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Title: **Humanizing High-rise Urbanism: Design Strategies and Planning Tools**

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Subject: Urban Design

Keywords: Density
Urban Planning

Publication Date: 2011

Original Publication: CTBUH Journal, 2011 Issue IV

Paper Type:

1. Book chapter/Part chapter
2. **Journal paper**
3. Conference proceeding
4. Unpublished conference paper
5. Magazine article
6. Unpublished

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Humanizing High-rise Urbanism: Design Strategies and Planning Tools



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Vinayak Bharne directs the urban design efforts at Moule & Polyzoides, and teaches urban design and planning at the University of Southern California in Los Angeles. His professional experience includes numerous new towns, inner-city revitalizations, campus plans, and form-based codes for municipal and private clients in the United States, Canada, UAE, Panama, and Mauritius.

His work has received awards from the American Planning Association, and the Congress for the New Urbanism and has appeared in such books as *New Urbanism: Best Practices Guide* (New Urban Press 2009), and *Great Planned Communities* (UL, 2002). His academic research has focused on the nexus of indigenous infrastructure, urban policy and the global water crises, with ongoing projects on Isfahan and Yazd in Iran, and Goa, Agra and Varanasi in India.

He is the contributing author of many books including the forthcoming *Planning Los Angeles* (APA Press 2012), *Aesthetics of Sustainable Architecture* (O10 Publishers, 2011), *Los Angeles: Building the Polycentric Region* (CNU 2005), and *Hvalnica Senci* (Slovenian for "In Praise of Shadows," Koda Press 2002). Nominated as a Presidential Fellow among 25 "promising future leaders" by USC's Leadership Institute in 1998, he currently serves on the Advisory Board of Global Urban Development, an international non-profit engaged in strategic policy and action on urban issues worldwide.

“From a global standpoint, the high-rise city remains a negotiated territory, a juggling act between private interests, political processes and public good. But while private entities might be entitled to seek their advantage in the urban fabric, the shape of the city should eventually be a collective decision.”

In his 1924 book *The City of Tomorrow and its Planning*, Le Corbusier juxtaposed an image of Manhattan with his alternative version of “the Contemporary City.” In contrast to New York’s compact high-rise district, this new model depicted an airy field of twenty four cruciform towers standing in a park. The street grid had been replaced by a field of gigantic mega-blocks, the street wall obliterated by setting the buildings away from the block edge, and the tower redefined as a freestanding and replicable object rather than part of a continuous, diverse urban fabric.

The Fallacy of High-rise Urbanism

Le Corbusier went on to demonstrate this model’s application by superimposing it on the traditional Parisian grid. In response to what he saw as the congested, unhealthy traditional city, his Plan Voisin erased the intimate horizontal fabric centered on courts and yards, and imposed a new urban order that could not have been less stark.

The project was never realized, but this model and its manifesto – eventually known as the Ville Radieuse – marked a turning point for the formal, social and moral dimensions of city-making. The Central Business District that has come to be identified with the monumental streetscapes of towers now became vivid galleries for these newer high-rise models. Popularized by New York’s Lever House (1952), towers were made with their own plazas linked exclusively to private interiorized office parks. As seen in John Portman’s hotels, glazed high-rises sat on brutalist podia housing parking and service uses that present dead walls to the street. Nothing was more antithetical to this street nihilism than New York’s and Chicago’s earliest towers that while expressing their individuality on the urban skyline had

simultaneously generalized their bases to activate street life (see Figure 1).

Meanwhile, with developers vying for maximum land value, the tower also became a popular production housing prototype, and hundreds of high-rises erupted randomly within finely grained traditional



Figure 1. Mid-town New York. High-density buildings fostering a vibrant street life © Moule & Polyzoides



Figure 2. High-rise development in Shanghai. Note the relentless repetition of the freestanding towers and their angled relationship to the central avenue © Brian McMorro



Figure 3. Lunkad Skylounge, Pune, India. Slabs and towers define a common green in this high-end residential enclave secured by walls and gates © Vinayak Bharne

neighborhoods regardless of the size and scale of their neighbors. Such relentless extrusion was the result of a linear Floor Area Ratio (FAR) based zoning that established the numerical maximum building envelope per zone (A FAR of 3 means that the total buildable area can be up to three times its lot area). In the absence of other guidelines this area could therefore be legally accommodated in a 6-story perimeter block building just as conveniently as a 20-story tower, irrespective of context. With FAR offering assembled lots a considerable buildable area over individual ones, high-rise accumulations are now synonymous with high-end production housing from Buenos Aires to Mumbai. As emblems of an exclusive, elite lifestyle, they are designed as introverted mega-block enclaves with towers and slabs floating in private greens, fostering a vibrant social life within secured walls that seal them from the city (see Figures 2 and 3).

The most dramatic products of this FAR syndrome are the circumstantial hyper-Manhattans of southeast and eastern Asia. In Tokyo for instance, towers are peculiar simply in the way they exist – in fragmented, cacophonous spurts amidst fabrics of relatively miniscule buildings. Standing in anything but an urban grid, they defy any urban logic save their presence on important streets and subway stations. The result of ad hoc piecemeal vertical extensions of historic lots by successive entrepreneurs, they often embody spasmodic configurations as seen in Roppongi or Kachijo, with low medieval

fabrics surrounded by high-rise eruptions creating sharp disjunctions from bustling high-rise urbanity to quiet, small-scale traditional circumstances right next to each other.

Similarly, in Hong Kong, with individual property owners competing for optimum land value, peculiar fabrics of tall thin buildings on small traditional lots have erupted with little concern for light and air. These “pencil skyscrapers” have an extremely low aspect ratio (gross floor area divided by the number of stories) compared to typical high-rise buildings in the United States or Europe. Twenty to twenty-five stories in height, each floor typically contains no more than a pair of 37-square meter (400-square foot) units, with the bottom two floors dedicated to commercial use. They are the result of Hong Kong’s relatively laissez-faire building height limitations, when the British-controlled government traded the discretionary European planning controls for a developer-friendly quasi-mathematical formula. This hyper Manhattan prototype has now spread from Malaysia to China making it the most dominant high-rise urban model in Asia (see Figure 4).

The tower as an urban landmark may contradict the iconism

traditionally reserved for religious edifices or palaces and in some cases a few state institutions such as the Nebraska State Capitol and the Los Angeles City Hall. But Kuala Lumpur’s Petronas Towers, Dubai’s Burj Khalifa and Pudong’s Jin Mao Building also echo the original intentions of the skyscraper as a symbol of commercial competitiveness. The problem however is that few if any of these marvelous icons engage in conscious urbanist responsibilities. The publicly accessible mall at the base of the Petronas Towers is completely internalized with dead street walls and narrow sidewalks. The 99-hectare (244-acre) lake-centered oval mega-block containing the shimmering Burj Khalifa has nothing happening at the block-street edge. And the Jin Mao Building located along Century Avenue neither contributes to any collective thoroughfare form, nor marks any public space. In as much as the endowing of these private monuments with cutting edge technology and symbolism are laudable ➔



Figure 4. “Pencil Skyscrapers” against mid-rise housing in central Hong Kong © Brian McMorro

... desirable

“Urban planners generally agree that a rise in car commuting is not desirable for cities anywhere.”

Elisabeth Rosenthal, from her article “Across Europe, Irking Drivers is Urban Policy,” New York Times, June 27, 2011

their urbanist contributions remain tellingly questionable (see Figure 5).

A hundred odd years since it first appeared in Manhattan, the virtues and vices of the skyscraper have not gone unnoticed. Hardly limited to Ken Yeang’s “bioclimatic skyscraper” manifestos, a lot has been written about reforming the high-rise as an architectural object. But relatively little has been said about rethinking its urbanism. The conscious assemblage of towers and slabs towards a coherent urban form, their positive role in street-making, their intrinsic relationships with block sizes, their combinations with other mid-rise and low-rise typologies to recast

high-density in urbane and contextually-appropriate forms, and the planning tools to enable responsible high-rise form are subjects that remain below the radar. How then can high-rise urbanism be empowered to foster a rich urban life without compromising the ambitions and aspirations of their builders?

Shaping Urban Form

The collective arrangement of high-rises towards something bigger and more identifiable than their individual selves is equally, if not more, important than its contribution to the urban skyline. The high-rise district is one such place type characterized by a grid of hierarchical vertical buildings. Principal avenues carry taller buildings than the side streets. Blocks have alleys that accommodate all service uses behind the buildings creating positive frontages towards the street. At street level, the individual high-rise is deglamorized and turned into an undemonstrative urban unit intent on making street walls. In 1916, New York passed an ordinance that required all building massing to step back from the street to ensure ample light into the street space. The consequent Art Deco towers carefully respected the street by using a fairly planar ten stories or so of their façades to create the abutting frame that these right-of-ways

needed, and beyond that point, towering faceted and pinnacled masses strove skyward to create the skyline (see Figure 6).

The high-rise corridor is an identifiable high-density spine that both separates and connects various neighborhoods or districts. It is typically half to one block deep, with tall buildings lining a major thoroughfare and tapering down into mid- and low-rise fabrics. The base of these buildings is activated with retail uses, street friendly frontages and ample sidewalks. In some cases, as in Vancouver, the towers are set back atop a two to three story residential or commercial base defining a lower scale street room. Michigan Avenue in Chicago or Wilshire Boulevard in Beverly Hills exemplify this place type whose essential identity stems as much from the character of the right-of-way as the continuity and richness of the high street wall (see Figure 7).

The composing of high-rises to create conscious urban space is a forgotten art. Stuart Cohen in his analysis of Chicago’s Michigan Avenue has noted how four skyscrapers designed independently – the Wrigley building (1921), the North Michigan Avenue building (1923), the Tribune Tower (1925), and the London Guarantee building (1928), chose to work together to define a very specific figural urban space. Likewise the Rockefeller Center situated on three elongated blocks in midtown New York has

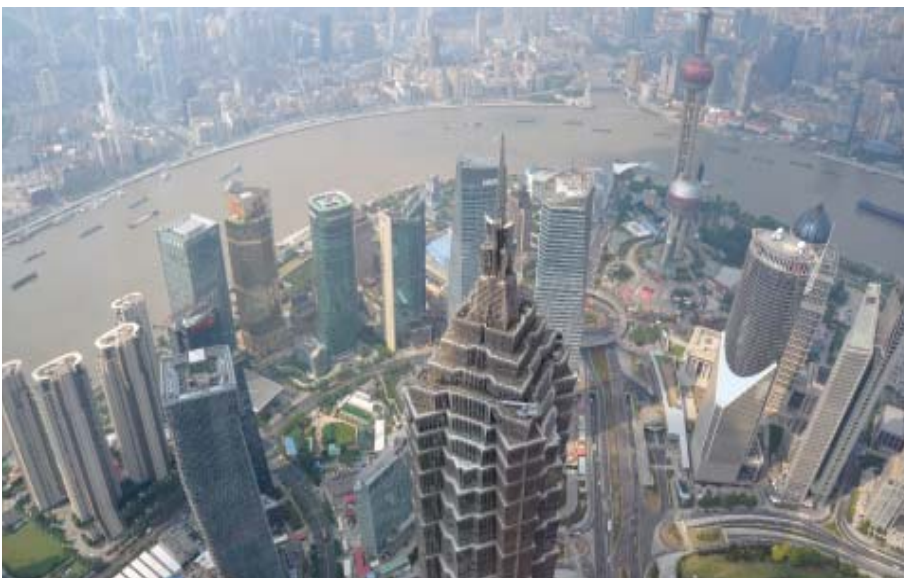


Figure 5. Pudong area centered on Jin Mao Building. The random location of towers set back from the street, and the lack of a street wall present a blatant contrast to the controlled diversity of the Bund in the backdrop © Brian McMorrow

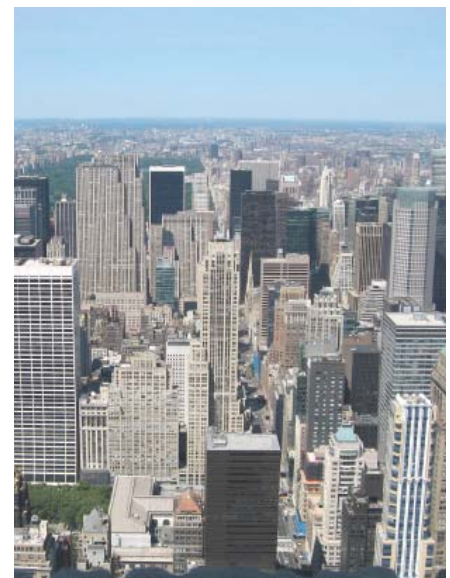


Figure 6. Mid-town Manhattan. Central Park is visible in the background © Jason Claypool

multiple office slabs of different heights and orientations hierarchically surrounding the tallest central tower fronting a T-shaped plaza. The towers have thin profiles, maximizing the amount of natural light into the street, with space between the towers carefully calculated to permit the central tallest one to be seen in its entirety. These high-rise assemblages are exceptional and exemplary because they prioritize the city and its configurations as more important than the architectural idiosyncrasies of single buildings.

Designing the High-rise Block

At the scale of the urban block – the mediating element between the district/ corridor and the building – the high-rise has a tarnished reputation for contextual appropriateness. The idea of “Blending Density”¹ is a response to this syndrome. Instead of accommodating a given program within a single vertical extrusion, it advocates for a heterogeneous distribution of this program throughout the block. It thus replaces a single tower configuration with a calculated typological or massing diversity that responds to and evolves from the character of its adjacent context. For instance, a density of 200 dwelling units per acre can be achieved



Figure 7. Michigan Avenue, Chicago © Antony Wood

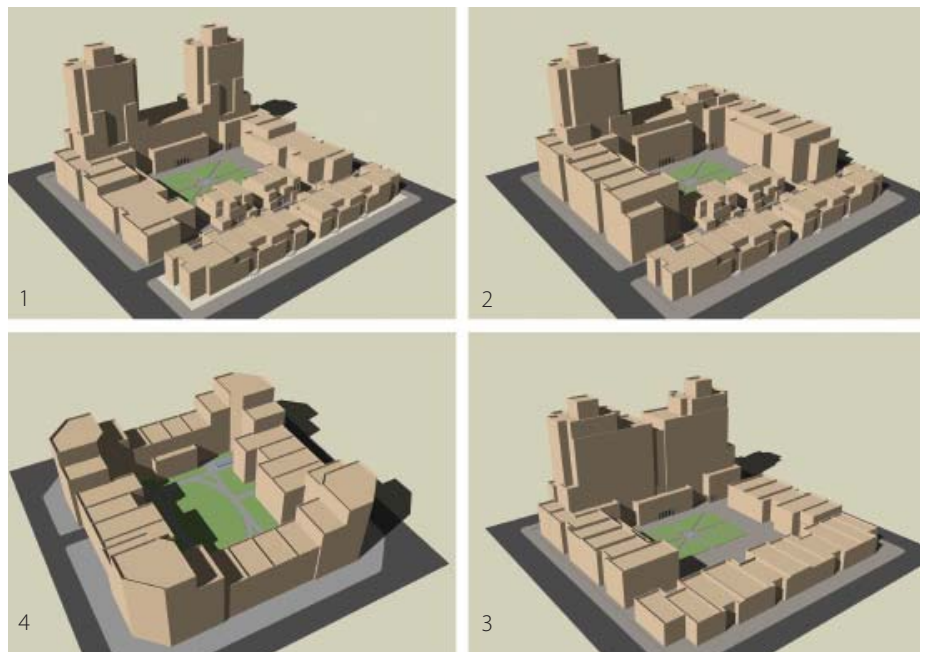


Figure 8. Yuzhnoye Block Study. The targeted number of units is achieved through four different density and massing variations, all creating continuous street walls © Moule & Polyzoïdes

through a single freestanding tower floating within the block or a combination of mid-rise and low-rise buildings that line the entire street face and establish compatibility with the adjacent urban fabric. The same density numbers can thus be achieved through the juxtaposition of diverse dwelling types whose various individual density numbers average into the eventual target.

The Yuzhnoye Block Study² for a new town in Russia by Moule & Polyzoïdes demonstrates how high densities can be appropriated in diverse building and block-scale configurations. Using a consistent block size of 91 by 91 meters (300 by 300 feet), the study developed four residential block types based on different combinations of four building types (see Figure 8):

1. Two towers + Mid-rise perimeter building + Rowhouse mews + Corner loft building
2. One tower + Mid-rise perimeter building + Rowhouse mews + Corner loft building
3. High-rise + Mid-rise perimeter building
4. Mid-rise perimeter building

4. Mid-rise perimeter building

Each block type accommodates approximately 175 units. Block types that include row houses provide an additional 12 units per block (totaling 187 units). The corner loft building accompanies the row house building type occupying the corner location and acting as a bookend while providing frontages to both streets. Despite the varying configuration of a given block’s building types, the unit count is kept constant by varying the number of stories of the perimeter block. Each block type provides one level of semi-subterranean parking for one car per unit with row houses providing additional at grade parking spaces.

The study further shows how various such block types assembled in a grid can generate the specific character of streets and districts. Larger avenues and parkways can take bigger and higher buildings, smaller neighborhood streets can repeat the scale of single-family dwellings. A simple DNA of four building types and their combination into a finite variety of block types can generate a rich

¹ The term Blending Density or Blended Density has emerged primarily in the New Urbanism movement as an effective means to merge residential densities in contextually appropriate forms.

² The Yuzhnoye Block Study has not yet been implemented.

and complex urbanism, derived as a seamless extension of its adjacent context.

“Blending Density” affirms the intrinsic relationship between building footprints and block sizes particularly because towers require appropriate adjacent open spaces to ensure ample light at their base. If a block is too small, tower footprints when combined with other types on a single block serve to lose the required sizes of courts and quads. Block sizes particularly in new urban cores should be officiated only after examining such potential hybrid combinations, thereby helping enable them (see Figure 9).

Integrating High-density and Mass-transit

Manhattan, Chicago and Shinjuku work because of their interdependence with an efficient and widely distributed rail transit system. It helps balance street capacity and reduces traffic volume preventing what would otherwise be a perpetual and guaranteed gridlock. The specific location of high-rises and their synergy with proposed or existing mass transit therefore is critical to the success of high-rise places.

The growth strategy of Curitiba, Brazil provides important insights in this regard. In 1965 the Curitiba master plan proposed a siphoned urban growth along five structural axes radiating from the urban core. Instead of focusing their infrastructure solely on cars, the planners initiated a rapid bus mass transit system within these corridors that has now gained global fame. What is less known however, is that the land fronting these transit corridors was simultaneously zoned for

high-rise buildings with residential/office uses above and retail/commercial uses at street level guaranteeing that the fabric would not only produce but also attract transit trips. As one progresses outward from these corridors, the residential densities decrease from mid-rise buildings of 8–12 stories to low-rise garden apartments of 3–5 stories, to zero lot-line structures such as row houses, duplexes and single family detached homes. This conscious FAR reduction has not only helped keep land speculation in check but allowed diverse products enabling the middle class to purchase housing within their budgets.

Furthermore, to incentivize the plan’s implementation, the zoning was changed to permit little to no development in downtown Curitiba, whilst promoting high-density mixed-use development along these transit axes (see Figure 10).

What Curitiba has done in-effect is empower the seamless integration of transit and development through a formal geography that is predictable rather than speculative, and collective rather than ad hoc.

Regulating High-rise Urbanism

This idea of prioritizing urban form over land use has now reached its culmination in Form-Based Codes that numerous cities across the United States are adopting as alternatives to conventional zoning. These graphic regulations visualize in advance the interrelated physical characteristics of streets, buildings, and open spaces all towards a large physical vision. The Land Use Plan is replaced

by a Regulating Plan whose various colors indicate not use zones, but development intensity zones ranging from urban cores and corridors to neighborhoods of various densities. For each zone, specific urban standards specify block by block, street by street or lot by lot regulations on building placement, parking placement, and building profile with further specifications on permitted building frontages, enabling a predictable urban form with an open ended architectural character.

The recently adopted Miami 21 Zoning Code by Duany Plater-Zyberk for the City of Miami for instance mandates strict regulations for the minimum base height of towers within the urban core. Façades are mandated to be built parallel to the principal frontage line along a minimum of 70% of their setback length. In the absence of a building face along the remainder of the lot, a street-screen is required to be built coplanar with the façade to shield parking and service areas. When two or three principal frontages meet at thoroughfare intersections, the building corner is allowed to recede from the designated setback up to 20% of the lot length. When the frontage line is more than 104 meters (340 feet) from a thoroughfare intersection, the building is required to provide a pedestrian cross-block passage, just as a vehicular cross-block passage is required once that dimension increases to 198 meters (650 feet).

Parking is required to be accessed by an alley or from the secondary frontage when available. All parking along a primary frontage, including drop-off drives and *porte-cocheres*, is required to be masked by a liner building or



Figure 9. Cityfront Place, Chicago. Slabs are set back and lined with townhouses creating a pedestrian scale base – also known as the Vancouver model © Moule & Polyzoides



Figure 10. Curitiba. Plan showing radial bus corridors (left). View of towers along one of the corridors (right) © Thomas Hobbs

street screen. All parking on secondary streets is likewise required to be masked by a liner building for a minimum of 50% of the length.

Above the eighth floor, maximum building floor plate dimensions or area footprints are spelt out along with minimum spacing requirements between buildings to ensure adequate light and air. Any high-rise is thus ensured a predictable and carefully regulated base that address the public realm in positive ways, with the tower perched above open to architectural expression.

In other form based codes, high-rise typologies such as the tower and slab form part of an entire menu of residential types organized by intensity from least to most dense, each with their respective physical characteristics, density (units/acre) or FAR numbers. The code specifies the types that are permitted within specific zones of the regulating plan: For example, the tower might be allowed on lots facing a corridor, but not on lots adjacent to single-family neighborhoods. The typological menu coupled with zone-specific urban standards provides an alternative planning tool towards enabling responsible urban form (see Figure 11).

Prospects & Cautions

From Manhattan to the Ville Radieuse to the Hong Kong model, the high-rise city having existed for more than a hundred years is a tradition by now, even though its civic dimension might have waned through this evolution. But alternative regulatory methods towards humanizing high-rise urbanism are being increasingly embraced by municipalities and developers particularly in North America and Europe. Several Asian cities too are counteracting existing urban trends, since 2003 Tokyo has initiated a new policy on "Urgent Improvement Zones" designed at the municipal level to bypass the central government and offer a far more streamlined process for private sector engagement. Taipei's sprawling *laissez-faire* style of urban growth characteristic of so many south-east Asian cities has begun to settle into a more legible pattern of diverse urban centers and surrounding communities. And the Vancouver tower prototype, with the building set back

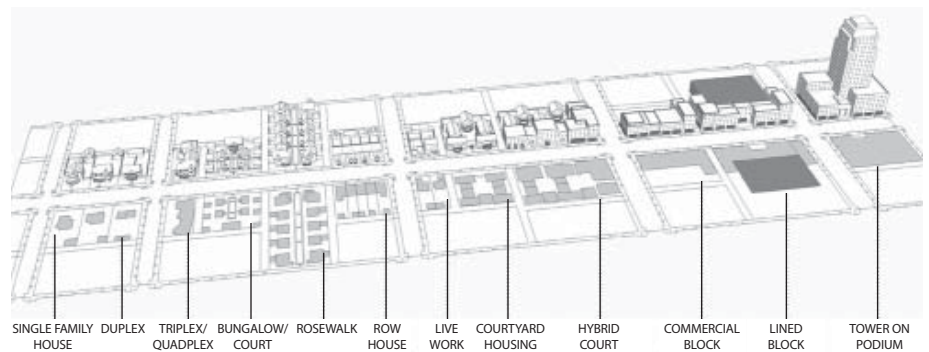


Figure 11. Residential typology transect © Moule & Polyzoides

atop a low street-friendly podium, is spreading around and beyond the Pacific Rim.

But difficult questions persist. Form Based Codes for instance work within the highly regulated jurisdictions of countries such as the United States, but they are far more difficult to implement in countries with relatively ambiguous legal, political and development engines. Ironically, the circumstantial hyper-densities of several Asian countries present blatant contradictions to such formalized urbanism. Many high-rise places in Asia, despite their seemingly unregulated dispositions, boast of a street life many Western cities would aspire to (see Figure 12). At Nariman Point, Mumbai's CBD, even as franchised business activity dies down in the evenings, street life is re-energized by illegal hawkers, vendors and daily street fairs. Also, in several countries where the public realm carries cars, pedestrians, animals and pavement dwellers, the desire for insular communities is understandable with street level units increasingly difficult to sell. Do such realisms suggest other readings of the contemporary city, expanding the rubric of high-rise urbanism at large?

From a global standpoint, the high-rise city remains a negotiated territory, a juggling act between private interests, political processes and public good. But while private entities might be entitled to seek their advantage in the urban fabric, the shape of the city should eventually be a collective decision. As such, it has to be supervised carefully. Humanizing high-rise urbanism through form based regulations and alternative design methods are steps in this direction. But these steps



Figure 12. Contrasting urbanities in Shanghai © Nicole Friend

cannot be limited to the confines of reformatory Euro-American models. One may take these ideas to other worlds, but one must also listen carefully to the cautions regarding the hazards of over-confidence and false assurances. If the fallacy of the Ville Radieuse has taught us anything, it is that high-rise urbanism is not a one-shoe-fits-all model, rather one that most essentially evolves from the socio-cultural nuances of a place. In the same vein, its humanization too should not be dogmatic and universal, but indigenous and open-ended. ■

Acknowledgement

I wish to thank Carol Wyant and Kaiser Rangwala from the Form Based Codes Institute for encouraging me to write this paper and submit it to the CTBUH Journal, and for providing their comments and guidance throughout the process.