the number of trips they make or preference for different travel modes.

Modelling pedestrian behaviour

Mathematical models have been used to simulate human spatial behaviour, and are useful to assess the accessibility of various layouts and street designs, to assess a designs ability to promote pedestrian activity or to reduce congestion at a particular location (Aschwanden, Haegler, Bosché, Van Gool & Schmitt, 2011). The modelling of pedestrians has primarily been used to simulate crowd movements rather than individual movements.

The modelling of pedestrian spatial behaviour is primarily split into two types: discrete-space models (cellular automata-based models) and continuous-space models. Discrete-space models locate pedestrians at various nodes in a grid (fixed or adaptive) at regular time intervals. Table C2.14 provides an example of a discrete-space model. Continuous-space models have pedestrians move continuously through a space represented by a 2D surface, and are broken into two groups. One group bases the models pedestrian movement in crowds as a fluid and the other bases pedestrian movement a cost function. Dirk Helbing's model is the most common in this category. Table C2.15 provides examples of continuous-space models.

Although pedestrian and human behaviour is based on individual and seemingly random movements, mathematical models for the movement of pedestrians assume that movement decisions are not completely random, rather have certain regularities (such as pedestrians move in the most convenient way, avoid obstacles amongst others). Although, the models of pedestrian movement will never be one hundred percent accurate, they provide a good impression of pedestrian movement and have proved to be useful in reproducing behaviour such as the formation of lanes and the use of exits in panic situations (Helbing, 2004; Helbing, Farkas, & Vicsek, 2000).

Example of a discrete-space model
A discrete–space model was created by Batty, DeSyllas and Duxbury (2002) to simulate pedestrian behaviour at a carnival. They classify the modelled pedestrians into: 'walkers', those that move around and are attracted to different places; 'paraders', those that walk in fixed routes and act as attractors; and 'bands', those that are fixed and act as attractors. In addition the model contains 'streets', which are the physical barriers to the pedestrian movement. The model simulates the behaviour of the walkers as they enter the area and move through the street system to the various attractions. The modelled walkers are able to interact with each other along with other modelled elements such as noise levels. The model defines the paths that the walkers can take by noise levels, the positions of attractions and other pedestrians, and the density levels of pedestrians at certain locations. The paths that the modelled pedestrians will choose to take are unknown, except for the initial entry point, and modelled pedestrians are 'programmed' to be attracted to areas were other pedestrians are gathered (flocking) or areas where other pedestrians have been, and to the attractions.
There are many other examples of discrete-space models. See Schadschneider (2002), Blue and Adler (2002), amongst others.

Table C2.14: Example of a discrete-space model. Source: Author.

Examples of continuous-space models
Helbing (1991) developed a model of pedestrian motion that treats each pedestrian as a Newtonian particle that must abide by the laws of Newtonian mechanics. The pedestrian movements are altered by social and physical elements within the model. The models developed front this have been primarily concerned with representing pedestrian flow in crowded situations, and can be used to simulate pedestrian routes, discover areas of possible congestion and to stimulate flows of pedestrians over areas of the street. Generally they are limited in scope (i.e., they have not represented a full trip, rather are usually confined to a block segment or a room) (Helbing, Molnar, Farkas, & Bolay, 2001, p.365). In Helbing's model, pedestrians are influenced by social, physical and personal forces or fields, which alter their movements. The social force is the pedestrian's desire not to bump into other pedestrians or objects and to move in a certain direction. The physical force controls when pedestrians collide either with other pedestrians or with objects. Personal forces include an attraction force, which makes pedestrians move towards the nearest exit, and a velocity 'force'. Preferred velocities are determined by weighing the average of the pedestrian's speed and direction combined with the speed of those around it. Helbing's model has been expanded, tested and altered by Lakoba, Kaup and Finkelstein (see Lakoba, et al., 2005).
PEDFLOW is a mutiagent microsimulation model used to stimulate pedestrian movement (Kerridge, Hine & Wigan, 2001). The model represents pedestrians as autonomous agents that interact within a microsimulation and has can represent quite fine details. The models attempts to overcome the limitations of traditional methods of studying pedestrians that the authors felt

Examples of continuous-space models
might ignore individual movements and connections between the different stages of a trip. Within the model each pedestrian occupies a space that is related to their walking speed, and no other pedestrian is able to occupy the same space as another pedestrian. Each modelled pedestrian is considered an autonomous 'agent' that is able to act individually (rather than a crowd), although the system can be programmed to model related groups of pedestrians walking together. These actions are controlled by fixed structural details, such as the location of buildings which can be added and altered while the program is running, and a decision table which outlines rules to govern the actions of the individual pedestrians in specific circumstances. Space within the program is analysed as a grid to decide what the best course of action is.
The STREETS model is an agent based modelling system that uses Swarm and GIS to simulate the movement of pedestrians. STREETS presents a 'holistic' approach to pedestrian simulation enabling the integration of various scales (Haklay, O'Sullivan, Thurstain-Goodwin, & Schelhorn, 2001). This differentiates STREET from other models of pedestrian movement. An agent based models is when the basic unit of activity is the agent and the interactions between the agents. In the STREETS model the pedestrians are the agents. The agents are autonomous individuals and are goal directed. The STREETS model firstly looks at the socio-economic characteristics of the area it is going to model to establish an appropriate number of pedestrians for the area, and then simulates the behaviour of pedestrians within the spatial configuration and land use distributions of the area provided by a GIS dataset. The pedestrians in the model have set activity schedules and the modelled behaviour is influenced by the behavioural characteristics of each pedestrian, including walking speeds, visual ranges and fixation (the set level determining how the pedestrian will follow a set schedule. A high fixation level means the pedestrian will follow a schedule as precisely as possible and a low fixation level means the pedestrian is able to change their schedule and be 'distracted' by other activities and destinations). The model contains five fixed modules of behaviour: *Mover module*: enables the pedestrian to compute movement on a local scale, i.e., the next grid. This module moves the pedestrian, checking for obstacles as the pedestrian moves.   *Helmsman module:* enables the pedestrian to compute movement on a medium-range scale, enabling it to continue moving in the correct direction.   *Navigator module*: enables the pedestrian to navigate a route from origin to destination.   *Chooser module:* enables the pedestrian to recognise elements surrounding it. This recognition can result in the distraction of a pedestrian, creating a detour from its defined course.   *Planner module:* calculates and adjusts the pedestrians plan.   Together the modules manage the pedestrian's 'state', which is determined by: • Route: The pedestrian's route, their position on the route, fixation level, assessment of possible new destinations, and the pedestrian's ability to know when they have reached their destination.   • Speed: The pedestrian's current speed, preferred speed and maximum speed.   • Progress: The pedestrian's progress to the next destination, and available time limits to reach that destination.   • Direction: The pedestrian's current direction and the direction of the next destination   • Location: The pedestrian's current location in relation to the surrounding area.   • Vision: What the pedestrian can see, including other destinations that may cause the pedestrian to deviate from their plan.   • Time: The time the pedestrian has spent on the route and how much time is still available.   • Control: The movement state of the pedestrian, i.e., is the pedestrian moving, stopped or waiting.
Some other models are: • StarLogo language: concerned with network structure on the movement of pedestrians   • Netherlands National Transport model (includes biking an walking)   • TRANSIMS: simulates the movement of 200 000 individual travellers

Table C2.15: Examples of continuous-space models. Source: Author.

Appendix C, Toolbox Part 3: Jan Gehl's methods

C3.1 Introduction

A core component of Gehl's research is a grouping of surveys collectively referred to as Public Spaces Public Life (PSPL) surveys. This appendix provides an overview of Gehl's PSPL methods to study human and built environment interactions. He developed them in the 1960s as part of research conducted at RDAFA and has repeatedly tested and refined them.

To analyse the pedestrian environment and landscape and the friendliness of an area, Gehl asks a number of questions about the quality of the urban environment. The method is adapted to respond to differing contexts. However, generally the questions focus on the following questions:

Public spaces

1. What are the current physical conditions that the city provides for pedestrians?
2. "How are the public spaces organized, designed and equipped?"
3. "What are the conditions offered for walking and spending time in the city?"
4. "What is the traffic situation like?"
5. "What are the major conflicts with pedestrian movements?"
6. How does the city accommodate people in the public space?

Public Life

1. How many people are in the streets?
2. How do people use the streets, squares and parks?
3. "How many people are walking in the streets?"
4. "How many activities are going on?"
5. "What goes on summer/winter, weekdays/weekends?"
6. Which groups use the city centre? (Gehl Architects, 2004b, p.17).

These questions can be used in different ways in a variety of surveys taking into account individual urban contexts.

The PSPL surveys involve three parts:

4. **Public space analysis**: focus on the quality of the public space: surveys of the existing public space, including pedestrian infrastructure and the potential comfort and enjoyment of the pubic space (space quality).

5. **Public life analysis**: focus on use of public space: include surveys of pedestrian and staying activity levels in public places (space use) and characteristics of users of public space.

6. **Summary and recommendations** based on the analysis.

These surveys focus on the walkability and urban design of the pedestrian realm and are adapted to fit the individual requirements, conditions and needs of individual cities. The importance of these surveys is the 'big picture' or story they tell, along with the data collected. Together, the surveys provide an "objective base of knowledge on which it is possible to describe a present condition of the public space and…work out new solutions" (Gehl Architects, 2007, n.p.n.). From this base of knowledge, together with knowledge of pedestrian flows, it is possible to make holistic planning decisions regarding public spaces within cities.

C3.2 Public space analysis

The public space analysis (or quality analysis) portion of PSPL are surveys that focus on the existing quality, condition and provision of public space within the city, including the potential comfort and enjoyment of the pubic space (space quality). Major surveys include:

- Field surveys, including seating surveys, footpath surveys, climate and topographical surveys and the quality analysis of public squares/plazas (discussed below);
- Street-frontage surveys;
- Test walks; and
- Tracing methods.

PSPL method for space quality: Field surveys

Gehl uses qualitative and quantitative surveys to collect information about the pedestrian environment in a city centre collectively grouped here as *field*

surveys. These surveys focus on street details, pedestrian amenities, such as benches and seating, street-level building elements, such as the façade of buildings, and other issues such as the microclimate that would affect the level and type of pedestrian activity in the area. The primary details about the street collected during the various field surveys include the following:

- Footpath widths;

- Street widths;

- Length of the streets included in the study;

- Interruptions to the footpaths, such as entrance lanes, changes in the grade and side streets;

- Number and type of pedestrian crossings (with and without lights);

- Timings of red and green lights for pedestrians and motor vehicle traffic;

- Access for people with special mobility needs (location of drop curbs, forced detours);

- Location of outdoor cafes and number of seating provided;

- Location and qualities of plazas, parks and other public spaces;

- Neighbourhood character;

- Visual elements of the street including views, landmarks, topography, the commercial impact (dominant signage), location of public art and heritage buildings or other landmarks;

- Safety elements (evening street frontages, night time lighting on streets and other public spaces);

- Noise levels;

- Climate conditions and built environment elements used to enhance or provide protection from these conditions;

- Eye level façades (described next);

- Street plantings (locations of trees) and other greening elements;

- Street elements (placement of streetlights, rubbish bins/facilities for disposal, traffic signs, commercial/retail signs, billboards, traffic

boxes, poles, traffic lights, bus stops, guard railings and other as needed) that impact on footpath widths; and

- Maintenance (litter, cleanliness, pavement quality).

The provision of seating is also a major focus of PSPL surveys, as seating encourages pedestrians to stay in centres. Details examined include:

- Amount and type of primary public seating provided (including the comfort and the climatic conditions);
- Numbers of outdoor café seats
- Amount and location of secondary seating;
- Noise and pollution levels;
- Placement of seating (location, climatic conditions, views and the ability to be social or private as required);
- Usage patterns of seating on a normal summers lunch time (usage, actual amount of seats and seats used).

The placement and views from seating is paramount to its use. Seats with good views and in locations with concentrations of people are most heavily used (Gehl, 1987). Providing good seating is of vital importance to the success of a pedestrian area: it is one of the simplest methods of improving the quality of an outdoor environment (Gehl, 1987, 2010a).

Gehl and his associates have developed a "12 Quality Criteria" keyword list for designing or assessing the public realm focused primarily on plazas, squares etc but also used for other public spaces such as streets. The 12 quality criteria are organised into three sections: protection, comfort and enjoyment. *Protection* is concerned with safety from traffic, crime and uncomfortable sensory experiences, along with protection from the weather. *Comfort* is concerned with possibilities for walking (i.e., quality and level pavements, space, interesting frontages, few stops or harassments) and opportunities to stay and spend time in the city. This criterion is concerned with the quality of the public spaces, noise levels, seating, diversity of uses for different user groups, day and night uses, views and visual interests and seasonal use. *Enjoyment* is concerned with the scale of the spaces, the space's ability to highlight enjoyable aspects of the

climate, and the sensory experiences of the place. The twelve quality criteria provide, according to Gehl, "essential qualities" which should be provided in the public spaces of the 21st century if they are to be "lively, attractive and safe and therefore assist meaningfully towards creating a sustainable and healthy city" (Gehl, 2007, pp.2-3). Appropriate architecture and design criterion need to be seen as an "umbrella concept" as they "cannot be dealt with in isolation from the other criteria" (Gehl, 2010b, p.238).

In addition, the field surveys also acquire information on mobility issues within the city, particularly with respect to public transport use, cycling numbers, location of transportation stops, cycling infrastructure, parking facilities and provisions for mobility impaired users. As part of these surveys the legibility of the city's transport network, including locations of landmarks, entries and exits to the city centre, location of prominent buildings and primary destinations, and other issues as required by the individual cities are examined.

PSPL method for space quality: Street frontage surveys

As part of the space quality assessments, Gehl and associates conduct audits of the urban environment focused on street frontages (the streetscape), particularly on how the urban environment attracts or deters people from staying in the city. Gehl, Gemzøe and other associates (through their many surveys of the urban design and streetscape façade of the area) developed a categorisation system of A through E to rate levels of attractiveness of buildings that face streets and squares. This rating scale is as follows (adapted from Gehl Architects, 2010a; Gehl, 2008b, 2010a; Gehl, Kaefer, & Reigstad, 2006):

- A: active street façade with many small units and many doors approximately 12-20 units per 100 metres), a diversity of functions, no closed or passive units, interesting reliefs and quality materials and refined details.
- B: pleasant or 'friendly' façade with relatively small units (10-14 units per 100 metres), some diversity in function, a few closed or passive units, some relief in the frontages and relatively good details.

- C: façade that is somewhere between pleasant and dull—that is a 'mixture'. It has a mixture of small and large units (resulting in approximately 6 to 10 units per 100 metres), some diversity in functions, a few closed or passive units, some uninteresting design of frontages and somewhat poor detailing.
- D: dull street frontage with larger units with few doors (2 to 5 units per 100 metres), little diversity in functions, many closed units, predominantly unattractive frontages.
- E: inactive street frontage with large units with few or no doors, no visible variation of frontages and monotonous frontages with little to no details.

This rating system enables mapping of streetscape façades and the identification of any problem areas of the city.

PSPL method for space quality: Test walks

As part of PSPL quality analysis, 'test walk' surveys are conducted to measure a pedestrian's ability to move through a city centre. Test walks consist of walking through the city following a pre-established route (chosen to represent commonly walked routes through the city) at an ordinary pedestrian speed and recording walking and waiting times at intersections. Test walks are important, as they provide a base level to show the ease or difficulty of walking in a city centre, the reality of the pedestrian network, and to illustrate conditions that a pedestrian might experience. Interruptions to the pedestrian walking rhythm give "an overall feeling that pedestrians are not really welcome and cared for" (Gehl Architects, 2004b, p.36). For the comfort of pedestrians and the vitality and functional quality of the city, it is important that people "can cross the streets frequently and in an uncomplicated manner" (Gehl Architects, 2004b, p.38). Interruptions to pedestrian flow are relevant to understanding the level of pedestrian friendliness in a city.

PSPL method for space quality: Tracing

Tracing involves 'following' people's movements and recording such aspects as the path chosen, walking speed, and the location of any pauses or stops.

Generally, within the PSPL surveys tracing is used to see how people move through a space or to measure the impact of façades on walking speeds.[5] Depending on the context and objectives, researchers can conduct surveys in the day or in the evening.[6] Surveys can record the number of people passing a façade per hour, their speed, the number of people who looked at the façade, the number of people who stopped in front of a particular façade, the number of people who carried out other activities or stayed in front of the façade, and various other types of activities. Tracing can also be used to record characteristics (such as gender and age) of those using the space and how they use the space (see section below).

C3.3 Public life analysis

Public life analysis involves surveys that focus on the current use of public space. They include observational surveys of pedestrian and staying activity levels in public places and surveys regarding the characteristics of users of public space:

- Pedestrian flow counts;
- Staying counts (behavioural mapping); and
- User surveys (age and gender surveys, location and number of residents, students and schools).

PSPL method for public life analysis: Pedestrian flow method

Gehl's pedestrian flow method is a field method, sometimes known as the 'gates' method or a pedestrian 'cordon' count. Gehl and associates conducted these surveys by recording pedestrian flows at a certain location either for 10 minutes

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[5] Gehl, Kaefer and Reigstad conducted a tracing survey testing the influence of different façades on walking speeds in Copenhagen in 2003. The objective "was to explore the connection between the content, transparency and design of ground floors, and the extent and nature of pedestrian activities and stays along the street" (Gehl, Kaefer, & Reigstad, 2004, p.8). To do this they tested seven typical shopping streets divided into 100 metre sections, with a 10 metre segment selected as the primary study areas. The streets contained both active (varied façades with many doors, visual contact between outside and inside etc.) and inactive (uniform façades with few doors, blinds, windows etc.) façades on the same side of the street within 100 metres of each other.

[6] In the Copenhagen 2003 survey, day studies were conducted in summer between 10.00 and 16.00 and evening studies were conducted in autumn between 17.00 and 20.00 (Gehl, et al., 2004, p.8).

every hour[7] or for 15 minutes every hour.[8] Streets with two footpaths have pedestrian flows recorded on both sides. Researchers extrapolate these pedestrian flow counts to calculate hourly pedestrian numbers. Generally, Gehl and associates conduct the counts between 8.00 and 24.00 or between 10.00 and 22.00, although there are some exceptions.[9] These times can be changed to suit the specific location. Usually the time span between 12.00 and 16.00 is used for comparisons with other cities and therefore is recommended if the surveys are pressed for time or resources (Gehl Architects, 2010b).

The timing and structure of the counts need to be flexible to reflect the nature of the area. Gehl and associates conducts the counts on ordinary days (i.e., when there are no festivals or other special events such as public holidays that could skew the counts), usually using one weekday and one weekend day. Tuesday, Wednesday and Thursday are the most 'ordinary' days during the week and "will generally have identical usage patterns", given that other conditions (such as time of year and weather) are the same (Gehl, 1994, p.22).[10] Pedestrian flow counts on Mondays and Fridays are generally not recorded unless for specific purposes, as the flows on these days are affected by their proximity to the weekend (Gehl Architects, 2010b). Gehl and associates usually record the weekend pedestrian flow data on Saturdays. Generally, Gehl and associates conduct pedestrian counts only during the summer months however; depending on the focus of the survey, this can be changed.[11] The days need to have ordinary weather conditions, as extreme conditions such as it being too hot, raining or too

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[7] The times were: 10 minutes in the Copenhagen Study, 1996, Perth Study, 1994, Melbourne Study, 2004 and Hobart, 2010 (Gehl Architects, 2004b, 2010a, 2010b; Gehl, 1994; Gehl & Gemzøe, 1996).

[8] Pedestrian-only malls are generally recorded for 15 minutes, particularly in Perth 1994 and 2008/09 (Gehl Architects, 2009; Gehl, 1994) and in the Copenhagen studies in 1996 (Gehl & Gemzøe, 1996). Recording for 15 minutes was used in the Perth 2008/09 surveys and in the London Study, 2004 (Gehl Architects, 2004b, 2009).

[9] Some of the timings exceptions include counts that were conducted between 10.00 and 24.00, 10.00 and 16.00 or between 08.00 and 22.00 or 24.00 (Melbourne, Gehl Architects, 2004b; Hobart, Gehl Architects, 2010a; Copenhagen, Gehl & Gemzøe, 1996). The London study's (Gehl Architects, 2004b) counts varied by day. Gehl Architects alter timings to allow for local contexts.

[10] The Melbourne study was conducted on a Thursday and the Perth studies were conducted on Tuesdays (Gehl Architects, 2004b).

[11] The exception to this is Copenhagen where Gehl and Gemzøe examined both summer and winter days, and on both weekend days (Gehl & Gemzøe, 1996). In addition, in Hobart, surveys were also conducted during winter (Gehl Architects, 2010a).

cold, can affect pedestrian movements. The number of locations used in studies varies depending on the city.[12]

PSPL method for space use: Activity (staying) counts

A major component of Gehl's PSPL surveys are activity counts (also called staying counts, stationary mapping, behavioural mapping or walk-by observation). Activity counts are a structured (or systematic) direct observational technique. The aim of activity counts are to provide a snapshot of use, focused on 'stationary activities' occurring in a preselected public space at a given time. Surveyors carry out activity counts in conjunction with pedestrian flow counts in a city's primary public spaces (or those chosen as of interest/importance to the city). They are generally conducted every second hour between 10.00 and 20.00 but, but as with the pedestrian counts, the timing of counts can be altered to reflect location conditions and interests (Gehl Architects, 2010b). The mapping records predetermined activity (or use) categories, such as 'sitting', 'lying down', 'eating', and 'talking to others'. The activity maps provide an indication of the quality of the space and an illustration of how it is used. A high number of pedestrians walking in the city does not necessarily indicate a high level of quality. However, a high number of people choosing to spend time in the city generally indicates a lively city of high urban quality (Gehl, 2008b). The activity counts are an important part of determining the quality of the public environment and illustrate the features of the city that attract people and that people use for activities other than commercial use.

PSPL method for space use: Users surveys

Increasingly, surveys of the characteristics of the users of public spaces are being conducted as part of the PSPL surveys, as they can provide a picture of who uses and moves through the city (Gehl Architects, 2010b, p.8). These user surveys

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[12] For pedestrian flow counts, the Melbourne study (Gehl Architects, 2004a) used 10 locations, the London study (Gehl Architects, 2004b) used 12, the Copenhagen 1996 study used 8 locations (Gehl & Gemzøe, 1996), the Hobart surveys used 28 locations (Gehl Architects, 2010a) and the Perth 1993/4 (Gehl, 1994) study looked at 6 locations. Surveyors, depending on need and on resources, can alter the number of locations. In addition, many of the surveys had primary counting locations and other peripheral locations.

generally include age and gender observational surveys, the mapping and observation of places in the city for children and youth, and the number of residents, students and schools (primary, secondary and tertiary) located within the city. In addition, some PSPL surveys have also included user interviews (Gehl, 2008b; Gehl & Gemzøe, 1996). Age and gender surveys are usually conducted every second hour throughout the day and evening, with the other surveys (mapping of places for children and youth) able to be conducted as part of the field surveys (discussed previously). City governments can usually provide information on the number of residents, students and schools. These can then be mapped.

These types of user surveys are important to illustrate the balance between different age groups and between men and women, as having good balances between different user groups are, according to Gehl Architects, "an indicator of the quality, safety and integration level of public spaces" (Gehl Architects, 2010b, p.8). These user surveys are progressively becoming an important part of the PSPL surveys, reflected in the increase in emphasis in recent surveys, including Perth and Hobart (Gehl Architects, 2009, 2010a).

C3.4 Summary and recommendations

The third component of the PSPL surveys is the summary and recommendations based on the previous two components, the quality of the public spaces and the use of the public spaces. This section provides conclusions from the surveys and provides comparisons of results to those in other cities. In addition, this component examines how the spaces can be improved to stimulate further use or other uses (Gehl, 2010c, n.p.n.) and sometimes provides detailed recommendations for improvements to specific places within the city.

Note: Classification of methods to study human and built environment interactions

When classifying methods of study, it is also important to distinguish among all the elements of the city that can possibly be perceived—Nigel Taylor's "objects of sensation"—and those objects that are perceived—"objects of perceptions" (1999, p.197) (These objects of sensation and perceptions are similar to Thiel's (1961) 'anatomy of space' and 'meaning of space' respectively). Taylor describes the objects of sensation as "those objects which are available to our senses" (objects existing in the townscape) and objects of perception as "those objects of sensation that are actually perceived, recognizing that, because of the selectivity of our actual perceptions of the world around us, some things available to our senses many be perceived more than others, and some not at all" (1999, p.197). Different methods are used to capture these different elements of the city and are primarily focused on objects or infrastructure, the built environment, rather than the use (Jacobs, 1985; Lynch, 1975).

This toolbox focuses more on substantive methods: that is, ways to study how the city is, how it relates to people using the city, rather than ways to study what the city could be. Normative methods are touched on in some of the methods that use stimulation and modelling.

Phenomenological approaches to research within urban design have been the most popular approaches to date, primarily because of the holistic focus of this approach. These research strategies can be cross linked with researchers often using more than one of these research strategies. Therefore, these classifications, why helpful, missed the point within the methods classification desired. Rather it is important to establish what the researcher is focusing on—is it people, infrastructure or the built environment?

Urban design uses many different methods to study human and built environment interactions and the possibilities for use of an area or a space. These methods can be classified in many ways, including whether they are qualitative or quantitative, and what they study (i.e., people's use or environment). Moudon (1992) classifies methods by research strategies, modes of inquiry, research focus, research ethos and area of concentration. Her classification system aims to provide "an epistemological map for urban design" (1992, p.331), differentiating between normative and substantive research. Normative research looks at what the city should be whereas substantive research looks at what the city currently is, as discussed in Chapter 3. She then breaks the 'area of concentration' down into 9 categories: Urban History; Picturesque studies; Images Studies; Environment and Behaviour; Place studies; Material culture; Typology-morphology; Space morphology; and Nature ecology. While there are many different classifications of methods, this toolbox is primarily concerned specifically with methods classified primarily as empirical and environment-behaviour studies. Empirical methods are approaches that derive information from direct observation. Environment-behaviour studies refer to a body of research concerned with how humans relate to their environments (as discussed in Chapter 2).

This toolbox first classifies methods by focus—Observational methods, Interview methods, and then Infrastructure and built form methods—i.e., was the research primarily concerned with people, and if so was it looking at how people used space or was it asking people how they used spaces? If not, was the research concerned primarily with the built environment and its potential for use by people.

These methods are then further classified by whether they are qualitative or quantitative research methods, and then individually by approach—involved or removed. This attempts to explain how the research is carried out: is it involved with the research, removed from the environment, i.e., are the researchers out in the field or are they conducting research via a computer model etc?

These frameworks were primarily to provide an organised structure for researching the methods and discussing them. However it is important to note that some methods could be classified in other ways and that many of the methods discussed could also bridge other research focuses. For example, Space Syntax bridges behaviour and environment studies and urban morphology studies.

Appendix D: Jan Gehl's Awards.

In recognition of his work on increasing planning, architecture and urban design focus on people and the importance of appropriate public spaces, Gehl has received many international awards and fellowships, including recognition as a Fellow of the American, Canadian and United Kingdom Institutes of Architecture and the Australian Planning Institute. Among the many awards and prizes he has received are the following:

Year	Awards, decorations and fellowships (etc.)
1993	Sir Patrick Abercrombie Prize-for exemplary contributions to Town Planning and Territorial Development.
1993	The International Union of Architects.
1998	Environmental Design Research Association (EDRA) Places Research Award (USA).
1999	Dalicarlika-Prize for public space planning, Sweden.
2000	Prize of the Danish Pavers Guild, Copenhagen, Denmark.
2003	Australia Planning Award (with the City of Adelaide).
2005	Australia Urban Design Award (with City of Melbourne).
2006	Environmental Design Research Association (EDRA) Places Research Award, (with the City of Melbourne).
2007	International Fellow Royal Institute of British Architects (Int.FRIBA).
2008	Honorary Fellow American Institute of Architects, (Hon. FAIA).
2008	Landscape Institute Award, U.K.
2009	New York Department of Transport Commissioner's Award, for Exceptional Contribution to New York City Streetscape and the Public Realm.
2009	Civic Trust Award, U.K., for Brighton New Road.
2009	Honorary Fellow Canadian Institute of Architects.
2009	Lifelong grant from the Danish Arts Foundation.
2010	Honorary Fellow Planning Institute of Australia.
2010	Dreyer Prize of Honour for Architects (along with Helle Søholt).
2010	'Lille Arne' Award from the Copenhagen chapter of The Architects' Association of Denmark.
2011	EDRA, 2011 Places book award for *Cities for People*
Other	
	N.L.Høyen Medal for contributions on research and teaching concerning the arts.
	Cavaliere dell´Ordine Al Merito della Republica Italiana (a rank of honour given by the Government of Italy for work given to the nation).
	Medaglia di Bronzo: Benemeriti della Scuola, della Cultura e dell´Arte (Italy) (metal given to those that distinguish themselves in culture or the arts).

Table D.1: Table of awards and fellowships received by Jan Gehl (as of April, 2010). Source: Author.

Appendix E: Jan Gehl media clippings

This appendix provides a medley of media clippings regarding Jan Gehl's work around the world, focusing on publicly available newspapers and magazines. This is to illustrate how the media portrays Gehl's work to the general public (as opposed to articles in peer-reviewed journals) and to provide some illustration of how Gehl interacts with the media. Attempt has been made to be expansive, showing clippings from various places around the world, however only clippings written in the English language have been included. It is important to note that this collection is by no means inclusive (especially the PSPL survey of Sydney which often had an article or more a day during the survey period and the launch), rather is to illustrate the various types of media coverage and response garnered by Gehl.

Adelaide, Australia

A great Dane's ideas ditched*. The City Messenger,* **Adelaide, 2004**

DANISH architect Jan Gehl has another book out, called New City Spaces. But who cares in Adelaide? Gehl, some of us fondly remember (and won't let the rest forget), was the man brought out by the Government and city council to tell us how to make Adelaide CBD more people friendly. There has been precious little evidence of Adelaide following Gehl's ideas. Rather, we have rebuffed them, most notably, by dumping the plan to unify Victoria Square.
As Gehl told Philip Adams on ABC Radio National last week, the prime aim is not to get the people into the city to shop. The aim should be: get people to come into the city because they want to. Then they'll shop.
We still don't get this premise…

Light, R. (2004, 11 February). A great Dane's ideas ditched*. The City Messenger,* p.1.

Waiting for walk on the wild side*. City Messenger,* **Adelaide, 2003**

…I'm haunted by the memory of sitting in a packed Adelaide Town Hall listening to Jan Gehl. The failure to follow through on his ideas was a failure of the big bold imaginative leadership needed from the State Government and the city council.

Light, R. (2003). Waiting for walk on the wild side. *City Messenger, p.1.*

Gehl plans left to gather dust. *The Adelaide Review,* **Adelaide, 2004**

…The Gehl philosophy cannot be an occasional afterthought but a constant reference point to the whole range of decisions made about the city public spaces: from parking to traffic to public artworks. While we dither, Perth has taken up 65 percent of Gehl's recommendations. Adelaide hasn't been persuaded to change its culture from cars first to people first…
Gehl brought two new approaches to urban planning=He applied psychology to planning, asking what are the things that make humans enjoy a public space. His other

practical innovation was, amid the welter of information on vehicle movements, to start counting the people using public spaces…

Robinson, M. (2004). Gehl plans left to gather dust. *The Adelaide Review, August.*

Brisbane, Australia

The department of transportation is a large, dull bureaucracy dedicated to moving cars and trucks around town. *The Courier-Mail***, Brisbane, 2009**

Run mostly by engineers, it treats streets as an engineering problem. How do you move as many motor vehicles as possible, as quickly as possible? The streets themselves have mostly remained grim, unattractive and (ironically) jammed. Sound familiar? Anywhere we know? Actually, it's not Brisbane. It is a description of New York. Or that should be, it was New York. And then something happened. Janette Sadik-Khan happened. As the city's transportation commissioner, she had a wild and crazy vision to make the streets calmer, greener and safer, tilting the balance of asphalt power away from the car towards the pedestrian and cyclist. Now, plenty of people have crazy plans but she had the balls to do it. And the charisma to win people over. And Mayor Michael Bloomberg gave her the political grunt and a deadline. She wanted to give New York's heart, clogged with traffic, a bypass. She sought inspiration in Copenhagen, where she hired urban planner Jan Gehl as a consultant. So, early one Sunday morning a couple of months ago, a work crew moved into Times Square, waited for a pause in traffic and closed off Broadway at 47th Street. In the following weeks, construction workers turned five blocks of the boulevard – one of the world's most congested stretches of bitumen – into a 17km pedestrian plaza, dotted with cafe tables free for public use….

Noonan, K. (2009, 20 November). Janette Sadik-Khan vision lesson for Brisbane. *The Courier-Mail.*

Christchurch, New Zealand

Design ideas make sense. *The Press***, Christchurch, 2008**

Danish design expert Jan Gehl makes a lot of sense…Better designed cities are nicer places to live in. It sounds so simple--seductively simple. But it makes sense. It is a message that Danish design expert Professor Jan Gehl has been plugging tirelessly for decades…
Gehl, an architect, said his main focus was not buildings in isolation, but people, and how they use cities. One of the most important aspects was transport...
Gehl favours bicycles and dedicated cycle lanes -- not fighting with cars for dominance, but next to sidewalks and away from cars. Cyclists, rather than having to dress in "survival gear", just wear normal business clothes on their way to work. Better public transport systems make sense and reduce traffic. Wherever more roads are built, said Gehl, they quickly become congested. Or people can get exercise by walking...
At [Gehl's public] talk there was palpable feeling of frustration--that people believed in what Professor Gehl said, but felt there were serious problems…People were also mad about boy racers and safety. Did many other cities have "boy racer" problems, Professor Gehl was asked. He thought for a while, probably having never heard of the term. "No," he said at length. But he did have a suggestion to get rid of louts—make sure if they are buying beer that food is served, too, and play classical music at them (Verdi is effective)…

Another of Professor Gehl's suggestions seemed eminently logical: ensure the city caters for all ages…

Killick, D. (2008). Design ideas make sense. *The Press,* p.A.9*.*

London, United Kingdom

Don't walk...can't walk. *The Evening Standard.* London, 2004

Today, proposals are unveiled for the Mayor's plan to make London 'one of the world's most walking-friendly cities'. Its authors describe it as the second stage of the anti-car plan of which the congestion charge was stage one…The walkways vision has a title - Towards a Fine City for People - so tepid that I hesitate to mention it, for fear it will make you stop reading at once, but its effect could be profounder than any celebrity architect's games with glass.

The proposals, commissioned by Transport for London and the Central London Partnership, are by Jan Gehl, an architect who, among other things, has made the centre of Copenhagen a utopia of pedestrian friendliness.

London, says Gehl, is 10 years behind the rest of Europe in its indifference to the quality of streets…

His Danish mind is offended by the profusion of different kinds of road crossings. He calls for the abolition of push buttons on traffic lights, which make pedestrians wait for the convenience of the car. 'To cross the street ought to be seen as a human right,' he declares. As it happens, 90 per cent of such push buttons have recently been found to have no effect whatsoever on traffic flow.

Gehl's solutions for London are not very glamorous. He suggests carrying the pavement at raised, constant height across the mouths of side streets, to give pedestrians priority. He is keen on benches and 'oases'- places where you might want to stop - and 'resting options' along walking routes. His biggest ideas are to create new public squares in front of Paddington and King's Cross stations. The modesty of his plans means that they ought to be cheap…

I don't entirely buy Gehl's vision of Scandinavian contentment. He seems too fond of the cliché that cappuccinos plus jugglers plus public art works (which is essentially the Copenhagen formula) equal a full public life. They don't: you need a bit of surprise, chaos, even the occasional ugliness. I also can't help noticing, in a UKIP sort of way, that mucky London, with its rubbishy pavements, is more vibrant, successful and popular than sensible, pedestrianised Copenhagen, or that the pedestrian precincts of many German towns, rebuilt after the war, are among the most life-sapping places known to man. But these points should not detract from the fact that Gehl is fundamentally right. His strength is his reasonableness: he is not a fanatic who wants to pedestrianise everything and achieve the ultimate abolition of the car, but only to shift the balance a little more in favour of pedestrians. Even if he were, the brute facts of London traffic would make it impossible.

He is talking, ultimately, about the dignity of living in a city, and there is no good reason why London should not achieve this…

Whether the civilising of London will actually happen is another matter. I fear for Gehl's gentle reason in the crude world of London politics, and in the city's balkanised system of local government. Terrorism, too, will be used as an argument against more enjoyable spaces. It has already been raised in relation to the proposed part-pedestrianisation of Parliament Square, even though most bombers travel in cars and vans.

We do, however, have a Mayor, newly re-elected, whose job it is to overcome such difficulties. If he cannot get a few railings moved and pavements raised, the office of Mayor is not worth having…

Moore, R. (2004, 22 June). Don't walk...can't walk. *The Evening Standard.*

A capital idea the Mayor of London's office hopes to revitalise the City's public space. But can its plans overcome London's essentially private nature? *Financial Times Weekend Magazine,* **London, 2005**

…the Danish public-spaces guru Jan Gehl, whose work in Copenhagen is invariably cited as the holy grail of urbanism, has been hired by Lord Rogers to study London's public realm. In Copenhagen, extensive pedestrianisation, better street furniture, surfaces, signage and traffic schemes led an essentially suburban, cold-climate and northern-temperament city towards the Mediterranean ideal of bicycles, people sitting outside cafes (albeit under heaters), and an increase in business for all independent design shops. Gehl has concluded that London is a complete mess. Where, he asked, are all the children? He saw none in the centre - and said that public transport, steps, kerbs and extreme overcrowding all conspired against bringing them there. Why are people always hurrying and never lingering? Where are the squares, markets, where is the joy in urban life? …

Heathcote, E. (2005). A capital idea the Mayor of London's office hopes to revitalise the City's public space. But can its plans overcome London's essentially private nature? *Financial Times Weekend Magazine, 05 March,* 36.

Tales of the city: A pedestrian vision of life. *The Independent***, London, 2004**

Isn't there something about the phrase 'tree-lined boulevards' that puts us on instant alert? Every time a city planner starts talking about the loveliness of a pedestrianised city, I reach for my Heckler & Koch. Any mention of a London street being transformed into a 'promenade' brings me out in hives.
So I'm not feeling too well at the news that Ken Livingstone's Transport for London is plotting to re-configure the centre of the Big Smoke into a series of walking zones…
All these hellish transformations are part of a plan developed by one Jan Gehl, who, having designed Copenhagen's dreary 'Walking Street', checked out central London and concluded it was 'a maze of obstacles, poor access and overcrowded streets for pedestrians and cyclists, with narrow footpaths, dangerous road crossings and a chronic shortage of seating'.
OK, the centre of town isn't perfect. This doesn't mean the answer to its problems is to concrete over the main thoroughfares, bung in some spindly silver birches and tubs of aubretia, and pretend we're living in Cookham Dean. Read my lips, gentlemen. London is a capital city. It is not a village. It is not a bosky dell. It's a big, handsome, thundering great machine of activity, with lots of lovely shops and amusements along its sides for tourists to visit. When did we decide the machine's valves and circuits-that is, its roadways - could be tinkered with and closed off? And when did tourists become more important than the motorists who use the place all year round?
…Roads are for getting away down, not for becoming stuck in. Nervous citizens of Russia's former satellite states used to wonder if the lovely wide roads being built in their cities were to make sure there'd be nowhere for the proletariat to take cover when the machine-gun fire started. Conspiracy theorists might wonder why the mayor is so keen on depriving Londoners of roads that go in and out of town...

Oh all right. These are the fumings of a London motorist under another threat from a central authority. If the congestion charge won't keep the blighters out of town (you can hear them saying at City Hall), maybe closing the major roads to traffic will make them think again. Drivers are fed up with the stealthy war that's being waged against us. We think Transport for London should come clean and call itself No Transport For London. We are sick of being treated like pests, intruders, vandals, despoilers of Arcadia. And we're especially sick of the elevation of pedestrians. There are far too many of them cramming out Oxford Street already. Do we want to encourage more by paving the road? You think it's a coincidence that the dictionary defines 'pedestrian' as 'prosaic, uninspired, flat and commonplace'. Is that the kind of London we want?

Walsh, J. (2004, 02 September). Tales of the city: A pedestrian vision of life. *The Independent,* p.4.

New Delhi, India

City cyclists look to get on track. *Mint*. New Dehli. 2011

In Jhala's city, New Delhi, government agencies for transport planning such as Unified Traffic and Transportation Infrastructure Centre have now evolved pedestrian guidelines that are sensitive to the needs of cyclists in the city by pushing for ramps on walkways in between traffic intersections, among other things…
Much of the transport planning today also involves studying how people use the cities. Earlier this month, at the busy Ranganathan Street in the heart of Chennai's shopping hub T-Nagar, a group of young men and women went about counting people and the time they spent on the streets using stop watches. Interspersed between malls, sidewalks and parking lots, they followed people closely, age and gender wise, and quickly jotted down notes.
Part of the Public Life Public Space survey, the study method devised by Danish architect and urban design consultant Jan Gehl and implemented for the first time in India, the exercise formed initial stages of the Anna Nagar Pilot Project in Chennai, which will connect local streets and schools through cycle tracks. Gehl's survey looks at Chennai's unique setting as a city by the sea, how it can encourage people to move around more on foot, cycle and transit and how public spaces can become more attractive and offer greater diversity of use…
Paradigm shift is needed in city design now…

City cyclists look to get on track. (2011, 3 January). *Mint*. New Dehli.

New York, United States of America

Business groups hear plea: Do something to cut traffic, *The New York Times*, New York, 2005

Ideas for reducing car traffic -- including the politically volatile notion of charging drivers for entering the busiest Manhattan streets -- gained momentum yesterday during a meeting of leaders of the city's business improvement districts.
Jan Gehl, a Danish architect whose fervent advocacy of bicycle lanes, pedestrian walkways and restrictions on car use have made him renowned among urban planners, addressed leaders of the districts, and several city officials, on the need to reduce the automobile's dominance of public spaces…

Chan, S. (2005, 18 November). *The New York Times,* p. 5.

Famed Danish Urbanist Jan Gehl in town to consult on PlaNYC. Streetsblog, New York, 2007

Jan Gehl, the famed Danish urbanist, is in New York City this week...
…Gehl said the city must tame the automobile if it is going to become a truly great city for pedestrians and for public life.
Asked during questions what he would do specifically for the city, Gehl said he would make pedestrians more comfortable in the city by adding street furniture, widening sidewalks and creating "oasises" for them. In addition, he would put immediate emphasis on better conditions for cyclists. And finally, he said attention should be paid to the mass transit system. Good mass transit and good pedestrian environments, he said, "are brothers and sisters," each depending on the other.

Streetsblog. (2007, 2 August). Famed Danish urbanist Jan Gehl in town to consult on PlaNYC. Retrieved from 30 May, 2001, from http://www.streetsblog.org/2007/08/02/famed-danish-urbanist-jan-gehl-hired-to-consult-on-planyc/

PlaNYC guru plays West Village: Gig is sold out. *Capital New York*, New York, 2010

Behind Michael Bloomberg's long-term plan for the city is a Danish professor and urban planner named Jan Gehl, who for several years has been quietly, if not slowly, guiding the remaking of New York.
Gehl is a legend in his field…
"We used to say we plan at the scale of Robert Moses, but we judge ourselves by the standard of Jane Jacobs," [City Planning Commissioner Amanda Burden] said. "That's not really true anymore. We judge ourselves now by Jan Gehl's standard"…

Jose, K. (2010, 17 September) PlaNYC guru plays West Village: Gig is sold out. *Capital New York*

Perth, Australia

Background: What should happen*. The West Australian*, Perth, 1999

…Premier Richard Court has ignited controversy with his plans for a multi-million-dollar belltower onthe Perth foreshore. But is the simmering debate masking a far bigger issue for the city?...
A MODERN, youthful city and its beautiful estuarine partner. Perth CBD and the Swan. It seems a perfect marriage. Even total strangers come to see them together. But are they really as one? Look more critically and you find a clear, empty distance between them. The city that once hugged the river now barely touches her…The net result: a long and unwelcoming void from the Narrows to the Causeway...Creative energy focused on the city itself, fuelling its heightening sense of distracted self-importance. Allendale Square, City Centre tower, AMP Building, the R&I (BankWest) Tower, Central Park, QVI and Exchange Plaza-all rose as glistening, corporate temples in the 1970s and 80s to dominate a soulless CBD in which people worked but did not live.
There was hardly a gesture towards the river, until 1991, when the then Labor government and city council went international with a competition to redesign the foreshore. The flood of entries, 151, was a statement in itself: there was great scope for

improvement. The prize went to a Boston architectural firm but, by then, a cost-cutting Liberal government had office and balked at the $1.7 million fee to produce a working plan. No thanks. Forget it. ALL the entries were shoved into mothballs, to the disappointment of a lobby group of architects, planners and concerned citizens known as CityVision. They had long craved a closer link between city and river. But the competition did, at least, raise some influential kindred spirits, including world-renowned Danish urban designer Jan Gehl. "Gehl put it beautifully," says Mr Warnock, who is CityVision's convenor. "He said that when the city leans forward to kiss and embrace the river it will become the kind of city it ought to be. At the moment we all love the river, we think it's fabulous, but we don't do anything about it because it's very difficult to get to. Try walking from St Georges Terrace to Barrack Square. It's a bloody long way"…

Aisbett, N. (1999, 16 August). Background: What should happen. *The West Australian,* p.6.

Planner sees sunken railway as Perth's missing link. *The West Australian*. Perth, 2004

PERTH is a better city than it was a decade ago, but the railway needs to be sunk, Danish planning guru Jan Gehl said on Monday.
Professor Gehl, commissioned by the State Government to study Perth's public spaces in 1993, was back in Perth on Monday to assess the city's development since 1993.
Professor Gehl said sinking the railway from Horseshoe Bridge to the freeway would improve the quality of the city and release areas of prime land that could help pay for the project. "Many of the problems we identified in 1993 have been resolved, but the railway and the cultural precinct are like a zipper between the city and Northbridge that needs to be done up," he said.
Professor Gehl said most of Perth's planning disasters were concentrated on St Georges Terrace, which was one of the worst streets in the world. But increased residential development, more benches, trees and cafes in the rest of the city had made it more pedestrian friendly. "I am very happy to see Murray and Hay Street sidewalks widened and that the shops are spreading beyond the malls," he said. But the city was still orientated towards cars rather than pedestrians. Perth, like most other cities, used sophisticated traffic movement data in its planning process but had no equivalent data on pedestrians.
He said the cultural precinct was the only significant link between the city and Northbridge, but it failed to be an inviting area. "The architecture in the cultural precinct is as though so many dogs went and did their business in the corners and what is left between them is public space," he said. "I really think that (a convenient link to Northbridge) is the missing link here."

Longley, G. (2004, 28 January). Planner sees sunken railway as Perth's missing link. *The West Australian*.

Top planner to advise on new Perth vision. *The West Australian*, Perth, 2008

Internationally lauded professor of architecture Jan Gehl…will be paid $250,000 to come up with a vision for the development of Perth….
[Perth Lord Mayor] Ms Scaffidi rejected suggestions a local architect should have been used. "Dr Gehl is internationally acclaimed for his work in several world-famous cities and as he has had lengthy involvement within Australia and Perth already, it makes sense to stay with him and not jump ship to another planner for an injection of global ideology and thinking," she said. "We should not view things too parochially because this is an opportunity to leverage winning ideas and internationally acclaimed urban

planning from places we aspire to replicate in some small way to enhance our won liveability…

Hatch, D. (2008, 20 September). Top planner to advise on new Perth vision. The West Australian, p.64.

Architect's river of dreams for Perth diverted*. The West Australian*. Perth, 2009

Danish architect Jan Gehl says that as much as Perth has evolved it has some way to go to reach its potential.
His analysis of Perth's public spaces and public life…shows authorities have done a lot right to enliven the city's heart but many recommendations remain unheeded…
"You have fantastic natural amenities," he said. "Why not use them?"

Thomas, B. (2009, 28 May). Architect's river of dreams for Perth diverted. The West Australian. p.19

Sydney, Australia

Man with Sydney in his sights. *The Sydney Morning Herald,* Sydney, 2007

…Word of Gehl's ideas spread quickly, partly because they fitted so neatly with the people-power movement of the 1970s. Since then, the Dane has undertaken city improvement projects in more than 20 countries around the world…
Kim Dovey, professor of architecture and urban design at the University of Melbourne, has observed first-hand Gehl's impact on Melbourne's city centre. His great skill, Dovey says, is as a communicator. "He is good at popularising his ideas," Dovey says. "Everybody likes Jan. He's very inoffensive. He's a good talker and he gets large groups of people behind him, saying, 'We can change this.' The politicians tend to follow." Dovey says Gehl's main achievement in Melbourne, where he first worked in the late 1970s, was to lend political clout to the lobbyists who wanted to rehabilitate the city's streets and give them back to the people. "At that time the inner city was still considered a sort of no-go area," Dovey explains. "Gehl's ideas were new. For example, back then there wasn't much alfresco eating - people considered Melbourne too cold and rainy for that. Now Melbourne is an eat-all-year-round place, and it's not as if the climate has changed."
Almost 20 years later, in 1994, Gehl produced a report for the Melbourne City Council which recommended increasing the CBD's residential population, reducing traffic through the city and fostering a cafe culture. A follow-up project in 2004 found his recommendations had brought resounding success. Melbourne's centre had been transformed from an "under-utilised and inhospitable" place to "a vibrant, charming 24-hour place", with a population of more than 8000 (from 1400 in 1981), and hundreds of footpath cafes.
…Gehl's critics say that while his ideas may work for a small city like Copenhagen, they are unrealistic for large commercial centres like Sydney and New York, where he has proposed taking cars out of Times Square, and making city parking prohibitively expensive. According to Dovey, who is a fan, Gehl's mild manner helps him counter the nay-sayers. He is no radical, and advocates incremental changes so that people have time to get used to them. "He doesn't come out railing against cars. He simply presents his case," Dovey says. "He's charismatic and he gives a good lecture. It's all about giving the city back to the people and treating it as a party place."
Gehl is unfazed by criticism; he has confidence in his ideas and their universality…

Maley, J. (2007, 01 December). Man with Sydney in his sights. *The Sydney Morning Herald,* p.33.

Take back the city*. Sydney Morning Herald,* Sydney, 2007

THE centre of Sydney would be returned to the people under a radical plan to push out cars, create public squares at Town Hall and Circular Quay, and ultimately tear down the Cahill Expressway and the Western Distributor.
The Herald has obtained the blueprint for the biggest transformation yet envisaged of the city centre. The acclaimed international planner Jan Gehl will unveil it for the City of Sydney on Monday night.
His report paints a picture of a city at war with itself - car against pedestrian, high-rise against public space. "The inevitable result is public space with an absence of public life," he concludes.
His nine-month investigation found a city in distress...
Upon completing his report, Public Spaces, Public Life For The City Of Sydney, Professor Gehl asks: "We have one question for this city: what do you value more - your people, or your cars?"
His plan does not require tearing down the city and starting again. Rather, it could be transformed in stages.
Munro, C. (2007, 01 December). Take back the city. *Sydney Morning Herald,* p.1.

Start planning to repel the invaders. *Sydney Morning Herald.* Sydney, 2007

SYDNEY residents are so used to coping with the city's inconveniences and awkwardness that they don't think about them much. They should. The greatest virtue of the Danish architect Jan Gehl's careful and thoughtful observation of the city for the city council is the freshness he brings as an outsider…
What strikes the reader immediately about Professor Gehl's report is the truth of his observation that Sydney is cut off from the feature that gives it its personality: the harbour…
Many of the blights which spoil Sydney are symptoms, not the disease itself. Above all, Sydney is failing as a city because its transport is a failure…In Professor Gehl's words, Sydney is an invaded city-invaded by cars. Cars rule the city streets, and roads rule the city's shape. Pedestrians and cyclists are second-class citizens. By allowing cars to determine the shape and character of the city, we let it go to ruin and devalue ourselves.

Start planning to repel the invaders. (2007, 03 December). *Sydney Morning Herald.*

Excerpts from opinion pieces by Gehl in the Sydney Morning Herald, 2007

How to build a place for people, Not Cars*.*

If, as visitors once did, today's traveller arrived in Sydney by boat, he or she would see the best Sydney has to offer…
But progressing south into the core of the CBD, the visitor might well think he or she was in Kansas City. People experience the city at street level, but what do Sydney's streets tell us of Sydney?
…When Gehl Architects was asked by the Lord Mayor and City of Sydney last May to prepare a Public Spaces and Public Life report on Sydney, we began…with a series of quantitative surveys: how many people are walking, how many cycling, how many in

cars? We looked at the number of public spaces-parks, promenades and squares-and how they were used, winter and summer. How many people were in the city by day and how many at night, and where were they found? These are the detailed measurements traffic engineers make for cars; isn't it time we made them for people in Sydney?

…To do that, though, you will have to believe that cities made for people are better and more sustainable, that they work better and provide healthier environments than cities made for cars. Of course, this means ignoring the advice of generations of traffic engineers and car makers and oil companies in favour of the rights of citizens to clean air and a healthy life.

When we undertook our test walks across Sydney's CBD, we found that on any one trip, pedestrians spent between 17 per cent and 52 per cent of the time taken on the trip standing at traffic lights. Why not give pedestrians priority, instead of forcing them to push a button so that they can safely cross the street?

Sydney's streets are narrow, a legacy of its higgledy-piggledy colonial-era non-planning. Yet its buildings are tall. This creates congestion on narrow footpaths, it makes for overshadowing and wind-tunnels, plus a concentration of traffic noise, none of which encourages people to use their streets for pleasure.

…We found many footpaths interrupted by drive-ways and carpark entrances. Here the pedestrian should be king, not the delivery van going into a parking bay.

We also noticed in our Sydney survey that some groups were very obviously absent from the city: children and the elderly. A civilised city welcomes all, and provides access for baby strollers and wheelchairs; it lets vulnerable people feel safe. A city for children also provides delight and surprise in creative public space and art. But how can we do that, if the streets are wall-to-wall traffic? Where are the shared-zone streets or pedestrian laneways?

Above all, where is the sense of Sydney as a great harbour city…We need to thread water through the city as a reminder that this is part of Sydney's unique spirit, that we are, even in mid-town, in Sydney and not in Kansas City.

If Sydney is to deal with climate change and remain a great global city, the creation of a welcoming city for pedestrians and cyclists will mark a giant step forward. It can only benefit all residents and businesses because, as I have said before, a good city is like a good party-people will always stay longer than they planned.

Gehl, J. (2007, 12 September). How to build a place for people, not cars. *Sydney Morning Herald,* p.13.

A heart where the city could come together.

All great cities have a heart. They attract people to their centres-not just to work and to live, but to shop or meet people, to dine, to visit a library or a gallery, to be part of the life of their city.

Sydney has great edges: its magnificent harbour, the green spread of the Domain and the Royal Botanic Gardens. But where is its heart?

Its heart is congested, choking on the noise and fumes of the internal combustion engine. That is unhealthy, for the city and for its citizens. So we have one question for this city: what do you value more-your people or your cars?

If you say people, then you need to unlock the centre of your city, so that it becomes a place people will want to go to and a place that welcomes everybody-workers, children, old people, students...

Sydney has a peculiar difficulty because so many arms of government have a finger in the pie: the City of Sydney, and the NSW Government through RailCorp, Sydney Ferries, the Roads and Traffic Authority and the Sydney Harbour Foreshore Authority (running

The Rocks, Darling Harbour and Barangaroo). Then there are the Botanic Gardens and Domain Trust and the Sydney Opera House Trust. All this in just a few square kilometres. It makes it much harder to organise and co-ordinate the necessary improvements...
We have produced our ideas, our vision of what Sydney could become. Now it is up to the people of Sydney, and the co-operative actions of government, to see what becomes of that vision. Who knows?
With a new Prime Minister who is interested in the future of Australia's cities you may get some federal help to make it happen…
I hope that by 2030, Sydney, too, will be a city for its people.

Gehl, J. (2007, 03 December). A heart where the city could come together. *Sydney Morning Herald*, p.11.

Meet the new Mr Sydney. The Sydney Morning Herald, Sydney, 2007

One of the world's most eminent urban planners has been asked if he would help rescue the exhaust-filled canyons of central Sydney from the motor car…
Lord Mayor Clover Moore said the project would be a milestone in the city's planning development, and an integral part of the wider Sydney 2030 strategy.

Gilmore, H. (2007, 18 February). Meet the new Mr Sydney. *The Sydney Morning Herald.*

Vancouver, Canada

Dwelling: Urban transport. A two-wheel solution to a more livable city. *The Globe and Mail,* Vancouver, 2008

…Are you up to Gehl's challenge, city council?
Jan Gehl is a soft visionary, an architect, professor and now globe-spanning consultant who continues into his 70s promoting a range of similarly simple-sounding strategies for improving the quality of urban spaces, and with this, the quality of life of city dwellers. Mr. Gehl's urban suggestions are common-sense, un-flashy, deeply democratic, state intervention-heavy, public purse-draining, and more in their sum than they are in their parts...

Boddy, T. (2008, 7 March). Dwelling: Urban transport. A two-wheel solution to a more livable city. *The Globe and Mail,* p.S4.

Other

Urban mentor invites cities to life. *The Wheeler,* 2011

…The foundation of all Professor Gehl's recommendations to cities is that it is essential to re-orient cities towards the pedestrian and the bycyclist. He considers the bycucle simply a rapid form of foot traffic.
…Professor Gehl said he had never met a mayor who did not declare that the goal of his or her city was for it to be lively, safe, sustainable and healthy.
The simple and direct route to this end, he said, is being "sweet to homosapiens"…

Humble, C. (2011). Urban mentor invites cities to life. *The Wheeler,* pp.6-7 (page 6 only provided).

Cities for People. ArchNewsNow.com, 2011

To readers who have followed the debates over smart growth, pedestrianization, transportation-oriented development, and the broader relations between the health of a culture and the form of its civic spaces–and especially to those who have seen Gehl's own witty and persuasive presentations at panels and conferences–Cities for People (Island Press, 2010) isn't saying anything incredibly new. What it adds to Gehl's well-traveled core message is an accessibly deployed framework of research and a logical, lucid framework for all the telling details and surprising data…observations that will strike some readers as obvious, others as radical, but practically all as convincing, revealing how deeply grounded Gehl's system is in common sense. This kind of synthesis is no small task, and Gehl performs it with aplomb.

He also does it without off-putting jargon or specialist assumptions, thus attracting an audience who might not otherwise have been aware of their own stake in these topics.… Its comprehensiveness and persuasiveness make the occasional moment of wheel-reinvention (and a notes/bibliography apparatus that's on the light side by academic standards) more than forgivable. It is designed both to persuade and to be used, particularly in its concluding Toolbox section, succinctly assembling essential design principles as a guide to implementation.

…These kinds of knowledge were literally built into the civic fabric until the mid-20th century; like Winston Smith, we knew this already. How, Gehl asks, did modern humans forget it? How did so many cities so quickly become grim and joyless places to live?

…His positive remediations follow from his scale-based diagnoses, but they move beyond quantitative factors like population density (he finds "dense city, lively city" too simple a formula, at best "a truth with qualifications") to emphasize qualitative aspects of design. The Gehlian prescription relies on eye-level aesthetic variety, incorporation of physical activity into daily routines (not just willpower-dependent exercise), attention to edge effects, minimization of barriers (he favors ramps over stairs), building forms that respond to light and microclimates and wind patterns, and above all a critical mass of people who are invited, not forced, to use public space. Encouragingly, he does not confine his praise to older cities or districts; his positive examples, along with well-established cases like Barcelona's Cerdà plan, include Ralph Erskine's work in Sweden and England, the Aker Brygge complex in Oslo, Malmö's BO01 eco-city, Freiburg's Vauban, and numerous promising cases in the developing world, particularly Latin America….

Certain simple components of form and technology, he notes, are inherently civilizing and have earned the right to be promoted: the sidewalk café, the well-scaled plaza, the diverse row of small storefronts, and of course the bicycle….

Many cities have grown so accustomed to automotive monoculture that bicycle planning and other acts of reclamation attract ferocious opposition. But Gehl is unfazed by obstructionism:…Municipalities would do well to launch official departments of pedestrian life, Gehl suggests, studying human behavior in cities with all the rigor that traffic departments bring to auto movement and parking…While eschewing the boosterish tone that sometimes accompanies accounts of early steps toward post-automotive urbanism, he is a resolute optimist…

…The improvisatory joy of jazz is a natural match for the everyday street dance that occurs in neighborhoods he loves, the same complex urban ballet that inspired Jane Jacobs. Urban life is in many ways a matter of rhythms, and the rhythms of human movement and perception have found a gifted interpreter in Gehl. Every city that has implemented his ideas has revived some of its livelier qualities, or discovered them anew. This is not to say that Gehlianism offers solutions for every troublesome aspect of contemporary urbanity.

His perceptive and often droll accounts of strong and weak points in various cities bear a resemblance (probably unintended) to the delightful thumbs-up/thumbs-down aphorisms that one finds in the writings of Robert Venturi and Denise Scott Brown…Each of these judgments appears for sound reasons, and one may find oneself in agreement with nearly all of them, yet in the aggregate they produce an impression that their sheer sensibleness has overwhelmed some forms of dialogue and perhaps certain forms of improvisation. It's too bad an articulate apologist or even defender of automobility as a force compelling some urbanites to fashion new modes of living, far from the models of beloved (largely but not entirely European) cities–the obvious choice would have been Reyner Banham, had he lived long enough–isn't present here, at least as an imagined antagonist in Gehl's pages if not a real-time opponent on a panel.

Gehl would almost certainly win such a debate. We all know more now about the damage the automotive-industrial complex wreaks on every scale, from atmospheric particulates to human bodies to global climate patterns, than nearly anyone did when Banham sang his guarded praises of midcentury Los Angeles. But the fireworks would have been a delight to see and hear, and the discipline of provocation would bring an enlivening sense of dialectic to Gehl's work. He's clearly earned his increasing influence…his next project, perhaps, might be to invite the forms of theoretical antagonism that could complicate it.

Millard, B. (2011). Book Review: Cities for People. *ArchNewsNow.com*
http://www.archnewsnow.com/features/Feature347.htm

Appendix F: Results of the interviews regarding PSPL surveys

The following provides the transcripts of the interviews coded by subject. The respondents are from all levels professionally and vary in their enrolment in the PSPL surveys. Please note this is not the complete surveys but rather a compilation of responses that influenced this research, coded into the categories of:

- Public Spaces Public Life surveys;
- Attributes of the methodology;
- Concerns with the methodology;
- Additional surveys;
- What surprised you most;
- Leadership; and
- Other comments.

The responses to the above categories along with being presented as quotes are also presented as a summary in a word cloud (specifications given for each individual cloud). The word clouds are not meant to provide a statistical analysis of the responses rather they provide a summary of word frequency within the responses for each section (excluding common spoken words—see captions). In addition, some of the interviewees chose to remain anonymous, therefore it was decided that all responses would be kept anonymous so as not to place any one in an adverse situation.

General comments about the Public Spaces Public Life surveys

Figure F.2: Word cloud summary of interview comments regarding 'general thoughts on the PSPL surveys'. Source: Author.

Note the cloud is generated excluding the words 'Jan,' 'Gehl' and 'PSPL', the interviewee codes, and words shorter than 5 letters. It has a maximum word inclusion of 50.

I think probably the biggest impact it has had is in the thinking itself because what Jan Gehl has done is that he has not just challenged the way that the authorities perceived the needs of the pedestrian space, he has actually written it down on the paper and he effectively got the commissioner to sign it, which is a huge step. It is one thing to come and say things at the conference because it still is verbal. The minute you write things down and someone like the commissioner signs the document, it has got the greater task or the status of written word which is well and beyond anything else London has had, so effectively it is a document that is slowly changing the perception and understand and requirement and perhaps that's the step that needs to happen before any physical work can happen on the ground. (20093006FL)
[The methodology is] so useful to quantify the befores and afters. We started to use it about the time we had just finished Swanson Street Walk, and we had gone through a very big and contentious public consultation. I thought if we had something like Jan's work then, we could say, 'Oh well, we have this amount of activity happening in the space already, our objectives are to have twice as much or one point five times as much or whatever.' And we can start to set ourselves some goals and see how well they are being done. (20090603MMA)
It seems to me that if you are working in the field of city planning and urban design and suddenly come across this body of work of Jan's for the first time, for me it's an obvious no-brainer, it's, 'Wow, this is a fantastic technique, let's do it in our place so we can compare ourselves to everybody else'. (20090603MMA)
Why coming across Jan's work was so significant for me was that it was the first time I had seen a way of quantifying what we wanted to achieve. It was fantastic to be able to wave numbers under people's nose and say, 'By doing this we've increased the number of people sitting in Burke Street Mall by a 100%' or whatever it might be. (20090603MMA)
The Melbourne one I was responsible for—I am happy to claim credit for that. I met Jan at a conference; it must have been about 1992. He was speaking in Melbourne and I thought what he

had to say was very interesting, so I contacted him afterwards—immediately after the presentation—and he said he would send me some material and it duly arrived in a triangular post box, cardboard box, which I thought was very nice rather than a normal roll. It was a triangle like a Toblerone box. It had his Copenhagen study in Danish and then it had an English translation just for the text, so I had to turn over a page of the study and see the pictures and then turn over a page of his translation and put the text to the pictures. It was quite cumbersome, but I read through it and was fascinated. I thought this was a fantastic methodology for understanding how people use space, and for creating benchmarks and for seeing how things change over time. It helped to quantify the results of what we had been doing already for about 6 years at that point at the City of Melbourne. I thought 'We must have this' and so I corresponded with Jan and I talked about how he might do it in Melbourne and what it might cost and so on, and then talked to my boss Rob Adams and got the budget for it and then lead the study. We had a team of about 5 people, maybe six people. And with Jan visiting Melbourne a few different times to first of all tell us how to do it and then to make sure we were doing it the right way. And then he also contributed, the overview of Melbourne and the ideas for Melbourne. (20090603MMA)

Certainly for the Melbourne study I was highly motivated to get it done because I saw it as being so useful to quantify the befores and afters. We started to use it about the time we had just finished Swanson Street Walk, and we had gone through a very big and contentious public consultation. I thought if we had something like Jan's work then, we could say,'Oh well, we have this amount of activity happening in the space already, our objectives are to have twice as much or one point five times as much or whatever.' And we can start to set ourselves some goals and see how well they are being done. The other thing I was very aware of at the time, and I expect this is still the case, was that the transformation of public spaces in Melbourne was very much being led by the Urban Design group at the City of Melbourne. I think it was very good that we did that, but ideally we would have client. We were acting as the judge and jury in that, and ideally we would have as a client a body within the City of Melbourne that was responsible for managing and operating the public spaces. Let's call it a place manager. And they would hire our services at the City of Melbourne Urban Design Branch to redesign the places according to particular objectives they had in mind, or as particular issues or problems came up in spaces. That wasn't how it was operating. We had a good idea for something and we got a budget for it and then we did it. But there wasn't necessarily the ongoing management of it to accord with what we were wanting. I am not at all being critical of the people that were managing the spaces. I think they did a great job. What I am critical of is that ideally we shouldn't have been driving things—it should have been driven from another party. So that was very much my motivation for the City of Melbourne study. For the Adelaide study my motivation was to try to get the Adelaide City Council, to better understand what they could do make the city a much nicer place for people, because I don't think they got it at the time and I still don't think they really understand it. And so I was hoping Jan with his great communication skills plus the quantification abilities that his techniques have, would get the decision makers in Adelaide City Council to understand what the potential was and how to do it. (20090603MMA)

There was no objective assessment of what actually had to happen from year on to year on across the board. So a study like Jan Gehl's, it would look at the city overall but because it would come up with a total reform of the way pedestrian spaces are to be designed there rarely ever would be funding to address all of what he proposed to be addressed and so effectively what I have found mainly to happen in any city for that effective redesign is to do incremental changes in different places. (20093006FL)

[The needs and requirements of people using public spaces within Perth City Centre where not measured] Measuring use doesn't necessarily establish need – people can only use what's available, while they can need anything. (20090212MP)

Broadly speaking, yes [the surveys measured people's use of space and streets]. We know what a selection of people are doing at points in time and roughly how many travel through some points. (20090212MP)

I think there is a huge part of the field of urban design that could be much more quantified. Jan has shown the way for that. He has achieved a magnificent beginning! There's a lot more that I think can be done to systematise that and to develop a whole lot more techniques… (20090603MMA)

[The PSPL surveys] highlights certain types of uses: you would see the buskers, the sellers of

various items and the people that were standing and talking and so on…it certainly made us acutely aware of how people can use public spaces beyond movement—all those social uses— and I think we had an idea about that and we were certainly trying to encourage it but Jan really gave us a language to use and a much finer sensitivity to it. (20090603MMA).

Attributes of the methodology

Figure F.2: Word cloud summary of interview comments regarding 'attributes of the PSPL methods'. Source: Author.

Note the cloud is generated excluding the words 'Jan,' 'Gehl' and 'PSPL', the interviewee codes and common four letter words (such as: when, that, with, also, that, them and this) and has a minimum word length of 4. It has a maximum word inclusion of 75.

…understanding how people are using a space. (20090220FP)
Helps actually seeing the gaps in use and real use—no assumptions. (20090220FP)
To assess the performance of existing public spaces and to understand the elements which contribute to a good public space. (20090311FP)
Pedestrian traffic counts – relatively accurate, get data that is otherwise unavailable, get people thinking about pedestrian activity. (20090212MP)
[Referring to Melbourne survey's] both 1994 and 2004's-the methodology-undertaken in a way to be comparable across study years as well as the other cities studied. (20090527FM)
[The] greatest attribute [of the surveys] is the ability to quantify how people are using public spaces and that is what I found particularly valuable when I read Jan's Copenhagen study. (20090603MMA)
Using 'standard' Gehl surveys facilitates benchmarking against other cities. Data from all of the surveys potentially provides a basis for determining policy shifts and project priorities. The quality surveys are unique and provide a useful media focus. (Urban designer, 20090719MA)
Innovative – alongside Copenhagen, Melbourne is one of only a few cities in the world to now have a formal research programme for public life, not just recording the numbers of pedestrians but also the social activities that people engage in when not walking, such as standing and sitting – which are a very good indicator of the quality of an urban space (necessary vs. optional activities – refer to Life Between Buildings: Using Public Space). There are very few cities in either

Australia or overseas that have information collected on stationary activities, especially over time. (20090527FM)
How easily the methodologies may be applied. They are low tech. and so any city can apply them within set parameters. (20090527FM)
Actually seeing where seating is placed around the city and the sort of spaces designated for café seating, the relationship with the streets, etc. (20090213FP)
Overall for the participants it was good to see how comprehensively the city and its attributes are broken down and survey/analysed. It seemed to broaden the scope of urban design/public space use for me. (20090213FP)
The test walks allow the researcher to be in the public domain as an actor and experience their reactions to the streetscape and public domain. You can count traffic without having to interrupt other actors. It is a good form of observational analysis. (20090304MP)
Pedestrian traffic and stationary activity—a good attribute is their simplicity and for the stationary activity survey the ability of the survey to show the specific places and features that attract, and are used by people for activities other than commercial activities in the city. (20090224MP)
There has not been a lot of research on how people use public spaces (although, refer to the research work by William Whyte for NYC). Research has typically been about people moving through spaces rather than how people use space and why. (20090527FM)
[the surveys highlighted people's use of space and streets within Perth City centre] because the surveys show what features and attributes get used and are (somewhat) attractive to people. A good way of drawing attention to pedestrians and walking as a valid form of transport and important in the functioning of the city. (20090224MP)
[the surveys highlighted people's use of space and streets within Perth City centre] mostly. Because we could see what was being used and what wasn't, and how busy the streets actually were. (20090213FP)
The surveys have been valuable research and should become part of the ongoing research that is done in the city. Pedestrian traffic surveys should be as frequent and well resourced as vehicle traffic, if not more so. It would be good for Gehl Architects to propose an ongoing program for the City to adopt. (20090212MP).
[The surveys] highlighted the peaks and troughs of pedestrian flows throughout the day and probably the relationship between pedestrians and other activities. (20090224MP)
A rigorous and systematic research methodology that makes possible the study and evaluation of the character and range of public life in association with changes in urban form, and social cultural and economic conditions. (20090527FM).
Collecting real data rather than subjective observations. (20090210FP)
Parallel techniques that allow for robust comparative analysis between different time periods and cities. (20090527FM)
The surveys showed that people shop, walk, ride, drive and use public transport. (20090304MP)
The surveys show that people come primarily to Perth's urban place to shop, walk or pass through. (20090304MP)
Simplicity of the data collection - it is easy to undertake and is low-tech, making it an accessible and resource-efficient way to study the city. (20090527FM)
Urban design advocacy and education – academic participation (both students and lecturers), which helps to advocate for urban design and the benefits of collecting data on physical improvements and the public life generated over time. (20090527FM)
Clarity and appeal of the information: • Ensures the study is accessible to the general community. • Interesting to people across professional disciplines and on a personal level to understand their city better. • Offers invaluable material for understanding how the city has changed relative to urban, cultural and social conditions and how this has become manifest in the design of Melbourne's public environment and its resulting public life. (20090527FM)

Due to the clarity and appeal of the information, it contributes to generating a wider appreciation and understanding of: • The urban design profession.   • The importance of quality public open space that is designed and managed for people.   • People as essential to the quality of urban places – public life is essential to creating successful urban places. (20090527FM)
The surveys show what happens when spaces are improved and so also illustrate what is needed to attract people and generate public life. (20090527FM)
Fairly comprehensive and similar methodology in other cities to aid comparison. (20090325MP)
12 quality criteria makes you see a place for what it is without any preconceived ideas of perceptions. (20090510FP)
Very simple to use and can be used by anyone/everyone. (20090510FP)
Makes people realise there is more to a walkable city than nice footpaths (20090510FP).
It gave a holistic view of what is required for a vibrant walkable city through the 12 point quality criteria. (20090510FP)
Yes, definitely [the surveys highlighted issues of sustainable transport within the city]. Importantly it highlighted (hopefully) that even with cycling initiative, the city centre is not alternative transport friendly even though the city keeps claiming to be cycle friendly. (20090510FP)
The greatest attribute was the simplicity of the methods used to give a snapshot of activity in the city. This sort of approach allows for anyone to take part in the information gathering process. The formulaic approach also gives data which allows for easy comparison to other cities around the world for the other Public Life studies undertaken by Gehl Architects. (20090401FP)
Firstly the surveys themselves: their greatest attribute is the ability to quantify how people are using public spaces and that is what I found particularly valuable when I read Jan's Copenhagen study and thought that we should apply it to Melbourne. So that's the survey themselves. The study as a whole, I think the greatest attribute is Jan's great ability to enthuse people and to communicate the worth of lively public spaces—the city as a party—and so on. It's obviously backed up by these surveys but ultimately he could almost do the same thing without any of that quantification, I think. Obviously the quantification helps, but he could tell all the anecdotes and show all the photographs and largely, but maybe not quite as powerfully, communicate the points he's communicating. (20090603MMA)

Concerns with the methodology

Note the cloud is generated excluding the words 'Jan,' 'Gehl' and 'PSPL', the interviewee codes and common four letter words (such as when, will, that, with, also, that, them and this amongst others). It has a minimum word length of 4 and a maximum word inclusion of 75.

During entry and exit times into the city make ped counts more often to be more reflective, i.e. shops close at 5pm [so therefore] do counts at 4.30, 4.45, 5.00, 5.15, 5.30.(20090220FP)
To be reliable there needs to be a far greater number of surveys done through the year and over time. Completing the surveys over a few days doesn't allow for sufficient comparison and averaging –some counts were done in the school holidays, for example. (20090212MP)
With the pedestrian counts it would be interesting to know why the people are walking. I.e. are they strolling or simply walking to the car park or to the shops?. (20090510FP)
The pedestrian traffic counts didn't pick up early commuter traffic, which is one of the busiest periods. Should start at 7:00 a.m. (20090212MP)
Reliance on volunteers limits ability to complete the planned studies. (20090212MP)
Allowing participants to select their own point for the pedestrian surveys means that the 'same' count could actually be done at a different position. Being the wrong side of a mall or laneway can have a significant impact on the traffic count. (20090212MP)
How people are moving through the areas wasn't always captured accurately, i.e. in the mall. (20090220FP)
While not a major concern, quality assessments can be a little subjective despite applying Gehl criteria. However, the easiest way to improve this (averaging more assessments) would be resource hungry. (Urban designer, 20090719MA)
What Jan Gehl's [survey] doesn't do is it doesn't directly integrate the cities current strategies and targets and how implementation of Jan Gehl's recommendations will effect that. And I think that is quite important. So very often his work will be a little bit stand alone, i.e. this is what needs to happen to the pedestrian [and] cycling environment and yes at the moment there is total lack of balance because the car users are kings and they do win out, but then on the other side of the coin the authorities are bound by those requirements and so what Jan Gehl doesn't often talk about is

how you can actually marry the two, so it doesn't actually make it easy for any public authority to implement his work because he doesn't look into how the addressing of his recommendations will actually infringe upon the road safety and economic requirements and targets that the city authorities are actually obliged to carry out and that's the hard part. (20093006FL)
…what it doesn't do because of the way he focuses his research and because he comes from that angle and that angle alone. It's almost like and add on piece of work that you ought to do if you are trying to develop an overall strategy for accessing the health of the cities street spaces. (20093006FL)
Could potentially undertake pedestrian and stationary counts via CCTV if there are not enough people to undertake these. On ground observations however is important in building personal familiarity with a place (20090311FP)
I think people use what is there and will more likely avoid the area if what they need can't be found which makes [whether the surveys highlighted the needs and requirements of people using public spaces] less relevant. (20090213FP)
It seemed as if the benches and café seating locations and quantities could be given by [the City] rather than spending days walking around doing the counting and mapping. (20090213FP)
…there was a huge amount of data (i.e. distribution of trees and species; demographic data; land use data) that I could have provided ahead of time to Gehl and fairly simply from my resources here at the City. This was explained to people here but I was not asked for it. One of our systems captures the complete spread of street trees round the city (including planting date and species) but Gehl had people walking around mapping them. I appreciate that he may want to capture their heights/influence on surrounds but this could have been done much more efficiently. (20090325MP)
Some of the counting may be open to human error (when counting pedestrians). (20090304MP)
…some locations may require more than one person counting during peak times due to large volumes of pedestrians and thus capturing all the movement in the counts. (20090224MP)
Sometimes the way the research interprets the streetscape may be influenced by their bias. (20090304MP)
It would have been better if the Gehl team had undertaken the entire survey themselves. I thought the margin for error was far too large with (a) subjective assessments of safety or lighting (b) communication problems (c) different interpretations by different surveyors. (20090325MP)
The survey parameters require a minimum temperature of 21c (as below this the use of the spaces is not representative of a fine day). There should be a maximum temperature of 35c because the use of outdoor space changes above this temperature and so is also not representative of a typical fine day. (20090527FM)
I was providing advice and guidance to students in the field – I think this should have been the role of Gehl's team but it was just too small in numbers. I was expecting a larger survey team. (20090325MP)
That students were expected to collect the data independently, without close supervision from the Gehl team. There should have been a better briefing and clearer instructions for surveyors – many students said to me 'we don't know what we're doing'. (20090325MP)
Yes [the surveys show people's use of space and streets within the city], however I don't believe the studies showed the reasons for walking. Our walking traffic is commuter walking, ie from one place to another for the sole reason of destination as opposed to walking to enjoy the streetscape or presence of the city. The studies did not differentiate this. (20090510FP)

Additional surveys
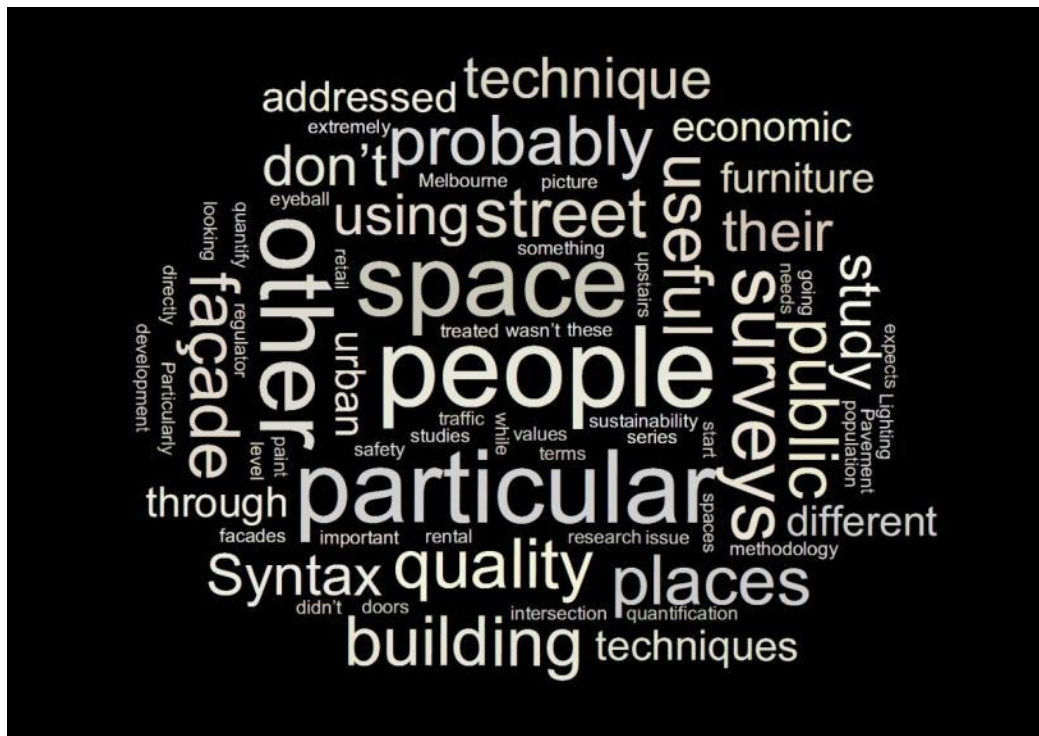
Figure F.4: Word cloud summary of interview comments regarding 'what other surveys should be included'. Source: Author.

Note the cloud is generated excluding the words 'Jan,' 'Gehl' and 'PSPL', the interviewee codes and common five letter words (such as should, would, great, could, added, whole, think, that's, where, there, which, those amongst others). It has a minimum word length of 5 and a maximum word inclusion of 75.

Cycling counts. (20090527FM)
…short interviews. (20090510FP)
Market research to ask the public what their own perceptions of public spaces are – these may be very different from an 'objective' measurement. (20090212MP)
Lighting surveys. (20090527FM)
A questionnaire of people using urban places to find out why or why not they use particular space and what improvements could be made. (20090527FM)
…it would be useful to collect data on why people use or not use particular space and what their needs and wants are. (20090527FM)
Determine and analyse urban / population densities for different times of the day and week - to help us understand the nature of the city's functions, activities and population. (20090527FM)
The other technique that would be useful would be a Space Syntax analysis or something equivalent. I have never seen the combination of the two. You could say, based on the Space Syntax analysis of an area, 'This should be the busiest street, it's the best connected link in the whole system and therefore we should try to put more retailing on it, but for various reasons it is not happening at the moment'. So the Space Syntax analysis would give you an idea of the potential in the big picture, while the finer grain I think can be added by Jan's quantification techniques. (20090603MMA)
I think there is a whole other angle here I don't think I have seen Jan use but that I think is a useful adjunct to all this, which is to look at the rental values of retail space, not just retail space but ground level space generally. You could then probably use some statistical analysis to work out how much is being added by the passing foot trade, how much is being added by general

location in the city and so on, how much is being added by the people that live upstairs, work upstairs. I have seen a contour map of the city showing rental values, done by one of the big real estate companies. You could then correlate that directly with footfall and things like that. That would be a useful technique to add in, to add that whole economic dimension, to try to start to put some dollars around it. (20090603MMA)

Surveys of the following might assist to verify/nuance the urban quality picture:
- Pavement quality (appearance, safety, convenience)
- Other influences on quality (eg design/level of lighting, signage coordination, street furniture other than benches, street tree quality)
- 'Vox Pop' surveys (what are you favourite parts of the City and why in terms of appearance, attractions, safety, etc)
- 'Green' Design. (Urban designer, 20090719MA)

No, we were using Jan for a particular purpose and he did a fantastic job of it, and we were not expecting everything from him, so I certainly don't recall us think 'Oh god, there is a big gap there that we have to plug some other way.' Jan gets invited to places that are already on a particular path, and Jan was one tool in the arsenal. That's probably a very bad analogy to use! He was there to do a particular job and he did it extremely well. He made sure that the methodology we were using was in accordance with his other studies so that they would be directly comparable, and as such, it all worked very well I think. I wouldn't ask Jan to do a study that was trying to quantify the economic benefits of pedestrianisation, or to tell us the right pavement to put down on a footpath, or to do something else that's not his expertise and that he wouldn't claim it to be. Given what he has spent a long time doing and making into a great tool, he did extremely well. I would again say that the study methodology was very useful and it is great to have all those numbers but the benefit of the study was as much Jan coming and talking to people as anything else, and getting some great publicity. (20090603MMA)

One thing that didn't really come out in Jan's work is the issue of whether you try to create places of a similar character or places of a different character. That's probably because we didn't ask him to and it wasn't an incredibly important issue…So there is a whole discussion in Melbourne, in Sydney and in other cities as to what spaces should be treated alike and what should be treated differently. There is, I think, a good question to be asked: 'Do we want the whole of central Melbourne looking the same, with the difference between places provided by certain public artworks, and by the shops and the buildings and so on, or do we say that in this particular precinct we are going to have this type of street furniture and paint it all blue and in this one we paint it all green. Do we change colours? Do we change the type of artwork? Do we change the whole suite of street furniture? Do we change the plant materials? Do we change where we put the trees on the street?' I am not at all being critical of Jan that this wasn't addressed. I don't think it was addressed in his report. It's just that it's another issue that at some point needs to be addressed and Jan could address it. (20090603MMA)

One idea I think would be worth developing, not necessarily as part of Jan's work but in associated studies, would be the 'eyeball' time devoted to particular facades in cities. For example, people sitting in cars at the vertical arm of a T intersection are looking at a building on the other side of the intersection while they wait for the light to change. That building gets a lot more eyeball time than a building five doors down. As a regulator of development in the city it is much more important to get a fantastic façade on that building if it is redeveloped than on the building five doors down. For any particular façade in the city, one can begin through Space Syntax, through pedestrian counts, through vehicle counts, to quantify the eyeball time of a particular façade and therefore its relative importance compared to other facades. That should then determine how much effort the regulator expects a designer to expend in designing a façade, and is the level of quality one expects from it. (20090603MMA)

Again on façade aesthetics, there is a whole series of quantification techniques that you could use to do with the public liking or disliking of a proposal. There is a technique that people use in scenic analysis all the time of flashing a series of photographs in front of people and asking them to rate their attractiveness. That's a technique that I think the central city governments in Australia and probably elsewhere could and probably should use. Particularly with online surveys now it's very easy to get large sample sizes. You can start to say, 'Well sorry Mr Developer, but 90% of people that looked at your proposed development are rating it 1 out of 10 on the scale so

we are not going to approve it'. Or you might say to another developer, 'Your architect has done a fantastic job here and 80% of people think this is an absolutely wonderful result, and we would love to see it, please go ahead.' So I think there are a whole lot of techniques like that that could be developed and used. (20090603MMA)
Greater emphasis on environmental sustainability indicators and undertaking research of those, perhaps, as the study looks primarily at cultural and economic sustainability. (20090527FM)
Yes- in terms of comfort/enjoyment, surveys could also be undertaken with respect to access to food, water (drink fountains etc.) and public toilets. These are basic amenities which will encourage people to stay in a place longer. (20090311FP)
Incidents of anti-social behaviour. (20090311FP)
Surveys of individual journeys, monitoring CCTVs or using a much higher density of traffic counts to establish the common routes and traffic flow of pedestrians. At present the counts are not particularly connected – we know where people are but we don't know their destination or origin. (20090212MP)
[policy review] (20090510FP)

Additional information: What has surprised you most:

Figure F.5: Word cloud summary of interview comments regarding questions asking if Interviewees had any additional comments. Source: Author.

Note the cloud is generated excluding the words 'Jan,' 'Gehl' and 'PSPL', the interviewee codes and common five letter words (such as should, would, great, could, added, whole, think, that's, where, there, which, those amongst others). It has a minimum word length of 5 and a maximum word inclusion of 25 to reflect the short responses.

During your role in the PLPS survey?

Areas I thought were being used were clearly not. (20090220FP)
That [the City] does have some attractive buildings when you look up (and some unattractive ones too). (20090224MP)

How much I learnt! Jan Gehl rocks! (20090401FP)
It was good to have the time to look at the city we live and work in from a urban design/planners point of view. (20090213FP)
When you start talking to the public about what we were doing they become very interested and enthusiastic. (20090510FP)
…Being able to plot the results of the surveys on maps of the city to show where the quality of facades were, or where the number of café seats where, or whatever. That certainly brought some surprises. Before that we had some general ideas but we were able to see the patterns much more clearly when they are there in black and white on a piece of paper. So that was certainly very useful. (20090603MMA)
The reactions of people…I suppose when I saw Jan's work from Copenhagen, or where ever it was, and I thought, 'That is fantastic, I want one for Melbourne', it didn't surprise me when other people had the same reaction when it was applied to Melbourne, and they were saying, 'This is fantastic.' I was very pleased that Melbourne just managed to pip Perth in becoming the first English speaking city to have a report of his techniques. I am pleased to be able to say we broke this to the English speaking world. My memory is that Perth commissioned him first, but we got the report out first. (20090603MMA)
If I was surprised by anything, I think it was that when we tried to sell the idea to Sydney a few years later—I was trying to act as an agent for Jan—they didn't buy it. Eventually Sydney did commission Jan to do a survey, but it took a long time. It seems to me that if you are working in the field of city planning and urban design and suddenly come across this body of work of Jan's for the first time, for me it's an obvious no-brainer, it's, 'Wow, this is a fantastic technique, let's do it in our place so we can compare ourselves to everybody else'. So why a city like the City of Sydney wouldn't do it surprises me. (20090603MMA)

About the PLPS survey's methodology

How simple but effective it is. (20090220FP)
Its comprehensiveness. (20090311FP)
The simplicity. (20090401FP)
The lack of interactive elements in [the city's] urban areas, the lack of shade and free activities. (20090304MP)
Its simplicity. (20090224MP)
How hands on it actually was, but also how disorganised it was. (20090213FP)
The weight that is put onto a small number of surveys. (20090212MP)
That it is very simple to initiate and undertake, so why does this measuring not get routinely carried out? (20090510FP)

Leadership: How important was the profile and expertise of Jan Gehl in getting the City to undertake a survey? And in implementing recommendations? If the city 'did it alone' would it have been nearly as successful?

Figure F.6: Word cloud summary of interview comments regarding questions on leadership. Source: Author.

Note the cloud is generated with the words 'Jan,' 'Gehl' and 'PSPL' deleted, the interviewee codes deleted, a minimum word length of 5 (excluding common five letter words such as: should, would, great, could, added, whole, think, that's, where, there, which, those amongst others) and a maximum word inclusion of 50 to reflect the small response.

50/50. I feel it was more driven by the involvement and comparison to other cities. (20090220FP)
Very important. People are often more willing to listen to international experts than local experts. (20090311FP)
Very influential in my opinion. Jan is highly respected and his previous work on Perth has shown just what…Perth has to transform the public areas. (20090304MP)
I am not too sure but from what I understand, I doubt the survey would have been supported had it not been for the City's respect for Gehl. (20090325MP)
It has been quite effective—with his good reputation etc. (20090210FP)
Pretty important but a few people heard the rep from City of Perth say something along the lines that they would tone down Jan's report which seemed to say it wouldn't have that much impact. (20090213FP)
I think it was very important to have Jan Gehl involved. Perhaps not necessarily for the execution of the survey but for the subsequent report and results. Having Jan Gehl's name would certainly make more people take notice. (20090224MP)
Think people are more willing to listen when the project is led by someone with an established international reputation. There also has to be a desire for action within the community. (20090212MP)
I believe that the City of Perth and the DPI almost wasted their opportunity with having Jan here. I feel very sad that the opportunity to hear Jan speak was not open to everyone in the DPI and the public as well. Hearing and learning from Jan was such a privilege and there should have been more opportunities for him to speak to interested parties and the public about what good cities are. Even having him do a talk down at the waterfront to the public or in the Cultural Centre to try and get the public behind everything that he is about. With every new initiative/design/plan that planners do there is such a backlash of opposition from the public always about parking, traffic and height. If Jan had been made available to the public maybe some of his passion and way with words could have rubbed off on the public and make them see that cars are not in fact the lifeblood of our city. (20090510FP)
My sense is that Jan obviously has his own beliefs in what makes a good city and he is particularly articulate about that. He is also a good political animal and he knows, or will soon find out, the lie of the land politically and what would be acceptable to at least his immediate client. We certainly didn't ghost write what he wrote, but we certainly commented on it and changed around various parts of it with his blessing. He was being paid by us and he wrote something that would fit with his beliefs and also what we wanted to achieve. So for example, if he mentioned getting more cyclists down Swanston Street in his report, it was probably because we fed him the idea. He may well have come up with it himself if we hadn't already been advocating it. Jan was very much working to achieve what we already wanted to achieve. I hear people talking about how Jan Gehl has transformed Copenhagen and then gone on to do it in other cities in the world. My understanding is that's not at all what happened. I think if you ask Jan, (and correct me if you know differently, I certainly heard directly from Jan)—he would say, 'Well, it wasn't me who transformed Copenhagen, I've simply commented on it really.' I think his techniques probably gave the authorities in Copenhagen ammunition to continue the way they were already going. Likewise with Melbourne: Jan gave us some great techniques to quantify what we were doing and gave us a good shot in the arm to help persuade certain decision makers and the general public. But he, with a few exceptions, did not come up with the ideas himself and he did not achieve them himself. (20090603MMA)
To talk about those two specific instances I think the media are very important, and not just the media, it's the public occasions. I remember, certainly with the Adelaide study, Jan giving a public talk starting at three o'clock in the afternoon on a weekday at the Town Hall It filled up with people. There was such a buzz around the place before he came on, all these streams of people heading to the Town Hall. It was really very much the intelligentsia of Adelaide gathering together, certainly a lot of public servants and a lot of designers I suppose. Even if there had been no media covering that it still would have been an important and potentially very useful occasion. Likewise the same thing happened in Melbourne. (20090603MMA)
Jan has the ability to bring people together to hear his message, whether it is directly through him

speaking over a microphone or whether it is indirectly through reading about him in the newspaper. That's important I think. Now certainly in Melbourne much more so than Adelaide, he stirred up a lot of, or helped stir up, controversy. If I remember the timing right, there was already a lot of controversy over Swanson St. He helped add to that, not by deliberately being contentious, but by saying what he would say normally anyway and so just encouraging public debate on how we should use the space we have on our streets. Should it be devoted to private vehicles or to trams, or to purely pedestrian malls, or whatever? Having Jan there with his study, with his recommendations fostering that debate is very useful and hopefully as the patrons of the study it gives you the answers you desire, but even if it doesn't, it helps educate the public and hopefully further the debate, further the understanding of various people that are going to go on in their careers and lives to examine these issues again. So that's all very useful. (20090603MMA)

In my motivation in getting Jan to do the one in Melbourne, it wasn't important at all. I was concerned to have his quantification techniques…[however] part of the value for whoever [pays for the surveys] was Jan and his profile. It would have been a lot less valuable if it had all been done by Gehl Architects without Jan doing it, without Jan being there. It depends on what you are after. Jan is not going to be able to do the surveys forever anyway, so at some point that whole question will become academic. I know Melbourne's recently done a revisit of his work. I don't know whether Gehl Architects did it or not. I think they did probably. But the City could well have done it by itself. I wrote a detailed report on the methodology for it, and what we learned and what we should do again, and what we shouldn't do again and so on, so the City could easily have done it by itself and it would have the data from 1994 and the data from 2004 and so on. So that side of it doesn't need Jan at all or Gehl Architects particularly. I would say they have advanced their techniques a bit. They have added some and Jan certainly keeps on adding to his stories so it is always different when you bring them in again. But fundamentally, no, I don't think we need Gehl Architects, but Jan, yes. He certainly remains valuable. (20090603MMA)

I will tell you this quote that I just heard recently, it must have been generated shortly after Jan did his work in Adelaide so I think it was 2002 from memory. It was the Lord Mayor Michael Harbison, who is still the Lord Mayor, saying 'Adelaide is not Copenhagen and Jan Gehl is not God.' At that stage the councillors, the majority of the Councillors were not supportive of Jan's work, and didn't see the value in it. Certainly few councillors did. In my view the main bods in the administration that needed to champion it didn't either. One of Michael Harbison's children has recently been undertaking a course in architecture or a related discipline. Michael Harbison seems to have had a 'road to Damascus' experience. For that reason, and for various others, including I am sure the influence of Jan and his report, I think the councillors and hopefully the council administration is somewhat more in tune with Jan's general direction than it was at the time of the study. One sign of that is that the design of Victoria Square is being undertaken again for about the fourth time in fifteen years or so. Hopefully this time will result in some real work happening there to make it a much better pedestrian space. Now Adelaide has still a very, very long way to go in understanding the better use of public spaces and how to create a much better pedestrian environment. The Victoria Square design, if it happens, will be one small increment towards that understanding. It certainly wouldn't be the first to come off the rank if I were running the city because it's a great park in the middle of the city, it's not really a plaza. I would do a lot of other things first. Anyway, if it happens, it will be a great improvement. Adelaide has a long, long way to go. Jan's work here really fell on very infertile grounds and it's now another one of those reports gathering dust on the shelf. People still refer to it, usually in a very wistful manner. I was recently talking to an engineer from Adelaide who has just spent seven years doing street work in London and really understands urbanism. She was saying Adelaide is the only city in the world that has done a Jan Gehl report and not followed through. Now whether that's true or not I don't know, but certainly it really hasn't achieved much here. (20090603MMA)

[Leadership is] Absolutely essential—100% necessary. With all these things, with all these types of reports, if you don't have the local champions to follow through then you get nowhere. And you need the champions at the political level and you need the champions at the administrative level. Melbourne certainly had both and Adelaide lacked both. I wasn't in Adelaide when the study was initiated. I suspect it was a good idea from the State Government. They probably had a $100,000 to spare at the end of a budget year and they said, 'Let's do this'. At that stage relationships between the Council and the State Government were pretty good. Some things are done in Adelaide because of a 'me too' syndrome: Melbourne's got on, Perth's got one, so let's have one too. I suspect that

was part of what was going on, part of why various decision makers that had to fund it decided to fund it. At the end of the day there weren't the champions in the council, so it wasn't followed through. (20090603MMA)

Other comments:

Figure F.7: Word cloud summary of interview comments regarding questions asking if Interviewees had any additional comments. Source: Author.

Note the cloud is generated with the words 'Jan,' 'Gehl' and 'PSPL' deleted, the interviewee codes deleted, a minimum word length of 5 (excluding common five letter words such as: should, would, great, could, added, whole, think, that's, where, there, which, those amongst others) and a maximum word inclusion of 75.

I don't think it is too important to get people interested in the city but it appears that getting the city to become a place that allows for human scale, face to face exchange and interaction between people is very important. Perhaps a city that people really enjoy being in because it accommodates all sorts of interactions at human scale. (20090224MP)

[Getting people interested in their city is] generally desirable for both social and economic reasons, and can contribute to the perceived quality of life. If people are willing to invest time, money and emotional commitment to the city it will enhance the community and allow more projects that are for community benefit rather than individual need. (20090212MP)

[Getting people interested in their city is] extremely important. Our city centres should be an inclusive place where people work, play and live all within easy access by walking, cycling or public transport. The City should be a place that is the heart of our society. Urban sprawl is not only unsustainable environmentally but also socially and economically. (20090401FP)

[Getting people interested in their city is] extremely [important]. Especially for isolates Aussies who don't really venture out of the suburbs. (20090220FP)

[It is] absolutely essential [to get people interested in their cities]. I believe Perth is so used to bad city planning that it doesn't see the problems anymore. Once people start tp notice that there are better initiatives and alternatives that are being implemented successfully elsewhere in the world, the public will start to demand these things and hopefully politicians will finally start to support these initiatives. Getting people to realise that the city could be so much more than it is, is absolutely fundamental to bringing about positive change. (20090510FP)

The study seemed very disorganised, I realise it's hard to organise the amount and type of people especially coming from another country, but I think the feeling of disorganisation may have dampened the enthusiasm from volunteers especially those who were doing it in work time. (20090213FP)

However, should also note that the idea of places for people is by its very nature sustainable. (20090527FM)

Implementation and yearly evaluation will be extremely important to seeing any of the results and recommendations actually happen. Many people that were involved feel, unfortunately, very sceptical that all this hard work will actually make the necessary changes happen. We unfortunately do not have a strong champion to implement the recommendations here in Perth. Melbourne's Rob Adams implemented the 1994 recommendations [and] has successfully turned Melbourne into what it is today. Who will take this study and make sure things actually happen? (20090510FP)

It was an absolute delight working with Jan. He is a lovely human being as well as a good communicator and a good deliverer of the product. It was a great pleasure working with Jan, and certainly one of the highlights of my career both in terms of collaborating with somebody and achieving a result that has had good consequences and still attracts interest now. That I'm talking to you now is one example of that. (20090603MMA)

Why coming across Jan's work was so significant for me was that it was the first time I had seen a way of quantifying what we wanted to achieve. It was fantastic to be able to wave numbers under people's nose and say, 'By doing this we've increased the number of people sitting in Burke Street Mall by a 100%' or whatever it might be. Rob Adams just told me recently how the number of pedestrians in Swanson Street has increased four times since 1994. That's a wonderful statistic to have. That's the sort of thing we would have done without Jan anyway - we were aware that we needed to start talking numbers. However, Jan came and gave us a well established methodology that had already been established in other places. We would have started counting pedestrians walking along the street without Jan, but there are lots of those other add-ons that Jan really helped provide. Since then I have worked for several engineering firms. Engineers are people that love numbers and process, whereas architects, landscape architects and urban designers tend to be much more touchy feely. We tend not to quantify things so much. Engineers, particularly traffic engineers, have a whole lot of techniques for quantifying things. They have their warrants, such that 'If you have so many pedestrians crossing the road at this point, we have a warrant for a pedestrian crossing' and so on. I think there is a huge part of the field of urban design that could be much more quantified. Jan has shown the way for that. He has achieved a magnificent beginning! There's a lot more that I think can be done to systematise that and to develop a whole lot more techniques… (20090603MMA)

Engineers are great at quantifying the benefits of proposed works, and through that justifying all sorts of horrendous interventions in the city, such as new road projects that have destroyed cities but achieved great travel times! I think urban designers and town planners need to get smart about all that. I think Jan's work has really shown a great beginning in that direction. I think there is a still lot further we can go. I don't mean particularly in the use of numbers to quantify the use of public spaces for example, although I am sure there is more we can do with that too. Overall, I think we can quantify what is important in our cities and in our design proposals much more to achieve a higher quality urbanism. The money that the City of Melbourne was well worth it. That is suggested by the fact that Rob has got Jan back again to Melbourne, and Jan has got Rob involved in various things. My understanding is that the people Jan has got doing the studies now come from a design background. I think that this quantification work would be helped if people came from backgrounds in geography, marketing research, economics, as well as from a design background .This might lead to a whole suite of techniques that Jan is not using at the moment. Jan I think sees himself very much as a designer, or at least a design analyst. I hope that there is room for a company that sees itself as an urban analysis company, not a design company. For that work you need to have an understanding about design but also much more than that. The focus can be how to analysis what's going on, to quantify it and compare. We can then leave it up to the designers to come up with a great design to achieve a design brief based on the analysis and quantification of what is happening now and what people want to happen in the future. I see Jan's technique as valuable in that analytical side and I see Jan himself as valuable for his rhetoric. These are two separate skills that are very happily married in his work but they could be separated. (20090603MMA)

Appendix G: Government of Western Australia, & Legislative Council. (2009).

Question Without Notice No. 902.

On 16 September 2009, the Hon Robyn McSweeney, the Western Australian Liberal Party's Minister for Child Protection, Community Services, Seniors and Volunteering, Women's Interests and Youth responding to a question by Hon Lynn MacLaren, the Green Party's Member of the Legislative Council, stated that:

"(1) Immediately following the launch of the "Public Spaces & Public Life Perth 2009" publication on 28 May, the department reviewed the text to identify and tabulate the recommendations of the study. On 10 June 2009, a report on these outcomes was submitted to the Central Perth Planning Committee, which is the subcommittee of the WA Planning Commission principally concerned with the central city area. The CPPC resolved the following —

    (a) to endorse the eight key recommendations of the "Public Spaces & Public Life Perth 2009" report by Gehl Architects;

    (b) to request that the City of Perth coordinate a response in discussion with key stakeholders, including the Department of Planning;

    (c) to request the City of Perth provide the coordinated report on how the recommendations of the "Public Spaces & Public Life Perth 2009" publication can be adopted as a step towards the implementation; and

    (d) to await a detailed response from the City of Perth on those recommendations.

(2) Once the response from the City of Perth is received, the Department of Planning will seek to have government implement its share of the broad thrust of all recommendations. Of the more specific recommendations, there may be some development of the concepts offered to make them compatible with other government initiatives before they are implemented.

(3) The job of implementing the report's recommendations will be an ongoing one. That will continue until we undertake another review of our city's public spaces. The bulk of the implementation will take place as part of existing government programs; therefore, there is not expected to be any isolation of the budgets related to the implementation from existing government budgets.

(4) The report has ongoing influence on several major projects in the central city, including the central city planning framework, being progressed by the Department of Planning; the urban design framework, being progressed by the City of Perth; the hub project for the Perth city station and Wellington Street bus station, being progressed by the Public Transport Authority; the Northbridge Link project, being progressed by the East Perth Redevelopment Authority; the Perth waterfront project, being progressed by the Department of Planning; and regeneration of the Perth cultural centre, being progressed by EPRA.