PLANNING GUIDELINES FOR ENHANCING PLACEMAKING WITH TALL BUILDINGS
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Abstract
This paper provides a summary of a recent book by the author on urban design guidelines for integrating tall buildings in urban environments. The paper discusses the placemaking problems created by tall buildings, and simultaneously attempts to harness the potential of tall buildings to enhance placemaking. The research contends that instead of contributing to the problem of placelessness, well-designed tall buildings can rejuvenate cities, ignite economic activity, support social life and boost city pride through the science, engineering and craftsmanship embodied in these buildings. Although this study does not claim to possess all the solutions to these matters, it does propose 10 design and planning guidelines that can help to promote placemaking through tall buildings.

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INTRODUCTION

What is Placemaking?

Placemaking is the act and process of creating physical environments that impart a distinct sense of place to an area while meeting the basic physiological, social and psychological needs of people (Oldenburg, 2007). A sense of place is an essential quality that matters to all people regardless of their culture, age, gender, social class, race or city (Lynch, 1960; Fleming, 2007; Relph, 2007). Kevin Lynch (1960, p. 119) explains, “Sense of place in itself enhances every human activity that occurs there, and encourages the deposit of a memory trace.” Similarly, Michael Southworth (2011, p. 507) has articulated that sense of place “can provide a sense of security and stability in a transient, rapidly evolving society.” In the same manner, Kathy Madden (2011, p. 645) elucidates that nurturing a sense of place in our cities is important because cities constitute one of the most significant, direct and constant human experiences of our world. Such an experience profoundly affects us. Indeed, some parts of the urban experience make us feel comfortable, uplifted and excited, while other parts frustrate or even depress us (Al-Kodmany, 2013).

Therefore, a key concern of placemaking is to improve the qualitative human experience of a city's environment by turning “spaces” into “places” (Gehl, 2010). The term “space” represents the physical container of activities and objects, whereas the term “place” represents a particular portion of space that evokes meaningful and memorable messages of a specific culture, climate and geography, while meeting people's physiological, social and psychological needs (Lefebvre, 1991; Oldenburg, 2007). “Simply, ‘spaces’ become ‘places’ when they begin to develop a multitude of reasons for people to go there” (Madden, 2011, p. 656). The Project for Public Spaces website echoes Madden’s notion by defining placemaking as “turning a neighborhood, town or city from a place you can’t wait to get through to one you never want to leave.” Overall, placemaking is a powerful, transformative and multi-faceted urban design concept that aims “to create places in cities that can invite greater interaction, while fostering healthier and more economically viable communities” (Madden, 2011, p. 654). It has the potential to foster pride, stewardship and ownership by upholding the integrity of physical and social environments, whether in the home, neighborhood, community or city (Norberg-Schulz, 2007; Choi, 2011).

Tall Buildings and Placemaking

Due to their massive size and great height, tall buildings have often contributed to the problems of placelessness. In central business districts (CBDs), tall buildings frequently evoke the image of a nerve-racking, workaholic business environment. Moreover, in residential areas they convey the perception of living in crowded apartments that are more akin to cages than living spaces. Inhumanely high towers often shatter the human scale by dwarfing nearby public spaces and buildings, particularly those of a historic character (Gehl, 2010). People at the street level are unable to connect visually with them because they cannot see the whole building (Jacobs, 1963). People often become disoriented and feel lost in their midst, as if they were engulfed by canyons of skyscrapers. In addition, the tenants of high-rises tend to lose sight of the pedestrian and social life of the street. Conversely, pedestrians often cannot see the decorative art and personalizing details, such as flowerpots in the upper-story windows, which bring a touch of humanity to these types of living structures (Al-Kodmany, 2011; Krummeck and MacLeod, 2015).
The significance of the problem has been emphasized in recent years as we witness the rapid proliferation of tall buildings worldwide. This phenomenon is corroborated by the Council on Tall Buildings and Urban Habitat (CTBUH), which indicates that the past decade has witnessed the completion of more skyscrapers than any previous period in history. Asian cities like Shanghai, Shenzhen, Tokyo, Osaka, Bangkok, Seoul, Jakarta, Manila and Singapore have been very active in the construction of tall buildings. Also, major cities in North America such as New York City, Chicago, Philadelphia, San Francisco, Los Angeles, Toronto, Vancouver and Calgary have experienced renewed interest in the endeavor to build vertically. Furthermore, European cities that have historically banned tall buildings to protect their valuable built heritage—e.g., London, Paris, Frankfurt, Amsterdam, Moscow and Warsaw—have recently embarked on constructing significant tall buildings. Cities in the Middle East such as Doha, Jeddah, Mecca, Riyadh, Kuwait, Dubai and Abu Dhabi have been particularly active in the construction of tall buildings. Therefore, with the resurgence of the skyscraper city, it will be increasingly important to study the impact of tall buildings on placemaking in their respective cities (Al-Kodmany, 2015a).

Globally, there continues to be great interest in constructing the world’s tallest building (Gabel, 2016). The tallest building in the world, until 1998, was the 442 m (1,451 ft) high Willis Tower (formerly Sears Tower) in Chicago, Illinois. That title was then taken by the Petronas Towers of Kuala Lumpur, Malaysia standing at 452 meters (1,483 feet). Soon thereafter, in 2004, Taipei 101 in Taipei, Taiwan surpassed the Petronas Towers by soaring to a height of 509 m (1,670 ft) to become the world’s tallest building. It retained the title until Burj Khalifa in Dubai, United Arab Emirates (UAE), was completed in 2010, which rises to a height of 828 m (2,717 ft). Shanghai Tower in Shanghai, China, completed in 2015, rises to 632 m (2,074 ft) and became the world’s second tallest building. However, Kingdom Tower, which is currently under construction, in Jeddah, Saudi Arabia will surpass Burj Khalifa by reaching the unprecedented height of 1,000 m (3,280 ft), and upon its completion in 2020, will become the world’s tallest building. Interestingly, architects and engineers believe that we can build even taller than the Kingdom Tower. For example, William Baker, a chief structural engineer for Skidmore, Owings, and Merrill (SOM), explains in an online article titled “Is there a limit to how tall buildings can get?” that “We could easily do a mile…We could do probably quite a bit more” (Berg, 2012). It is remarkable to consider that it took 80 years (1930–2010) to build the first 50 supertalls (buildings that reach heights between 300 and 600 meters), while it took only five years (2010–2015) to build the next 50 supertalls (Gabel, 2016, p. 38). Certainly, these extremely tall buildings will have a profound impact on placemaking for future cities (Al-Kodmany and Ali, 2012).

A review of the urban design literature, however, reveals that there is little research addressing the issue of placemaking in regards to skyscrapers (Krummeck and MacLeod, 2015). We find abundant research that focuses on the structural engineering and technological innovations that make the creation of these immense structures physically possible, such as smart materials and systems. Some researchers have focused on wind impact, fire, safety, evacuation and terrorist attacks, while others have focused on the economics, sustainability and construction of tall buildings. Additional studies have examined the architecture of tall buildings or their technical elements, such as façade design or vertical transportation. While historians have been busy documenting the historic developments of tall buildings, visionary architects and planners have been engaged in designing futuristic, megastructure projects.
In the same vein, urban design research in regards to placemaking has focused primarily on public spaces, neglecting the issues of placelessness engendered by tall buildings. The work of William H. Whyte has served as the foundation for most research done in the realm of placemaking, focusing largely on public spaces and urban plazas. Whyte’s research has concentrated on the factors that contribute to making successful public spaces. Madden’s definition of placemaking echoes the same theme. She explains that “placemaking is geared toward the ‘ground floor’ of a city, streets, sidewalks, parks, buildings and other public spaces…placemaking focuses on the creation of the public places of everyday life; the streets corners, bus stops, and parks” (Madden, 2011, p. 654). In this way, as concerns the skyscraper and particularly in regards to supertalls, we can see that research on placemaking is lacking (Al-Kodmany, 2011).

Similarly, urban theorists have largely been in favor of low-rise cities and neglect to provide theories that enhance the experience of high-rise cities (Al-Kodmany, 2013). For example, in Christopher Alexander’s seminal work A Pattern Language (1977, p. 114), the high-rise city is rejected altogether as a viable human habitat. Alexander and colleagues explain: “Pattern 21: FOUR-Story LIMIT. There is abundant evidence to show that high buildings make people crazy. Therefore, in any urban area, no matter how dense, keep the majority of buildings four stories high or less. It is possible that certain buildings should exceed this limit, but they should never be buildings for human habitation.”

Likewise, the urban theorist Jan Gehl in Life Between Buildings (1971) and Cities for People (2010) praised low-rise cities in various parts of the world, for they emphasize the value of human scale and provide abundant opportunities for healthy social interaction. Also, Hans Blumenfeld in his influential work The Modern Metropolis (1971) denounced tall buildings for the purpose of preserving the historic fabric of cities. The well-known Jane Jacobs, in The Death and Life of Great American Cities (1963), praised human scale environments that foster an active pedestrian life. If placemaking is not given due consideration, tall buildings are at risk of becoming eyesores that bring an unwanted burden to the urban fabric. Placemaking centered on the creation of tall buildings is therefore one of the most challenging design issues of our time (Al-Kodmany, 2012).

**Research Goals and Scope of Work**

This research examines the nexus of tall buildings and placemaking. Its intention is to stimulate discussions on the possibilities of mitigating the placelessness often imparted by tall buildings. Simultaneously, it challenges designers and planners to harness the placemaking potential of skyscrapers. This study explores opportunities where tall buildings can improve the character of communities and cities so that they make them more attractive and memorable. It searches for urban design and architectural frameworks that may help tall buildings to create, reinforce and enhance a sense of place. It also explores the opportunities of providing captivating open spaces to invigorate social life. The purpose of this research has been to inform and empower planners, architects, politicians and the public about the means and ways to improve a sense of place while humanizing the high-rise city (Al-Kodmany, 2013).
TEN PLANNING GUIDELINES

1 Create “micro-urbanism” with tall buildings that support the human scale.

This guideline recommends utilizing shorter buildings to enhance the human scale by replacing “singular,” monolithic tall buildings with groupings of smaller structures or through a “closed-loop” typology. A closed-loop typology suggests that instead of increasing the height of a skyscraper, one should instead consider the breadth of the building when space is available. An example of this paradigm can be seen in the CCTV Building (2011) in Beijing, China, by OMA where the building’s activities have been contained in a single loop. For this reason, the building’s height was reduced—as the client originally desired to build a supertall—to adopt an innovative structural system of a more “three-dimensional” quality. Jeanne Gang (2013, p. 61) reflects on this building by stating that “It is an incredible achievement in terms of structural engineering and iconography; in some ways it is the Eiffel Tower of our time.” Recently, the proposed Crown Mixed Use Tower in Sydney, Australia, and City of Dreams Hotel Tower in Macau, China (under construction) have also embraced the same closed-loop typology.

In the same manner, “micro-urbanism” can be achieved through the replacement of singular, supertall or megatall towers with shorter buildings in the form of “twin,” “triplet,” “quadruplet,” “quintuplet” or “sextuplet” towers. These towers are intrinsically imageable landmarks because of their affinity and companionship amongst themselves. They also tend to possess the symmetry and balance that evoke a strong imageability. By providing spatial demarcation and breaking monotony, as well as offering a source of orientation for the city, these buildings have the potential to create “collective” landmarks while boosting the three dimensionality of the city (Shehab and Salama, 2018). Generally speaking, in order to avoid a cookie-cutter appearance these towers should be designed to be semi-identical to provide new meanings for “collective” landmarks. These subtle differences in appearance can spark spatial dialogues and engender a dynamic visual interplay. Overall, shorter buildings can be integrated more easily into existing low and mid-rise environments by avoiding the problems of scale created by very tall buildings. In this way, “three-dimensional” and “collective” landmarks have the potential to improve placemaking.

Another recently emerging design strategy to achieve “micro-urbanism” is achieved by employing interconnected towers (Moon, 2015, p. 829). Some examples include The Pinnacle@Duxton (2009) in Singapore, which consists of seven residential towers that are connected by “sky planes”—referring to the spacious sky bridges (sometime at multiple levels) which contain various functions, amenities and services—on the 26th and 50th floors. In the same manner, The SkyTerrace@Dawson (2015) by SCDA Architects, also in Singapore, contains sky planes that connect four residential towers at two levels. Singapore’s Sky Habitat (2015) integrates three Sky Gardens at levels 14, 26, and 38 that interconnect two 38-story towers. Also, the Tencent Binhai Towers (2016), a vertical high-tech campus in Shenzhen by NBBJ (dubbed the Synergy Tower) has sky planes that contain shared functions and that connect the two office towers (50-story and 41-story). In the same manner, Singapore’s Marina Bay Sands (2010), by Moshe Safdie, consists of three hotel towers that are connected at the rooftop by a large “sky park” that contains numerous amenities, services, greeneries and recreational facilities, such as swimming pools, gardens and restaurants.
Moshe Safdie advanced the Marina Bay Sands design concept even further at Raffles City in Chongqing, China, where a glass-enclosed, 402m long (quarter-mile) bridge—that contains amenities, services, green spaces, and recreational facilities—would connect the four towers at the 60th floor. Gate Towers (2013) at Shams, Abu Dhabi, on Reem Island, UAE, employs a similar design concept, featuring a rooftop sky plane that connects three residential towers. The Hangzhou Civic Center 3 (2012) in Hangzhou, China consists of six trapezoid towers that are connected via five 85m (279ft.) sky bridges. Originally, the client wanted to build a single supertall building at 300m (984 ft.) high. However, the architect persuaded the client to construct multiple shorter, connected towers. This new planning trend of building interconnected shorter buildings may mitigate the problems of “tallness” engendered by supertall structures, while still providing new meanings to placemaking.

Interestingly, the Linked Hybrid (2009) complex in Beijing, China, by Steven Holl, creates a three-dimensional landmark characterized by the contrasting visual composition of nine “vertical” towers and eight “horizontal” bridges. The courtyard increases civic pride and community life through beautiful landscaping, while the complex itself is characterized by a porous pattern, where the spaces between the buildings seamlessly connect to the street outside and the courtyard within. The ground level offers a number of open passages that invite people to walk through the courtyard. Visitors are allowed to tour the public roof gardens located on the intermediate levels of the lower buildings, and the multi-layered circulation pattern on the ground and in the upper floors connects the various parts of the development; the design being meant to create a “city within a city.” While Beijing’s current development style is “object buildings” and freestanding towers, this “city within a city” envisions linked spaces that support the daily life of over 2,500 inhabitants. It has pushed the limits of this conceptual approach by implementing an urban design that embodies three-dimensional “micro-urbanism” in its purest form. Steven Holl has applied a similar design concept to the Sliced Porosity Block (2013) in Chengdu, China, where outdoor spaces with double-fronted shops open to the street and foster a better sense of place.

Interconnected towers evoke the symbolic meanings of association, relation, solidarity, and unity. In addition to improving aesthetics and placemaking, bridges, sky planes, and sky parks enhance the functional connectivity of building while increasing their safety. These “links” promote more community, communication and chance encounters. In this regard, Richard Wilson explains “As a city’s populations grow, it is increasingly important to not only provide great public spaces around buildings, but also in [the] upper levels of tall buildings with public access and programming” (2016, p. 59). Kyoung Sun Moon also explains that “By interconnecting towers, tall buildings are no longer isolated individual towers. They are growing into organically interconnected, more dynamic megacities” (2015, p. 825). Many of these projects contain mixed-use functions that create a series of destinations where people may gather, improving sense of place. In the case of supertall and megatall buildings, “micro-urbanism” can be achieved by providing social spaces within the tower. For example, Shanghai Tower integrates nine sky gardens that provide visitors a venue in which to meet, eat, relax and shop.

2 Create “macro-urbanism” to support placemaking at the larger scale of the built environment.

Placemaking may be enhanced by Kevin Lynch’s theory of imageability, through which tall buildings may be used to create vivid landmarks, edges, paths, nodes and districts. Imageability helps to create places that have a clear regard for the built environment, making it easier to understand and navigate cities. In particular, landmarks can strengthen the visual
orientation of the city, creating urban legibility and enhancing the visual experience of the downtown. Tall buildings, as significant physical constructs, can further enhance legibility by creating vivid edges, and as an essential component of major streets and boulevards, they can also play an important role in strengthening a path’s imageability. In the same manner, the careful clustering of tall buildings around open spaces, outdoor plazas or bridges can create powerful nodes. Furthermore, a careful grouping of tall buildings at a larger geographic scale may create a more imageable district. Finally, because a city’s skyline may be viewed as a collection of edges, which form the signature appearance of an urban locale, an imageable skyline should convey a city’s identity, promote civic pride and support placemaking.

Though they should be produced sparingly, supertall and megatall buildings can play an important role in fostering placemaking by creating vibrant centers and strong focal points within a city’s skyline. These towers may become key identifiers in the skyline and haphazard development around them should be avoided. Overall, supertall buildings epitomize city pride, showcasing the achievements of “warm architectural passion and cold engineering logic” (Al-Kodmany and Ali, 2013). Supertall and megatall structures can provide a unique identity to the city, as is exemplified in the cases of the Big Ben (1859) and the Shard (2013) in London, the Eiffel Tower (1889) in Paris, the Space Needle in Seattle (1962), Willis Tower (1974) in Chicago, Burj Khalifa (2010) in Dubai, and so on.

It is important to note that a building’s top is one of the most important elements of both a skyscraper and a skyline. For example, the gleaming crown of the Chrysler Building (1930) consists of “a series of sunbursts punctuated by triangular windows...a most remarkable feature...The prima donna of all skyscrapers—the extravagantly topped Chrysler Building—remains the belle of New York’s skyline” (Dupré, 2008, p. 39). The historic Chicago Tribune Tower (1925) has a crown distinguished by flying buttresses, while the Modernist Chicago’s Crain Communications Tower (1983) (formerly the Smurfit-Stone Building) employs a sliced, sloping roof, which forms a distinguishable diamond shape. Similarly, the Southeast Financial Center in Miami, Florida features a unique top characterized by an attractive saw-tooth profile. Recently, “glazed crowns” are becoming more popular as they provide breathtaking views as is seen in the cases of the KK100 (2011) in Guangdong, China, and the 20 Fenchurch Street (2014) building (dubbed the Walkie Talkie Building) and the Swiss Re Building (2003) in London, UK. The Oriental Finance Center (2014) in Shanghai, China, utilizes an open-air courtyard at its top. “Green crowns” are also becoming more popular and being designed in various forms and shapes. For example, the CapitaGreen (2014) in Singapore integrates an intriguing rooftop wind scoop that collects fresh air and distributes it to the offices below. Interestingly, Los Angeles, California has recently removed the 40-year old building code requirements of providing a helipad for a building 75 feet and taller—which made L.A.’s skyline remarkably flat—paving the way for the integration of more interesting building tops, which will help to animate the city’s skyline. The Wilshire Grand Center (currently under construction) will become in 2017 the city’s tallest building to possess a distinct crown. Observation decks—often present at a building’s top—allow these towers to become tourist destinations. In this way, they celebrate our ascendance into the sky, while simultaneously providing attractive panoramic views (Al-Kodmany, 2014).

Computerized systems and LEDs (light emitting diodes) technology have empowered tall buildings to project dynamic, colorful images that can enhance placemaking at night. The Torre Agbar (2004) in Barcelona, Spain, by Jean Nouvel and Yann Kersalé, possesses 4,500 LEDs that generate luminous and colorful images on the building’s cylindrical façade. They
also have applied a clever lighting system to Doha Tower (2012) in Doha, Qatar, that accentuates its mashrabiya (wooden lattice screen) design with a digitally programmable transition between “gold” and “silver”—giving the tower a jewel-like quality and making it particularly recognizable in the city’s crowded skyline. In an earlier project, the designers Yann Kersalé and Michael F. Rohde, of the Berlin-based lighting design firm L-Plan, applied a sophisticated lighting system to the Deutsche Post Office (2002) in Bonn, Germany. The façade’s lighting system consists of over 2,000 computer-controlled lighting fixtures and 100 projectors that gradually change from red, yellow, green, cyan and violet. Recently, Kersalé has incorporated a lighting system into the heliostats of One Central Park (2014) in Sydney, Australia, which illuminates the surrounding space in a grand fashion. In another case, the top of the Makkah Royal Clock Tower Hotel (2012) features four colossal clock faces that are illuminated by one million green and white LED lights. Finally, the Shimao International Plaza (2006) of Shanghai, China, situated next to the People’s Square, employs a simple LED lighting system that illuminate the tower’s corners and spires, giving the building a unique presence in the city’s skyline.

It would be in the interest of many cities to draft urban design regulations which coordinate a building’s lighting systems. This being said, the collective effect of individual lighting systems should be further studied to improve placemaking. Interestingly, cities such as Hong Kong and Singapore feature comprehensive design guidelines for their lighting systems and their regulations recommend using specific lighting systems in certain areas—e.g. up-lighting for large governmental buildings and museums so as to create a sense of grandness, or colourful LEDs to help attract shoppers to an up-scale shopping district. These lighting regulations also recommend using LEDs to highlight major landmarks. Most interestingly, the Hong Kong skyline offers a 14 minute long Symphony of Lights Laser Show every night, which includes 44 buildings on either side of Victoria Harbor and is accompanied by symphonic music. The collective lighting effects, coupled with Hong Kong’s extraordinary skyline, make this event particularly impressive (Al-Kodmany, 2011).

3 Respect neighboring buildings and the natural environment.

When placed next to historic buildings, ill-conceived towers can cause irreparable damage to the existing character of a city. Chicago’s Trump Tower (2009) by Adrian Smith is an excellent example of a modern tower that respects neighbouring buildings (including those that are considered historic landmarks) as well as the natural environment, i.e. the Chicago River nearby. The 98-story, 423m (1,388 ft.) tall Trump Tower complements its surroundings by having each of its three step-backs relate to a nearby building. The first step-back honours the top of the Wrigley Building (1922), the second aligns with the roof of Marina City (1956) and the third has been placed at the height of 330 North Wabash (1973) (or AMA Plaza, formerly the IBM Building). The spatial connection provided by these step-backs facilitates a visual continuity between the tower and the surrounding environment. Additionally, the silvery-blue color of the Trump provides a transition between AMA Plaza’s dark color and the Wrigley Building’s white color. In addition to being a dramatic visual terminus, Trump Tower’s asymmetrical, stepped profile gives the structure an aesthetic dynamism that can be appreciated from virtually any vantage point. Furthermore, its curved corners and silvery-blue steel-and-glass curtainwall echoes the river’s curvature and color. The building was designed to “flow” in congruence with the river insofar as its south side parallels this diagonal section (relative to the grid of the city) of the riverbank. The three-level base of the tower is recessed from the rest of the tower, creating a visual bond with the river.
The base contains a walkway, restaurants and shopping and, for these reasons, fosters a lively pedestrian environment along the river (Al-Kodmany and Ali, 2012).

Similarly, the NBC Building (1989), also by Arian Smith, provides another excellent example of respecting city’s cultural heritage and built environment. The office tower takes cues from its neighboring Art Deco masterpiece, the Chicago Tribune Tower (1925), by making references to its top, buttressing elements, modules, punched windows, beige color, exterior limestone, granite spandrels and recessed tinted glass. The Postmodern NBC Tower honors Chicago’s 1923 zoning ordinance by having its first step-back at 264 feet (80m), marking the height of other historic buildings along the river. Furthermore, the tower’s second step-back—at the 20th floor—mirrors that of the nearby Tribune Tower (Bosch, 2008).

Recently, the OneEleven (2014) building in Chicago has employed an incised, recessed glass “ribbon” that meanders and wraps around the building (from the base to the penthouse) in much the same way as the Chicago River winds through the city. The changing movement of the ribbon also corresponds to the heights of the neighboring buildings. For example, at the 25th floor, the ribbon ties into the step-back of its historic neighbor to the west, the LaSalle-Wacker Building (1930), before continuing skyward. Functionally, the ribbon provides several semi-private outdoor spaces and balconies. In a similar fashion, London’s Leadenhall Building (2014) tapers in order to avoid obstructing views to and from St Paul’s Cathedral and the St. Andrew Undershelf church. Respecting the local context can also be attained by having nearby buildings employ a compatible architectural language. Overall, a study of the existing character of a place is needed to help urban designers make informed decisions about the appropriateness of a proposed development (Al-Kodmany, 2014).

**4 Create a visual contrast.**

Maintaining a harmony between newly introduced buildings and existing urban fabrics is not the only way to promote placemaking. An element of contrast between new and old can also enhance placemaking. For example, in Chicago we find the NBC Tower (1989) provides a splendid contrast with its neighboring building, the Sheraton Hotel (1992) by having the former provide an explicit element of verticality (following an Art Deco style) and having the latter exhibit a strong expression of horizontality, insofar as its floors are delineated by distinct bands. This visual contrast evokes a unique spatial dialogue between the towers. And yet, they are unified through a similar limestone cladding. Similarly, the Citigroup Center (1987) by Helmut Jahn with its vertical lines—meant to simulate a waterfall—contrasts well with its neighbor, the ABN AMRO Plaza (2003) which stresses horizontality through horizontal belts. Yet again, both towers are visually united by possessing a similar glass curtainwall. Interestingly, the Swiss Re Building (2003) in London, UK has a unique form that contrasts with the hard-lined façades of its neighboring Modernist buildings (Binder, 2006; Riley and Nordenson, 2003). A more dramatic example is provided by the Wangjing SOHO (2014) in Beijing, China by Zaha Hadid. The mountain-like triplet towers contrasts vividly with the surrounding orthogonal architecture of the city.

It should be noted that diagrid structures are especially likely to provide strong visual contrasts with a city’s traditional orthogonal street grid, as illustrated by Hearst Tower (2006) in New York, the Swiss Re Building (2003) in London and the Bow (2012) in Calgary, Alberta, Canada—all designed by Norman Foster—as well as the Guangzhou International Financial Center (2010) designed by Wilkinson Eyre in Guangzhou, China. Diagrid structural systems have also enabled the construction of visually striking forms that seem to defy the
basic principles of large scale engineering. For example, the Capital Gate (2010) building in Abu Dhabi employs a diagrid system which allows it to lean at an 18° angle, the most lean for any tower in the world. Also, the diagrid system has been employed in the geometrically bold Al Dar Headquarters (2010) in Abu Dhabi, UAE, enabling a cantilever of 25m (82 ft.) in each direction and a distinct diagrid pattern, which offers a powerful contrast to the surrounding environment. Completed in 2016, Lotte Super Tower, designed by Skidmore, Owings and Merrill, offers a “dynamic” diagrid system where its angles gradually change from about 79° at the bottom to 60° at the top.

5 Employ a design that connects people to vernacular architecture.

In a globalized world that generates anonymous, mass-produced and homogeneous urban environments, vernacular towers are particularly important to placemaking. Before 1990, most tall buildings were built in North America. However, today the majority of tall buildings are being built abroad, namely in Southeast Asia and the Middle East. Therefore, the tall building typology established in America needs to be reconfigured to avoid the “Manhattanization” of world cities, for many cities have started to lose their identities through the importation of these “urban giants” (Al-Kodmany et al., 2013). Vernacular architecture has the potential to combine traditional forms with high-tech design, an approach that can revive local culture while still conveying a sense of modernity (Al-Jokhadar & Jabi, 2017; Asfour, 2007). Kyoung Sun Moon explains that “unlike the Postmodern buildings, which often irrelevantly adopt various exotic architectural languages, these buildings’ regional expressions actively engage traditional vernacular architecture through building forms and detailing. …..[the] marriage of the image of a particular region and modern technology is, at least, more contextual than postmodern architecture in general” (2015, p. 817).

Several examples may illustrate the vernacular design approach. Shanghai’s Jin Mao Tower (1999) by Adrian Smith and Taipei’s Taipei 101 (2004) have revived the traditional pagoda. Smith has commented on Jin Mao’s design, explaining how “It was important to relate Jin Mao Tower to the culture and indigenous character of China and its people” (Binder, 2015, p. 20). Judith Dupré expressed her admiration of the design by explaining that “Unlike some Asian skyscrapers that paste on neo-Chinese motifs to ‘sinofy’ what is otherwise a bland box, Jin Mao subtly integrates historical influences” (2008, p. 121). The Petronas Towers (1998) of Kuala Lumpur, by Cesar Pelli & Associates Architects, embraces an Islamic geometrical pattern—the eight-pointed star superimposed with eight semicircles into the floor plans of the towers—that when extruded vertically, simulate the forms of traditional Islamic minarets. The design of these towers could be considered place-based. Put simply, given these local design choices, the Petronas Towers would be inappropriate in any Chinese city in the same way that Jin Mao Tower would be inappropriate in Kuala Lumpur.

Similarly, the Burj Al Arab (1999) mimics a ship’s sail, thus making a clear reference to the traditional seafaring activities of the region. The white PTFE-coated tensile fabric that wraps the building’s front façade “is a contemporary iteration of the tent, a ubiquitous Arabian vernacular structure that evolved in response to the desert climate” (Dupré, 2006, p. 123). Remarkably, the Baku Flame Towers (2013) embrace a flame-shaped silhouette to resonate Azerbaijan’s nickname as the “land of fire,” referring to the country’s natural gas that continues to fuel its economy. The LED screens that cover the towers display the movement of fire. Notably, the SOCAR Tower (2015), also in Baku, has applied a similar design with motifs of fire and wind being brought life via 3,000 LED lights. Overall, this vernacular design
approach may be useful to “starchitects” who could utilize their exceptional artistic talents to create places with a stronger sense of identity (Southworth, 2011).

Interestingly, the Al Bahar Towers (2012) in Abu Dhabi have modernized a vernacular architectural element, the “mashrabiya” (a traditional wooden lattice screen), that opens and closes in response to the sun’s path and weather conditions. In addition to enhancing the environmental performance of the building, this opening and closing gives the tower an ever-changing appearance. Doha Tower (2012), in Doha, Qatar, has also modernized the “mashrabiya” by applying two layers of traditional geometric patterns that corresponds to the sun’s path and to the building’s orientation. The opacities of the mashrabiyas—of approximately 25%, 40%, 60% and 60% on the north, south, east and west façades of the building, respectively—have been tailored to suit the harsh desert conditions specific to this site (Al-Kodmany, 2015, a). Many years earlier, the Dayabumi Complex (1984) in Kuala Lumpur modernized the traditional Jali screen (resembling the mashrabiya) reviving a local aesthetic that provides environmental benefits.

6 Employ local “green aesthetics” to connect people to their indigenous landscapes.

The twin towers of Bosco Verticale (Vertical Forest) (2015) by Boeri Studio in Milan, Italy have provided a new paradigm in which indigenous vegetation—containing local species of birds, bees and butterflies—is wrapped around the buildings’ façades. In addition to providing environmental qualities that support bio-diversity, trapping dust, absorbing carbon dioxide and producing oxygen, these towers also promote local green aesthetic. For these reasons, Bosco Verticale has recently won the CTBUH 2015 Best Tall Buildings Worldwide Award, which has motivated Boeri Studio to design a similar building that integrates local plants and vegetation in a 36-story, 117 meter residential tower in Lausanne, Switzerland.

In the same vein, One Central Park (2013) in Sydney, Australia has been recognized as a “green urban sculpture” that vertically exhibits local plants. The buds and blooms of the vegetation that springs from between floors and thin vertical walls, forms a fascinating “musical composition.” The project won the 2014 CTBUH’s Best Tall Building Worldwide Award and the Emporis Skyscraper Award in 2013. Recently, the Parkroyal on Pickering (2015) has created a significant, vertical, urban greenspace. Interestingly, the contoured podium echoes the country’s mountainous rock formations and contoured paddy fields of Asia. The changing colors of leaves offer a dynamic seasonal appearance that reflects the environmental locality and enhances the building’s impact on placemaking throughout the course of the year.

Some tall building’s design may serve an educational purpose in regards to their use of wind and solar energy. Bahrain World Trade Center (2009), in Manama, Bahrain, and Strata Tower (2010) in London, UK, have boldly integrated large wind turbines into their façades. Guangzhou, China’s, Pearl River Tower (2012) by Adrian Smith was sculpted to harness wind and allure the eye. The project won the Emporis Skyscraper Award in 2012. In Seoul, South Korea, the facades of the FKI Tower (2013) embrace a zigzagging profile where the upper part integrates PV cells tilted by 30° to face the sun, and the lower part integrates vision panels that are tilted downwards by 15° to minimize solar heat gain and glare – creating an intriguing “green expression” (Moon, 2015, p. 825). The proposed Solar Carve Tower by Studio Gang would use the sun’s angles to enhance daylighting – the building’s
design facilitates "200 more hours of daylight (annually) to the High Line Park than a building adhering to NYC zoning regulations" (Gang, 2015, p. 81).

Green expressions can also echo nearby natural environments. For example, Chicago’s Aqua Tower (2009) by Jeanne Gang uses an exterior expression inspired by the topographic profile of nearby Lake Michigan. Similarly, Regalia Tower (2014) in Sunny Isles, Florida features a flowing “organic” profile inspired by the prevailing waves and wind of the nearby Atlantic Ocean. The Emerald (2015) in Melbourne, Australia embraces a design that echoes the ripples and waves found in the nearby Albert Park Lake. Clearly, the aforementioned buildings attempt to connect people to nature by providing interesting visual expressions reminiscent of local environmental features.

7 Design a tower’s base with respect to human scale, provide visual continuity between indoor and outdoor spaces, and support socio-economic activities.

James Goettsch (2012) explains that if we are concerned about the human experience in urban habitats, a serious focus should be given to the entryways of buildings, those points where people and buildings meet; where public and private spaces converge. In her article, "It is Not About the Skyline, It is About the Base Condition," Terri Boake (2015, p. 494) explains that “More effort needs to be placed into the design of the base condition of the skyscraper to ensure that it plays a role in the activation of the pedestrian precinct.” Unfortunately, some tall buildings have turned their backs to the street by employing high, blank, windowless walls. Indeed, some towers are being “built as wall-like masses, one next to another, without the sensibility to relate to the surroundings or to the street life below” (Lubin, 2016, p. 12). Here, retail and social activities are wholly internalized from the city’s social life, segregating indoor spaces from outdoor spaces. They become isolating, rather than integrating, components of the city.

Therefore, a tower’s base must not look vacuous, bulky or clumsy, and the importance of clearly identifiable entrances should not be undervalued. In order to cater to the human scale and provide views of the tower’s shaft, the tower’s base should not exceed five or six stories and sufficient openings in the base should support passive supervision at the street level. A colonnaded base, for instance, has the advantage of protecting pedestrians from the elements while opening up the ground level space to public use, examples of which can be found in 200 South Wacker Drive (1981) and 155 North Wacker Drive (2010), in Chicago. Also, a base should contain socio-economic functions in order to stimulate social life at the street level with the building, at this scale, communicating a sense of welcoming and arrival (Gehl, 2010).

8 Design urban plazas and public parks to invite people and support a vibrant social life.

The social fabric that surrounds tall buildings is critical to placemaking. Iconic tall buildings need to go beyond new aesthetics and flamboyant designs in order to foster a healthy social life for the entire city. Public parks and recreational spaces are essential components to healthy and sustainable urban habitats and therefore should be emphasized in future tall building developments (Ryan, 2006). Successful urban plazas can draw thousands of people together in common public spaces and offer respite to workers and visitors alike. The denizens and visitors of the urban core can use these spaces to relax, eat or simply people-watch. If well designed, plazas and open spaces near tall buildings have a good chance of
being properly utilized given that tall buildings tend to promote high population densities (Elbakheit, 2018).

The common design elements that make urban plazas successful include a range of sitting spaces, a positive relationship with the street, adequate protection from the elements, lush landscaping (trees, water, shrubs, etc.), public art, food and proper maintenance (Whyte, 1980). This being said, each plaza will likely have a slightly different role to play in the city and will probably have to specialize in only a few of the aforementioned elements. Identifying the role of a plaza ahead of time can help designers direct their efforts to creating an urban space that most suitably engages the public. Ultimately, plazas can perform an important complementary role in the design of skyscrapers insofar as they can collectively enrich the social life of a city. Interestingly, in Chicago, the austere Modernist plazas of the 1970s and 1980s have supplied plenty of open space to allow for a wide-range of cultural and political events. These events have played an important role for the region, connecting plazas with the city at large by drawing people from the greater metropolitan area, engaging them in spontaneous social interactions, while helping to forge stronger connections between people and place, making the city safer, healthier and more vibrant.

Open space are also important to humanize the mega scale of skyscrapers. For example, Chicago’s Millennium Park and Maggie Daley Park stand out as two open spaces that have enlivened an area that was once characterized as passive and underutilized. In recent years, these parks have attracted millions of local, national and international visitors, making the skyscrapers nearby even more socially vibrant. Together, these parks have engaged visitors in social activities that have imparted a positive association with the adjacent tall buildings. Furthermore, these skyscrapers have created a beautiful backdrop to Millennium Park and Maggie Daley Park, reinforcing the aesthetic impressiveness and social utility of both. Remarkably, even as new additions, these parks have evoked a “Chicagooan” spirit that fits the city’s “tradition of high design and innovation” (Southworth, 2011, p. 504).

In both urban plazas and large parks, sculptures and art works are important humanizing elements that can engage people mentally, emotionally and spiritually. In these settings a well-designed sculpture stimulates people’s attention and engages them in casual conversations. Sculptures frequently evoke special aesthetic qualities and may represent the latest and greatest in artistic merit, further drawing in people’s admiration and attention. The sculptures examined in this work—all located in Chicago—include the Federal Plaza’s Flamingo by Alexander Calder, Chase Plaza’s Four Seasons by Marc Chagall and Millennium Park’s Cloud Gate by Anish Kapoor and Crown Fountains by Jaume Plensa. It is worth noting that all of these sculptures are over-scaled in order to provide a spatial transition between the nearby skyscrapers and the public (Gilfoyle, 2006).

Importantly, parks should not only be iconic, providing acres of artwork, but they should also be inclusive; everyone should feel invited and engaged in social and recreational activities. Using Ray Oldenburg’s terms (2000), parks should constitute “third places,” where the first place is home and second place is work. Third places are neutral areas where people may gather, interact and enjoy the company of friends or even “strangers.” These informal, inclusive places promote social equity by leveling the socio-economic status of visitors. “Doing so humanizes everyone, rich and poor” (Efroymson, et al, 2009, p. 113). Ray Oldenburg explains that public spaces “are essential ingredients to a well-functioning democracy for developing social cohesion, endowing a sense of identity, and providing psychological support” (Oldenburg, 2007, p. 138). People often identify cities by their most prominent public spaces and social life.
As such, one of the most important roles of parks, plazas, and open spaces is drawing in people who help to humanize the skyscraper city. According to William H. Whyte (1980), people are the ultimate source of place, in that people always attract more people. This notion is clearly illustrated in the case of Shanghai where the presence of large crowds along the Bund Promenade enhances the public setting by acting as an attraction in and of itself. Interestingly, the movements of people along the Bund create a “theatrical” visual composition. In this regard, Jan Gehl profoundly explains:

Experiencing other people represents a particularly colorful and attractive opportunity for stimulation. Compared with experiencing buildings and other inanimate objects, experiencing people, who speak and move about, offers a wealth of sensual variation. No moment is like the previous or the following when people circulate among people. The number of new situations and new stimuli is limitless (2007, p. 368).

9 Integrate tall buildings with multi-model, mixed-use transit nodes and ensure that each node features unique perceptual characteristics at a steadily decreasing density.

The Tall Building and Transit Oriented Development (TB-TOD) model can promote placemaking where high-rises mark the locations of mass-transit nodes that people can visually identify. Iconic tall buildings, in particular, provide distinct points of reference that can enhance the imageability of transit nodes. It is also recommended that each transit node seeks out a distinct characteristic in its architectural style so as to attain a unique identity. Examples of this include offices, business centers, government buildings, civic spaces, residential towers, educational hubs, and entertainment and performing art districts. A distinct “personality” for each transit node can further promote placemaking.

The relationship between clustered tall buildings and low-rise, fine-scaled buildings can be made more pleasing if building heights are gradually reduced. As a result, it should be possible to reshape the city’s skyline to correspond to mass-transit systems, so that focal points in the skyline will indicate the location of major transport centers in the city and to the metropolis at large. For this reason, there will be less of a need for tall buildings to compete for attention given that their locations will already be prominent.

Interestingly, Georges Binder (2015) explains that the TB-TOD model has an earlier precedence in New York City’s Chrysler Building (1930), and Cleveland’s Terminal Tower (1928). The Chrysler Building, the world’s first “supertall” (300-plus meters), had an underground tunnel that gives it direct access to Grand Central Terminal and the city’s subway system. The tower contained a mixed-use scheme including retail shops, hotels, offices, and an observation deck on the 71st floor. Similarly, upon completion, the 213-meter Terminal Tower in Cleveland had been the tallest building outside of New York City, providing an early example of a mixed-use urban ensemble—with department stores, restaurants, banks, smaller office wings and a hotel—that was connected to a major transit terminal. Binder (2015, p. 23) explains that mixed-use transit centers continue to be integral components of most successful skyscrapers today.

Importantly, TB-TOD ensures a constant presence of people—through mass-transit, mixed-use activities and tall buildings—to promote sense of place. For example, London's The Shard (2013) sits next to the busiest railway station in the capital, the London Bridge Station, which experiences a daily ridership of 120,000 people (Safarik, 2016). The Abeno Harukas
complex (2014) in Osaka, Japan, has a rail station that draws a daily ridership of 70,000 people. Burj Khalifa (2010), for example, draws masses of people, with the tower being capable of holding up to 35,000 employees and visitors. Adrian Smith, the designer of Burj Khalifa, explains that “A piece of architecture, in and of itself, can be an attraction that is a significant draw to a city. The premise in Dubai is to create architecture—of quality, permanence, and commitment—that will draw people to visit it, view it, and use it” (Dupré, 2008, p. 10). In addition to Burj Khalifa, the complex integrates the world’s largest mall, the world’s largest fountain and the Khalifa Metro station (Dubai’s busiest station). In this way, it is clearly inherent to the nature of tall buildings to concentrate large numbers of people and in almost all instances, more functions tend to draw more people, who further enliven a place. Finally, TB-TOD reduces the need for parking spaces, which is a common problem for good placemaking.

10 Utilize new building technologies that may provide new architectural expressions and promote placemaking.

The architect Michael Green recently proposed a 30-story skyscraper to be built out of super-compressed, “fire-resistant” wood in his home city of Vancouver, Canada. Similarly, Skidmore, Owings, and Merrill (SOM) has recently proposed a structural system that comprises columns, beams, and slabs made of super-compressed mass timber. In 2014, the United States Department of Agriculture (USDA) announced the US Tall Wood Building Prize Competition to promote the construction of tall buildings made of wood (Robinson et al., 2016, p. 26). Given the above examples, we can see how wood can provide natural beauty even “nostalgic” qualities that connect people with nature. In an online article titled “The Sustainable Future of Wooden Skyscrapers,” Michael Green states that “You never see anyone walk into a building and hug a concrete column… but a big wood column, it’s like an individual. You totally see people walk up and touch it. No two are the same. It’s much closer to people. It’s much closer to who we are” (Hoyt, 2013).

Employing heliostats (mirrored devices that reflect and concentrate sunrays into receivers to generate energy) may also become more popular in the future as they provide new architectural expressions for nascent tall buildings. Sydney’s One Central Park (2013) by Jean Noveal, for example, utilized heliostats as a defining element of the building—a giant truss cantilevered along the side of the building. In regards to energy efficiency, new research examines “solar glass,” a technology that has tremendous potential for sustainably powering skyscrapers. Furthermore, high-tech elevator systems—such as the Electromagnetic Levitation System and the Circulating Multi-Car Elevator System—will enable elevators to move “three-dimensionally” (i.e. vertically, horizontally, and diagonally), and may facilitate new architectural forms in tall buildings (Al-Kodmany, 2015, b).

Interestingly, biomimicry (from bios, meaning life, and mimesis, meaning to imitate) will provide new ways to design our environments and solve human problems. For example, biomimicry has inspired a cactus-shaped structure in Doha, Qatar, a project conceived by Aesthetics Architects GO Group for the Ministry of Municipal Affairs and Agriculture (MMAA). The office building and adjoining botanical dome are examples of biomimicry in which the skin of one of the hardest plants of the desert is mimicked to make the building’s façade more resilient. In addition to this façade component, the building features hundreds of smart shades that automatically open and close, depending on the strength of the sun, thus further mimicking the activities of the cactus as these shades aid in the retaining transpiration processes of water. This design is well suited for a country like Qatar, given that it is hot
nearly all year round and receives very little rainfall. Notably, a dome at the base of the tower will house a botanical garden where edible plants will be grown to clean up wastewater. Similarly, the B+U Architects, an architectural firm in Los Angeles, has released a conceptual design for a 20-story Animated Apertures Housing Tower project in Lima, Peru. What makes this project unique is how its windows will be reconfigured in terms of function, components, appearance and materiality. The three-dimensional “window apertures,” resembling palm fronds, will attempt to create an “interactive and intelligent building organism.” The pod-shaped opening apertures will also function as inhabitable spaces that “exploit the potential energetic exchanges between the natural and built environments,” as explained by Barbara Porada in online article titled “B+U’s Housing Tower Rethinks Window DNA.” The apertures will be made out of advanced silicon composites and will move without mechanical parts, emulating systems found in nature. The apparatus’s strands will be coated in a solar film that transforms sunlight into energy, allowing the building to absorb and repurpose energy like a living organism (Porada, 2013).

FUTURE RESEARCH
This work barely scratches the surface of a very large body of research in regards to skyscrapers and placemaking. Future studies will hopefully advance the four planning dimensions of placemaking touched upon here and add new ones. There is much opportunity for future research into the social, economic, cultural and political aspects of placemaking. This research has focused on the social life that surrounds towers; future studies may examine the social life that exists within towers. Additionally, future research may engage others in the empirical examinations of this subject, building on the theoretical groundwork provided in this study. Without question, individuals experience and value places differently based on many factors, including cultural background, social class, political orientation and education (Jacobs and Appleyard, 2007; Rapoport, 1997, Southworth, 2011). Therefore, future research may involve the stories of everyday people and their experiences, opinions and perceptions of the built environment. In this way, future research may involve conducting direct observations to better understand the behaviors of the public in regards to these spaces (Salama et al., 2017).

In sum, academics, planning departments, local government and community organizations should engage with local residents to learn about their views, experiences and expectations of the built environment, especially in regards to the urban core. Rather than having professionals define the parameters of placemaking through top-down methods, a bottom-up approach can empower community members to voice their views, while better utilizing the skills and knowledge of the professionals tasked with improving the physical environment—e.g. architects, urban designers, landscape architects, civil engineers (Madden, 2011). Each city has a unique identity and empirical research should be context sensitive. In modern times, it has become increasingly evident that top-down processes and generic studies are less useful than bottom-up approaches that use creative processes of data collection and analysis. The idea that “what works for one place may not work for other” applies in the case of placemaking as well. Tall buildings should always be seen in relation to their context, whether as an infill project within a single block, a corner building that defines an intersection or a freestanding tower along a robust skyline. When such developments are applied without contextual considerations, urban design fails to create meaningful places (Kamin, 2010). It is the hope of this research that ill-conceived developments will be less common going forward and that good placemaking will become the norm, not the exception, in the future (Fleming, 2007).
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