Chapter 14
Urban Design and Quality of Life

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Abstract
This chapter deals with those aspects of the design of cities that have been shown to affect quality of life. Whilst direct causal relationships between physical space and well-being are often difficult to establish, physical space certainly does play a significant part in shaping the way we engage with it, informing the individual and collective sense of attachment to our own environment; this will become increasingly important, with the urbanization process predicted to grow, a significant part of which in conditions of informality. The aim of this chapter is to gather relevant and recent research that highlights advances in the study of the reciprocal effect between urban form and urban life and use this to compile an agenda for future thinking, research and practice in the field of socially sustainable urban design.

The thrust of this agenda is centered on the concept of control. Since urbanization is an ongoing phenomenon and life in cities is now the norm for the vast majority of people, the traditional role of design needs to be reconsidered to give way to more collaborative and flexible forms of conceptualization, creation, occupation and management of space. This is important in order to relieve pressure on land and institutions, and instill an overall proactive and reciprocal attitude towards space itself, and space as a form of collective and social life.

The chapter will highlight that urban quality of life rests on four core themes of: material well-being; emotional and personal development; interpersonal relationships; and physical well-being. These themes provide an organizational framework for exploration of how they are manifest at the metropolitan, neighbourhood and pedestrian levels of scale.

Keywords
Cities, urban form, control, urban design, quality of life, metropolitan scale, neighbourhood scale, pedestrian scale.

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Outline

From an overview on recent trends in urbanization, we will introduce the notion of control as a key to read the following text and in particular we will:

1. contextualize the concept of control in relation to the fields of both quality of life (QoL) and urban form. In fact, the literature in both domains shows that there is a mutually reciprocal relationship between aspects of quality of life and urban spatial structure;
2. review established and recent research on the relationships between QoL and urban form, structured around metropolitan, neighborhood and pedestrian scales, which illustrates the centrality of control in shaping our cities and allowing quality of life to be fulfilled within them;
3. propose a conceptual framework for socio-spatial urban design, which is sensitive to the relative importance of predictive/structural and loose/flexible urban elements in the production and management of urban space, and their critical role in affording their users a sense of control;
4. suggest the need for a reconceptualization of city form away from an assemblage of material and spatial elements towards a more integrated sense of a city as a mutually defining socio-spatial system.

Implicit in the development of our narrative are two assumptions, which we will aim to highlight throughout our discussion. These are:

- a wealth of literature has accumulated over the past five decades, ranging from the work of Jacobs and Hall, for example, in the 1960s through to Gehl, Dovey and Habraken more recently, which has attempted to connect the form of cities with social processes in various ways. Despite this, effective synthesis of this material has yet to be systematically undertaken and its influence on, and acceptance within, the mainstream of practice remains limited at best;
- there is a continuing corrosive impact of a prevailing disciplinary fragmentation, which perpetuates the separation of the built environment disciplines from those concerned with human social and psychological processes, resulting in communication barriers that obstruct effective cross-disciplinary discourse.

14.1 Introduction: an Urbanized Future

Urbanism is a very old term; it has accompanied the development of our cities for centuries, through the skilled and at times grand and intentional, to the ad hoc and piecemeal intervention of development, growth and refinement. Significantly different targeted, widespread, professional and coordinated approaches to urban planning emerged to address a severe public health crisis only when industrialization hit cities in Europe and North America in the second half of the 19th and the first half of the 20th centuries. A new profession was born here that effectively divorced scales of intervention by separating architecture from planning and thus created a gap in the layout and design of our cities. This became evident at a large scale after WWII and has had a significant impact ever since on how we experience them.

Thereafter, the concomitant effects of both World Wars and the aging of the stock built during industrialization called again for large-scale intervention. Healthier cities (physically

and morally), more efficient cities, less city-like cities, and reformed cities were the ambitions of these early experiments in urban planning, which were broadly translated into a dispersed model and the zoning of functions. Dispersion and zoning combined to shape post-war urbanization, and are still playing a part in our daily environments.

Nevertheless, the potential benefits of density and mix became clear in the early 1970s when the oil crises and greater environmental awareness revealed the un-tenability of a world based on the consumption of finite resources and the need for a different model of development. Between the 1980s and 1990s, advances in technology and globalization brought a very polarized economic growth, changing the form of cities yet again, making it more specialized, with great repercussions on the relationships between regions around the world, resulting in increased social inequalities.

Everyone is affected by the problem of sustainable development: on the one hand, there are areas in the world where population and urban infrastructure are not yet synchronized, that is the scale of urbanization is not yet fully matched by income growth and institutional development, and where the experimented paradigms and planning approaches cited are imported as signs of aspiring modernization. Here, we call these “the becoming cities”, or the Global South. On the other hand, there are those countries where planning, policy, technological and scientific advances are available and matched, but the nature of change is profoundly cultural and therefore slow, due to a complex balance of economic, political, social, and environmental interests; we call these “retrofitting countries”, or the Global North. These are not fundamentally different problems, but more like two sides of the same coin.

The apparent mismatch between the resources available to deliver sustainability and the scale of the task calls for a different paradigm of creation and delivery of our space, one in which the responsibilities of structuring, equipping, using and managing land are shared between institutions (intended here in the broadest sense) and users, in a way that recognizes that the benefits derived from responsibility can actually become shared benefits – cultural, societal, financial and environmental.

The form of our cities has a role in generating such benefits, in relation to its capacity to afford its users control. It embeds cultural values and supports habits but, unlike values and habits, it has, in principle, a longer life span. Life span and adaptability are now the key issue because the cost of remediation for environments that are not fitting and supporting will become increasingly prohibitive. Individual urban forms differ greatly, but the principles that govern and structure them are surprisingly lasting over time and were only significantly challenged after WWII. The capacity of these structures to survive life spans, representing and supporting changing values and habits, may also differ accordingly; we cannot stay in some places, we cannot inhabit them without losing our identity, feeling unsafe, alienated, or threatened, while others have remained with us for centuries, adapting to our transformations, responding to our needs, fulfilling our lives, and allowing a bond to form. Establishing what determines this difference in responsiveness, and what benefits are derived from it, is summarized in the literature review of this chapter, and will lead to more holistic and phenomenological concepts of human-environment relationships as solutions better able to integrate city form and social processes.

14.1.1 The Research/Review Problem

Overviews of cities and their effect on people, presented in handbooks in the area of environment behavior studies, often start by listing the positive and negative traits of cities – mainly in relation to density and opportunities on one hand, and crowdedness, pollution and alienation on the other. Individual studies on single aspects of urban form and their impact on cognition, affection and behavior and attitudes are also very plentiful, with several journals

dedicated to this theme, and a fast-growing international portfolio of cases and examples. More recently, encompassing publications have linked the discussion on cities to environmental effects (Speck 2013), and overall quality of life (Montgomery 2013).

Planning, design and social sciences have also benefitted from the more recent interest and activity of data analysts, mathematicians, etc., with great advances in the understanding of how cities function as complex systems, and how socio-economic and environmental aspects of life are linked to form. Even more recently, the study of cities and their character has become popularized, being embraced by entire communities, often through innovations in social media outlets/forums, to observe, record, map and track morphological, behavioral, and usage data (we can now model, use remote sensing and crowd sourcing, and conduct simultaneous morphological comparisons at global, national, metropolitan and local scales). This is significant as it is creating a much broader pool of diverse knowledge than we have ever had, to the point that we can now link advances in quantitative work to the study of trends and patterns at any scale, and make increasingly sophisticated observations of shared, cross-cultural and contextual behavior, to use both as evidence and as guidance. In theory, with this knowledge at hand, *"Planning and design, when aware of these complex molar systems, can act on city form, to enhance, enable or alleviate immediate and extended relations and behaviours in cities* (Gifford 2007 p. 265)".

The reality is that, with this knowledge and the goal of making life healthier, fairer, more efficient and richer, our cities have, over the past century, been shaped by the dominance of design as a catalyst and instigator of behavior and habits. We have over-professionalized urban place-making, especially at the human scale, with two consequences. First, this has caused the progressive distancing of the design and delivery sectors from the users of their work (Punter 2011) – this was a necessary outcome, due to the sheer scale of development and lately of its success (Thwaites et al. 2007). Secondly, people have been left with the belief that nearly everything about the shape and management of environmental form is a professional problem, whether it belongs to a policy, management, legal, political or planning framework. Thus, today, people are disempowered and discouraged from acting on and taking charge of space for themselves; in an age of increasing interest in localism, this may well no longer be tenable.

The timing is right. Large-scale and sophisticated operations such as global, national and urban observatories are now widely established; they are repositories of data to monitor, compare and guide sustainable growth. Municipalities are extending and sharing their "guarantors of fair development" role to non-profit urban design groups, agreeing to widen roles and responsibilities to the users and the city. On a local level, responsibility for development is taken up by community movements, supported by the locally-oriented and participative agenda of place-keeping research, which explores innovative approaches to designing and managing open space while securing its long-term future by putting the right people, funding, policies and evaluative processes in place (Dempsey and Burton 2012), trying to disentangle change from excessive professionalism and bureaucracy. Knowledge is power, for all these levels. Urban design needs to use this broad pool of knowledge to guide strategic and structural work at metropolitan and neighborhood levels, and accompany all of us in the gradual transformation of small-scale environments.

Urban form is the setting where a more complex sharing of responsibilities needs to occur because, as we will show, shaping, controlling and being able to access the urban realm is significant for our well-being. Morphological structures and control relationships that are capable of better integrating social processes, material form and spatial organization can be found in the literature and require further investigation and development in the context of contemporary urban design and sustainable living challenges (Habraken 1998; Thwaites et al. 2013).

14.1.2 Aim and Rationale of the Review

Cities are many things to everyone; for the purpose of this chapter, we see them as first and foremost sources of behavioral and experiential opportunities, which other environments cannot offer. As such, we look at urban form as shaped by urban design at three main scales: metropolitan, neighborhood and pedestrian (Clifton et al. 2008; Lehrer 2010). We then search for studies that relate domains of QoL to each of these scales, including a focus on objective and subjective indicators. A significant part of our justification for focusing on different scales is that awareness of scale, and the way that this can have a profound influence on human behaviors and experience, lies at the very heart of contemporary place theories, which intimately connect human functioning with the settings of that functioning. Thus, we argue here that human experience of scale in the environment provides a foundation on which to build an understanding of urban settings as integrated socio-spatial systems.

Particularly significant origins for this are found in the work of anthropologist Hall in the 1960s (Hall 1969). Against a background of growing concern about what many perceived as the placeless consequences of modernist planning and design, Hall, and others at the time, began to develop an understanding of space as an elaboration of culture where space becomes place as a consequence of what people do in it. Hall rejected Cartesian concepts of a dualistic human-environment relationship through research that sought to establish that significant aspects of what it is to be human are not confined within a material skin but are manifested as "learned *situational* personalities" (ibid. p. 115) associated with responses to human-environment transactions at intimate, personal, social and public levels of scale.

Hall developed these ideas into the theory of proxemic space, premised on the innate tendencies of humans to band together in mutually supportive, and usually small, social groupings. Space is therefore cultural, rather than geometric, and becomes distinctive through the activities of individuals and groups within this context. This concept was later used by Greenbie (1978) to describe how culturally distinguishable urban villages and city neighborhoods become apparent in large cities, and was extended by introducing the term distemic space, referring to the often large portions of major cities that are shared by a diversity of cultural sub-groups. In broad terms, proxemic space describes the homeground, which necessarily involves high levels of personalization related to cultural needs and preferences. In psychological terms, this represents a place where basic needs such as security and a place of retreat are found. Distemic space, by comparison, is the place of challenge and enrichment offering diversity of experience, but within which opportunities for personalization may be limited. Proxemic and distemic spaces function in a complimentary manner, with both being required to optimize human psychological health.

The relationship of innate human behavior in response to levels of environmental scale has perpetuated throughout the development of urban design's intellectual core, spearheaded most explicitly in the work of architectural theorist Alexander (Chermayeff and Alexander 1963; Alexander et al. 1977) and more recently in Habraken's (Habraken 1998) exploration of the structure of ordinary built environments. Similar themes of human-environment integration in urban settings resonate in Dovey's explorations of the phenomenological nature of place (2010a, b, c).

The main areas which we will refer to are Quality of Life (QoL) and Urban Design (UD); these are complex, multifaceted terms, studied in a variety of disciplines.

14.1.3 Urban Design and City Form

Urban design as a distinct academic and professional area emerged in the USA in the late 1940s and 1950s from the cultural cradle of the late Modern Movement in architecture, through the convergence of themes that, though entirely internal to the Modern Movement of the times and initially proposed to expand and reform it (Mumford 2009), contained the seeds of a radical departure from it. By the early 1960s, themes including the "heart of the city", the historical built heritage as an environmental (not just monumental) asset, social engagement and community empowerment, and the sensorial experience of the "townscape", shaped within the area of urban design a radical opposition to the Modern Movement's core principles; for example, around the role of design and the designer in society, the origin of place identity and above all the role of time and history in cities' evolution (Hebbert 2014). The parallel growth of cognate disciplines, such as ethology, psychology, environmental psychology and urban anthropology, legitimized the development of urban design into a more complex area, which found much of its inspiration and ideas in the desire to understand the relationship between people and space. The "giants" of urban design, that is those thinkers who shaped the foundations of the discipline as we know and practice it today (Porta and Romice 2014), were determined to understand critically place and the human experience within it as a pre-requisite for design, conscious of the impact that design ideologies were having on quality of life across the globe.

Urban design today has been defined as a "mongrel discipline" (Carmona 2014), which studies and shapes the form of cities as complex, organized systems (Jacobs 1961 after Weaver 1948) of people, spaces and connections (Cowan et al. 2005). It works in the past, present and future; it deals with individuals, groups and society as a whole (Krier 2009). It works for efficiency and satisfaction and is thus centered on "the process of making better places for people than would otherwise be produced" (Carmona et al. 2003 p. 3). This definition contains the notion that places do change in time, within or without the remits of planning, suggesting that urban evolution is a founding principle of our discipline. Urban design deals with structures and values in order to offer rich, coherent experiences (Cowan et al. 2005). It determines our interface with the external world, modulating our interaction with others, our access to choice, and our bonds with space. Moreover, urban design deals with the delivery of urban form, at different scales. In a metastudy of urban form, Clifton et al. (2008) suggested that this is the focus of many different disciplines, which use different scales of investigation, have a different focus of interest and use different methods. We follow on from their classification of scales, and focus our review on the (sub-)metropolitan, neighborhood and pedestrian scales.

14.1.4 Quality of Life

Research on QoL started in the 1970s, in conjunction with the establishment of the journal Social Indicators Review. Its area of investigation spans many disciplines, although its core sector of work is health. Because of the wide-ranging scope of investigation in QoL, there is little agreement on its definitions and approaches (Schalock et al. 2002). Many have identified factors, domains, frameworks, and concepts to clarify and organize its meaning. The World Health Organization (Kuyken et al. 1995) recognizes that the study of QoL is at the same time subjective and weighted on individuals' experience (contentment), objective (financial status, employment) and multidimensional.

Developmental psychologist Ryff sees satisfaction with life not as contentment with the achievement of a status, but rather as "the realization of talent and potential, and the feeling

that you are able to make the most of your abilities in life" (Montgomery 2013, p. 35). The spatial organization of our urban habitat must be conducive to supporting and sustaining us through these journeys. Greenbie (1978) offers perhaps one of the earliest attempts to develop an understanding of spatial structure that is integrated with such fundamental human functioning.

Citing World Value Surveys and Gallup World Polls amongst others, which set out to measure QoL from thousands of respondents' overall satisfaction with life on the basis of many components – personal, social, economic, environmental – which they then correlate, Montgomery (2013) suggests how economic status, which for years was deemed the driving element for life satisfaction, is not dominant and that indeed the most prosperous countries and cities in the world do not score higher in these surveys. Rather, education, employment, location and social ties seem to work together in fulfilling one's life. Satisfaction with life does, in turn, positively affect our perception of health, being linked to the feeling of leading a positive and meaningful life (ibid. p. 35). Well-being is therefore multidimensional and context-specific (Rogers et al. 2012).

14.1.4.1 QoL Domains

Several analyses of the literature have identified domains that contribute to the overall perception of QoL. From a review of almost 10,000 abstracts and 2,500 papers, (Schalock et al. 2002) identified 8 domains, each assessed through 3 indicators, objective or subjective, for the study of QoL. Subjective views of QoL are linked to cultural and contextual differences, and tend to be related to a smaller scale of investigation (Pacione 1986). Objective indexes are useful at a mesoscale, and a combination of both is used at higher scales, such as national or international surveys. Acknowledging that international comparisons are difficult, these surveys take into account contexts by weighting them, thus revealing important cross-cultural commonly shared values (Schalock 2004).

Pacione (1990) suggested that liveability is a description of this sense of comfort, and represents the interaction between people and place, involving social, economic, environmental and health-related factors (Newman and Kenworthy 1999). The form and character of most places in the city modulate our interaction with others, and with the environment as a whole, triggering emotional, cognitive, effective, and behavioral processes, on a personal and group level. Taking our lead from the work of Schalock and Verdugo, we therefore focus our study of form on those aspects that have resonance with psychological, physical and material well-being and interpersonal relationships. In doing so, we structure our discussion at each level of scale (metropolitan, neighborhood and pedestrian) within the categories of material well-being, emotional and personal development, interpersonal well-being and physical well-being. These domains relate well to cities, as this is where people act more clearly as individuals (Hall 1966) and as social beings (Greenbie 1978), through the modulations afforded by space. Since our focus is on the relationships between cities and well-being, we then concentrate on those aspects of city design and functioning that can play a role in our *realization of potential, and our feeling that we are able to make the most out of our life*. To us, this means looking for aspects of form that contribute to a sense of security, engagement, freedom, choice and control.

A potentially productive way to summarize the essence of these indicators in relation to particular properties of urban form is to consider the relationship between territorial behavior and the achievement of human self-esteem. In their attempt to develop a manifesto for urban design, Jacobs and Appleyard (1987) suggested that "*The urban environment should be an environment that encourages people to express themselves, to become involved, to decide what they want and act on it*" (Jacobs and Appleyard 1987 p. 169). This kind of territorial

awareness can be related to human quality of life in terms of the need to achieve self-esteem. Through their mental and physical actions, individuals make their ideas into something permanent and thereby become aware that they have a mind of their own. Furthermore, through having their actions recognized by others, individuals are able to enjoy self-esteem. These ideas are central to the work of Honneth (1995) who identified the importance of recognition as a vital human need. Honneth considers that self-identity depends on developing self-confidence, self-respect and self-esteem. Achieving these requires the recognition of others who share common concerns within a mutually supportive community. The achievement of self-esteem and feeling comfortable in an urban setting, therefore, appear to be intimately related to human interactions with each another and with place. Consequently, urban environments ought to be configured in ways that will encourage and sustain "beneficial" interactions, those capable of sustaining a balance between individual self-expression and conformity with locally-formed norms and values. Urban forms that encourage the formation of communities, neighborhoods and a sense of belonging may therefore be more beneficial to QoL than those that do not. Much of the problem with the prevailing professionalized processes of urban planning and design is that, by excluding the end-users from the process of making decisions (and making in general) regarding their own space, they often excessively reflect the feelings, values and norms of the professional fraternities involved in the development process, leaving little space or incentive for personal expressions or the embedding of cooperative community.

Social functioning, similar to the territorial dynamics studied by Honneth (1995), which can be understood as a generator of the urban order we experience, is central to Habraken's exploration of the structural characteristics of the ordinary built environment (Habraken 1998). What Habraken means by "ordinary" in this context is the wide fabric of the built environment of human habitation, where the routine of daily life occurs, which until relatively recently managed to evolve and be sustained without the sort of professional attention it receives today. "*Ordinary growth processes that had been innate and self-sustaining, shared throughout society, have been recast as problems requiring professional solution*" (ibid. p. 3). For Habraken, these levels of control reflect the need for a balanced approach to the delivery of urban structure, involving a holistic relationship of specialist expertise (form), territorial behaviors (place), and user expression and conformity (understanding). The overlapping relationships between levels of control generate active and continuously shifting patterns of occupation and expression, creating a kind of margin at an indeterminable boundary where the control necessarily exerted by specialists gradually gives way to the social forces of occupants. Although such margins retain a form of stability and coherence over time, they may in fact be in continual change as the patterns of occupation and control ebb and flow with objects placed for short or longer periods, according to local custom, practicality and negotiation between neighbors. What appears visible results from the resolution of tensions between people's biological need to assert their individuality through territorial expression and the wider need for personal assertions to remain within commonly accepted norms: essentially the drivers of Honneth's concept of the recognition necessary for the achievement of self-esteem. Urban regeneration based on large-scale spatial interventions and compressed timescales squeezes such opportunities.

We suggest that control, through form shaping, place understanding and choice management over time, offers the potential to build a more vital link between the physical structure of our cities and our capacity to establish meaningful relationships with others. In particular, the form of cities:

- organizes and links places, people and functions - at metropolitan and sub-metropolitan scales;

- clusters and distributes choice, facilitates movement, orients, and gives character, encouraging challenge, enrichment and relationships – at the medium, neighborhood scale;
- invites, welcomes, protects, engages and satisfies, allows choice and use – at the small, pedestrian scale.

This review covers these three scales, listing research that has shown a link between aspects of urban form and QoL.

14.2 Urban Design and QoL Literature Review

14.2.1 The Metropolitan Scale

Intuitively, quality of life seems easier to relate to the more human scales of urban experience whereas understanding which components of the wider city scale are influential is perhaps more obscure. Nevertheless, we view cities as places with characteristics that enable us to distinguish one from another and form images of them in our mind. This allows us to grow attached to them, organizing them as referents, for directions, for narratives, and to move through them. However, although the effect on QoL, at this scale, is harder to grasp, our experience of them as "wholes" is nevertheless important in the basic lifestyle they allow us to have, not least because it is at this scale that the arrangement of communication networks, land-uses, the distribution of services and access to them can either help or hinder our movement, and generate positive or negative experiences.

14.2.1.1 Material Well-being

Bettencourt and West (2010) have calculated the increase in urban productivity, urban benefits and negative externalities that accompany city growth, suggesting that these increase faster than population growth, whilst the urban infrastructure required to accommodate such growth is much slower (Bettencourt and West 2010). From an evolutionary perspective, this might suggest that cities can "*reset their carrying capacity over time, and largely avoid (…) social and physical collapse*" (Pagel 2011) through restless innovation, and the continuous production of creative solutions, geared towards *efficiency*. The issue of efficiency, in both environmental and cultural terms, is crucial to conceptualize and develop the fundamental strategic role of urban design.

Because of the predicted pace of urbanization in the next 25 years, we know that there will be a drastic influx in existing cities and the development of more in conditions of informality but, whilst much of this urbanization will be spontaneous, some elements can be controlled. Research at UN-Habitat (Angel et al. 2011) suggests that rigid or inflexible expansion boundaries, for example, will, in the long term, determine poverty for a section of the population, because they will not be able to afford accommodation within them, as prices will be pre-fixed by these boundaries. On the other hand, the strategic initial conception, not even necessarily followed by immediate development, of carefully spaced infrastructure would allow for natural and fair occupation over time, enabling negotiation to form ordinary environments with manageable degrees of control where needed. Whilst this view, put forward under the term "the making room paradigm", might be one of a few in relation to urban development, it is reported here as very significant, especially when paired with other findings from UN-Habitat, that population increase and land urbanization are non-linear patterns, with the latter being much greater (and faster) than the former by a scale of 2% in developed and 7% in developing countries (i.e. Africa and Asia) (Angel et al. 2011). In this sense, it is possible to make predictions about urban growth (population and land) and therefore infrastructure (arterial grid and hierarchy of open spaces) and edge expansion limits.

Availability of land is an issue for developed countries too; the phenomenon of shrinking cities, which is occurring at a different pace in different political geographies, provides both an opportunity, to deal with the scarce resource of brownfield land in cities, and a risk, given that brownfield sites are not a solution (panacea?) per se as they are often linked to issues of social justice, development risk, location difficulties and servicing. An interesting study on the rather sudden and vast availability of brownfield sites in East Germany is supported by an integrated assessment of their character, and could be used to study the feasibility of their reintegration in the retrofitting city (Schetke and Haase 2008), for the negotiable space they add to existing built-up areas.

Recent work in urban morphology has shown that historically, and independently, the structure of cities has been organized around main urban streets, which in turn has generated "sanctuary areas", that is zones of a predominantly residential character bounded by main channels of movement (Mehaffy et al. 2010). Following on, Porta et al. (2014) confirmed this in an extensive geographic and temporal review of cases, subsequently addressing the importance of some structural physical elements at the metropolitan scale for the performance of urban life within social unspoken behavioral rules at the neighborhood scale (Mehaffy et al. 2014). These spontaneous clusters are important for the establishment and maintenance of such rules. The fact that their scale has a rather consistent dimension seems to suggest that, even today, amongst all changes, urban design should acknowledge such consistencies and respect them in new development.

14.2.1.2 Emotional and personal development

The morphological work above, which confirms the historic and geographic persistence of coherent urban areas bounded by movement channels up to modern planning, suggests the development of a rather spontaneous but balanced character within each of these areas, proportional to their size (which is remarkably rather regular, in time and space). This was consistent until large-scale professional planning started to predetermine the character of whole areas from the outset, limiting the spontaneous development of the city (Porta et al. 2014). Interestingly, research mentioned above (Bettencourt et al. 2010) has also shown that the organization of the main city elements, and the dynamics within them, are remarkably consistent and predictable, even across socio-cultural processes of diversification, migration and overall change. As such, they are robust and lasting. The degree of organization that such elements allow their users changes substantially, according to both the societal context (including policy and planning) and the physical form of places. Habraken's reference to form, place and understanding, and therefore control, is key, making explicit that much of the contemporary mainstream in urban design tends towards the delivery of mostly professionalized urban structure thus limiting, and even obstructing, the more socially-oriented levels of control (place and understanding). These levels of control have a significant part to play in our capability for emotional and personal development because this is where relationships between individuals and groups most actively interact with material and spatial settings.

The degree of organization afforded in space is fundamental to how we inhabit and experience it. An overview of articles from Landscape and Urban Planning over 16 years has identified a number of consistent human needs in urban settings, valid across cultural differences and political contexts: *"Urban residents worldwide express a desire for contact with nature and each other, attractive environments, places in which to recreate and play, privacy, a more active role in the design of their community, and a sense of community identity"* (Matsuoka and Kaplan 2008). Having a degree of control at a metropolitan scale is a societal need expressed through meanings. Castells defines urban meanings as an expression

of peoples' values over time (Castells 1983); they are infused in the city's structure. Nevertheless, people change, and with them their values; the city also changes but on different timescales, and yet needs to maintain congruence between meanings and form, to allow coherence and a sense of place to develop. It is enough to think of recent social change in developed societies, how substantial it has been within a relatively short timescale; from the early 1960s, more women started working, marriage occurred later in life, changing family size, and reducing the number of households with children; life expectancy generally grew, and so did disposable income, with a surge in the number of wealthy in retirement. Whilst these changes are primarily societal, economic and cultural, they require physical adaptability to allow our environments to be supportive, conducive, representative and enabling for our emotional and personal development.

Montgomery (2013) gives an interesting example: the typical image that has been depicted in the media for years, that of the American family living in the suburbs, has recently been substituted by more urban lifestyles (i.e. *Friends, Fraser, Sex and the City*). These "mental libraries of stories" contribute to changing our perception of what is desirable, helping us explore life according to different urban rules and pace (ibid. p. 93). The form of cities helps us develop and understand ideals and models, and with them become part of systems of practices. The congruence between form and these systems, some of which are unspoken, is key to our functioning as social beings. It relieves us from stress and gives us confidence to use the city and its parts; Lewicka suggests that the urban scale can participate in place attachment and deserves more attention by future research (2010). Urban form needs to be able to assimilate meanings over time; it is dangerous and costly to expect urban form to help us substitute them every time society demands new ones. The notion of control demands a more negotiative relationship between us and space, a creative, smaller-scale combination of context and subject in which spatial arrangements interpret, absorb and help develop social and cultural rules.

14.2.1.3 Interpersonal Relationships

Cities increase economic activity and productivity, but people flock to them as much for human interaction as for that. This is a double-edged sword. We crave interaction, which we enjoy when it is accompanied by our controlled ability to retreat from it. Moser (2012) calls urban behavior paradoxical, in that individuals must cooperate socially to maintain their anonymity (p. 208). Urbanity must function as a guide to manage social interaction.
Despite their higher efficiency, big cities have been associated with a cultural bias that has long been studied in America. Recent investigations show that big cities tend to score lower than small towns on three scales: poor neighborhood quality, associated with housing conditions; home and neighborhood satisfaction with fair neighborhood characteristics; and the neighborhood quality rating of older long-term residents satisfied with their neighborhood, and young short-term residents not so satisfied with it. In all these instances, small towns scored better than large cities but a variation in the cities studied seems to suggest that those included were also those with a more generally uniform form of neighborhoods, even across varying incomes, whilst other cities where the polycentric nature of form was more evident did not feature (Greenberg and Crossney 2007).

A significant obstacle to beneficial interpersonal relationships in cities is criminality, one of the greatest sources of stress in urbanites. Fear of crime limits our ability to go out (mobility) and interact with others (sociability), two key domains of quality of life. It is also one of the main reasons why people leave the city (sometimes referred to as suburban flight). Research shows that instances of crime and fear of crime are different, the latter in fact not being the consequence of real risk, as summarized by Moser (2012). Concentration of crime is

often higher in city centers, which being denser in activities tend to attract greater densities of people; this can be explained on the basis of, amongst others, the principle of de-individuation (Zimbardo 1969), which suggests that when the concentration of strangers is greatest, it is impossible to identify the odd-one-out. The feeling of insecurity that is associated with fear of crime is linked to the feeling of loss of sense of control and territoriality (Taylor 1978).

Incivilities and aggressive behaviors are heightened by physical form (Moser 2012 p. 209), with the sense of civic responsibility, the probability of intervening when witnessing distress, and simple people-people interactions (i.e. looking at a stranger in the eyes whilst walking) being reduced with an increase in density and the number of people around (ibid.). The concept of helpfulness has also been shown to be linked to city size. In general, it is higher in smaller towns than cities, with 300,000 being the threshold above which there is no significant distinction (Sundstrom et al. 1996), and is affected by weather and noise levels (increases in both above certain limits reduce it (Gifford 2007)). Helpfulness can also increase in complex settings – at least for women, not for men – and decrease with the number of people potentially there to help, explained as the overload approach, similar to the de-individuation principle introduced by Rydin et al. (2012) and Zimbardo (1969).

Urban forms that allow for the performance of urban life through the establishment and maintenance of unspoken behavioral rules have crucial implications for the nature of change and adaptability within urban realms: an important concept in the delivery of urban social sustainability. Change and adaptability in this context, and their relationship to resilient sustainable living, can be captured through the conceptual lens of "forgiveness". Here, the action of forgiveness underpins a conciliatory human-environment relationship uniquely able to articulate how environment can "forgive" human interventions and humans can "forgive" constraints that environment may impose. The concept of forgiveness maintains that we will tolerate large amounts of discomfort if we have what is most important to us. This is established within psychology (McCullough et al. 2003) but not in our relationship with environment. The environment is an actor of forgiveness, part of a process of exchange and thus significant as a means to explore connections that enable and constrain forgiveness (Latour 2005). Such connections become visible in human-environment relationships in how people develop perceptions of relationships among themselves, society at large, and the wider natural world. Consistent with this are ideas related to the struggle for recognition, which facilitates forgiveness by connecting past experience with the present through people's socially interactive need to experience themselves as belonging, "recognized" as a focus of concern, a valued contributor, or a responsible agent, as central to achieving self-esteem (Honneth 1995)**.**

From this perspective, the attention of urban design is beginning to shift from purely form towards patterns and the interpersonal relationships that define them, supported in particular by recent debates criticizing the concept of neighborhood as a physical entity associated with that of community (Mehaffy et al. 2014). Whilst these still perceive neighborhoods as important, they interpret them as fluid and variable, changing around individuals, their interests and pursuits. Such fluidity does not negate the contribution of space to shaping social interactions and collective behaviors; on the contrary, the latter seems to self-organize *around* prominent spatial features, for example concentrations of shops and services. The importance of this in the development of environmental competence was discussed earlier, highlighting the significant role played by understanding the environment in terms of proxemic sets (Hall 1966). The concept of proxemic sets is resonant in the work of Spivak (1973) who considered the environment to consist of a finite range of 13 characteristic settings, or archetypal places. Like proxemic sets, which are primarily concerned with context defined in terms of the human-environment experience, archetypal places go beyond physical features and are defined in terms of the human behavior that occurs in them.

Like Hall's proxemic theory, Spivak's archetypal place concept provided a pivotal contribution to the subsequent development of socially responsive approaches to urban design. Its emphasis that social action and social networks are intimately woven together with the spatial and material fabric of the urban environment resonates throughout the evolution of urbanist thinking from Lynch (Lynch 1960) and Cullen (Cullen 1971) in the 1970s through to the design guidance of Bentley et al.'s Responsive Environments (Bentley et al. 1985), and the ongoing socially-oriented urban research and practice of Gehl. Contrary to common belief, therefore, social networks do not hinder, but rather encourage and support the constitution of physical networks, organizing them in space (Hampton 2000). Recent attempts to capture the morphological implications of this, focusing on the development of an anatomy for urban transitional edges as socio-spatial components of urban form, can be found in Thwaites et al. (2013).

Spatial organization, and especially how this influences a city's collective of services for people to access and use, has a significant influence on mobility. The proportional amount, distribution and quality of services are important, as is our capacity to access them, through choices in mobility. The conceptualization of clustering, and access to such services, is therefore an important area contributing to QoL. Several studies have demonstrated that greater density increases trip generation in a given area (Clifton et al. 2008 p. 28) and that greater balance between employment and residential facilities reduces commute time and the use of motorized transport. Urban diversity also stimulates modes of transport, with an increase in walking and cycling (Weeks 2014). The form of the built environment affects the frequency of trips undertaken to and from a certain area but, most of all, the distance covered to access services (Ewing and Cervero 2001). The important issue of time spent accessing services is directly linked to commute time and QoL. Central densities and gradient densities have fallen dramatically over the past 20 years around the world; sprawl, with an increased spending capacity and reduced transport costs, is responsible for this pattern, which is common. Services and retail outlets have consequently adopted different patterns of distribution and access to them has changed.

14.2.1.4 Physical Well-Being

With research on the links between physical activity and chronic health developed since the 1970s (Weeks 2014), we have gained knowledge about the relationship between the socio-psychological characteristics of individuals and exercise, urban density and exercise, and service distribution at the community scale and exercise. More recent integrated approaches to both monitoring and planning are providing important information on how to achieve healthy cities. This is crucial given that, currently, the most widespread cause of preventable death is heart disease (Speck 2013), and this is associated, amongst other things, with weight. Research has shown that weight is linked to inactivity, and inactivity to physical environments; the role of urban design is therefore becoming increasingly important. Speck (2013) reports a bleak trajectory in the increase in obesity in the US, from 10% of its population in the 1970s to more than 30% today, with a further third of the population being overweight. He then warns of predictions by the Center for Disease Control that one third of all children born after 2000 will get diabetes, making this the first generation in America predicted to live shorter lives than their parents.

Physical activity has been found to have positive effects on the control and reduction of obesity, and the studies of physical environments in relation to their capacity to encourage such activity are growing in number and sophistication. This issue will be dealt with in more detail in the Neighborhood and Pedestrian Scale sections.

Reducing car dependency to encourage forms of mobility, which can increase exercise and reduce exposure to harmful gases, tends to favor an urban infrastructure that is richer in its provision of urban green space. Urban green spaces have been shown to be positive for ecosystems and human physical and emotional well-being when carefully designed and distributed, but are also associated with an increase in land values around them, which in turn can speed up gentrification processes in the surrounding areas (Wolch et al. 2014). The capacity of green open spaces to deliver restorative benefits to people has been well established by research in environmental psychology. Restorative environment research is a growing field of academic activity as concerns about the health and well-being of urban populations increase. Establishing evidence for the benefits of access to green open spaces has therefore taken on political and economic as well as social significance in recent years. Although varied in detail and approach, restorative environment research is essentially concerned with developing an understanding of environments, in terms of type, scale and quality, which promote the restoration of depleted psychological, physiological and social resources (Kaplan and Kaplan 1989; Ulrich 1979, 1984; Hartig et al. 1991; Hartig 2004).

If green open spaces, and particularly those with a naturalistic emphasis, are good for urban inhabitants' QoL, one of the main challenges in urban design is how sufficient amounts of green open space can be accommodated as cities become ever denser and more compact. One consequence might be to reduce the availability of land in urban centers for large tracts of green space, generating instead a need to look to smaller types of public open space for respite and escape. Central to this developing concept is the re-establishment of the street as the urban focus, which provides a web of connections offering people a range of choices and experiences as they move about. Streets, and their capacity to connect a diversity of outdoor rooms, may therefore have potential as components of a reconceptualized urban park in the regenerated and rejuvenated compact city. The idea of a network of small, restorative open spaces in an urban center has been explored before in the context of urban planning, notably in a proposal by the American landscape architect Zion in 1963, who suggested that New York citizens would be better served by thousands of very small parks rather than a few larger ones. Zion's vision was never realized in the form he envisaged, but one of his pocket parks, Paley Park, has since become one of Manhattan's treasures.

Mosaics of small, designed green open spaces may well be part of the solution to the delivery of restorative benefit in cities, but the growing interest in urban agriculture may offer an additional benefit in this respect, particularly given that growing food crops requires proactive involvement and social interaction from participants. Increasing academic interest in this field has explored the implications of augmenting the implementation of various forms of urban food production as a socio-sustainable and ecologically beneficial component of future resilient cities (Ferrai 2014). Through an extensive literature review and an evaluation of European case studies, benefits to urban populations in the form of social cohesion, food security, economy, sustainability and education have been identified. Communication and collaboration between stakeholders and local authorities were found to be significant obstacles that required addressing, along with a change in public perceptions of productive landscapes as part of the city open space aesthetic. In respect of the latter, a study of front garden use in residential settings revealed that certain ethnic groups, particularly the Bangladeshi community in Leeds, seem to be much more open to using front garden spaces for food production, rather than ornamental display. Native UK residents, by comparison, usually see this as something that should be hidden from view in rear gardens or on allotment sites. The outcome of this work was a comprehensive practical manual of guidance to promote the wider use of front gardens for growing food (ibid); secondary benefits in relation to maintenance, personalization, attachment and ownership, and similarly externalities, could derive from this initiative.

Summing up

At a metropolitan scale, the quality of life of urban inhabitants is related to the way in which services and facilities are distributed and, by extension, to the infrastructures provided to achieve optimum distribution. From a quality of life perspective, optimum distribution needs to work towards as inclusive a level of accessibility as possible, ensuring that what people need to have contact with in routine daily life can be achieved with relative ease and by the most sustainable means possible. As our review shows, this is likely to require urban patterns of distribution and connectivity diametrically opposite to the specialized, functionalist zoning associated with modernist urban planning approaches in favor of mosaics of multiple centers with diverse, mixed uses. Connectivity within and between such multiple centers will require urban public transport infrastructure capable of replacing the present reliance on private car usage. In order to improve and maintain the physical dimensions of quality of life, this will need to work alongside initiatives for greater levels of walkability within urban settings, coupled with radical re-thinking about the provision and distribution of networks of green urban open space. A variety of modeling and predictive methodologies are now available to help planning and design decisions become much better informed by observations of actual patterns of use in urban settings, such as Space Syntax and Multiple Centrality Analysis (Hillier 1996; Porta et al. 2010), for example, making predictions about trends and growth more realistic and therefore reliable.

14.2.2 The Neighborhood Scale

Neighborhoods are social clusters where interactions among members of the cluster are more likely to take place, and in a stronger way, than those involving externals. As such, neighborhoods may occur in space or even develop entirely in the virtual world. The dynamics involving both the “space of flows” and the “space of places” in the network society of our times have been explored by Castells (2000) who maintains the importance of the local form and function of places, where creative economies are increasingly reliant on human face-to-face interaction to generate innovation, attract choice-makers and thrive (Hall 1997). The social and physical (spatial) dimensions of the neighborhood have undergone cyclical waves of attention and neglect in the history of urban planning on one hand and urban sociology or anthropology on the other since the beginning of the 20th century.

From an urban planning perspective, space has gained momentum in the past generation of scholarship, with urban renaissance and place-making guiding the agenda for a sustainable future in the age of urbanization, starting from the Urban Task Force (1999) and (English Partnership (2000) to the wealth of planning and design guidance published internationally. The persistence of Perry’s synthesis of the Neighborhood Unit idea (Perry 1929) through the development of the discipline has emphasized the fixed spatial relationship between location of services and gravitation of local social practices, taken as a whole, on the grounds of a notional distance of 400 meters (or 5 minutes walk) from a center. This notion of neighborhood needs review, to take into account the complexity of sociality in the information age, and local communities expanding their role in relation to services, by becoming producers and not only consumers of services in a way that involves entrepreneurship and innovation primarily in the local space (Mehaffy et al. 2014). New forms of inhabiting, from co-housing to LAT (Living Apart and Together), and working, with the expansion of house-working and multiple-working, coupled with the crisis of publicly-subsidized welfare systems, are emphasizing the benefits of adaptability and resilience through local control, as opposed to centralized planning-and-delivery, as an effective response to emergent societal needs.

In this section, we list studies that explore the layout and character of neighborhoods in relation to behavioral patterns, suggesting that the issue of control as an indicator of quality of life can be observed through: (i) investment in the immediate, private and semi-private environment; (ii) instances of crime and antisocial behavior; (iii) social life in streets. As outlined in the introductory sections of this chapter, the experience of a measure of control over the identification, occupation and appropriation of places we favor and use is connected to quality of life by association with our capacity to develop self-esteem through our interactions with others in society. More so than at the metropolitan scale, where distribution and connectivity are principal drivers, the neighborhood scale begins to highlight greater prominence of dimensions of self-expression and how this is mediated through social and spatial interactions.

14.2.2.1 Material Well-being

Speck (2013) suggests that home investment is about as local an investment as you can get. We use investment (both economic and emotional) as a signifier of interest, commitment and sense of control over our immediate space, as a starting point to discuss form and quality of life at a neighborhood scale. A significant and useful reference is Akbar (1988), who, in describing the modern Muslim city, identified the relationship between ownership, use and control of space as central to the nature and quality of space. For him, every space in a city is definable in terms of the relationships between the parties who own, control and use it, and divided into five types - trusteeship, possessive, permissive, dispersed, unified (ibid. p. 18-19) - each affecting the dynamics in the development, maintenance and transformation of the built environment. When a space is owned, controlled and used by one single party ("unified" form of submission), maintenance is generally good, change is gradual and piecemeal, corresponding to the user's needs, and the overall environment is socially responsive at the most basic level of society. At the other extreme, the space is owned by a party (the state or the local authority), controlled by another (the housing authority) and used by a third (the inhabitants), in a "dispersed" form of submission; here, direct control over the environment is removed from its direct user, and maintenance is more likely downgraded, with limited emotional investment allowed (Porta and Romice 2014). Together, and with all the variations in between, these relationships explain the complexity and variety of urban environments, also linking their form to management, use and maintenance.

Akbar's model shares similarity with Habraken's form, place and understanding control model in that it emphasizes the connection between form and structure in the urban environment, here at the level of the dwelling, and the extent to which occupiers are empowered and incentivized to maintain and adapt where they live. As Honneth (1995) showed, striking the right balance between individual expression and the recognition of that expression within a mutually supportive community is important for the achievement of self-esteem.

In addition to the contribution that patterns of control and ownership make to neighborhood quality of life, there are environmental and economic implications that can be associated with urban form. The form of cities at a neighborhood scale has been the subject of investigation (i) for the environmental and economic benefits that different physical urban models can contribute to energy consumption and electricity generation, for example, suggesting that increases in the latter of up to 50% can be achieved through careful layout design (Hachem et al. 2011); (ii) for the role of the built environment in the conservation and production of renewables at city level through image processing of digital urban models and remote sensing imagery (Carneiro et al. 2009); and (iii) for the role of form in thermal comfort in both open and enclosed spaces (Mangiarotti et al. 2008).

In general, an earlier generation of modeling tools for optimizing the use of energy resources throughout the production and consumption of houses is now complemented by efforts to analyze the environmental performance of neighborhoods, in a more holistic understanding of zero-carbon futures; these are being used to assess and plan, in contexts both to retrofit and to plan anew.

14.2.2.2 Emotional and Personal Development

Crime, fear of crime and perception of crime have been found to be linked to the perception of loss of territorial control (Bell 1996) and to impact on quality of life, in an indirect way, through the mediated impact of environmental features (Lorenc et al. 2012). Importantly, stress related to perception of crime reduces people's activity (Bell 1996), with effects on personal development and interpersonal relationships.

Perception of crime is linked to the size of the residential area where one lives and its capacity to establish relationships and unspoken social rules/norms of behavior. Neighborhood form and fear of crime have therefore been studied to understand how the former contributes to the latter; in particular, more walkable neighborhoods with access to shops and transit appear to lower the fear of crime thanks to a perceived increase in territorial (informal) guardians, although they may also increase the perceived crime risk due to the increased presence of strangers to the area (Foster et al. 2010). The homogeneity of neighborhoods and their geometry, including the number of main artery roads traversing them and the amount of use of bounding streets, were also found to play a significant part in crime rates, more so than informal territorial control in a study of pairs of low and high crime rates in neighborhoods in Atlanta, Georgia (Greenberg et al. 1982). In particular, residential homogeneity, fewer traversing arteries and fewer travelers on bounding streets were more frequently associated with lower crime rates.

In a study set in Perth, Australia, the degree of neighborhood upkeep was a more important predictor of perception of safety and social capital than features of the built environment (Wood et al. 2008). However, indirectly, the design, and therefore use, control and ownership of space, as illustrated above (Akbar 1988), play a great role in its upkeep. The way space is perceived, in relation to degrees of privacy and publicity, is a key factor determining to a significant extent the awareness of ownership and responsibility, even in situations where no legally defined ownership exists. Orientation and the relationship between the public realm and built fronts establish informal control through the definition of marginal zones where the form of the urban realm often becomes more a matter of social negotiation than design of the physical form. In relation to mixed development environments, which have also been shown to be those more likely to enhance a sense of social capital, this requires the design of the urban environment to support upkeep and maintenance, enabling the marking of clear boundaries of ownership, competence and responsibility, and dealing with territoriality in an inclusive but defined manner. Achieving the optimum balance of material and spatial organization, and the capacity for social processes to play out as they need to, identifies a complex and hard to define relationship between what professional agencies need to deliver and how patterns of user occupation and control need to be empowered.

Instances of crime, fear of crime, and perception of crime risk are different constructs. The form of the built environment affects each in different ways, and since densification and mixed use are solutions that will probably need to be embraced more widely, it is important that urban design tackles physical features to allow a sense of territoriality, even within denser, more mixed, complex and open (to other than residents only) environments. Territoriality in itself is a complex term, including both signs that deter crime by communicating cohesion and care (found to be more frequent in homogeneous neighborhoods

with strong social ties), and others that reveal a more defensive attitude towards crime, or social decay (Hunter 1978; Taylor 1978).

Aspects of the social implications of neighborhood upkeep and the modifications and adaptations that people routinely make to their surroundings is highlighted in Martin's work on the potential of the back alley as a community landscape (Martin 1996). Martin discusses the way different configurations of boundary treatment affect social potential in American residential developments. When boundaries are configured to achieve a balance of what Martin describes as "hidden-ness" and "revealing-ness", the back alleys can be transformed from being merely functional conduits into settings rich in social potential, capable of encouraging and sustaining neighborly behavior in residents. Hidden-ness and revealing-ness reflect that people, depending on mood and circumstance, sometimes wish to preserve privacy whilst at other times choose to be more openly available for contact with neighbors. Martin links the development of community spirit in residential settings with the extent to which the built environment allows individuals to control when they wish to hide or reveal themselves as they move about their daily lives. Boundaries of different heights and degrees of transparency, gate orientation, location of outbuildings and bin storage, places for car maintenance, children's play and so on, can become strategically arranged to optimize such control, allowing inhabitants to position themselves according to how sociable or otherwise they feel. There is a question of balance: infrastructures that facilitate too much hidden-ness may obstruct the sort of spontaneous social encounters from which good neighborly relationships often develop, whilst those that are too revealing can lead people to feel themselves oppressively overlooked. The ability to control privacy and sociability is therefore a factor that may contribute to levels of neighborhood satisfaction.

Neighborhood satisfaction has been studied by many, with a focus on perceptive and evaluative aspects; personal, social and psychological factors have been found to play a significant part in satisfaction, with physical attributes – generally considered through ratings rather than measurement – lagging behind in research (Hur et al. 2010). Overall, residential satisfaction is confirmed as a complex matter, with perception and evaluation interrelated with physical characteristics.

A theoretical model for the study of neighborhoods by Churchman and Ginosar (1999) suggests that the complexity of residential neighborhoods ought to be studied through a multidimensional approach. Bonaiuto et al. (1999) established, from an analysis of neighborhood satisfaction in Rome, that contextual factors and the presence of services are the strongest and weakest predictors, respectively, of neighborhood satisfaction, whilst architectural and town planning factors and social relationships fall in the middle range (Bonaiuto et al. 1999). A later work (Bonaiuto et al. 2003) refined the initial study, combining scales of perceived environmental qualities with a scale of neighborhood attachment. These are scales of perceived environmental quality so, whilst contextual and physical factors are taken into account, they are not measured. Combining both is an effective approach which could now, with more robust, spatial, pervasive capacities, be combined to understand the effective impact of types of form on attachment.

Physical, social and cultural factors have been listed as playing a part in neighborhood and residential satisfaction. Amongst the social ones, the fear of crime, the number of traffic accidents occurring, the sense of neighboring felt (Bell 1996), and the access to services (Rioux and Werner 2011) have been studied. On the other hand, research has found that these can be lessened through the use of good design and maintenance; for example, lighting and well-maintained greenery can help lower the fear of crime (Bell 1996),.

Personal factors that have been found to affect such satisfaction are, amongst others, the past experiences that we associate with a place; our adaptive behavior to and within such a place, that is our tendency to grow fond of what we have, or the conditions we are given;

whether we own or rent our residential environment and our stage in life of occupation of the home in which we live (Brown et al. 2003); this might also be linked to fear of eviction. Lastly, our sense of control - or lack of – and residential mobility also play a part in our degree of satisfaction towards our residential environment.

Hur and Nasar (2010) found physical features such as the presence of greenery, upkeep/deterioration, the size of the estate, access to facilities and transport, noise, smog, the degree of naturalness and openness, which are also associated with vistas and residential density all contributed to residential satisfaction.

Whilst cultural factors have also been found to affect satisfaction, being subject to cross-cultural differences, they are often shared and universal values overall (Scott Brown 1990), suggesting that the congruence between residents' values and the physical form of the community they occupy is important (Castells 1983).

In short, all the evidence suggests a correlation of psychological and cultural factors with physical and spatial ones, adding great insight to Jacobs's initial observations (1961), which is reflected in levels of satisfaction and is of interest to urban designers and communities at large.

14.2.2.3 Interpersonal Relationships

Public life is recognized as being key in modern life as it is within it that people learn how to deal with complexity, understanding and using unwritten rules and codes of practice (Sennett 1992a; 1992b). Diversity is crucial as it offers accidental and unlimited scenarios for life. Research reviewed in this area relates our likelihood to establish and engage in social relationships, feel a sense of community and use local facilities to well-being (Francis et al. 2012) and focuses on the physical features in which such events take place. Density and spatial configuration in relation to movement, access and distribution of services are two of these features frequently cited.

In a study of residential layouts of different design principles, Hanson (2000) showed how the spatial configuration of modernist layouts does not appear to contribute to larger and more intense human interactions within the neighborhood or indeed between adjacent neighborhoods, decreasing opportunities to mix, and consequently reducing the potential for a vibrant and successful urban life. Through a study of London's morphological change, Hanson (ibid.) concluded that different design theories are connected to specific preconditions for sociability. Housing estates designed on the basis of social theories aimed at creating strong communities expressed through modernist urban layouts have failed in their goal by isolating people from each other, rather than facilitating social relationships (Milun 2007).

The presence of shops and public open spaces in residential environments has a positive effect on reinforcing a sense of community, independently of the frequency of use by respondents (Francis et al. 2012). The proximity of, and access to, such local facilities has a potential impact on the use that elderly residents make of their neighborhood, as it links to their overall emotional, social and physical well-being; reliance on motorized vehicles to access local services reduces their capacity to interact within the neighborhood. Since this is linked to urban form and layout, age-friendly urban design is very important to encourage participation in neighborhood activities (Vine et al. 2012). Other detailed studies show that the use in time of micro-places, transitional zones and "third places" in neighborhoods is very important to encourage the social life of older residents (Gardner 2011).

There has been much work on the study of the relationships between density and social sustainability. Different cultures have different tolerances to density and adopt different coping behaviors, while environments of different structure and density afford different social relationships to form (Moser 2012). The effects of density can be moderated through design

by working on the gap between actual and perceived density, with specific physical features contributing to considerably lowering the latter (Bosselmann and Cervero 1994), but contextual knowledge and solutions are required.

Up to certain values, high densities facilitate physical movement and reinforce social capital (Kyttä et al. 2013). Diversity, which generally comes with density, has been found to favor a higher social effectiveness in certain situations (Weiner 1976), although it also appears to correlate with a lower sense of responsibility (ibid. p. 380). Overall, density has been shown to intensify already natural behaviors in people, that is social people will find more opportunities for interactions where density is higher, whilst people who tend to isolate themselves will do so even more where density grows (Freedman 1975 p. 209). Greater differences in the appearance of others generate more weariness, and generally higher density may lead to "overload" and correspond to more unhelpful behaviors (Bell 1996 p. 380). Density is a complex concept, with many definitions and characterizations and many factors linked to it; hence the suggestion that it should be studied using both "hard" quantitative measures and "soft" qualitative and contextual ones (Boyko and Cooper 2011).

Densification, which now seems widely accepted as a pathway to deal with both urbanization and environmental challenges, is a delicate subject, and one that causes great debate in planning and design. Whilst this might seem the ideal, if not the only, path ahead for policymakers and professionals, there is still significant cultural resistance to it, especially in certain areas where the "suburban dream" remains widely embedded in collective images and values. In these instances, density is associated with the fear of losing local life quality, privacy and access to nature with no evident return. On the other hand, other studies, such as those above, have highlighted some positive outcomes on the improvement of services and infrastructure that would follow increases in density, and changes are emerging in the attribution of values to place configurations, which is largely driven by the media, towards the return of a positive notion of urban "buzz", now associated with individual freedom and increased personal opportunities of the techno-professional elite. It is therefore fundamental that discussions on densification involve the immediate users, since they require a cultural shift, especially in the "developed" world, and – at the very least – adaptation and coping strategies in the urbanizing world. "Location-based evidence" becomes essential to offer contextual solutions to ideas of densification, taking into account the experiential, behavioral and evaluative consequences attached to density.

A recent study in Sweden (Kyttä et al. 2013) has opened the door to invaluable, extensive knowledge about these experiential aspects of densification, suggesting that when it needs to occur, this "softer" information is as important as more physical and objective data. In this work, experiential knowledge was paired to a more structural study of the social potential of places, to establish first where densification would be more appropriate; this was done by overlaying use, density, and capacity studies from GIS, in the combination of experiential and quantitative, objective and quantifiable measures.

The urban layout of neighborhoods, including their density, affects children's mobility, particularly in relation to the street layout, its geometry and the quality of experience for walkabilty. A study in Minnesota comparing children walking to school in suburban and new urban, mixed use pilot NEED/ND (a neighborhood with LEED certification) areas found that in the latter, children were more likely to walk unaccompanied, due to the more pleasant, walkable, crime-safe, dense and diverse environment. Moreover, children in suburban cases were confronted with a greater variety of traffic conditions, since cul-de-sacs tended to funnel traffic into arterial roads, so their level of engagement with road traffic had to vary between points of great to little challenge; in contrast, new urban environments tended to expose children to more uniform traffic conditions and accompany them through a more engaging

and variable environment where the public realm contributed to the overall experience (Gallimore et al. 2011).

A study in Atlanta showed that black children from the poorest backgrounds were much more likely to die in car accidents than any other child, and this is because the state of public transport in suburban areas is too basic –suburban bus stops are often one mile apart and separated by highways. In the UK, poor children are 28 times more likely to be killed in street accidents than wealthy ones (Montgomery 2013). Similarly, a number of design features of neighborhoods, such as their spatial organization, overall legibility, presence of landmarks, and richness of detail, play an important role in encouraging the elderly to walk within the neighborhood. In particular, the presence of significant buildings is rated more important than signage, and the absence of barriers, such as poor paving, are factors that encourage walking within a neighborhood (Phillips et al. 2013).

Residential preference (the choice of the type of neighborhood in which we live) is also associated with the travel choice we make: residents who live in a neighborhood type of choice (i.e. walkable vs. car-dependent) are more likely to travel by the means afforded by the neighborhood's own form. On the other hand, dissonance between form and preference of neighborhood encourages the use of private means of transport. People who spontaneously choose suburban, car-dependent neighborhoods stay true to their beliefs and use the car (Schwanen and Mokhtarian 2005), while people who choose and live in walkable neighborhoods tend to drive less and walk even more than necessary (Frank et al. 2007). Disadvantaged neighborhoods with good levels of connectivity and access to public transport were found to encourage walking habits for movement, with benefits in terms of offsetting other inequalities and chronic diseases, which has many implications for practice and policy-making (Turrell et al. 2013).

The affordance of an urban environment for walking is an important factor related to self-determination. Much research has now shown that people prefer being and walking where other people are, because they feel safe and in company, therefore attracting further people for the same reasons in a typical "domino effect" (Gehl 1987; Whyte 1980).

This resounds well with research conducted in Barcelona, about the location of primary and secondary services in urban networks; while general common sense would locate main services along main and more central routes, and secondary services in the immediate surroundings, the study demonstrated that primary activities and attractors can sit comfortably on secondary paths and still remain destinations, while secondary services, whose market is mostly created by passers-by, need the highest degree of centrality to survive in an urban competing environment (Porta et al. 2012).

14.2.2.4 Physical Well-Being

Availability of choices to walk is an important part of human self-determination and is significant for physical well-being. The correlation between physical inactivity and chronic health problems has been studied since the 1970s, initially with a psychological and social focus on individuals undertaking recreational activities (Sallis et al. 2004; Weeks 2014 p. 26). Only in the 2000s has the focus started to include an integrated study of environmental correlates to physical activity (Saelens et al. 2003). Physical activity, like diet, operates at the individual scale (Barton et al 2013). Physical inactivity is associated with a number of undesirable health outcomes, including coronary heart disease, circulatory diseases, diabetes, and hypertension (Bell et al. 2002). Future approaches to city organization and communication infrastructure conducive to human quality of life should not only facilitate travel by walking, but also actively encourage it.

Problems related to a sedentary life can be reduced significantly by a slight increase in moderate physical activity (Frank et al. 2005). The introduction of moderate daily exercise into the lifestyle of people with sedentary lives brings considerably more benefits than for an already active person committing to even more exercise (Katzmarzyk 2010), suggesting that a sedentary life is unnatural for people and that small, non-life-changing adjustments can have great benefits. A study on transport priorities in England, in relation to public health, established that small behavioral changes in relation to exercise in the whole population would be more effective than targeted changes for specific groups (Milne 2012); it is thus very important that these changes in behavior are encouraged by a physical environment that promotes utilitarian activity as part of its use.

Many have distinguished between recreational and utilitarian physical activities associated with exercise, the first referring to those undertaken with intention and purpose, and the latter, also producing benefits, being derived from other activities such as going to work, etc. Recreational activities require intention and commitment and are linked to individual personality and behavior, whereas utilitarian activities are an added-on benefit of the completion of different tasks; they are a consequence of other pursuits and depend on environmental conditions (Saelens et al. 2003; Weeks 2014).

Urban form, which combines the pursuit of daily tasks with utilitarian activities, can generate physical benefits through non-purposeful exercise. This is achieved when urban form is walkable, through a density and diversity of uses, the quality and character of streets and street fronts (Gehl 1987) establishing a direct link with public space (Lopez and Van Ness 2007), a permeable and interconnected street network (Jacobs 1961), and policies of traffic calming, especially on main streets to prevent vehicle flows, and particularly speed, from threatening Vulnerable Road Users (IREC 1990; ITE 1993). At a neighborhood scale, research called WalkScore suggests that those living in a more walkable neighborhood are 35% likely to be overweight compared to 60% of those living in less walkable neighborhoods. Frank et al. (2005) showed that single-use sprawl is especially inconvenient for families because most activities depend upon chauffeuring children (Weeks 2014 p. 26).

A forthcoming study extensively observing street life, street quality and street centrality in Tripoli, Libya, suggests that street life is more likely to occur in central streets and that, in these central streets, it is more likely to occur where street fronts have greater levels of different units, functions, transparency, upkeep and richness of details. These factors contribute to the experience of walking in the city, encouraging or discouraging it. The presence of public open space in neighborhoods is important to stimulate walking in neighborhoods, but their amount and quality are not the only factors involved; the characteristics of the routes to and from them also count (Koohsari et al. 2013). Numerous studies have recently investigated the relationship between dimensions of urban form and walkability, evaluating features such as block size, diversity, density and fear of crime against the likelihood of people walking to access light transit (Werner et al. 2010). A study by Hanlon et al. (2006) of 65 cases across the USA, Canada, the UK, Australia and Japan showed that, all being equal, people walk more in walkable environments (Weeks 2014).

Studies on elderly people's attitudes to walking have shown that elements such as the presence of historic buildings, good upkeep, safety from crime and pleasantness are more likely to encourage them to walk for transportation (berg et al. 2014). Interestingly, the National Association for Realtors in America revealed that in 2011, 6 out of 10 Americans would rather live in a walkable neighborhood with accessible facilities than in an environment that would force them to drive cars to access the resources they needed in their daily lives. For elderly populations, this inversion of trend is particularly important as the Atlanta Regional Commission suggests that by 2030, one in 5 residents will be over 60 and therefore the dependence on private transport will only isolate them even more, forcing them indoors and

limiting their social interaction (Montgomery 2013). As mentioned earlier, quality of social interaction is a factor in quality of life.

Summing up

At the neighborhood scale, and referring back to Habraken's control model of form, place and understanding, urban design decision-making is beginning to confront the difficult balance between what requires delivery by professional planning and design agencies and what requires delivery by neighborhood inhabitants, individually and collectively. It seems clear, in relation to the quality of life considerations reviewed in this section, that provision at the neighborhood scale must empower greater levels of Habraken's "place" than might be necessary at the metropolitan scale. This is primarily because quality of life at this scale depends largely on the capacity of people to experience a sense of belonging, security and association with others. It is also important to distinguish a sense of an environment shared and respected as the homeground, for which an individual might experience a sense of collective responsibility in the interests of sustaining investments relevant to material well-being as well as fruitful interpersonal relationships. At this scale, urban design can work towards the provision of services and facilities relevant to establishing and sustaining a sense of neighborhood: the delivery of meaningful public resources, such as shared green open spaces, shops and other community provision. It can also act to ensure that these are designed in ways that are accessible, clearly defined, and amenable to natural surveillance, and can encourage social diversity and interaction where members of other neighborhoods can be welcomed, bringing social and economic vitality, but within constraints that maintain the identity and sense of belonging for those whose neighborhood it is. Territoriality is, therefore, increasingly important at this scale. It needs to work at and be experienced at a range of scales, from that of awareness of the "whole" neighborhood through to the identification and protection of individual and familial territories within it.

14.2.3 The Pedestrian Scale

Human quality of life, at least in relation to what we experience in routine daily life, rests heavily on what happens at the pedestrian scale. This is evident throughout wide-ranging contributions to the literature, from Jacobs in the 1960s through to Gehl and his contemporaries in the present day. In his "Cities for People", Gehl (2010) provides comprehensive accounts of the ways in which city spaces at the pedestrian scale are intrinsically interwoven with human functioning and social processes at the level of the individual and the collective. In addition to spatial organization at this scale, there is the strong message that to access beneficial experiences in urban settings, people must have a measure of control over what they choose to do and where they do it. Perhaps, therefore, more so than at the metropolitan and neighborhood scales, provision of open space that is conducive to quality of life does not rely entirely on the outcomes of professional design interventions. It seems that, at some very difficult point to identify at pedestrian scales, a transition is needed whereby the kind of prescriptive "design", as conventionally understood in the mainstream of current practice, needs to gradually give way to enable patterns of user occupation, control and adaptation to become more prominent in how the urban environment is shaped.

14.2.3.1 Material Well-being

In terms of urban design decision-making, material dimensions related to quality of life are intimately tied to our capacity to become aware of spaces that we can own, control and experience responsibility for, and those where these apply to others in society. The literature shows that this can be interpreted in terms of spatial attributes that allow us to become aware of the extent of spatial containment, where boundaries between adjacent spaces exist, and the extent to which these can be controlled in order that we can define and protect items important to our material well being.

Such spaces are often associated with a capacity to combine security with surveillance to encourage the personalization of space and facilitate the protection of acts of personalization, and frequently define a zone between two distinguishable realms (Bosselmann 2008). As Nooraddin observes: *"Public and private claims visually and functionally overlap, which creates an identifiable urban space"* (Nooraddin 2002 p. 50). Where the two spaces join there should not be a linear boundary but instead a place in its own right with a certain thickness to it. It should be a realm between realms, in essence, a transitional sub-space between two larger recognizable spaces. Habraken (1998), Bentley et al. (1985) and Biddulph (2007) showed that personalization requires a spatial dimension to flourish. Cooper-Marcus et al. (1986) and Gehl (2006) also outlined optimum spatial dimensions for the personalization of space. For example, Cooper Marcus et al. (1986) highlighted a British study in which the size and shape of the front garden had an influence on its levels of use and personalization. They showed that front yards need to be in spatial balance and "*should be deep enough for privacy but not so large as to inhibit personalization*." (p. 104).

The awareness of enclosure is therefore important for establishing material well-being in space. Frank and Stevens (2007) suggested that spaces with a strong sense of enclosure occur where the private building meets the public space and can be formed by the building façade and other continuous boundaries such as fences, hedges, walls or natural features (Habraken 1998). Many authors have shown a preference for an articulated façade because it creates a series of niches that can be appropriated (Gehl 2006; Macdonald 2005; Alexander et al. 1977; Dee 2011; Buchanan 1988; Cooper-Marcus et al. 1997; Cooper-Marcus and Sarkissian 1986). Crinkled façades create pockets of semi-enclosed spaces that make the user feel more protected, creating spatially distinct sub-spaces that are easier to identify with. Therefore, this creates a space that has higher levels of social activity, social interaction and aspects of territoriality and personalization. For Cooper-Marcus et al. (1986), articulated façades have another territorial benefit: "*the more articulated the façade, the more likely are residents to add their own touches to the design*" (p. 68).

Effective personalization and surveillance require space to have a level of transparency, opening up the structure of the urban realm and preventing it from being experienced as a disconnected set of sealed enclosures. Transparency enables people to be aware of places where they are not and therefore opens up future possibilities. Whilst permeability is generally, although not exclusively, associated with issues of physical accessibility, transparency is usually understood as mainly visual. It is probably most readily recognized as a property of the urban environment that enables us to experience the interplay of "here" and "there" by means of features that make us aware of nearby settings other than the one we currently occupy. This is an aspect of place identity central to Cullen's Townscape concept (1971). In *The Concise Townscape*, Cullen highlights a series of ways this sense of "here-ness" and "there-ness" arises in the urban landscape and shows this act of transparency occurring at the edges where adjacent buildings or courtyards meet the street, for example.

For Porta and Renne (2005), the visual characteristics of transparency are reinforced through their assignment of it as a measure of the amount of window space fronting the street. In this case, transparency is highlighted as one of seven quantifiable qualities associated with a socially sustainable streetscape. Transparency is, therefore, a desirable characteristic that increases both the social activity (Gehl 2006; Alexander 1977) and the level of perceived and actual security on the street (Jacobs 1993; Biddulph 2007; Carmona 2010; Llewelyn-Davies 2000; Rudlin and Falk 1999; Newman 1976; 1972). Visual access allows the inhabitants of the space to survey their territory from within the building whilst the openings, such as windows, add visual interest, which attracts the "eyes" of the street user and suggests a human presence.

14.2.3.2 Emotional and Personal Development

We mentioned above that experiencing the capability to organize and adapt the places we routinely use, according to personal or collective preferences, tastes and functions, is a vitally important contributor to human quality of life. It is especially significant at pedestrian scales because it is here that people have a more realistic opportunity to make small adaptations and expressions of preference relatively quickly and easily. This optimizes the experience of reward for effort expended in ways that the larger-scale neighborhood and metropolitan scales are less able to offer.

Emotional and personal well-being is intimately connected with territorial impulses. Awareness of the level to which we have control over territories we use is crucial to the extent to which we are empowered to adapt and organize. Territorial awareness at the pedestrian scale in the urban realm is complex and intimately tied to a spectrum between awareness of what is private and what is public, often involving demarcation and personalization as an extended form of boundary regulation. Research indicates that this characteristic is essential for social contact, safety and personal well-being (Hoogland 2000; Buchanan 1988; Habraken 1998; Altman 1975; Cooper-Marcus et al. 1986; Newman 1972; 1976). Such territorial acts are closely associated with human well-being. Altman (1975) and Honneth (1995), for example, relate territorial activity to the concept of self-identity. This may be because, as Habraken (1998) and Day (2002) have shown, territory is an innate and fundamental part of human nature, suggesting that if we are unable to inhabit and territorialize a geographic space, we are missing out on an important part of what makes us human. Research also indicates that a secondary territorial space is important for fostering social contact (Altman 1975; Hoogland 2000). Acts of personalization make these areas feel more protected and allow conversation and interaction to flourish.

Emotional and personal well-being is also associated with our capacity to interpret our surroundings according to personal preferences and other subjective impulses. Such interpretive capability is linked to a spatial property some have referred to as "looseness": "*People create loose space through their own actions. Many urban spaces possess physical and social possibilities for looseness, but it is people, through their own initiative, who fulfil these possibilities.*" (Frank and Stevens 2007 p. 10). Loose space can best be understood as a realm that is free, ambiguous, accessible and open-ended, according to Dovey and Polakit (2010), involving three distinct components: "*…a conjunction of loose forms (or loose parts), loose practices (behaviours, functions) and loose meanings*" (p. 167). The *loose form* concept can be seen in the work of Dovey and Raharjo (2010) and Fernando (2007). Their observations show that flexible or semi-fixed items partake in a continuum moving from the least fixed items, in the open space, to the most fixed items, in the private space (Dovey and Polakit 2010). *Loose meanings* are also supported by the work of Madanipour (2003) and Habraken (1998). For them, a finite understanding of urban open space is often difficult to

pinpoint because of its indeterminate form created by loose parts and loose functions. For Habraken (1998), this is because such space is where the physical form determined by the designer meets the ambiguous and emergent process of user occupation.

14.2.3.3 Interpersonal Well-being

Active edges in urban settings are almost ubiquitously acknowledged in the literature for the crucial role they play in encouraging and supporting social vitality and interpersonal relationships in urban areas. Consequently, they are often acknowledged as integrations of social as well as physical and spatial realms (Habraken 1998). If the socio-spatial nature of these marginal zones is to be accepted, then two key challenges become explicit. The first is that delivery of these socio-spatial margins "by design" can only be expected to go so far because professional design disciplines, as they are currently configured, cannot adequately account for the breadth and ambiguity of human behavioral and social functioning in spaces in entirely prescriptive ways (Cuthbert 2007). Second, and related to this, is that these *edge environments*, active or otherwise, currently fall between disciplinary interests. Despite several decades of recognition of their importance to the social well-being of cities, there remains no environmental planning or design discipline with a specific focus on edge design, management and socio-spatial nature.

Since the early 1960s, one of the most notable desirable characteristics associated with diverse social life in cities has been the need for urban spaces to overcome abrupt divisions of private and public spaces, with a smoother public-private continuum that flows from privacy through to the public realm more gradually (Alexander 1977; Altman 1975; Gehl 2010; Carmona and Tiesdell 2010; Madanipour 2003; Frank and Stevens 2007). Here, in this gradient of settings, one can choose the desired level of intimacy by positioning oneself in the appropriate degree of public or private exposure. In this way, the private-public gradient is a spatial quality that transcends the duality between the architecture and the adjacent open space. Madanipour (2003) sees this gradient working across edge environments: "*In practice, public and private spaces are a continuum, where many semi-public or semi-private spaces can be identified, as the two realms meet through shades of privacy and publicity rather than clear cut separation*." (p. 239). The private-public gradient is not an assemblage of clear spaces but a smooth and complex gradient of subtle changes, in which a wider range of spaces allows greater diversity of intimacy and social interaction.

Short or longer, stationary activities afforded by the kind of spatial arrangements discussed thus far bring people into close proximity and provide the opportunity for encounters, whether fleeting and temporary or more enduring interactions, which may contribute to greater social cohesion and the development of community. One of the main values of social interaction in the public realm is that it can improve and promote a sense of place and feelings of community. Bosselmann (2008) has shown, for example, that certain kinds of spatial configuration can create both a sense of place and a perception of greater intimacy between neighbors. It appears, therefore, as elements of urban form, they have a significant role to play in encouraging and sustaining the social dynamics of the urban realm.

Related to this, as Jacobs (1993) and Martin (1996) demonstrated, people need to be able to exercise a measure of control over when they wish to be private and when to be sociable: *"A good city street neighbourhood achieves a marvel of balance between its people's determination to have essential privacy and their simultaneous wishes for differing degrees of contact, enjoyment, or help from people around.*" (Jacobs 1993 p. 61). Whether explicitly or implicitly stated, a variety of authors concur that, for this to happen, urban spaces need to achieve a fine balance that displays attributes of both privacy and publicity (Jacobs 1993; Hoogland 2000; Sundstrom 1977; Martin 1996; Korosec-Serfaty 1985; Carmona et al.

2003; Gehl 2006). The settings they occupy should therefore be configured in such a way as to enable this choice to be readily made.

14.2.3.4 Physical Well-being

Cullen is perhaps best known for his concept of "Townscape" (1971) mentioned above. It reflects Cullen's emphasis on the urban experience as an unbroken sequence of spatial experiences, influenced by the way focal points, landmarks, views, openings, etc., work together to draw people through space and to signal the distinction between the experiences of "here" and "there". This stands in stark and deliberate contrast to perceptions of urban environments as assemblages of objects and buildings, and the spaces they define. The experience of spatial sequence also has an explicitly human dimension going beyond what is merely "seen" to something intimately tied to the way people react and develop a sense of place: "*…the whole city becomes a plastic experience, a journey through pressures and volumes, a sequence of exposures and enclosures, of constraints and relief.*" (Cullen 1971 p. 10). For Cullen, urban space is not, therefore, simply volume, but something capable of conveying to us levels of containment felt and, through this, exerting influence on what we experience and how we might react and engage with urban space, encouraging physical interaction through the experience of sequence and continuity, either stationary or mobile.

One of the principal city structures that can support this are the edges where "the city and building meet" (Gehl 2010 p. 79). Gehl observes that there is often seven times more city life in front of an active façade, which encourages a continuous blend of static engagement with specific places and movement between them. This so-called "edge effect" (Gehl 2010), the observation that individuals gravitate to the edges of spaces, has been well documented by authors on the social aspects of urban design (Alexander 1977; Appleton 1996; Bosselmann 2008; Chalfont 2005; De Jonge 1967; Dee 2011; Gehl 1977; 1986; 2006; 2010; Frank and Stevens 2007; Whyte 1980). Appleton's prospect and refuge theory offers an explanation for this based on human behavioral ancestry, postulating that these edge spaces are aesthetically and spatially favorable to human biological needs of habitation because they provide "*the ability to see without being seen.*" (Appleton 1996 p. 66). This is also noted by Gehl (2006; 2010), Frank and Stevens (2007) and Dee (2011) and seems to emphasize that people are drawn to the edges of spaces because they are prime spots for sitting or standing to survey the open space whilst also having one's back protected.

Diversifying opportunities for physical interaction with the urban realm relies on its permeability. Permeability is usually understood in terms of physical accessibility but can also include visual (referred to earlier as transparency), olfactory or audible permeability. Research indicates that permeability can have a significant influence on the level of activity in urban spaces. It is therefore desirable to offer as much permeability as the adjacent spaces can permit without compromising its function. Observations and research conducted by Gehl (2006) and Lopez (2003) showed that the level of activity within a street increases with the level of overall permeability between the building space and the street. These observations have been highlighted in other literature, suggesting that these are consequences of the permeable transitional edges (Rudlin and Falk 1999; Whyte 1980, 1988; Biddulph 2007; Frank and Stevens 2007).

Summary

At the pedestrian scale, quality of life seems to be much more intimately connected to our capacity to contribute to and participate in the determination of the identity, character and functionality of places we use. It is important at this scale that we are able to feel most in control of our settings: to participate in their making, use and adaptation, and not merely

receive what professional agencies provide. It seems that, at some very difficult point to identify at pedestrian scales, a transition is needed whereby the kind of prescriptive "design", as conventionally understood in the mainstream of current practice, needs to gradually give way to allow patterns of user occupation, control and adaptation to become more prominent in how the urban environment is shaped. At this scale, perhaps more than at other scales, the boundaries between social and spatial dimensions of the urban realm may become more blurred. A priority for urban design at this scale may thus be not so much what to do as what not to do. This is a very significant challenge because, as our review clearly establishes, there are identifiable spatial attributes that need to be present in order for the self-determining empowerment necessary to quality of life at the pedestrian scale to take hold and sustain. Paradoxically, however, too much external control over spatial organization and material provision here can result in obstacles to user self-organization, which in turn can impede expressive activity, which is important to our recognition within social groups and thus to our sense of self-esteem. It may well be, therefore, at this scale in particular, that new forms of professional agency need to be explored, shifting the current emphasis on professionalized interventions toward more facilitating roles aimed at community empowerment and participation. As the UK political agenda moves further in the direction of an ethos of localism and the right to build, this may well become one of urban design's most pressing issues if quality of life is to be achieved in future urban developments.

14.3 Conclusions

Urban design's greatest contribution to quality of life spans across scales, from the city-wide to the pedestrian and detailed one, through the distribution of basic services, the design of streets and blocks, and their combination, in terms of walkability, intended as a complex term, inclusive of spatial convenience (permeability), environmental quality (safety, appearance, interest, environmental comfort), and overall legibility. Moreover, the modulation of density and complexity (of activities) encourages exposure to diversity, the practice of social norms, the establishment of social networks, and engagement in civic activities (Berger 2013).

Urban design should be intended as a process that, especially at neighborhood and pedestrian scales, enables self-organization and modification through new forms of local space control. People-space relationships are, indeed, reciprocal. We need a substantial shift in how we see ourselves as part of the world, the city, and the neighborhood, in our personal, social and civic lives. Contextual pressures, from the environment, the climate and its resources, to the scale and pace of urbanization, require a change in how we make our choices. We might only just be seeing the end of a century in which choice was based on accumulation, individuality, and substitution, and we might just be at the dawn of a time of awareness of legacy and durability, and the convenience and affordability that they can offer. This requires learning how to move from compartmentalizing our activities and environments to blending them for efficiency, so that both efforts and effects contribute to more than their individual worth. Urban life is here to stay and indeed to grow at an unprecedented pace, so we need to understand that the synergies it can offer hold a large stake in our well-being. As the philosopher Berleant eloquently observed; "*What we need now is to reconceptualize our world in a way that comes to terms with this, for what we do in the environment we do to ourselves*." (Berleant 1997 p. 121).

It may be important, therefore, in moving forward to address contemporary challenges associated with the delivery of urban environments that actively benefit human quality of life, that we reconsider the concept of human-environment relationships that underpin our approaches to the practice of urban design. Recognizing, and then responding to, the mutually reciprocal relationship highlighted by Berleant (ibid.) may come to rest on two essential

components of the urban design process: (i) the development of a better understanding of the aspects of spatial organization associated with the social dimensions of urban order; (ii) the nature of relationships between professional processes of urban place-making and the participation of urban occupants in these processes, to recognize the importance of achieving a better balance of top-down professionalized decision-making with community-led bottom-up, informal practices on the ground. This may be especially important as communities begin to explore further the implications of a more localized approach to service delivery and environmental management.

It seems clear from our investigations that getting the spatial arrangement right "by design" can only go so far in the delivery of quality of life, and this appears increasingly true as design attention reaches the human scale of urban place-making. The moment may have arrived to recognize that the quality that Alexander called "quality without a name" (Alexander 1979), which makes places lively and loved over time by their inhabitants and users, *does not come by design*. Acknowledging this means reconsidering the role of urban design in society, moving towards one whose task is to set the conditions, the spatial ones first, to enable such dynamics to flourish. It is about designing the structure, not the solution, so that the solution can emerge by itself and continue doing so over time, "without effort" (Wolfe 2013).

We have tried to highlight that, at some hard to define point in the delivery of spatial arrangement, a fusion needs to happen between what the professional fraternity does and what must be left to patterns of user occupation, appropriation and adaptability. Understanding this point means designing structurally for progressive adjustments and requires, first of all, an understanding of what belongs to the structure that we must design, and what does not, that is what we should *not* design; this is mainly a matter of research. The development of new conceptual frameworks, for example Socially Restorative Urbanism, is beginning to set new agendas of thinking in this respect through the blending of new socio-spatial concepts of urban order and the role of urban inhabitants in how they become shaped, managed and adapted through time (Thwaites et al. 2013). Habraken (1998) has provided a particularly useful example by showing how the structure of the ordinary is often more a matter of control relationships, rather than external planning and design. Habraken demonstrates that social and spatial dimensions of urban order cannot be easily disentangled, and attempts to do so run the risk of producing planning and design solutions that are not necessarily conducive to human quality of life. This is one way of reflecting on the various lines of research and practice currently emerging that look at resilience, adaptability, plot-based urbanism, smart urbanism, and a socially-responsive, time-conscious way of planning (Thwaites et al. 2007). With increasing international and national focus on localism, this kind of mental reorientation at the root of our approaches to urban design may become increasingly important in the determination of policy and, if this is to be effective in the long term, ways will need to be found to enable appropriate reorientation of professional practice and, by extension, the education of practitioners. As our investigation in this chapter highlights, this may involve a shift away from the large scale and rapid pace of delivery, characteristic of much contemporary urban regeneration and design, towards a longer term and more time-conscious approach, which will need to be informed by new avenues of research.

We hope to have made a contribution to beginning this process by asserting that fruitful lines of inquiry might focus on the relationship between social processes and spatial organization. Clearly, much has already been done in this respect, but it seems that whatever understanding we have acquired thus far is being hindered in its effective application, partly by sustaining disciplinary divisions and partly because of communication gaps and power imbalances, which continue to exist between professional specialists and those who live with the consequences of their decisions. Perhaps the further development of new readings of the

environment and the relationship people have with it, in terms that can be accessed by all, may ultimately break down the professional-layperson divide to deliver alternative approaches to urban place-making and management that have explicit socio-spatial foundations.

Foundations for such an alternative approach might productively include wider consideration of the holistic nature of the human-environment relationship within research, teaching and practice to underpin a better understanding of the mutually transforming nature of our relationship with the settings we use. This essentially philosophical stance may well make it easier to frame new theoretical perspectives capable of recognizing the interdependency of urban morphology and social processes, and how this can then begin to shape approaches to research and practice better able to integrate professional, top-down processes with community-led bottom-up processes in urban design, management and adaptation. Accepting, embracing and delivering human quality of life within an urban design framework is necessarily cross-disciplinary, requiring a hitherto rare blend of psychology, sociology, architecture, landscape and urban design (and more besides). Nevertheless, this can enable research in environment-behavior studies help resolve urban problems (Marans 2012). It will require significant developments in accessible and inclusive forms of communication capable of addressing professional and community boundaries as well as discipline-specific boundaries. Inclusive communication may help to address better the territorial dimensions of urban quality of life, which are at the heart of its socio-spatial nature, emphasizing new readings of the urban realm more closely related to the need for a better balance between professional intervention and occupant self-organization and highlighting the importance of longitudinal, time-sensitive working partnerships. This alternative approach suggests a different kind of professional disciplinary position to that prevailing in the current mainstream, perhaps highlighting a need to re-think the relationship between professional interventions and the participation of urban inhabitants, starting with the reconsideration of the ultimate mission of design in society as advanced by Turner (Turner 1976; Turner and Fichter 1972) and Rudolfsky (Rudolfsky 1964), as well as a need for more effective cross-disciplinary relationships, ultimately to inform a renewed interest in the “right to build” well within advanced western planning systems (DCLG 2012; Wainwright 2014).

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