Maintaining a sense of community in high-density neighborhoods

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Abstract

This essay considers whether high residential density affects residents' sense of neighborhood community. The answer to this question is important because it helps inform the larger issue of what effect the densifying of cities may have on quality of life for urban inhabitants. I provide critical considerations of compact city objectives, measures of density, concepts of community and sense of community, and the concept of physical determinism. Although there is a paucity of research listed in academic literature on the topic, I argue that indirect evidence suggests that high-density environments are probably detrimental to sense of community, and that the effects of these environments may be ameliorated with the provision of hard infrastructure, such as increased semi-public space that is conducive to informal interaction, and with soft infrastructure, such as neighborhood events and neighborhood associations. I end the essay with a consideration of what urban planners might do to maintain a sense of community in the compact city.

Synopsis

1) Many city planners advocate compact city principles, including increased density
2) Increased urban density has some negative consequences
3) Sense of community is important
   a) Sense of community is an aspect of, but distinct from, the concept of community
   b) Sense of community positively correlates with many quality of life indicators
4) High urban density negatively influences sense of community
   a) Many things can influence sense of community
   b) The built environment can influence perception and behavior
   c) Density can influence sense of community
5) It is beneficial to maintain residents' sense of neighborhood community in high-density areas
   a) Enhanced sense of community benefits individuals and society
   b) Enhancing sense of neighborhood community is a legitimate enterprise for city planners
   c) Planners should understand their options for maintaining residents' sense of community in increasingly dense areas

Key Words

sense of community, compact city, urban density, physical determinism

Contents

INTRODUCTION **3**

WHY INCREASE URBAN DENSITY? **5**

How is density an issue for city planners? 5
What are the effects of increasing density? 14

DOES INCREASED DENSITY AFFECT SENSE OF COMMUNITY? **17**

What is community? 18
What influences community? 20
How does sense of community relate to the concept of community? 23
What influences sense of community? 26

CAN GOVERNING DENSITY HELP MAINTAIN SENSE OF COMMUNITY? **32**

Should planners incentivize sense of community? 33
How can planners help maintain sense of community in high-density neighborhoods? 36

REFERENCES **39**

ENDNOTES **44**

Introduction

Many contemporary urban designers advocate "compact city" principles for North American urban areas (Farr, 2007; Hester, 2006; Duany et al, 2010; Calthorpe, 2011). These principles include walkability, dense clusters around transit nodes, and high-density mixed-use development (Talen, 1999). Benefits of compact city design may include increased social interaction (Raman 2010), lower carbon emissions (Calthorpe, 2011), and improved access to amenities (Hester, 2006). However, increased density has also been associated with several negative effects, such as increased aggression (Evans 2000), decreased privacy (Evans 1989), and decreased neighborhood satisfaction (McCarthy & Saegert 1978).

While researchers have studied residential density's relationship with many conditions, one association that has not been sufficiently explored is the relationship between high-density residential areas and residents' sense of community. Putnam (2000) showed a relationship between low-density suburban neighborhoods and reduced sense of community (although he also showed it was difficult to theorize a specific causal relationship from the data he used). Other researchers have considered the association between higher-density areas and sense of community, but these were just higher-density sections of low-density areas and the results were inconclusive (Wilson & Baldassare 1996; French et al. 2014). Researchers have investigated factors that may influence sense of community such as community empowerment (Amad et al. 2016), sense of place (Wise 2015), diversity (Neal & Neal 2014), neighborhood associations (Kingston et al. 1999), and social capital (Long & Perkins, 2007). Other studies have investigated how the built environment in general may influence sense of community (Jung et al., 2015; Ebrahim, 2015; Kaźmierczak, 2013; Francis et al., 2012; Schwaller, 2012; Talen, 1999). While much has been written about urban density and sense of community separately, few studies have sought to link these topics empirically.

Interest in the concept of sense of community among sociologists, community psychologists, and city planners has grown since Sarason (1974) popularized the term. Chavis et al. (1986) provided further theoretical structure to the definition of sense of community by claiming that the construct required four elements, namely, *membership*, *influence*, *shared values*, and *shared emotional connection* (also McMillan & Chavis 1986). Researchers have associated sense of community with several personal and societal benefits, such as improved mental health (Hall 2017; Davidson & Cotter 1991; Pretty 2006), reduced crime (Jacobs 2011), and resiliency after disasters (Wickes et al. 2015). Others have noted potential hazards, such as exclusion (Halamova 2016), rigid conformity (McMillan & Chavis 1986), compromise of personal safety or values (Sense of Community Partners 2004), lack of diversity (Walker & Ravel 2017), and compromise of solidarity to other groups (Pretty et al. 2006). While planners tend to assume that building a sense of community is a beneficial endeavor and somehow within their purview (www.planning.org), it is unclear when this effort is appropriate (some people would rather be left alone (Brower 2011)), whether the effort is specially challenged in high-density areas (and why), and, if it is, what may and should be done about it and by whom.

Given the interest among North American city planning departments in both compact design and community building (Brower 2011), it is important to fill the gap in understanding regarding the relationship between high-density development and neighborhood sense of

community. I will consider this relationship, as well as built environment strategies that may affect sense of community in high-density neighborhoods. My intent is not to question whether cities should become more compact, but rather to understand possible negative ramifications of this process and what might be done to ameliorate or alleviate them. As cities continue to develop high-density neighborhoods, understanding the associated effects on sense of community, and strategies to address them, will continue to be relevant.

Theoretical framework

The theoretical framework that allows discussions of whether an aspect of the built environment, such as residential density, can influence some human behavior or perception, such as sense of community, is traditionally known as physical determinism. Urban theorists throughout the twentieth century, such as Clarence Perry, Catherine Bauer, Irving Rosow, John Nobel, and Peter Calthorpe have argued that the physical design of neighborhoods can affect the way in which residents interact with each other (Jabareen & Zilberman 2017). While post-modern planning theorists have expressed considerable disdain for physical determinism, I contend that most of this disdain is directed as *what* advocates of physical determinism claimed it could accomplish, rather than the concept that the built environment could affect behavior at all. (I discuss physical determinism further in the later subheading considering potential built environment influences on sense of community.)

Influential nineteenth-century urban designers, such as Frederick Law Olmsted and Daniel Burnham, claimed an extensive array of social and physical ills could be remedied with appropriate architectural and landscape interventions. The types of physical and spiritual cleansing expected of such early planning constructs as the Garden Cities movement, the City Beautiful movement, and the Sanitary movement carried forward into the design of tidy suburbs like the Levittowns in mid-twentieth century America. However, as knowledge of sources of urban disease, poverty, and despair improved, researchers began to dismiss the earlier expectations of physical deterministic thought, and, along with these, the very concept of a predictive relationship between the built environment and the social environment (Riggs 2014, Corburn 2007). But, I believe this outright rejection is an overreaction. Alternatives to the strict causality of physical determinism include concepts such as environmental probablism, which suggests that the built environment may not determine perceptions and behaviors, but is likely to influence them (Cochrun 1994, Talen 1999, Lawhon 2009). I think this modified construct is very sensible.

Limitations of this essay

Although I did not attempt to limit my literature search to studies and discussions of North American cities, much of the research I found related specifically to the North American context. I was limited by this geographic emphasis as well as by my own limited personal experience, which relates mostly to North American planning. Issues discussed in this essay, such as population density, perceived density, notions of community, sense of community, and appropriate roles of government, and roles (or existence) of planning departments, are highly context-specific, varying widely throughout North American regions and urban typologies (urban core, suburban, rural). I intend this discussion to have relevance generally within this

range of contexts, but make no attempt to rationalize a relevance in others (such as Asian or African).

I give only brief attention to methods of measuring sense of community and validity of existing testing instruments. Also, while I provide a cursory discussion of the many potential influences upon sense of community, the emphasis and focus of this discussion is on built environment influences. While I acknowledge that the built environment may not be the most important influence on sense of community, it is the primary interest of this essay.

Why increase urban density?

Increased density and compact urban development have become widely accepted goals among city planners and urban design professionals in North American cities. Development, planning, and environmental organizations such as the American Planning Association, the Urban Land Institute, the Congress for New Urbanism, the Natural Defenses Resource Council, and the United States Green Building Council promote compact city and smart growth goals, including increased urban densities. This unanimity of emphasis on increasing density is striking in view of the history of urban planning. From the early to mid twentieth century, urban planners were quite intent on solving the *problem* of urban density rather than promoting it. It has only been in the last few decades that urban density has become regarded as something of a panacea for many social and environmental ills.

In fact, so closely has density become aligned with ecological sustainability that many urban designers consider compact neighborhood design to be a fundamental aspect of sustainable urbanism. Some proposed benefits of density include more land for biodiversity and human access to nature (Hester 2006; Farr 2007). Density may also have indirect benefits. Calthorpe (2011) suggests a chain of personal, societal, and environmental benefits stemming from urban density, with dense environments leading to reduced auto use, which leads to reduced pollution and more walking, which lead to better health and stronger communities. While many of these benefits may be achieved with low densities, high density environments often offer economies of scale that allow market forces to align with economic and environmental objectives. Some success stories are available. For example, by using density to encourage transit use and walkable neighborhoods, Portland, Oregon has preserved farmland, increased housing options, and reduced per capita vehicle miles traveled (Calthorpe 2011). Other cities have used design standards in industry guidelines that include minimum residential and commercial density requirements, such as LEED for Neighborhood Development, to shape density policy.

While it is clear that density has many advocates, it is useful to consider what it is about density that they find so appealing. To do so, we will discuss meaning of urban density and the advantages and disadvantages of increasing it.

How is density an issue for city planners?

Density is not new. While the modern professions of city planning and urban design are only a few generations old, density has been a part of urban structure since antiquity. The most current framework for conceptualizing urban density is the compact city movement (Randolph & Tice

2013). Therefore, it is useful to understand current issues of density through this lens.

Density is essential to the compact city. Compact cities are attempts to accommodate more people with less land and fewer resources. This does not necessarily involve a uniform increase in density everywhere. New Urbanist ideals call for concentrated density around transit nodes, but not high density generally (Churchman 1999). According to Ewing (2015) compact development includes medium to high densities with "strong centers," mixed land uses, and contiguity with existing development. Compact city designs include dense, mixed-use development with an interconnected street network that facilitates mobility by transit, walking, and cycling (Lehmann 2016; Tian et al. 2015). While these features are primarily intended to leverage the resource efficiencies that high density affords, other motives relate to transportation and social interaction. Compact city principles call for urban growth boundaries and higher residential densities as a means to reduce auto use (Churchman 1999). Also, dense urban neighborhoods may offer greater opportunities to share knowledge through face-to-face interactions (Moroni 2016). While some of these ideas may appear novel in the context of modern North American development, Neuman (2005) reminds us that the term "compact city" is a redundancy that only has meaning when contrasted with the term "sprawl." Indeed, cities have traditionally been defined, or at least characterized, by density, until personal, affordable automobility enabled the more dispersed settlement patterns known as suburbia. The compact city movement is less a celebration of urbanism than it is a rejection of suburbia, with the critical difference involving density. But, density itself has no intrinsic value. It is not a quality like 'happiness' or 'prosperity' whose inherent value increases with quantity. It is simply a result of certain market forces and policies that create, or are associated with, certain conditions. (Moroni 2016). Still, to understand its associated values, we should understand what urban density means.

Definitions of density

The dictionary definitions of the words "compact" and "dense" make their relationship unclear.[i] In general use, their meanings are similar (having or made of things that are close together), with "compact" carrying an aura of neatness about it. However, each is a relative term and neither is particularly precise. This base ambiguity is compounded in the application of the term "density" to describe the ratio of human beings to land area. This ambiguity remains at all scales of measurement and has led to confusion and need for interpretation. There is no universally accepted measure for neighborhood density, making comparisons between studies difficult (Regoeczi 2003). Boyko & Cooper (2011) identify 23 working definitions of density and argue that density policy can be very complex. Such complexity may be lost, however, when descriptors of density as high, medium, or low, are used without specifying thresholds. Yet even with thresholds, whether arbitrary, contrived, or based upon some rationale, definitions of density may vary widely according to cultural, political, and geographical regions (Churchman 1999 p399).

Three common ways of discussing density as it affects people's life are as 1) a simple ratio of persons or dwelling units per area, 2) as perceived density (the range of subjective reactions to density), and 3) as crowding, a negative reaction to perceived density (Churchman 1999). Common measures of density include "Net Dwelling Density" (dwelling units per area of

residential land), "Gross Residential Density" (persons, households, or dwelling units per residential area, including streets), "Neighborhood Density" (persons, households, or dwelling units per area of land used for residential or community purposes), and "City Density" (using city limits as the denominator) (Alexander 1993). Some factors involved in calculations of density include dwelling form, dwelling size, lot size, block configuration, measurements used and methods used to take the measurements (Alexander 1993). However, measures of density are often ill-defined because it may be unclear which area is included in the denominator (Churchman 1999). Even when the area is clear, the density measure may have little applicability due to variation within the area. For example, while densities within urban boundaries may be instructive, metropolitan area densities may be quite meaningless because they involve both urban areas and rural areas (Demographia 2017).

In addition to the complications of deciding how to structure the numerator and denominator of the urban density equation, the resulting ratio may have limited applicability for planning and policy purposes. This is because perceived density, people's experience of, and reaction to, density, is, ultimately, more important than net or gross measures of density, though it is far more difficult to measure (Hester 2006). Further, it is difficult to translate physical density into a measure of perceived density because the relationship between the two is weak (Alexander 1993, Rapoport 1975). Despite these complications, we can generally understand urban density to refer to the ratio of people per land area.

The ambiguity and lack of consensus or consistency in defining urban density create a challenge for those interested in measuring or discussing density. Even focusing on a discussion of high density, as this essay does, is challenging. Dave (2011), in his study of neighborhood density and social sustainability, adopts the density thresholds of the Mumbai Metropolitan Authority for low (up to 200 units per hectare), medium (between 201 and 400 units per hectare), and high (between 401 and 600 units per hectare) densities, but these levels would likely have little currency in most other cities (Rapoport 1975). I have found no literature that attempts to define "high density" in either numeric terms or express characteristics in a North American context. While this may be an appropriate response, given that any definition would need to be tied to some geographic context and, even then, would likely be an arbitrary definition (Rapoport 1975), still, it shifts the burden of definition to every author who discusses the term. Therefore, for the purposes of this essay I will define high-density neighborhoods as <u>urban areas with specified boundaries, residential high-rise buildings, and a higher net dwelling density than adjacent areas</u>. This working definition will have to suffice until a better one makes itself apparent.

Issues associated with low and high urban density

To understand the kinds of problems compact city designs are intended to address, we have to understand the kinds of problems suburban sprawl causes. Compact city goals can be understood in the context of addressing these problems, usually by containing sprawl, and may be focused on economic benefits, sustainability objectives, or social outcomes (McFarlane 2016). Economic benefits may include increasing opportunities for local retail merchants, concentrating a labor pool, increasing employment opportunities, providing efficient infrastructure, and providing affordable housing (Boyko & Cooper 2011). Higher density may promote

sustainability by improving transit efficiency, facilitating walking and biking as mobility options, and reducing auto traffic congestion (Boyko & Cooper 2011). Other environmental benefits include reduced energy use (including options to use district energy systems), reduced auto use (for improved air quality), and preservation of farmland and open space (Churchman 1999; Calthorpe 2011). Compact city principles also include a social component. While early twentieth-century planning focused on reducing density, as cities were generally considered to be crowded, noisy, and dirty (Moroni 2016), compact city advocates believe higher density benefits outweigh such nuisances. Compact cities may increase opportunities for interpersonal interaction by favoring pedestrian mobility and providing public space (Bramley & Power 2009; Talen 1999). A study by Freeman (2001) suggests a strong inverse relationship between automobile use and neighborhood social ties. According to Ewing (1997), "leapfrog" development fails to provide functional open space where authentic communal public life can occur. Other compact city social goals include increasing housing options, bringing vitality to neighborhoods, and improving safety (Churchman 1999; Boyko & Cooper 2011).

While these goals will likely appeal to many urban planners, by what mechanisms can density achieve them? Generally, the tools planners have include policies and pricing mechanisms. Pricing mechanisms, especially those with a clear nexus (such as increased infrastructure costs) could, in theory, curb sprawl, but many, such as congestion pricing, are politically difficult to enact (Ewing & Hamidi 2015). Policies may include zoning regulations and growth boundaries. Zoning regulations may allow for denser development but may not be able to sufficiently incentivize it if market conditions are inhospitable. Growth boundaries may be effective at setting physical limits to sprawl, but have not been widely used and so have had few success stories. A study by Anthony (2004) showed that state growth management programs were not effective at limiting sprawl, but a study by Carruthers (2002) suggested that state growth management programs with consistency requirements and enforcement mechanisms might be (Ewing & Hamidi 2015). Portland, Oregon has enacted urban growth boundaries in an effort to contain sprawl and seems to have enjoyed some success (Song & Knaap 2004). However, in order to accept that compact city principles can mitigate the problems associated with sprawl, one has to accept a series of premises. These premises include, in order, that problems exist, that they are caused by sprawl, that aspects of compact city design (including density) can address these problems, and that policy mechanisms can bring about these design solutions. These premises must be both technically viable and theoretically defensible. Are they?

Compact city claims have several vulnerabilities. They may invalid because they are technically infeasible, politically infeasible, over-stated (good, but not as good as claimed), mis-matched (good, but for other problems), misguided (misaligned with the problems they are intended to address), or conceptually flawed. Many of these contestations are considered elsewhere, but this essay will only consider the conceptual soundness of compact city claims. While compact cities may offer economic efficiencies of scale and infrastructure and increased access to goods and labor, economic disadvantages are also noteworthy and may include higher construction costs, higher costs of goods and services, and higher costs of housing (Boyko & Cooper 2011). Density is often touted for its ecological superiority, but environmental disadvantages may include loss of urban open space, higher ecological construction costs, and higher pollution due to traffic congestion (Churchman 1999). If we consider extreme examples

of density, we see that they are not sustainable by many metrics. For example, Kowloon Walled City in China, with a population density of 1.2 million people per square kilometer (until it was demolished in 1992), was an example of a neighborhood with an unhealthy, unsafe, and unsustainable level of density (Lehmann 2016). While compact cities may offer more opportunities for social encounters, social disadvantages may include increased anxiety, reduced privacy, reduced safety, reduced environmental control, increased competition for resources, increased social segregation, loss of recreational opportunities, difficulty supervising children playing outside, and loss of sense of community (Churchman 1999; Boyko & Cooper 2011; Bramley & Power 2009). Transportation disadvantages may include increased pedestrian and vehicular congestion and a lack of parking (Boyko & Cooper 2011). Even today, many people associate the word "urban" with crime, congestion, poverty, and crowding (Calthorpe 2011). Suburban living still appeals to Americans for several emotional reasons, including feelings of independence, success, privacy, safety, familiarity, luxury, and ownership (Hester 2006). For many such reasons, it would be a mistake to assume that resistance to compact city principles is unfounded (Moroni 2016). After all, it was not that long ago that planners' prime directive was to alleviate the problems of urban density. Density has gone from a perceived environmental and social liability to a perceived asset in only about a generation (Tonkiss 2013, p37).

Density and high-rise development

When we consider urban density, it is important to distinguish between area density and building density. Although people may intuitively associate high-rise development with high density, this association is by no means fixed (Churchman 1999). As Lehmann (2016) makes clear (Figure 1), building density and area density are not necessarily associated, as a given area density may be achieved, theoretically, by different housing typologies. But, in practice, high-rise buildings are only financially viable when land costs and housing demand are high, and this combination is usually limited to downtown cores. While different building typologies can, in theory, produce equal area densities, they tend to occur within particular density ranges. Alexander (1993) compares the density ranges of residential buildings by typology (single family detached, row housing, low-rise garden apartments, and high-rise apartments). He finds that single family housing tends to range up to 10 units per acre, row housing and garden apartments tend to range from 20-40 units per acre, and high-rise apartments tend to range from 60-170 units per acre (see Figures 2 and 3). This provides some rationale for tying density to building typology. However, functional differences in density may not be reducible to simple ratios of only one numerator and one denominator. To provide meaningful comparisons between areas, it may be that several density measures should be considered. Dovey & Pafka (2014) argue that urban densities can only be meaningfully compared when they consider a suite of metrics that include building typology, building density, population density, and open space (Figure 4). They refer to these compilations as 'density assemblages.' A genuine understanding of urban density would likely take some such suite of measures into consideration.

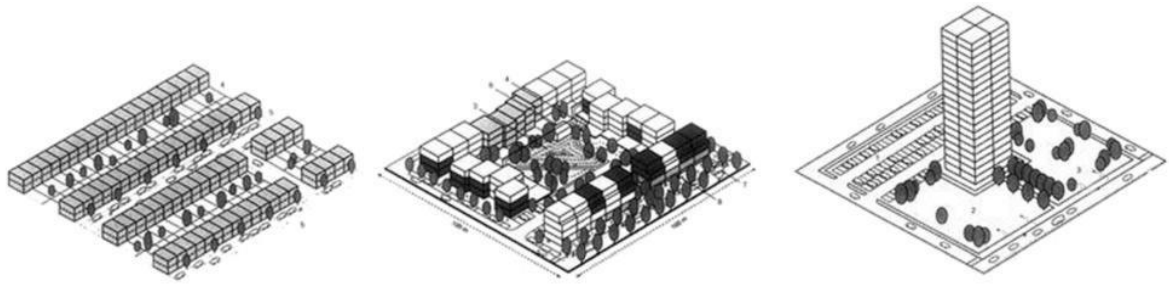

Figure1: Lehmann (2016, p9) shows that various building typologies can be used to achieve similar densities (in this example, 75 dwelling units per hectare).

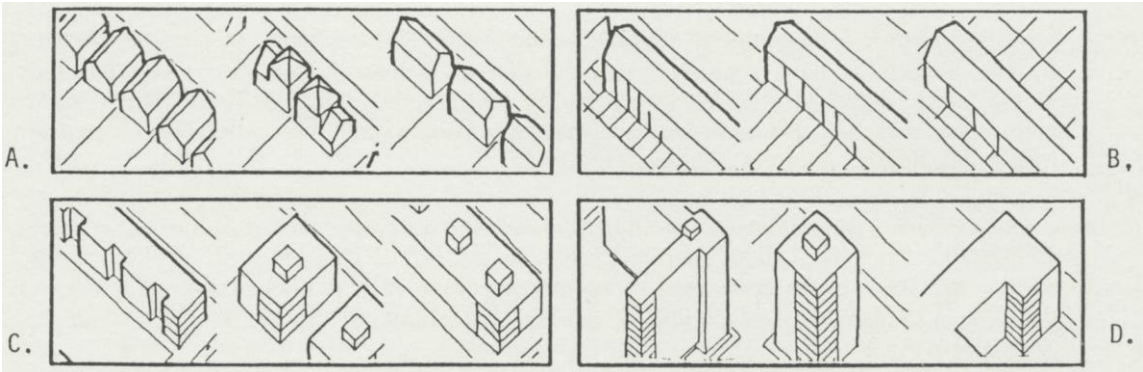

Figure 2: Housing typologies considered by Alexander (1993, p191)

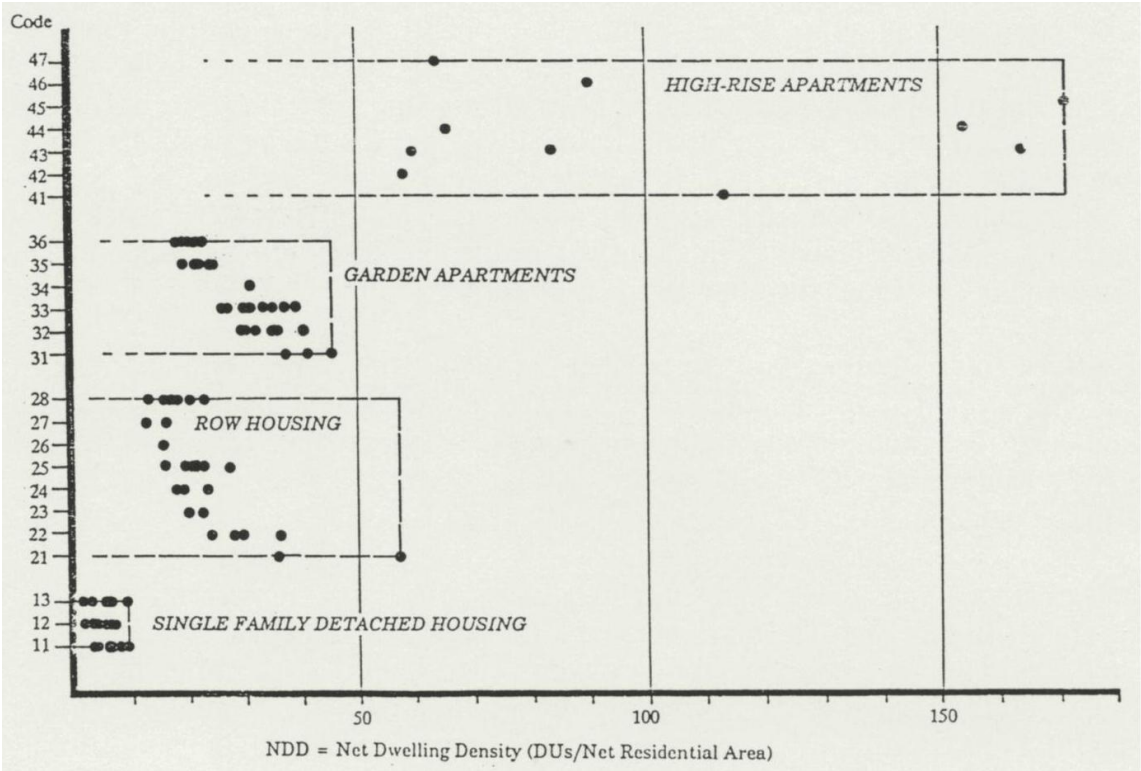

Figure 3: Density ranges by housing typologies analysed by Alexander (1993, p193)

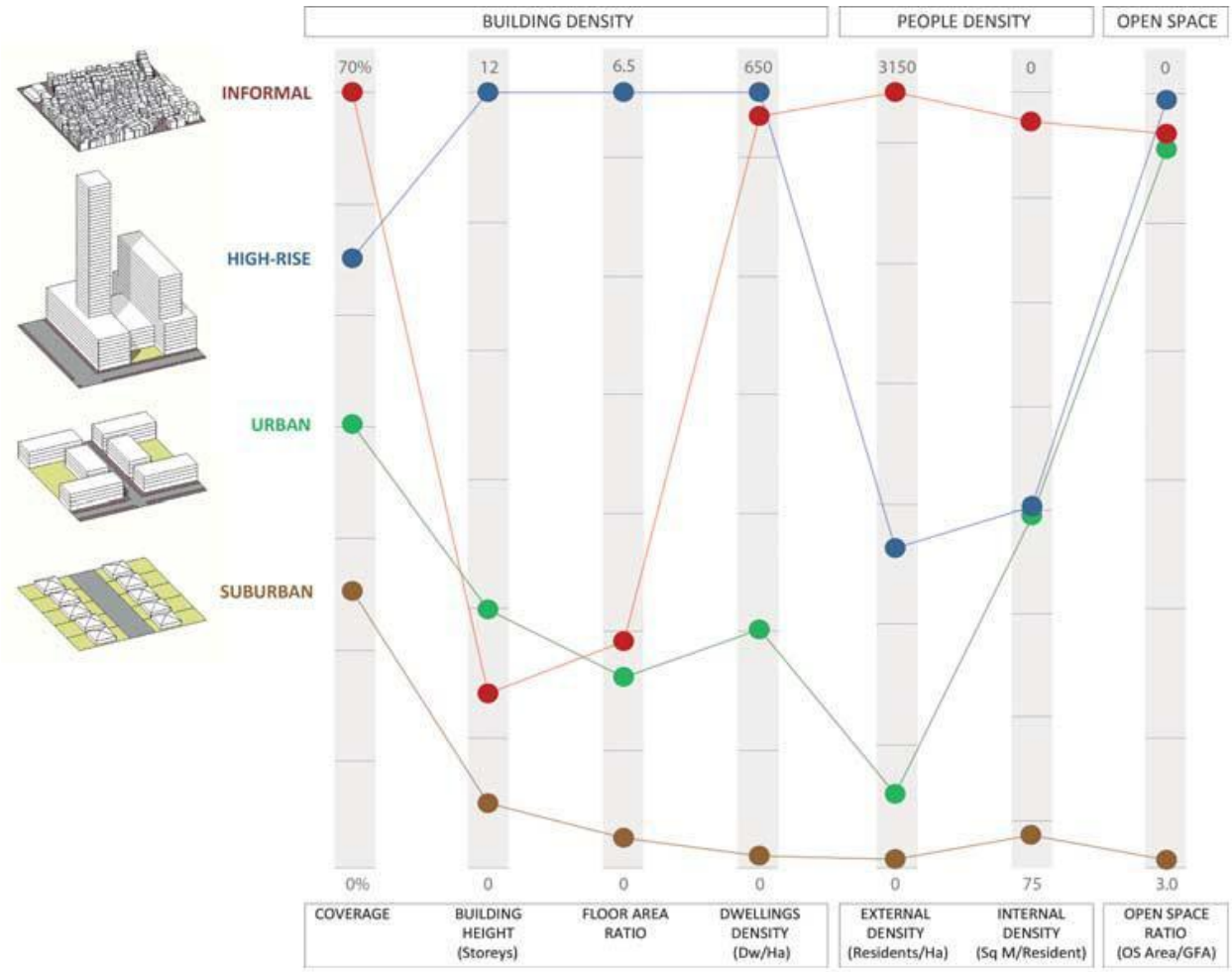

Figure 4: "Density assemblages" discussed by Dovey (2014, p74)

As we see from Alexender (1993) in Figure 3 (and, as seems intuitive), high-rise development is most likely to produce the highest building densities, and, by extension, the highest neighborhood densities. This suggests that literature on the experience of living in high-rise structures would be very helpful in a discussion of urban density. Unfortunately, as several authors note, there seem to be few recent articles that discuss the socio-cultural aspects of the high-rise building typology in the North American context (Nethercote & Horne 2016, Harris 2015, Graham & Hewitt 2012)). This lack is particularly notable when searching for the experience of particular demographics, such as families with children living in high-rise environments (Whitzman & Mizrachi 2012). While a large body of literature from the United States in the 1970's focussed on issues of social degradation and crowding associated with inner-city high-rise social housing, more recent literature seems to coalesce around theories of "vertical urbanism," such as by Nethercote & Horne (2016), Harris (2015), Graham & Hewitt (2012), and Harker (2014) (who all seem inspired by the work of Eyal Weizman on power and space in the West Bank in Israel (Harker 2014)), or on more pragmatic issues related to high-rise living in highly-dense Asian cities, such as reported by Randolph & Tice (2013), Karsten (2015), Yeh & Yuen (in Yuen & Yen 2011), and Cho & Lee (2011).

The character of residential high-rise (or, "tall") buildings, as discussed in the literature, allows for some variation. For example, high-rise buildings may contain several uses, but traditionally these uses are only mixed at the ground level; most floors in a high-rise building are mono-functional (Dovey & Pafka 2014). In many locations, residential high-rise buildings are traditionally constructed for the rental market, but not all high-rise residents are renters. Condominium buildings, usually high-rise, have a financial structure that allows residents to own their units. In many cities, this arrangement is very popular. For example condominium units in Toronto increased from about 65,000 in 1981 to around 280,000 in 2011 (Rosen & Walks 2014). Also, the height of a high-rise, or "tall" building, is open to interpretation. Nematollahi et al. (2016), in their study of residents' attitudes toward density in Perth, defined high-density housing as apartments over four stories tall. Verhaeghe et al. (2016) also use this definition. But, according to the Council of Tall Buildings and Urban Habitat, "tall" buildings are ten stories or more (Yeh & Yuen in Yuen & Yen 2011). Nethercote & Horne (2016), in their case-study investigation of high-rise residents in Melbourne, consider high-rise buildings to be 15 stories or more. Perhaps the height threshold of a high-rise building varies by region. It is difficult to know from the academic literature if this is so, but it critical to the discussion.

In the last few years, there seems to be a growing body of theory around the relationship between high-rise buildings and social forces, generally in the field of human geography. Baxter (2017) discusses the origins of high-rise architecture springing from the International Style (popularized by architects such as Le Corbusier and Walter Gropius). He notes that most literature discussing high-rise issues is concerned with the social failure associated with high-rise living (such as Pruitt-Igoe), but he also points to an emerging dialog around vertical urbanism that seeks to understand issues of vertical living that range from power dynamics to 'ordinary topologies.' Graham & Hewitt (2012) discuss the relationship between building height and power and money. They point out that in many cities, such as Dubai and Hong Kong, elevation (especially with fast elevators) is a symbol and mechanism of elitism, as wealthy high-rise residents are able to vertically separate themselves from the masses (see also Harker 2014 and Harris 2015).

Some researchers have sought to discuss the particular characteristics of high-rise living. Boyko & Cooper (2011, referencing Mitchell 1971 and Bagley 1974) claim that residents of high-density dwellings are more likely to suffer from emotional illness, hostility, and neuroticism. Kitchen et al. (2012), using Statistics Canada data from 2008, found sense of community belonging to be lowest among residents of high-rise apartments. Karacor & Parlar (2017) suggest that an increase in high-rise buildings in a neighborhood in Istanbul has resulted in a reduction in use of public space and thereby a reduction in collective efficacy and place attachment. Other researchers are more nuanced in their conclusions. Van Soomeren et al. (2016), in their study of crime in two neighborhoods with high-rise buildings (one in Amsterdam and one in Barcelona) suggest that the high-rise buildings were less related to crime than was the low-density environments in which they were placed, as this low density led to deserted public spaces, fear of crime, and criminal acts. And Verhaeghe et al. (2016), using data from the 2001 Belgian Census, found that residents in high-rise buildings tended to report having poorer health, but these findings could mostly be accounted for due to socioeconomic and demographic variables (meaning they found no negative health effects associated with high-rise living).

Few recommendations seem to be available in academic literature for architects seeking to improve the lot of high-rise dwellers, but the City of Vancouver (1992, p7, 8) has provided a set of guidelines for the construction of high-density (including high-rise) housing for families. Some suggestions include the following:

- Provide direct visual and physical access between each unit and at least one common play area (3.4.3)
- Strictly segregate children's play and circulation areas from vehicle traffic (3.5.3)
- Design interior corridors to accommodate children's play and toys (3.6.3)
- Provide indoor amenity spaces for play and large gatherings (3.7.2)

Such strategies, while directed at family housing, may prove beneficial for any high-rise development. On the other hand, it may be that such concerns are much ado about nothing, or that they can be resolved monetarily. Economist Edward Glaeser is quite sanguine about high-rise development, arguing that "limiting high-rise development...guarantees high prices" (2011, p152). He claims that "canyons of glass and steel and concrete, such as those along New York's Fifth Avenue, aren't an urban problem; they are a perfectly reasonable way to fit a large amount of people and commerce on a small amount of land. Only poor policy prevents a long row of fifty-story buildings from lining Mumbai's seafront....height is the best way to keep prices affordable and living standards high." (p160). Glaeser suggests replacing poor policies, such as those preventing new construction from blocking light and views, with a fast-track tax system that financially compensates "neighbors who lose light from a new construction project" (p161).

While high-rise living has developed a somewhat negative reputation in many Western lands, in Asian cities, such as Hong Kong and Singapore, the common perception is a bit different. The literature on high-rise living favors consideration of Asian cities and dates back several decades. Mitchell (1971), in his study of high-rise residents in Hong Kong in 1967, produced several findings, including the following:

- Density within dwelling units had limited effects on occupants
- Attitudes toward lack of privacy corresponded with densities within dwelling units
- High densities affected worry and unhappiness, but only for the poorest residents
- Densities alone did not affect intense emotional strain and hostility
- The condition of non-related families sharing a unit caused them stress
- Parents living in high-density housing had limited control over children playing outside
- High-density housing discouraged interaction among neighbors

Other researchers have focussed more on the social aspects of high-rise living in Asian cities. While Dave (2011), studying neighborhoods in Mumbai, found no connection between household density and social interaction, he did find that building form influenced behavior. He found that there was less informal chatting among neighbors who lived in high-rise buildings. This may have been due to a lack of community space. In their study of high-rise residents in Seoul, Cho & Lee (2011) suggest that provision of community spaces and community programs will improve resident satisfaction. Some cities seem to be taking such suggestions to heart. Yuen (in Yuen & Yeh 2011, p136) notes that Singapore is not content to provide minimally acceptable public high-rise housing, but rather "a total living environment" that would support "quality living, recreation and accessibility to facilities and a sense of community spirit and belonging."

Researchers have given special attention to issues of family life in high-rise environments in Asian cities. Rapoport (1975) notes that, in Chinese culture, upper stories of high-rise buildings are far less desirable than lower stories for residents with children. Whitzman & Mizrachi (2012) studied how children living in high-rise buildings in Melbourne used public space as part of their Vertical Living Kids research project. They found that children who lived in public housing tended to have a high level of freedom and a low quality of public space (a 'wasteland' condition) but children in private housing tended to have a low level of freedom and a high quality public space (a 'glasshouse' condition). Randolph & Tice (2013) studied the demographic data of high-rise occupants in Melbourne and Sydney and found that they are primarily childless renters. They suggest that if planners wish to use high-rise development as a means to produce compact city environments, they should structure these developments so that they will accommodate a wider range of lifestyles. A study by Karsten (2015) of middle-class families with children living in high-rise apartments in Hong Kong found that few interviewees interacted often with their neighbors and most felt that the environment provided poor opportunities for their children to play. On the other hand, considering the culture and lack of housing alternatives, interviewees felt that, overall, high-rise living was compatible with raising children. As Karsten notes, this viewpoint tends to contradict most other findings.

What are the effects of increasing density?

Researchers have also empirically considered density's relationship with a variety of economic, ecological, and social issues. For example, researchers have recognized the role of density in facilitating agglomeration economies (Boyko & Cooper 2011). Such agglomeration economies lead to an increase in job opportunities within the sector and in supporting sectors (Tonkiss 2013, p39). This, in turn, may increase the desirability of an area for employment, and, in turn, its marketability as a residential area. Yet, some studies have shown cases of a low market demand for high-density neighborhoods (Tian et al. 2015; Bramley & Power 2009). Other studies have shown that residents in high-density areas are often dissatisfied with their neighborhoods, especially in low-income neighborhoods (where residents may have no good options for moving) (Baldassare 1982). Studies associate increased density with reduced automobile and energy use (Hall 1999), but also with decreased affordability (Boyko & Cooper 2011). City planners often seek to enhance a city's marketability, sustainability, and livability, and may look to density to address all of these goals, yet these goals may be poorly compatible. For example, with respect to energy use, there may be conflicts among the goals of livability (high energy use), sustainability (low energy use), and marketability and affordability (low energy cost), that density cannot resolve. One of the paradoxes of the compact city is that sustainability and livability may be inversely related (Neuman 2005). Other relationships among density-affected variables may be similarly complicated.

How density affects marketability

It is difficult to know how density affects marketability in a given market, since people's preferences differ. If the question of marketability reduces to maximization of cash value of land, density may offer so much monetary advantage in number of units to sell that any disadvantages may be completely offset. Still, it is useful to consider what advantages and disadvantages dense environments offer on a per-unit basis. One marketing advantage is

proximity to employment centers, especially when these tie in to agglomeration economies that may offer robust employment options (Boyko & Cooper 2011, Glaeser 2012). The question is how appealing this proximity is in comparison to other quality of life factors. Several surveys show an American preference for high-density advantages of walkable environments with close amenities and short work commutes, but also for the low-density advantages of privacy, space, and free parking (Tian, et al. 2015). Privacy in general, and private outdoor space in particular, is of paramount importance in some cultures (Mulholland Research & Consulting 2003). While compact city and smart growth environments are advocated by many environmentalists, planners, and urbanists, most renters and home buyers in North America have not shown a high demand for them (Tian et al. 2015). In a study of English housing, Bramley & Power (2009) found an inverse relationship between density and neighborhood satisfaction across all demographics they sampled. A survey conducted in Salt Lake City, Utah showed that the highest priority of respondents, when considering where to live, was convenient parking (Tian et al. 2015). However, a balance of several preferences is at play in the marketability, and financial viability, of dense developments. Whatever people's affinity for, or aversion to, density *per se*, the North American market has shown that some popular areas, such as downtown San Francisco or midtown Manhattan, continue to command top dollar for housing irrespective of the densities involved. In the last few decades, the density of Vancouver, B.C. has more than doubled and so has the cost of living in condominiums in the densest parts of the city (City of Vancouver as cited in Montgomery 2013). This is not to suggest that the market is willing to pay more for housing *because of* high density (more likely it is *despite* the density), but simply that, in some areas, density and marketability can rise in tandem.

How density affects sustainability

In its EcoDensity charter (City of Vancouver 2008), the City of Vancouver claims that "A denser city uses less energy, provides easier access, promotes public health, and is more affordable than a less dense city." Such claims are not uncommon among progressive cities today. While a commonly-cited motive for increasing density is to improve ecological sustainability, there remains a paucity of empirical evidence that the compact city is actually more sustainable than its alternates. Some sectors, such as transportation, offer compelling rationales. The relationship between the built environment and travel demand, according to Ewing & Hamidi (2015), has become the most researched subject in planning literature, with empirical studies being in general agreement that a strong relationship exists. Studies show a positive correlation between density and walking and a negative correlation between density and vehicle miles traveled (VMT), although effect sizes vary greatly. Some studies have shown higher-density cities reduce automobile and energy use, but non-linearly and with decreasing benefits (Hall 1999). Other studies have shown relationships between density and biodiversity (negative), concentration of pollutants (positive), and per capita energy use (negative) (Boyko & Cooper 2011). Buildings in dense environments may have lower energy needs due to the insulative benefits of shared walls, but differences in energy savings in high-density buildings as compared to low-density buildings may be less significant today than in past decades due to overall improved building techniques (Holden & Norland 2005). Public health can be considered an issue of sustainability. Ewing & Hamidi (2015) found that health problems, such as obesity, heart disease, high blood pressure, and diabetes are less common in compact environments than in low density environments. However, given the ambiguous nature of the body of literature, it

may be argued that compact city principles are neither necessary nor sufficient to achieve urban sustainability (Neuman 2005).

How density affects livability

Studies have associated density with several aspects of quality of life, perception of environment, and social issues. In what the authors consider to be the first study of the effects of density upon quality of life, Cramer et al. (2004) found that quality of life varied inversely with density, even when controlling for factors such as levels of education and income. Psychological effects of living in high-density environments may include decreased perception of privacy and increased anxiety (Raman 2010) as well as loneliness and lack of control (Evans 2003). Several studies have shown the deleterious effects of high-density, high-rise, multi-family housing environments on families with young children, especially when compounded by the effects of poverty, restricted play opportunities, and lack of public socializing spaces (Evans 2003). Studies have shown a negative relationship between density and mental, emotional, and physical health (Boyko & Cooper 2011). Burton (2000) found that higher density areas tended to be associated with less domestic living space, less affordable housing, higher crime levels, and lower levels of walking and cycling, but higher transit use, less social segregation, and better access to facilities, than lower density areas.

In addition to studies of density, studies have considered perceptions of density. Perceptions of density vary greatly from person to person and may have little relationship to objective measures of density (Raman 2010). A study in New Zealand by Walton et al. (2008) that measured perceived neighborhood quality (to represent residential satisfaction as a component of quality of life) found that their respondents preferred medium-density neighborhoods, but were split as to their lesser preference for low- and high-density neighborhoods. They concluded that resident density preference was based upon trade-offs rather than being linearly associated with density. A national sample of households showed a negative association between density and community satisfaction (Audirac 1999) and a study by Baldassare (1982) suggested that low-income residents in high-density areas showed the most dissatisfaction among the groups sampled.

Social effects of density are particularly noteworthy in view of claims that compact cities may positively influence communal interactions. Some studies suggest that residents in high-density neighborhoods form fewer but stronger bonds with neighbors (Boyko & Cooper 2011). Raman (2010), in a study of six UK neighborhoods, found that social interactions in outdoor public spaces were most frequent in medium density areas (80-100 households/hectare) and least frequent at the lowest and highest densities. Studies have suggested that communal spaces are critical for neighborhood social activities, especially in denser neighborhoods (Raman 2010), yet requirements for community and social spaces may hamper efforts to create very high densities while maintaining a highly livable environment (Hall 1999). A study by Nguyen (2010) found that living in a high density area is associated with low social interaction and volunteering, but higher political participation. And, studies have shown a negative correlation between density and affordability (Boyko & Cooper 2011), though each may be a product of confounding factors, such as job availability. The effects on livability are thus varied and it is difficult to know whether they are, on balance, more positive than negative.

A fundamental livability issue related to high density environments is crowding. Researchers agree that spatial restriction is a prerequisite for crowding, but lack agreement regarding the degree to which it is primarily a physical manifestation or primarily a psychological response. Stokols (1972a, p276) frames crowding as a spatial issue, characterized as a "motivational state directed toward the alleviation of perceived restriction and infringement, through the augmentation of one's supply of space, or the adjustment of social and personal variables, so as to minimize the inconveniences imposed by spatial limitation." Elsewhere, however, Stokols defines crowding as a "multivariate phenomenon, resulting from the interaction of spatial, social, and personal factors, and characterized by the adverse manifestations of stress" (Stokols 1972b, p75). He also distinguishes between non-social crowding (a person not having enough physical space for some task) and social crowding (unwanted social contact—the primary type of crowding discussed in the related literature) (Stokols 1972b). Yust (2012) defines crowding in a numerical, non-psychological way, as "the relationship between the amount of space in a housing unit to the number of individuals in the household," and considers a dwelling unit to be "crowded" at one person per habitable room (which excludes bathrooms and storage rooms), "severely crowded" at 1.5 persons per habitable room, and overcrowded at two persons per habitable room (see also Lauster & Tester 2010). Evans (2000), on the other hand, defines crowding as "an adverse psychological response that occurs when the need for space exceeds the current supply." Standards of crowding in one cultural context may be far different from acceptable standards in another cultural context (Lauster & Tester 2010), although Evans (2000) claims no scientific evidence exists on this point.

Does increased density affect sense of community?

Having considered many effects of density, let us now turn our attention to the potential effects of density on community and sense of community. Most modern writers on community begin their discussions with Ferdinand Tonnies, who wrote in the 19th century of the difference between "Gemeinschaft" (community) and "Gesellschaft" (society). For Tonnies, Gemeinschaft includes "all kinds of social co-existence that are familiar, comfortable and exclusive," whereas Gesellscaft "means life in the public sphere, in the outside world" (Tonnies, F. (2001 [1887] p18). Although communities can involve animals, when sociologists, community psychologists, and urban planners speak of communities, they mean people (Hillery 1955). And, as Tonnies points out, these communities imply groups of people who have something in common. They have some measure of intimacy that distinguishes them from a simple category of humanity. There is an implication of harmony and agreement on some common, binding basis, though harmony and agreement are not required. There is an expectation of proximity, though communities can be virtual. There is a sense that members might know, or at least be able to recognize, each other, though vibrant and thriving communities may be made of members who personally know few other members, or none. Few elements of communities are absolute, yet humans seem to seek community (the experience), and communities (the groups), and value "building" community.

What, if anything, is community? Is it always beneficial? Does it require physical proximity of its members? What values are associated with community? What shapes

communities? What does it mean to have a sense of community? What are the effects of, and influences on, a person's sense of community? Can the built environment affect one's sense of community? If so, how? We will consider these questions next.

What is community?

Planners are often seduced by the concept of community, feeling a calling to support and nurture it, yet without an explicit sense of what it is (Talen 2000). A dictionary definition of community involves a group having some location or interest in common[ii], but sociologists and psychologists have attempted to provide more useful definitions to suit their fields of research. Hillery (1955) reviewed 94 definitions of the concept of community and found no two in complete agreement, but all definitions agreed that the concept involved people. A clear majority of the definitions he reviewed considered area, common ties, and social interaction to be necessary elements of community.

Sociologists and community psychologists distinguish communities of interest from communities of place (Cochrun 1994), though several current definitions omit reference to location. Moustafa (2009) notes that there is disagreement among community sociologists as to which social behaviors and relationships are necessary to define a local community, but suggests a framework in which local community is characterized by a shared set of interests among members, some way for members to achieve these common interests, and some physical location in which they may interact. Aldrich & Meyer (2015 p256) adopt the definition of the related term "social capital" from Louis Hanifan (1916) as "good will, fellowship, mutual sympathy, and social intercourse among a group of individuals and families who make up a social unit." While Tonnies (2001 [1887] p17) distinguished *Gemeinschaft* ("The relationship itself, and the social bond that stems from it...is the essence of *Community*") from *Gesellschaft* ("a purely mechanical construction, existing in the mind, and that is what we think of as *Society*"), it is unclear today that what he considered society could not also define a community[iii]. According to Barrett (2014), community is a "primordial type of social organization situated between family and kinship and society-at-large," and has an "intrinsic association with place." He presents a model of community that includes three components: interest, normativity, and identity (Barrett 2014). According to Bartle (2007), the concept of community is a sociological construct (a model) that represents member interactions based on their shared expectations, values, and beliefs. He notes that a given community may contain sub-communities, may be a sub-community itself, or share members with other communities (Bartle 2007). A community can be considered as a social organism, influenced by all of its individual members at any instant, but often existing before them and usually intended to outlast them (Bartle 2007). A community may also involve social capital, which Putnam (1995 p67) defines as "features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit."

Other definitions of community explicitly include location. According to Wellman & Leighton (1979 p365), definitions of community tend to include "networks of interpersonal ties (outside of the household) which provide sociability and support to members, residence in a common locality, and solidarity sentiments and activities." For Young (1986 p12) the term community "refers to the people with whom I identify in a locale. It refers to neighborhood, church, schools. It also carries connotations of ethnicity or race." She sees community as a

group that shares common heritage, identity, culture, and norms (Young 1986). Researchers may also refer to residents of a specific geographical area in which they are assumed to 'belong' and to have some homogeneity of interests as a community (Lawson & Kearns 2014). While community may involve location, it isn't a requirement. It may relate to interest, ethnicity, religion, occupation, or any number of commonalities or combination of commonalities (McMillan & Chavis 1986; Farahani 2016). For example, communities, especially neighborhood communities in areas of cultural amalgamation, may define themselves according to ethnic or cultural homogeneity. In such cases, as in many instances of self-understood group cohesion, it can be difficult to verify who actually speaks for the group (Sennett 2017). All such communities, whatever external definition best describes them, may function in distinct ways irrespective of common definitions and each member of the community may have a distinct understanding of what the community is and means.

How notions of community are contested

The word "community" carries with it a set of relentlessly positive and optimistic connotations, yet there are few good options (population? association? collective?) for those who wish to replace it with more a neutral term (Pandey 2005). While many sociologists have focused attention on how to maintain solidarity sentiments within communities, especially within neighborhood communities (Wellman & Leighton 1979), efforts to strengthen community solidarity may suppress legitimate differences of opinion and individualism (Young 1986). It is naïve to imagine that a community might be, or even should be, harmonious and free of conflict and division (Barrett 2014). In fact, efforts to strengthen communities by forcing people to interact with each other more may have an opposite effect. According to Sennett (2017 p18), "People are more sociable, the more they have some tangible barriers between them....Increase intimate contact and you decrease sociability." This effect may be inherent within human nature. Social norms in 19th century Western cities were such that one had no right to approach and speak to a stranger—everyone had an understood right to be left alone (Sennett 2017).

Issues that those seeking to influence a community should confront include whether community is a thing that is created or whether it is inherent within humanity, whether it can be modified and, if so, whether it should be and how (Wills 2016). It may be that a particular community is more functional in a weak (less active and influential) condition, as it may free members to join and support other groups. Urban residents may have primary groups with which they identify and that they look to for support, but they tend to have multiple social groups with which they associate (Pandey 2005). It may be better for neighborhood (or other place-based) communities to remain impersonal, as members are less able to fully escape future interactions with persons that cause them stress or after a negative encounter with another member. Wirth (1938) contends that urban life tends to be antithetical to interpersonal relationships, as even face-to-face contacts are "impersonal, superficial, transitory, and segmental." He claims that "the reserve, the indifference, and the blasé outlook which urbanites manifest in their relationships may thus be regarded as devices for immunizing themselves against the personal claims and expectations of others" (Wirth 1938 p12). While this may be an antiquated perspective, modern scholars debate whether proximity is a necessary feature of community (Barrett 2014). Notions of community that privilege face-to-face interactions as authentic and virtual or mediated interactions as inferior may be overly romantic and based more on intuition

than on evidence (Young 1986). Wellman (1979) discusses the effects of industrialization and urban divisions of labor on communal solidarity and presents three competing schools of thought, namely, "community lost," (arguing that these effects result in weakened communities), "community saved," (arguing that communities are robust and strong despite the diminishing effects of modernity), and "community liberated" (which claims that social ties have become dispersed among several interconnected networks) (see also Wellman & Leighton 1979). Any of these models, or none, may represent the reality of modernity on contemporary communities. However, unchallenged notions of community as being inherently or intrinsically harmonious, or of "stronger" communities being better than "weak" ones, may lead to misguided policy.

What influences community?

It is often a goal of city planning programs to "build community." Now that we have considered what community may be, it is useful to consider what may "build" it. To do this, we should consider what researchers believe may influence community, for better or worse. Putnam (1995) notes that there has been an overall decline in American civil society over the forty years since the 1950's, as manifest in the reduction of membership in numerous associations. Farahani (2016) claims that major societal changes in western countries, such as the industrial revolution and the emergence of virtual environments, have affected patterns of interpersonal interaction in neighborhoods.

Researchers have proposed frameworks for understanding influences on community. Aldrich & Meyer (2015) cite three types of social capital that influence community: "bonding" (strong connections such as with friends and family, usually among demographically similar individuals), "bridging" (including demographically dissimilar individuals connected by interest groups or religious affiliations), and "linking" (which connect individuals with those in power) (see also Putnam 2000). Such social capital may be formed or weakened through many different mechanisms, whether location based (such as in a neighborhood), or interest based (such as through a religious group or through work colleagues). Henriksen & Tjora (2014) suggest a four-part matrix based on the variable "interaction pretext" (low or high), meaning an opportunity (such as neighbors' children or pets playing together) that legitimizes an encounter, and on the variable "activity" (low or high) that describes the amount of common community activities a neighborhood experiences, to describe communities as being on a continuum from "tight" (high, high) to "weak" (low, low). Such frameworks may help one target specific community-building actions.

Community influences may be positive, negative, or some combination of both, and such valuations may be shaped by traditions, customs and rituals associated with shared history and memories of a given community (Barrett 2014). Increasingly, virtual communities, or, virtual components of physical communities, are playing a role in people's lives. A study by Johnson & Halegoua (2015) suggests that social media sites (online virtual platforms for social interaction) may be useful tools to enhance neighborhood community engagement, but are not suitable replacements for all face-to-face contact. However, a study by Quan-Hasse et al (2017) showed that the group of older adults they surveyed used digital media, such as email, Skype, and Facebook, to maintain social contacts and that, while they preferred in-person contact, they felt that digital contact was also real and meaningful.

Sometimes, positive community cohesion is formed in response to a negative condition, such as a common enemy or common problem (Putnam 2003). A community may be unmotivated to coalesce until they are presented with some external threat (Unger & Wandersman 1985). Neighborhood watch groups exemplify a response to such a threat. Kang (2015) found that demographics factor significantly into who joins neighborhood watch groups, with individuals who are older, unemployed, high-income, and homeowners being more likely to do so. Another threat to a community is natural disasters. Natural disasters may strengthen communal ties by bringing members together to help each other or may weaken communal ties by exacerbating existing tensions. Either way, communities seem to return to pre-disaster levels of social capital after disaster effects have subsided (Wickes et al. 2015). A community may also seek to resist threats in the form of outside interests. Collective interests build solidarity in a community when they resist the weakening influences of private and exogenous interests (Barrett 2014). These interests may even come in the form of benign interventions, such as government efforts to "empower" local communities that have unintended consequences, such as deflecting or containing criticism or disenfranchising members or subgroups of the community who are left out of the empowerment process (Lawson & Kearns 2014).

Communities may also be positively influenced purposively (as by common norms) or incidentally (due to circumstance). Norms of a community may strengthen the community if the norms are widely accepted and if they are benevolent by nature (i.e. involving altruism, charity, neighborliness, and sharing) (Barrett 2014). Communities tend to flourish when members feel that, in addition to the community representing their values, they can contribute to it according to their interests and abilities (Putnam 2003). Such linking of norms and interests may help communities remain united despite challenges of scale. A paradox of communities, noted by Putnam (2003), is that they need to remain small enough to be cohesive among members, yet large enough to remain robust and, if it is the intent of their existence, to effect change. One solution he proposes is the nesting of smaller groups (to maintain familiarity and intimacy) within a larger group (that unites the smaller groups ideologically and offers the clout that the smaller, individual groups lack). Nesting of this type (even at multiple levels) may be possible if the larger group has a sufficient ideological basis for unity. On the other hand, communities can also form on a more *ad hoc* basis due to convenience. When people need help, they may seek social support from others based more on availability than on expected expertise or even on familiarity, making incidental encounters particularly valuable to persons in distress (Small 2016). Small (2015) found that persons' "core discussion network" (the set of people they turn to when discussing important matters) is highly malleable and changes quickly as they enter new environments.

Influences on neighborhood communities

In addition to the above influences, neighborhoods experience influences that are particular to communities whose members live in proximity. Brower (2011) argues that community-generating components in a neighborhood include several factors, such as resident homogeneity, community organizations, suitable physical settings, and established shared traditions, though he suggests that like-mindedness (more than simple homogeneity), related to such factors as income, education, ideology, demography, and culture, may be the most important contributor to

community solidarity. Influences on neighborhood communities may involve either 'soft' infrastructure, such as means of communication, or 'hard' infrastructure, such as meeting spaces.

Civic participation can significantly influence a neighborhood community. Participation in neighborhood associations may be high in high-income neighborhoods, where residents are motivated to maximize land values, and high in low-income neighborhoods, where residents are motivated to keep out undesirable land uses, but low in mid-income neighborhoods, where residents may feel they have little to gain from their time spent on neighborhood issues (Jun & Musso 2013). Neighborhood associations may have a primary effect of providing local representation on issues of importance to neighborhood residents and a secondary effect of strengthening neighborhood communities as they go through the process of negotiating positions on issues internally and then advocating for these positions externally (Jun & Musso 2013). Citizen participation projects, such as community gardens, may both empower and challenge neighborhood participants, and may be both encouraged and resisted by local governmental agencies (Ghose & Pettygrove 2014). A study by Small (2006) showed the importance in poor neighborhoods of "resource brokers" (such as beauty salons and child care facilities) due to their capacity to connect residents to institutional assets, such as health care. In addition to such in-person communications, written communications can also affect communities. A newspaper or newsletter that serves a community can have a significant influence on how a community understands itself and communicates its values, traditions, and goings-on (Putnam 2003). Some neighborhoods may use email or other online devices, such as "facebook" to organize and share information. Online social media and random in-person encounters can be strongly reinforcing in a neighborhood community, as one is especially useful at instant communication (for example, of local events) and the other is a strong incentive to maintain civility online (Putnam 2003).

The physical environment of a neighborhood can also influence the local community. There has been a recent proliferation of research into connections between neighborhood design and its effects on residents' perceptions and behaviors (Foster 2014). Henriksen & Tjora (2014) note that the design of public space can significantly influence whether routine daily activities in a neighborhood facilitate social interaction. Although Gans (1992) downplays the effects of the built environment on neighborhood communities, he concedes that differences in physical space can influence residents' perceptions and behaviors. Ironically, measures that successfully strengthen a neighborhood community generally may have the opposite effect for poorer minority sub-communities in the neighborhood if gentrification causes some residents to move and leave their existing networks (Putnam 2003).

Yancey (1971), in his study of the Pruitt-Igoe housing project, shows the importance of semi-public spaces in the built environment in facilitating informal social networks among neighbors and how important these networks are to poor and working class residents. Parks and cafes often serve as "third places" (in addition to home (the first place) and work (the second place)) where community interactions take place (Henriksen & Tjora 2014). Also, public buildings, whose primary functions may be related to selling groceries, serving coffee, collecting mail, or lending books, may serve a significant secondary function as meeting places in a neighborhood (Putnam 2003; Jacobs 2011). The built environment may also *negatively* influence neighborhood communities. Residents make decisions regarding their level of community involvement based upon their perception of the level of disorder in the physical

environment of a neighborhood (O'Brien et al. 2014). If this perception of disorder exacerbates feelings among urbanites of social overload, lack of privacy, or vulnerability, it may hinder their communal involvement, trust, and willingness to help others (Milgram 1970). Bjornstrom & Ralston (2014) found several built environment features associated with perceived social cohesion, but found concentrated disadvantage and perceived danger to be strongly mitigating influences. Also, natural disasters can have devastating effects, not just on infrastructure and economies, but on communities as well, especially when the physical infrastructure is damaged (Aldrich & Meyer 2015).

How does sense of community relate to the concept of community?

The concept of community as used by sociologists, community psychologists, and urban planners relates to a group of people (possibly with some other defining characteristics added). What, then, does it mean to have a sense of this thing? Does it mean that one senses that a group exists? This definition would be insufficient to merit the level of attention the phrase 'sense of community' has garnered over the last few decades. As a sense, of course, it requires a consciousness to sense it. It may, however, be an ubiquitous sense with a nature that many people can agree upon (like the color blue) such that a group may share a common sense of community and have some expectation that its members are experiencing approximately the same feeling. Or, it may be that this sense is experienced differently (if at all) by each person. When people speak of 'building' or 'strengthening' a community, they may be referring to modifying the perception individual members have of their community, rather than increasing a community's numbers or influence (though they could mean these things as well). It is this perception that people have of their community, usually held to be a positive perception, that is usually referred to in related literature as sense of community. However, the definition, and the theory behind it, deserve a more nuanced consideration.

Definitions of sense of community

Most definitions of sense of community involve some combination of notions of belonging, membership, interdependence, support, connection, commitment, empowerment, sharing, and participation, though they may or may not involve location (Ebrahim 2015). Psychological sense of community generally refers to "how an individual perceives his or her bond to a community and the intensity of these ties to the community" (Halamová 2016). According to Sarason (1974 p157) sense of community involves "the perception of similarity to others, an acknowledged interdependence with others, a willingness to maintain this interdependence by giving to or doing for others what one expects from them, (and) the feeling that one is part of a larger dependable and stable structure." Talen (2000, p174) defines sense of community as "the interrelationship between the individual and the individual's social structure." McMillan & Chavis (1986 p9) state that sense of community is "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together." In his study of sense of community and New Urbansim, Ebrahim (2015 p26) defines sense of community as "social attachment and togetherness experienced by neighbourhood residents and an attachment to place where the environmental experience of this togetherness happens and people's needs could be met."

Cochrun (1994 p93) describes sense of community as a psychological construct that refers to "the feeling an individual has about belonging to a group and involves the strength of the attachment people feel for their communities or neighborhoods." Researchers have associated sense of community with neighboring behaviors, political efficacy, walkability, intended length of residence, neighborhood satisfaction, safety, control over one's environment, and community bonds (Johnson & Halegoua 2015). Sense of community is related to "neighboring," which Unger & Wandersman (1985) describe as involving "the social interaction, the symbolic interaction, and the attachment of individuals with the people living around them and the place in which they live." Sense of community is also similar to attachment to place, but with an emphasis on people rather than on location (Unger & Wandersman 1985). People with a sense of community feel that they are part of, connected to, and committed to a community whose goals they recognize and are motivated to work together to achieve (Ebrahim 2015).

How sense of community is evaluated

Interest in the concept of sense of community has its roots in feelings of dissociation and alienation associated with 19th century industrialization (Halamová 2016). Literature in the field of community psychology tends to present an idealized notion of sense of community that emphasizes positive community involvement and social support structures (Moustafa 2009). In small town or village settings, sense of community may be an expected by-product of residents' familiarity, shared history, homogeneity, and length of residency, whereas in modern cosmopolitan settings many of these elements may be lacking (Cochrun 1994). Yet, such elements may be more than quaint provincial trappings and may represent actual needs of the human psyche. Baumeister & Leary (1995) reviewed a body of empirical literature to test commonly accepted theories of the human need to belong and found that humans do, indeed, have a fundamental need to belong and that we seek frequent interactions within long-term, caring relationships. Such relationships build social capital. Long & Perkins (2007) propose that sense of community is one of the four elements comprising social capital, along with collective efficacy, neighboring behavior, and formal citizen participation, and that sense of community is the best predictor of these other three elements. Chavis & Wandersman (1990) posit that sense of community can act as a catalyst in community involvement by mobilizing members' perceptions of their physical environment, of their community relationships, and of their own level of empowerment in the community. McMillan (1996) emphasizes the need for community members to feel safe and rewarded by being in the community. He notes that once a group is confident in their similarities and shared goals, the members may then feel comfortable negotiating resolutions to their differences. Researchers have theorized the structure of sense of community. McMillan & Chavis (1986) propose four elements that form the amalgam of sense of community, namely, "membership," "influence," "integration and fulfillment of needs," and "shared emotional connection" (see also Chavis et al. 1986). McMillan (1996) later reframed the four elements of sense of community using more emotive descriptors categorized as "Spirit, Trust, Trade, and Art." Chavis et al. (1986) formulated a sense of community index (SCI) as a means to empirically quantify the components of sense of community. Several researchers have used some variant of this index to compare sense of community with other variables. It remains, in one form or another, the most commonly used metric of sense of community found in current literature.

Expected effects of sense of community

Several studies have shown a strong relationship between quality of life and neighborhood social connections (Talen 2000). Other studies have related mental health and subjective well-being to neighborhood sense of community (Moustafa 2009). A 2002 Canadian study estimated that sixty percent of a person's health status was attributable to the social, economic and physical environment (with 25% due to health care and 15% genetic) (Hall 2017). All of these elements may affect, and be affected by, sense of community. Researchers have associated sense of community with benefits at many scales, including the individual (better mental and physical health and higher quality of life), the community (increased pro-social behavior and cooperation), and society in general (greater interest and involvement in civic affairs) (Halamová 2016). Studies have associated sense of community with feelings of safety, self-efficacy, and well being and actions such as volunteering, community participation, voting, and helping others (Sense of community Partners 2004). A study by Davidson & Cotter (1991, referenced in Cochrun (1994)) found that sense of community was associated with more happiness, less anxiety, and greater perceived personal life competency (also Farahani 2016). A potential outcome of sense of community is social support, which can be emotional, functional, or informational (Unger & Wandersman 1985). A study by Forsyth et al. (2015) showed a positive relationship between sense of community and environmental engagement. Davidson & Cotter (1991), found strong positive relationships between sense of community and happiness ($r = 0.45$, 0.19, 0.34), but weaker relationships with worrying ($r = 0.06$, 0.11, 0.12) and coping ($r = 0.16$, .016, 0.17). A study by Gattino et al. (2013) found sense of community to be positively associated with the World Health Organization Quality of Life index. Amad et al. (2016) found that community projects were more likely to succeed when members felt empowered and had a strong sense of community. In more targeted studies, researchers have associated sense of community among adolescents with such positive outcomes as a more solidified ethnic identity, increased access to positive adult mentors, a reduced tendency to engage in destructive behaviors, increased psychological and social well being, and an increased drive to reduce common problems (Lardier et al. 2017). Mendoza et al. (2016), found sense of community to be the strongest predictor of a college student's tendency to thrive in the campus environment. Farahani (2016) claims that the advantage of neighborhood sense of community is not an ability to provide the highest levels of intimacy but rather the benefits of access and proximity. Such a claim may be supported by a study of contributing factors to heat-related mortality during a heat wave in Chicago, Illinois in 1995 by Jan Semenza that showed that socially isolated residents were seven times more likely to die from heat exposure than were those with some social network (Montgomery 2013). People with a strong sense of community tend to have healthy feelings of belonging, control over their environment, shared history with fellow members, personal investment in community success, and conviction that their needs can be met through the collective abilities of their community (Cochrun 1994).

While it may be tempting to romanticize sense of community, it would be naïve to imagine that it could never create or exacerbate negative outcomes (Sarason 1974). Communities may be founded, consciously or unconsciously, on constructive ideals such as faith, hope, and tolerance, or on destructive ones, such as fear, hatred, and rigidity (McMillan & Chavis 1986). It is often possible to exploit social cohesion and social capital to nefarious ends (Putnam 2000). The unity of a group is in no way a guarantee of good intentions, harmless

actions, or immunity from deception. Even with best intentions, a community member's sense of community must correspond to the nature and values of the community. Some members may consider identification or association with the community to represent a compromise of their personal values or even a reduction in their safety (Sense of community Partners 2004). The conflicts between members' values and their understanding of the community's values may range in severity or may be themselves conflicted (some values may be in harmony, some in minor conflict, and some in fundamental conflict). In a study by Walker & Ravel (2017), the authors interviewed undergraduate students from rural towns about their home communities. They found that the students generally felt a strong sense of community in their home towns, but had felt the communities lacked diversity and access to opportunity. The authors speculated that the students may have felt some obligation to remain in their home towns to help preserve the community. In other cases, residents may develop a negative sense of community in neighborhoods they consider to be more of a threat than a resource (Pretty et al. 2006). In addition to conflicts of values, sense of community may have negative effects if the community is in harmony but built on values that are harmful to society at large (such as racism or drug smuggling). In forming a sense of community, it is important to question whether it is based on exclusion of some members of the community and what types of diversity the community may not tolerate (Halamová 2016). Developing a sense of community may be dangerous if members of the community in question have unsupportive or predatory values (Halamová 2016). Such values may surface more readily in cases of severe heterogeneity and a perceived lack of resources. For example, an influx of immigrants may pose challenges to the sense of community of both immigrants and the established community into which they enter (Pretty et al. 2006). A minority group's sense of community may be used against its members by outsiders who are antagonistic toward it because of its ethnic, religious, cultural, or political makeup (Pretty et al. 2006). Close-knit, morally homogeneous neighborhoods may prove harshly judgmental of those it perceives as deviants (Unger & Wandersman 1985). While sense of community has many benefits and is generally perceived as benign, there are darker aspects that we should acknowledge.

What influences sense of community?

In our investigation of density's effect upon sense of community, we should consider the breadth of influences upon sense of community. While it is impossible to do this completely, I will show the major themes that I have found in the literature. First, we may think of how to categorize these influences. Halamová (2016) categorizes three approaches to building sense of community, which she calls "accidental" (due to crisis (which she doesn't recommend as a strategy)), "unintentional" (by putting people with similar interests or characteristics into close proximity), and "deliberate" (which involves purposive activities or other interventions). She argues that these approaches may be aimed at individuals, groups, or the physical environment (Halamová 2016). Jabareen & Zilberman (2017) propose a different evaluative framework of sense of community that includes three categories of factors, namely, physical typologies (objective and subjective measures of the built environment), demography and socioeconomics, and cultural perceptions (of, for example, trust). Jung et al. (2015) frame these categories as physical environment characteristics, socio-demographic characteristics, and social interaction characteristics. Kim (2007) groups sense of community influences into four domains, namely, community attachment, social interaction, community identity, and pedestrianism. A

commonality among these frameworks is a consideration of how the physical and cultural environments influence how people perceive their communities. Another way to categorize sense of community influences is in positive and negative terms[iv]. Several empirical studies have contributed to these divisions.

Researchers have found correlations between sense of community and several demographic elements, such as age, length of time in community, number of children, and education, but often separate findings contradict each other (Sense of community Partners 2004). A study by Glynn (1981, noted by McMillan & Chavis (1986)) found that length of time residents expected to live in a community, how satisfied they were with the community, and how many of their neighbors they knew by name were the strongest predictors of the residents' sense of community (see also Cochrun 1994). In a multi-level analysis of several neighborhoods in New York City, Long & Perkins (2007) found length of residence, participation, neighboring, empowerment, communitarianism, place attachment, block satisfaction, and block confidence to all predict sense of community, with place attachment being the strongest predictor. A study by Wilson & Baldassare (1996) showed positive relationships between sense of community and percentage Anglo, localism (residents' relative interest in local issues), privacy (ability to control one's separation from others), income, and age. A study by Kingston et al. (1999) found positive relationships between sense of community and both income and education. In contrast to Wilson & Baldassare and Kingston et al., Long & Perkins (2007) found positive relationships between sense of community and both affluence and non-white ethnicity, but no relationship with education. Sense of community is strongly related to participation in neighborhood associations, though it is difficult to know how to assign causality (Unger & Wandersman 1985). Similarly, sense of community has been linked to social control of the neighborhood and public ownership of neighborhood facilities (Talen 1999). Given the negative effect of heterogeneity, successful development of sense of community is more likely when members acknowledge and accept cultural differences rather than ignore or seek to suppress differences (Halamová 2016). While establishing common ground is an essential aspect of sense of community, such commonality must include recognition of, and respect for, differences among members in order to be genuine (Putnam 2003).

Many factors may inhibit sense of community. Putman (2000) provides a detailed and compelling description of the decline of civic engagement in America over several decades and provides some speculation as to the reasons for this, including increased financial pressures, sprawl, and television watching, but fails to find any compelling evidence of correlation with any of these factors, or with any others. Wilson & Baldassare (1996) found negative relationships between sense of community and city size, city density, and home ownership. Other studies have found affluence and increased social status to be at odds with neighborhood attachment (Talen 1999). This may be due to a positive correlation between affluence and expectations of privacy. Privacy is an important complicating variable. The relationship between privacy and sense of community appears to be non-linear. Too much privacy reduces opportunities to develop one's sense of community (which may be desirable to the individual) and too little privacy leads to withdrawal from social contact (Wilson & Baldassare 1996). However, withdrawal (or reluctance to engage) may also occur when privacy is not threatened.
In one neighborhood studied by Merry (1987), residents avoided interaction with neighbors, not out of hostility, but because they were "preoccupied with status, completion, individual growth

and fulfillment, and constant activity." Residents met their needs for community interaction elsewhere and considered taking time for informal neighborhood chat to be a sign of lower status and importance. In less affluent settings, safety, rather than privacy, may be a prime consideration. Lack of trust, fear of crime, and struggle for resources all make sense of community in a neighborhood difficult (Jabareen & Zilberman 2017). Demographic diversity has also been shown to hinder sense of community (Neal & Neal 2014). Cultural, ethnic, and other demographic differences can prove challenging to persons seeking to build a sense of community, leading to feelings of distress, distrust, and alienation (Halamová 2016). Ethnically homogeneous sections of a neighborhood may resist integration into the larger neighborhood as defined by spatial boundaries (Unger & Wandersman 1985). Competing communities, such as virtual environments, may reduce sense of community in other, more traditional communities, such as neighborhoods. Farahani (2016) describes a 'virtual sense of community' as "members' feelings of membership, identity, belonging and attachment to a group that interacts primarily through electronic communication," and argues that such online interaction may enhance or detract from neighborhood sense of community, but cannot exactly replace it.

How the built environment influences sense of community

Several studies suggest connections between built environment features and social interaction (Talen 2000). Yet, to understand whether density, an aspect of the built environment, can actually influence sense of community, an outcome of social interaction, we must first establish whether any aspect of the built environment can influence perception of community, or, more broadly, of anything else. While planners and architects tend to assume that it can and does (A review by Talen (2000) of planning documents of twenty major U.S. cities found that such documentation showed a general acceptance that the built environment could increase sense of community though facilitated social interaction), this assumption of causality is not uncontested. The mechanisms by which the built environment may influence sense of community remain poorly theorized (Moustafa 2009) and researchers have found little empirical evidence linking any specific feature of the built environment to any specific component of sense of community (French et al. 2014).

The theoretical basis for the concept that changes in the built environment can effect changes in the feelings and behavior of individuals and groups is known as physical determinism (Jabareen & Zilberman 2017). Jabareen & Zilberman (2017) trace modern interest in physical determinism to architects and urban designers such as Ebenezer Howard, Clarence Perry, Le Corbusier, Walter Gropius, Frank Lloyd Wright, and Mies van der Rohe. Several theoretical models are premised on the validity of physical determinism, yet researchers have produced inconclusive and contradictory assessments as to whether the physical environment can affect sense of community (Jung et al. 2015; Ebrahim 2015). Despite a growing body of popular and academic literature linking New Urbanist design principles to sense of community, this link remains an unproven assumption. Such lack of evidence has bolstered criticism of the validity of physical determinism. Criticism of physical determinism may be mild (accepting the premise but claiming its effects are minimal), limited (for example, accepting that built environment effects are substantial but challenging the interpretation of the effects), or severe (claiming that built environment effects are insignificant or non-existent) (Jabareen & Zilberman 2017).

Even if urban design can influence social interaction, it is unclear how much social interaction alone influences sense of community (Talen 1999). Talen (2000) highlights three practical limitations to the link between physical design and aspects of community: 1) most research examines effects on social interaction as a proxy for sense of community rather than on sense of community directly, 2) most research has focused on the scale of sites rather than of neighborhoods, and 3) most research considers only indirect effects of the built environment rather than aspects of the built environment directly. Supporting this last point, a study by French et al. (2014) showed that residents' perception of their neighborhoods were more closely associated with their sense of community than were objective measures of environmental characteristics (see also Francis et al. 2012). Also, neighborhood design elements that do increase sense of community may do so indirectly by encouraging a homogeneous population rather than directly by facilitating interaction (Talen 1999). While studies seeking to understand psychological effects of physical typologies often fail to sufficiently account for non-physical factors (Jabareen & Zilberman 2017), several researchers support the notion that neighborhood residents have been 'liberated' from the need to make social connections within their neighborhood (Talen 1999). Given the multiple proposed components of sense of community, including shared emotional connection, neighborhood attachment, membership, influence, reinforcement, and sense of place, it is unclear to what extent these all might be affected by simply facilitating random encounters among residents with strategically placed public space (Talen 1999). A study by Jabareen & Zilberman (2017) found 13 percent of variation in sense of community due to physical typologies (design, compactness and transportation), 13 percent due to a demographic factor (length of residence), and 19 percent due to the socio-cultural perception of trust. Expectations of increasing sense of community by providing nearby social space may be misguided if they fail to predict residents' preferred methods of finding companionship and associated barriers to doing so. Notions of spatial determinism that predict an association between sociability and proximity presume that residents put a high "spatial cost" on relationships that are far away, and this may not be the case (Talen 1999). Instead of expecting a direct and predictable relationship between built environment interventions and communal response, it may be more reasonable to discuss the relationship in terms of probability, expecting that some types of spaces have somewhat predictable effects on some types of people (Talen 2000). Talen (1999 p1374) notes that "physical design need not create sense of community, but rather, it can increase its probability." This response to criticisms of physical determinism (as, for example, setting unrealistic expectations for built environment effects on human behavior) is the concept of *environmental probablism*, which de-emphasizes a strict causal relationship between the environment and behavior in favor of an expectation of more likely behavioral outcomes based on specific environmental influences (Cochrun 1994). Given that the theory of physical determinism (along with its newer, lighter relation, environmental probablism) seems neither proven nor falsified, I argue that it is fair game to be treated as operationally useful; there seems insufficient cause to reject the work researchers have done to link the built environment to perceptual responses. At the very least, we should hear what they have to say.

Researchers have claimed several associations between the built environment and sense of community. Moustafa (2009 p81-84) distinguishes between the *instrumental* role of the built environment in affecting sense of community ("the capacity of physical characteristics of the environment to enable or promote the occurrence of behavior"), in which the built environment operates as a tool that provides affordances for interaction, and the corresponding *symbolic* role

("the capacity of physical characteristics of the environment to affect perceptions about the social environment"), such as signs of neighborhood beautification or degeneration that affect residents' pride of place or fear of lingering. Common approaches to influencing sense of community with the built environment typically involve facilitating informal social contact with the thoughtful placement and design of common public areas (Halamová 2016). How this can best be accomplished is the subject of many urban design books. Hester (2006) suggests that good public centers should concentrate multiple uses and provide opportunities for both routine activities (such as shopping) and special rituals (such as community events). Cochrun (1994), on the other hand, warns that when public institutions from several neighborhoods are concentrated in one area, this may reduce opportunities for local interaction by putting the venues too far away. A study by Kingston et al. (1999) found associations between sense of community and the presence of recreational spaces, the presence of a town grocery, and the absence of auto traffic, but found no association with the presence of neighborhood-bounding arterial roads.

The concept of "new urbanism" has, for the last few decades, become a clearinghouse for ideas linking the built environment, and, especially the public realm, to sense of community. Enhancing sense of community with the built environment is fundamental to new urbanism. Strategies include the thoughtful integration of private and public space, clear neighborhood boundaries, pedestrian and transit oriented development, and mixed land use (Talen 2000). Some communities have been built according to new urbanist principles and researchers have evaluated some to test the claimed links with sense of community. Kim (2007) studied ten physical features of Kentlands, a new urbanist development in Maryland, U.S.A., and found that the mixed-use nature of the development and the proximity of the local shopping center were the most significant built-environment contributors to sense of community. A study by Lund (2003) of several new urbanist neighborhoods in Portland, Oregon found that amenities such as parks and retail shops tended to increase pedestrian travel and that people who walk in their neighborhoods were more likely to develop relationships with their neighbors. Other studies have found associations between pedestrian-friendly environments and sense of community, but the results vary depending upon whether residents are walking for leisure or for transportation (French et al. 2014). Anecdotal success stories are available, such as that of one Vancouver resident who found that by moving from a higher-level apartment to a ground-level apartment within the same building (a more new urbanist environment), he went from having no social contact with his neighbors to knowing several of them and having an active social life (Montgomery 2013).

Both within the new urbanist movement and without, advocates of social cohesion point to the social benefits of open space. Unfortunately, there are not many studies that directly relate open space to sense of community, and fewer that account for the design and quality of the open space under consideration or the frequency of its use (Francis et al. 2012). However, a few studies are instructive. A study by Kazmierczak (2013) showed that visitors to well-maintained local parks tended to have more extensive social ties within their neighborhoods. A study by Francis et al. (2012) compared six open space types (parks, plazas, sidewalks, shopping malls, community centers, and schoolyards) according to ten attributes (walking paths, shade, water features, irrigated lawn, birdlife, lighting, sporting facilities, playgrounds, type of surrounding roads, and presence of nearby water) in 1,900 open space locations in Perth, Australia and found a high correlation between sense of community and what residents considered to be high-quality

open space. Farahani (2014) also suggests that social life in public spaces may be enhanced through improved activity-generating spaces (such as parks and plazas), planning strategies (such as incentivizing higher density and mixed land use), and design strategies (such as landscaping and outdoor seating). While high-quality open space tends to be more useful than low-quality space, a study by Cattell et al. (2008) in the 'most ethnically diverse borough in Britain' suggested that even mundane public spaces can act as important venues for building tolerance for neighborhood diversity. Still, we must remember the limitations of our ability to assign causality. For example, a study of two edge city communities by Schwaller (2012) found a positive relationship between the resident use of public space and resident sense of community, though there was little evidence that this sense of community is built either en route (walking) to the public space locations or by interacting at these particular locations. And, a study by Francis et al. (2012) found that, of the many possible uses people might have for open space, relaxation was the only use that corresponded to sense of community. Jacobs (2011) observed that city parks are often unsafe and unused except for crime or other unsavory endeavors. So, while public open space may correlate with sense of community in many studies, there is little basis to assume that any public space anywhere at any time will have similar effects.

A significant limiting factor in the relationship between public space and sense of community is the issue of privacy. Privacy features as a mitigating factor in several studies of sense of community. A study of community-oriented housing in Finland by Helamaa (2013) showed that key features important to residents who sought out such housing included purpose-built spaces for both formal and informal encounters and the ability to control residents' level of privacy. In seeming fulfillment of Lewis Mumford's description of suburbia as "a collective effort to lead a private life," typical suburban shopping malls provide an environment in which its denizens experience 'the presence of others, but not their company' (Putman 2000). A challenge of designing the built environment to facilitate interaction is that the built environment, by its nature, tends to be inflexible. A case study of a co-housing community in Atlanta, Georgia, in which the physical layout was designed for, and the community members were self-selected for, optimal communal existence, found that the narrow sidewalks created conditions of both wanted *and* unwanted social contact (Brower 2011). Ideally, the built environment should provide residents with the ability to limit their contact with their neighbors without having to retreat entirely (Gehl & Birgitte 2013). A 1973 study of dormitory students by Andrew Baum showed that those who had a semi-private buffer zone between their (private) room and the (public) corridor were far less anxious and more sociable than those who had to transition directly from their rooms to the corridor space (Baum et al. in Aiello & Baum 1979). And, a study of Danish residents by Jan Gehl found that residents were most likely to chat with their neighbors when front porches were close enough to walkways to facilitate conversation but far enough away that conversation could easily be avoided (Gehl & Birgitte 2013).

There may also be built environment challenges to sense of community. While some retail locations, such as pubs and cafes, may increase local social contact by providing opportunities for casual interaction among residents of a neighborhood, other retail locations, such as grocery stores or clothing stores, may decrease local social contact by filling the local sidewalks with transient, non-local shoppers (Baum, et al. 1978). A study of three parallel residential streets in San Francisco, California by Donald Appleyard showed a strong negative correlation between the amount of vehicular traffic and the vitality of social life and sense of

community of residents on these streets (Gehl & Birgitte 2013). Negative visual cues, such as litter, unkempt yards, and persons loitering, may lead residents to associate a neighborhood with crime and then avoid developing a (positive) sense of community in that area (Unger & Wandersman 1985). This wariness might be mitigated by physical and visual boundary markers that define outdoor private and semi-private space, thereby creating "defensible space" that can help preserve perceptions of safety, privacy, and environmental control (Unger & Wandersman 1985). Based upon their study of sense of community in Beer Sheva, Isreal, Jabareen & Zilberman (2017) recommend planners seeking to improve sense of community should seek to improve neighborhood aesthetics, transportation, and accessibility, and should strive to create more compact neighborhoods. Another challenge to neighborhood sociability may simply be time. Jacobs (2011 p73) notes that "the trust of a city street is formed over time from many, many little public sidewalk contacts." She suggests that residents in a new neighborhood may need months or even years of head nods and other small acknowledgements before they begin to commit to engaging conversations.

Having considered evidence that high density environments can affect emotions and behavior, and that sense of community can be affected by some aspects of the built environment, we can finally consider whether high urban densities influence sense of community. Jabareen & Zilberman (2017) note that physical typologies can involve either objective elements (such as street networks, compactness, density, land-use types and mixes, transportation systems, connectivity, and aesthetic elements) or subjective elements (people's perceptions of the objective ones). While we can benefit from studies that consider the objective measure of density, it would be even more useful to consider studies that compare residents' perception of density (such as crowding) to their sense of community. Unfortunately, this seems to be a gap in research. Some studies do comment on some aspects of density as related to sense of community. Jung et al. (2015) compared residents' sense of community in a pedestrian-oriented neighborhood versus an auto-oriented environment in Seoul, Korea and found negligible difference. Wilson & Baldassare (1996) found a statistically significant negative relationship between density and sense of community, but their finding was limited in that it was restricted to a low-density area and relied upon a single question to describe the dependent variable[v]. French et al. (2014) found a negative relationship between density and sense of community, but this was also in a low-density environment (Mean = 6.36 dwellings/acre, Standard Deviation = 3.02) and their results were statistically insignificant (p-value = 0.08). Baum et al. (in Aiello & Baum 1979) report their findings related to a high-density environment and claim that the nature of the circulation in most high-rise buildings is antithetical to meaningful neighbor contact and prevents the development of sense of community, but their study was very limited in scope and demographic, making generalization tenuous. While several studies have related density to behavioral responses, and several others have related built environment factors to sense of community, I have found no studies that attempt to relate high-density residential environments, or perceptions of density, to sense of community. This leaves the relationship unresolved in the current literature.

Can governing density help maintain sense of community?

We've seen that much has been written regarding the values and perils of high-density urban environments. We've discussed the effects of, and influences on, sense of community. We've

seen that several effects of high density are related to influences on sense of community, but we've seen no studies that directly show a relationship between high density areas and residents' sense of neighborhood community. Until such research is done, the best we can do is to speculate upon the effects of high density environments on sense of community via mediating effects. For example, we have seen that feelings of crowding in high density environments lead to social withdrawal and aggressive behavior as coping mechanisms. These responses would clearly work against one's sense of community. Therefore, we may speculate that, to the extent that high density environments evoke a negative perception of density (such as crowding), they will reduce an individual's interest in social outreach and, thereby, the individual's sense of community. We may also speculate upon mitigating factors in the built environment that may ameliorate the reduced sense of community produced by high density. As we have seen that sense of community is positively related with available public space, it follows that an increase of public open space will help counteract the negative effect of high density. In this regard, it will be important to understand the effect of scale and distance. Public space may need to be provided locally, possibly on the same floor of a building, to provide an effective opportunity for the informal engagement associated with building a sense of community. Conversely, since feelings of crowding are based in experiences of unwanted social contact, it may be necessary to provide greater privacy and separation in the built environment to foster residents' sense of empowerment and control over their social interactions. We should also consider several limitations to these strategies, such as the limited ability of the built environment to affect sense of community (other mechanisms may be more effective), the limited benefits (and possible harm) associated with sense of community, and the limited responsibility of professionals to meddle in communities at all. Even with the best of intentions, planners with their rules and regulations, developers with their marketing strategies, and designers with their spatial manipulation, may fail to inspire communal feelings at all and may, in fact, be quite naïve to think they could.

Should planners incentivize sense of community?

Planning theorist Bent Flyvbjerg recommends that, in order for planning research to be useful (practically relevant), it must address questions such as

- *Where is the trend under consideration heading?*
- *If it continues, who will gain and who will lose, and how (by which political/power structures)?*
- *Is the trend desirable?*
- *And, should practicing planners do anything about it, and, if so, what?* (Simmons 2012).

These questions are all relevant to the discussion of density and sense of community. There is currently a trend toward urbanisation and densification. More people are moving to cities and the cities to which they are moving are becoming denser. Obviously, there are qualifications and exceptions, but this is the trend. Whether the people who live in these cities are becoming more impersonal and suffering for lack of social networks and support groups is an important question, but beyond the scope of this discussion. Instead, we can say that it seems plausible that the increased amount of high-density areas in cities will lead to a reduction in sense of community and that this reduction will likely have an overall negative effect. If this densification trend continues, residents in these areas may lose quality of life, happiness, and network benefits. They may also face higher risks of damage to mental, emotional, and physical well-being due to

lack of a social support structure. Developers, on the other hand, may stand to gain monetarily due to the higher financial returns of high-density buildings, but may gain also if they can turn lower-density buildings, or projects with compensating amenities (such as common spaces), into higher rents or selling points. Advocates of ecological sustainability may gain from density if they equate it with the advancement of environmental goals, and advocates of affordable housing may win or lose depending on the nature of the housing stock increased due to higher density. The current power structure enabling this trend is a combination of market forces (rewarding density in some areas (usually downtown cores), though not in others (such as suburban and rural areas) and government control, usually in the form of city planning department regulation over zoning laws. Overall, the trend toward density seems to be desirable to most decision-making stakeholders. Yet, the ensuing questions are whether there is a corresponding trend toward reduced sense of community as a result, whether planners should address this as an urban problem, and how?

Part of the answer to whether planners should seek to advance sense of community involves the valuation of it. While sense of community may have monetary benefits (such as increased rental income or reduced health care costs), it would not be very meaningful to attempt to translate its value into strictly monetary terms. Neither would it be very meaningful to attempt to calculate the value of sense of community as the difference between its positive effects and negative effects (some of which were described earlier), as the variables are mismatched with each other and could have little relation to the costs involved in promoting it. We can look to anecdotal evidence of the value of sense of community. The city of Vancouver, British Columbia, for example, has recognized the value of cultivating community connections among its residents and has made this one of the goals of its Healthy City Strategy (Tavakoli 2017). Researchers have hinted at valuation. Helliwall & Barrington-Leigh (2010) show a strong correlation between having strong social networks and high life satisfaction. But, the evidence is also contradictory. Residents of a Baltimore, Maryland condominium community studied by Brower (2011) showed almost no interest in attending community events, supporting the local neighborhood association, or socializing with their fellow residents, even though they generally enjoyed living where they did and felt it was a friendly enough place to live. This is not to argue that Vancouver or Baltimore have characteristics—geographic or otherwise—that are particularly conducive or resistant to communal interactions, but rather that demographics, culture, local social norms, and intersectionality all play a part in the value residents place on community engagement. Indeed, there may well be citizens of a city who place zero value of any kind on sense of community and who are quite content to know none of their neighbors. Planners in a city composed of only such persons would do a great disservice with attempts to foster social connections. However, most evidence seems to indicate that sense of community is a generally positive trait that most people value to some extent. Whether this alone is sufficient criteria to make it an issue for planners is questionable, but perhaps it is.

Before we can resolve whether planners should advance sense of community in their cities, we should understand who else might be able to do so. Perhaps this is a burden better shouldered by others. The most obvious group to consider first is neighborhood residents themselves (let's confine our consideration to the topic of *neighborhood* sense of community, the most likely potential province of planners). Shouldn't residents who would like to increase their sense of community simply go out and do so? Surely no one is preventing them. They may

decide, like a group of Vancouver residents on the same floor of a high-rise building did, to leave their unit doors open so their children can easily play together (Lauster 2016). Or, some suburban residents may decide to begin a door-to-door campaign to get to know their neighbors, possibly screening for common interests. Unfortunately, despite the evidence that many people value sense of community and would like to have it, not many have the circumstances and initiative to develop it, anymore than the person who would like to have a sense of place can develop it simply by thinking more about a place. We might look to community leaders to help develop neighborhood sense of community, but community leaders can only rally members around causes or issues that the members themselves care about enough to spend time on (Putnam 2003). Sense of community might then be a by-product of a project or initiative led by a community leader, but the opportunity would be limited by the availability of potential members, their interest in the project, the duration of the project, and the ability of the project to facilitate social interaction. Architects and urban designers may wish to provide communal space for social interaction, but they can only make recommendations to property owners or developers, who may or may not see market value in setting aside non-rentable or non-salable space. On the other hand, developers may see this value and choose to provide common space, yet be unaware of what type of space is most suitable for socializing or what the overall needs of a neighborhood or region are for open space. Therefore, if we accept that sense of community is an urban good, and that it may be restricted by the 'tragedy of the commons,' we can at least make a case that responsibility for its nurturance falls, to some degree, to planners (whose general purview is, arguably, to redress such market failures).

Even if we do accept that sense of community is the purview of the planner, we still need to exercise caution that the planner do no harm. Creating physical environments that force antipathetic personalities to engage is not a service to a community (Talen 2000). Also, some strategies employed to develop sense of community may be wrong-headed. Efforts to strengthen communities through social homogenizing result in exclusion by definition and elitism by default (Talen 2000). Even inclusive efforts may face opposition. Given the change in power dynamic that occurs when community members become unified (Putnam 2003), some agencies that stand to lose power in the process, such as legislative or civic officials, property owners, or business administrators, may be reluctant to see an otherwise subordinate group's sense of community grow. They may simply view it as a potential liability and challenge to their authority.

One might even argue that city government has no business mucking about in social engineering projects at all, given that city officials have no exclusive understanding of how to optimize society and social interactions, nor the authority to orchestrate and construct idealized social structures. A countervailing argument might be that by allowing (and more so by incentivizing) changes to the built environment, cities bear some responsibility for all of the ramifications caused or facilitated by that change (along the 'you broke it, you bought it' principle). By allowing greater densities, city governments accrue some responsibility for both positive and negative externalities associated with the difference between the existing and new conditions (Tonkiss 2013, p12). Of course, such changes are myriad and the effects myriads compounded. It is not possible for a city to neutralize every injustice created by a policy, even one as simple as increasing the density of a lot, block, or parcel. What we do see, however, is that the city is necessarily involved in the quality of life of its residents, even in technical matters. The city cannot claim the luxury of neutrality. Therefore, even if city staff prefer to

remain officially disinterested in the issue of sense of community, the very fact that city decisions can affect sense of community makes city government a necessary stakeholder, whether willingly or otherwise. Furthermore, while some may view any government intervention as misguided, inefficient, or nefarious, the fact is that without government support, as Putnam (2003) shows in several examples, many community-building projects would not succeed.

City involvement in sense of community finds particular expression in planning departments, which are usually responsible for, or at least involved in, issues of increased urban density. Still, it is relevant and valuable to question the extent of the nexus between a given planning department's mandate and its interest in, and responsibility to promote, a neighborhood sense of community, or any other kind for that matter. For example, if peoples' social needs are met through placeless communities, city planners have no stake at all in building sense of community (Talen 2000). In fact, instead of concerning themselves with the larger issue of community building, Talen (2000) suggests planners focus on the specific aspects of it that more naturally fall under their purview, such as provision of high-quality, easily accessible public space. How much of a difference this might translate into in staff time is hard to say, but it is always best to focus one's time where it is most useful. However, it also raises the issue of whether fostering social connections is a valid role for city planners at all (Talen 2000). Money and time spent on efforts to build sense of community cannot be spent on unrelated issues that may be more pressing, such as safety, job creation, or pollution abatement (Talen 2000). Spending city resources on advancing social connections obviously represents a value statement, though, really, not a bad one. Should planners incentivize sense of community? To the extent this represents a value of, and a value to, city residents and falls within the planners' purview, yes, they should. But how?

How can planners help maintain sense of community in high-density neighborhoods?

The focus of this essay has been on the responsibility and ability of urban planners to advance neighborhood sense of community in high-density environments, therefore strategies available to other stakeholders (political, religious, or civic leaders; individuals; group moderators; business or school administrators, and such) in the context of psychological sense of community more broadly (beyond the physical neighborhood) lie beyond the scope of this discussion. Further, while the intent of this essay is to consider means of encouraging sense of community in high-density environments, it may be that none of the following strategies are limited to use in any particular density but may be useful anywhere (or nowhere). As we conclude, it will be useful to consider what cities, agencies, and non-profit organizations are doing already to advance sense of community in their jurisdictions. Then, we will consider what options planners have to advance sense of community through existing mechanisms that would require little or no adjustment. Finally, we will consider creative solutions that may require novel (or unreported) approaches.

A comprehensive review of grey literature to determine cities' strategies to foster sense of community (and the effectiveness of these strategies) was outside the scope of inquiry for this essay (having found little of note in academic literature). However, Vancouver, B.C. does provide a brief case study. In the last fifty years, Vancouver has gone from one of the least

dense major cities in North America to one of the densest (Lauster 2016). The city has sought to balance several quality of life goals with such mandates as its Healthy City Strategy. Some of the goals stated in this document address the value of social connections. In furtherance of these goals, the City of Vancouver and Vancouver Coastal Health will run a pilot program in 2018 that explores options for developing social connections in high-density buildings (Tavakoli 2017). The idea of teaming a planning agency with a health agency creates an interesting nexus of abilities to intervene in urban environments and to monitor the results of the intervention. This may prove to be a useful model for other cities to consider.

Both city governments generally and city planning departments specifically have established mechanisms in place to incentivize or restrict behavior. Cities may target an increase in, or improvement of, "hard" infrastructure, such as community gardens, activity rooms, spacious lobbies, playgrounds, or other physical amenities, or "soft" infrastructure, such as neighborhood events, farmer's markets, recreational clubs, and neighborhood associations (Tavakoli 2017). It is the "hard" infrastructure that is the realm of the planning department. Planning departments have little or no ability to create projects, but some latitude to regulate building projects undertaken by others. This power is granted to the planning department by the city under the aegis of protecting the health and safety of the populace. The planning department has some discretion to decide what that involves and some strategies may be amenable to developing sense of community. For example, planners may seek to encourage a greater diversity of services and amenities in a neighborhood to create a greater likelihood that residents will encounter one another as they use them (Lauster 2016). Alexander et al. (1977) suggest several urban design strategies that may have the effect of strengthening neighborhood sense of community among a city's residents, including

- keeping major roads outside of designated residential neighborhoods (chapter 14),
- separating neighborhoods with boundary-defining features, such as gateways and discontinuous street networks (chapter 15),
- encouraging the formation of a promenade that links several activity nodes (chapter 31),
- providing small public squares (chapter 61),
- and, providing alcoves as activity nodes at the edges of public open spaces (chapter 124).

Larger projects may come under special review by a planning department. Sarason (1974) suggests that cities could require that the effects on residents' sense of community be considered as part of the environmental impact reports for major new urban developments. A common tool used by city planning departments to influence development is the exchange of higher density allowances for some amenity provided to the city.

Vancouver has used this technique extensively. Municipal planners in Vancouver allow developers to increase density by building higher in exchange for providing some pubic amenity, such as a park plaza or affordable housing. Such arrangements are usually carried out within the context of rezoning to allow higher densities under city policies such as the "Green buildings policy for rezoning" (which requires various building quality and energy efficiency upgrades) or the "Rezoning policy for sustainable large developments" (which requires planning for (but not necessarily provision of) such amenities as Sustainable Site Design, Access to Nature, and Affordable Housing) (City of Vancouver 2014, 2016). Of particular note are the Community Amenity Contribution (CAC) and Density Bonusing policies that Vancouver uses to exchange allowance for higher densities in exchange for cash contributions or some other public benefit

provided by a developer (City of Vancouver 2017b). In 2016 in Vancouver, benefits provided through increased density included monetary or actual provision of affordable housing ($35M), child care facilities ($27M), community facilities (like libraries) ($26M), and parks and open space ($18M) (City of Vancouver 2017a). Given that the city is already gaining amenities that can, arguably, enhance sense of community that may be lessened by higher density, it would be a small adjustment to use the nexus with open space to ensure that any increase in density requires an accompanying increase in open space. The critical component, of course, would be that the open space be truly functional in facilitating interaction and engagement among residents, and not simply an obligatory but useless plaza (Putnam 2003). As Jacobs (2011) has forcefully argued, open space does not bring people together simply because it exists. People may avoid it. (They may be more enticed by small shops and bodegas.) The key is to observe how people in a city actually use the public spaces provided and, as well as possible, provide more of the kind that people use. This point is particularly salient in that, although over three out of four Metro Vancouver residents live within a 10-minute walk of a green space, over half of these residents would like to get to know their neighbors better and over a quarter would like to have more public space in which to do so (Vancouver Foundation 2017). In fact, they may simply need better public space.

Additional to these more traditional approaches, what novel initiatives might cities offer to advance sense of community? If it is true that sense of community is a beneficial by-product of other processes, cities can look for opportunities for synergistic overlap with other initiatives. For example, a city may wish to implement a disaster-preparedness program or a neighborhood crime-watch program. Either of these, while valuable in themselves, could become useful vehicles for neighbors to get to know one another—pretexts for building sense of community. In return, this sense of community would benefit the programs and also have the additional benefits discussed earlier. Another approach cities could take is facilitating the formation of neighborhood associations. The city of Portland, Oregon did this with much success (Putnam 2003). Such a program might begin by approaching religious or recreational groups to begin forming neighborhood networks. Putnam (2003) notes that, rather than start from scratch, often it is better to "recycle" existing networks by reaching out to groups with similar interests. Cities may also seek to make a more targeted use of their open space by making socialization an explicit goal of public space. Cities might also require post-occupancy evaluation of these spaces to inform industry-relevant best practices for future public space requirements. Such requirements may be even more important in high-density areas, as lack of personal outdoor space in compact environments incentivizes residents to make best use of communal outdoor spaces, thereby increasing the utility and potential of these spaces for social interaction (Lauster 2016). These spaces may be at ground level or internal to buildings. Availability of semi-public social space and control over privacy are possible even in high-rise buildings (Lauster 2016). Such spaces needn't be overly complicated. Putnam (2003, p291) emphasizes the importance of redundancy, rather than elegance, in forming social capital: "Common spaces for commonplace encounters are prerequisites for common conversations and common debate." Such spaces, coupled with common sense interventions, may be sufficient to maintain a healthy sense of community in high-density environments.

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Endnotes

[i] The Concise Oxford English Dictionary defines "compact" as "adj. 1 closely and neatly packed together; dense.>having all the necessary components or features neatly fitted into a small space." and "dense" as "adj. 1 closely compacted in substance. >crowded closely together." Merriam Webster's Dictionary of Synonyms contrasts the words "compact" and "dense" this way: "**Dense** applies to something in which the arrangement of parts or units is exceedingly close....The term commonly implies impenetrability and an extended use may lose the basic notion of close packing of parts. **Compact** suggests close and firm union or consolidation of parts, especially within a small compass; it often also implies neat or effective arrangement."

[ii] The entry for **community** in The Concise Oxford English Dictionary is: "n. 1 a group of people living together in one place, especially one practicing common ownership. >a place considered together with its inhabitants: *a rural community* > (**the community**) the people of an area or country considered collectively; society. 2 a group of people having a religion, race, or profession in common: *the scientific community*. 3 the condition of having certain attitudes and interests in common. >joint ownership or liability. 4 *Ecology* a group of interdependent plants or animals growing or living together."

[iii] "We have a community of language, custom, belief; but a society for purposes of business, travel, or scientific knowledge....Community means genuine, enduring life together, whereas Society is a transient and superficial thing. Thus *Gemeinschaft* must be understood as a living organism in its own right, while *Gesellschaft* is a mechanical aggregate and artefact" (Tonnies, F. (2001 [1887] p18, 19).

[iv] This essay refers to positive and negative effects of sense of community, meaning 'good and bad' effects, and positive and negative influences, meaning influences that tend to increase or decrease sense of community.

[v] "The dependent variable, which is the respondent's overall sense of community, is derived from a question: 'In general, would you describe your city or community as one which has a sense of community, or not?' About 68% perceived that their city or community had a sense of community; 32% said that it did not." (Wilson & Baldassare 1996 p34)