Special Issue: Tall + Urban Innovation—The 2021 CTBUH Awards

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“Opinion leaders could be thought of as ‘human microwaves,’ who present a persuasive professional motivation for people to move vertically.”

Chevez & Simpson, page 30
Americas

In Vancouver, the largest and most prominent example of Indigenous city-building in North America is due to break ground late in 2021 in the Squamish Nation. The multi-tower development in the 371,612-square-meter neighborhood called Senāḵw will utilize low-carbon cement and will run on a district energy system.

In the nearby town of Burnaby, a group of architects, builders, and engineers is likewise reimagining the high-rise, developing a “use-neutral” typology that is adaptable to changes in use, a response to pandemic market pressures. The ring-shaped tower, currently in proof-of-concept stage, is meant to support health and wellness, have prefabricated modules that are easily swappable between programs, and buffer changes that affect life cycle costs.

On the eastern side of Canada, Toronto has many potential changes coming to its skyline. The planned condo development at 260 King Street West continues to evolve, with one tower decreasing from 275 to 267 meters, and the preservation of the neighboring Princess of Wales Theatre. Conversely, The One is to reach higher, with its developers now proposing an additional nine stories to reach 338 meters. Project completion is targeted for 2022. In Midtown, the 3.7-hectare Canada Square Redevelopment proposal includes five office and residential skyscrapers.

In Quebec, phase 2 of the LB9 rental condo project has been announced. Phase 1 reached completion in June 2020 and is 95 percent occupied. Tower 2 will have three more floors than phase 1, at 15, with 218 apartments and studios. Tenants are expected to move in at the end of 2022.

In San Francisco, 415 Natoma Street topped out in March. The 59,457-square-meter Class A office building plans to open in the fourth quarter of 2021. The building features large open floor plates, column-free interiors, and layouts that promote movement. A publicly accessible lobby extends outward to the adjacent streets and Mary Court, a new 0.2-hectare park.

The theme of biophilia is front and center in Denver’s Populus, a proposed 14-story, mixed-use tower on a triangular plot modeled after Colorado’s aspen trees (Populus tremuloides). The bulging, curved window arches echo the black knots on aspen. They will double as passive sunshades, help water drain away from the windows and create natural channels for water to flow down the side of the building.

Two large projects have garnered key support in Chicago. The proposed US$20 billion One Central complex has a memorandum of understanding regarding securing railroad air rights west of Soldier Field from the Metra commuter rail system. Other municipal transportation agencies have also indicated support for the project.

South of Soldier Field, at the former Michael Reese Hospital site, developers are planning a 19.8-hectare mixed-use campus over the next two decades. Approved by the Chicago Plan Commission, the initial phase of the
Abstract
Highlighting the best tall building and urban habitat innovations, drawing from diverse disciplines and approaches, the CTBUH Awards program annually catalogues and celebrates the projects reshaping skylines and urban spaces. New for this year are several functional subcategories of the Best Tall Building Category: Best Tall Office Building, Best Tall Residential or Hotel Building, and Best Tall Mixed-Use Building. The outstanding projects represented in this report, all recipients of a CTBUH Award of Excellence in the 2021 program, are exemplary symbols of the city’s potential when it thoughtfully integrates placemaking with an expansive vision of the livable, sustainable, and urban future.

Keywords: Best Tall Buildings, CTBUH Awards, Innovation, Sustainability, Urban Habitat

As the symbol of the city, the skyscraper carries a lot on its shoulders, representing, in a single gesture, urban growth, expansion, and iconicity. Then again, situated at the center of urban cores the world over, the skyscraper, and particularly the office building, is also one of the urban assets most heavily impacted by hard times. This occurred on a grand scale in 2020 as the COVID-19 pandemic swept the globe. Once-bustling downtowns temporarily slowed and emptied, and projects paused or were stalled altogether. The high caliber of projects in the 2021 Tall + Urban Innovation Awards program, many completed before COVID-19 was identified, provide a survey of innovation and excellence in every sense of the word, but against the backdrop of the lingering, transformative effects of the pandemic on cities, they also demonstrate remarkable and prescient resilience. Some projects exuded creativity in navigating structural solutions and incorporating existing features, while others built in the trends of flexibility into their work and living spaces. Where projects meet the public realm, their ingenuity will allow for a vibrant return as cities resume their daily activity, albeit cautiously.

The interdisciplinary feat of the skyscraper, to achieve the resilience that the typology demands across environmental, social, climatic, and structural quandaries, is carried out by a broad range of professions. This collection spotlights them all: interior space, construction, renovation, façade design, fire & risk mitigation, geotechnics, mechanical and electrical systems, and structure.

This paper thus functions as a compendium, not only of some of the most salient trends occurring in the tall building industry in 2021, but as a catalogue of the urban spirit, expressed through the excellence assembled below. Each project named is followed by its Award of Excellence category in parentheses.

Crafted for the Context
Every skyscraper must strike a balance between making a statement and blending into its surroundings. Through abstracting natural and man-made features important to their locale, these projects integrate within their urban context successfully.

With a gradually increasing tower volume that expands with each layer, the form of the SHUIBEI International Center, Shenzhen (Best Tall Building, 100–199 meters) resembles sprouting bamboo, a culturally and economically critical plant and building material in China.

Hugging a spot along the Brisbane River, Walan, Brisbane (Best Tall Residential/Hotel Building) reflects the nearby rocky Kangaroo Point via its ochre-colored exterior, stepped...
Overcoming the Challenges of a Complex Mega-Scale Project

Abstract

An architect’s best work flows directly out of how the challenges of a project—whether they are urbanistic, architectural, artistic, or technical in nature—are faced and overcome. This applies equally to the engineers and contractors who ultimately build the development. Undertaking a project on the scale of Raffles City Chongqing required a level of coordination and collaboration that went well beyond the requirements of a “normal” project. The developer understood this and put in place the framework and team infrastructure that allowed this intense level of collaboration to take place on-site. All the major design team consultants maintained a very strong on-site presence throughout the construction phase, which was paramount to achieving the response and turnaround times required to meet the aggressive schedule. It was the melding of all these necessary players into a cohesive, functional team, and navigating the challenges together, that made Raffles City Chongqing the success that it is.

Keywords: Chongqing, Construction, Project Management, Skybridge

Overview

Opening its doors a little over four years after the start of construction on the substructure, the 1.1 million square-meter Raffles City Chongqing (RCCQ) project moved at a very aggressive pace right from the start. In addition to the complexity and sheer scale of the undertaking, the project team had to deal with a site that was situated at the end of a narrow, very densely populated urban peninsula, abutting two active riverfronts—located at the convergence of the Yangtze and Jialing rivers—and with the historic Chaotianmen Square—Chongqing’s historic Emperor’s Landing—to the north (see Figure 1). Beneath the surface of the existing soil lay the archeological ruins of the ancient city wall. Meanwhile, the two adjoining flowing rivers brought annual flooding. Even from above, there were constraints that had to be addressed, such as height restrictions imposed on the location below the flight path of the international airport, forcing alterations to the two tallest tower cranes. Any project with world-class aspirations requires close and efficient collaboration between the ownership, the design team and the contractors to address the challenges that are presented, and at RCCQ, this was even more critical.

Segmented by Parts, Undivided in a Sense of Purpose

It was clear right from the start that the project had to be constructed and read as a single, cohesive whole, given the very tight timeline, a very congested site bounded by the two rivers, hilly site topography and operational inter-dependency of the different building elements and asset classes (see Figure 2). The need to ensure the structural and visual integrity of the sail-shaped design also had to be
Interconnecting Stairs: The Vertical Axis Of Mobility and Social Interaction

Abstract

Increasingly, atria with interconnecting stairs are being promoted to increase collaboration and the transfer of tacit knowledge across organizations. These claims are frequently supported with reference to the “Allen Curve” and the “bump factor.” In addition, the importance of vertical mobility experience, as opposed to its mere functionality, is emphasized as a salient design consideration for interconnecting stairs. Empirical data for design effectiveness and organizational outcomes, however, is scarce. This study presents a multi-method empirical investigation into the role of interconnecting stairs in promoting vertical mobility and social interaction in an Australian firm. Findings moderate the expectations set upon stairs as the drivers of vertical mobility to that of enablers. The relative attraction of floors is proposed as the driver and structure of the vertical axis of collaboration and social interactions.

Keywords: Atria, Social Engineering, Stairs, Workplace Design

Background

Research on stairs in the workplace has predominantly examined their role in emergency evacuation (Huo et al. 2016; Ding, Zhang & Che 2017) and their contribution to health and well-being of employees (Meyer et al. 2010, Zhu et al. 2020). However, observations that the probability of two people communicating with each other declines rapidly as the distance between them increases, lead not only to the phenomenon known as the “Allen Curve” (1984), but to a greater reflection on the role that space and design elements, such as interconnecting stairs, have in enabling social interactions in the workplace.

Visual and Physical Connectivity: Atria and Staircases

Labeled as a “place for space” (Shum 1990), an atrium opens up the floor plan, allowing for greater visibility of workspaces, colleagues, and ultimately, the organization (Marriage 2012). On its own, however, an atrium creates what Hillier and Hanson (1984) describe as the “visual-accessible paradox,” in which a place might be visible, but not accessible. A staircase resolves this paradox by providing the missing physical connectivity (Ibid.).

This combined connectivity increases the ability to see and reach people across floors, leading to a higher “bump factor,” a colloquial term used to describe the probability of bumping into someone, and it is cherished by knowledge-based organizations as the foundation of serendipitous encounters, leading to cross-pollination of ideas (Rodriguez 2017).

Design Considerations: From Trip to Journey

Increasing the accessibility of stairs in relation to elevators results in a higher stair usage ratio (Bassett et al. 2013). As a result, well-being certifications establish prescriptive guidelines on the location, visibility and visually appealing attributes of stairs (IWBI 2020). In terms of the latter, an atrium can greatly
Regulating Compact Urbanity in Jakarta

Abstract
One of the key challenges to achieving livable, compact urban complexes in Jakarta is the local building codes, which regulate types of activities, setbacks, spatial utilization, and ground-floor frontage, as well as easements. This paper provides a desktop-study analysis of challenges faced in designing compact transit-oriented development (TOD) areas in Jakarta, by reviewing and comparing several existing regulations and building codes, in order to analyze their roles in encouraging the establishment of compact TOD in the city.

Keywords: Building Codes, Compact, Jakarta, Transit-Oriented-Development, Urban

Introduction
Jakarta's predominant growth pattern over the years has been sprawl, with inadequate public transport, and a heavy reliance on private motorized vehicles, resulting in uneven distribution of facilities around the city, high energy consumption, and a low quality of social life due to traffic congestion (JICA 2012, Kirmanto, Ernawi & Djakapermana 2012). A number of efforts to provide a reliable public transport system have been taken, including introducing the TransJakarta BRT (bus rapid-transit) network starting in 2004 (TransJakarta 2016) and the modernization of the commuter train system (including trains, ticketing, and stations) since 2011 (Kumparan 2017). In 2017, Indonesia committed to accomplishing Sustainable Development Goals (SDGs), incorporated into the National Development Plans as per Presidential Decree no. 59 (2017). To achieve these goals, the government of Daerah Khusus Ibukota (DKI) Jakarta encourages the implementation of the “compact city” concept and vertical development through its Regional Spatial Plan (2012). The compact city has been identified as a more sustainable approach, where intensification is supported by a good public transportation system and good city management (Jenks, Burton & Williams 1996). The concept relies greatly on the availability of mass public transportation, which Jakarta has historically lacked.

Around the same time as the drafting of the Regional Spatial Plan, the city started to improve its transportation network. The improvement of the commuter line network was followed by the opening of the Greater Jakarta Light Rail Transit (LRT), which is expected to begin operations in July 2022. With the addition of these mass public transport systems, Jakarta plans to implement transit-oriented development (TOD) around the stations. On another note, it is important to acknowledge that the success of compact cities in developing countries such as Indonesia depends on economic power and good governance (ibid.) However, spatial planning regulations on the macro and micro levels, such as those assessed in this paper, define the built spatial form, and thus play a great role in achieving the higher quality of life associated with well-managed, compact cities.

This paper assesses the existing regulations related to spatial planning and building codes, and highlights how these regulations may or may not encourage the establishment of compact TODs in Jakarta, and thus accomplish a more sustainable and livable city. As most of the available land in Jakarta is built up already, establishing a compact TOD in Jakarta may well be a challenging task, which will rely largely on the brown-field redevelopment of the existing built environment.

The assessment started with an evaluation of the compact city discourse, highlighting the physical characteristics of a sustainable compact city in the urban context of developing countries. These characteristics

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Putrikinahis R. Santoso is one of the senior urban designers at PDW, joining the team in 2016 after acquiring her Master of Urbanism degree from Delft University of Technology, with a design thesis on the implementation strategies of mobility-based development in Bandung City, Indonesia. She had been involved in various architecture and urbanism projects in Indonesia since 2008, as well as participating in a number of design competitions. Santoso believes that the built environment is the actual manifestation of culture, and the dynamic between the two is one of the defining factors in achieving sustainable urban development.

Dyah Fatma is an urban designer with more than 10 years of experience. She pursued her master’s degree in Urban Design at Kyushu University, with a thesis on human perception of security in public space, and obtained her doctoral degree at the University of Tokyo, with research on green area provision in a new administrative municipality. Following her graduation, she joined PDW to write PDW’s first book, Architecture: Beyond Building and joined the company’s Urban Design Team. She is interested in how humans use the built environment, and actively researches with her networks on varied subjects relating to urbanism.

Julianti P. Setiawan started her career as an urban designer at PDW in 2013. She has been involved in designing various projects, ranging from master plan to urban design guidelines of wide-ranging urban development projects, especially in Indonesia. After gaining four years of experience in the field, she took a break to pursue her master’s degree at the Norwegian University of Science and Technology, focusing on Urban Ecological Planning. During her studies, she has been involved in research globally, concentrating on people’s participation in planning and design processes. After finishing her degree, she returned to PDW.
Past and Present

Contrary to general perception, off-site construction is not a new technology. Throughout history, as far back as circa AD 43, evidence of prefabricated building elements has been found, among the Romans who applied this construction method to build forts quickly and efficiently to progress their conquering campaign. We then fast-forward to the second Industrial Revolution in the late 1800s, and witness the advent of machinery in manufacturing, and the introduction of steel as a construction material. Structural-steel mass prefabrication was carried out in a factory environment, and in some instances, shipped across continents. Since then, not much has changed until recently, when prefabrication has again become the current “buzzword” in our industry, even to the extent of being coined a “Modern Method of Construction.”

Why the resurrected interest? Why now? And what next? This paper explores these questions by reviewing critical current trends and describing evidence-based scenarios for the industry. It provides a trajectory for the future of systemization design and construction that is framed around three critical trend certainties: (1) finite natural resources, (2) generation skills shift, and (3) exponential technology growth. These narratives provide a trajectory of what could happen beyond Industry 4.0.

A Finite World

As the world continues to generate waste and deplete itself of natural resources at an alarming rate, the younger generations are calling for serious actions to save the planet. In response, the United Nations formulated an action plan: “Transforming our World: 2030 Agenda for Sustainable Development” in 2015, which provides a shared blueprint...
About the Council

The Council on Tall Buildings and Urban Habitat (CTBUH) is the world’s leading non-profit organization for all those interested in the future of cities. It explores how increased urban density and vertical growth can support more sustainable and healthy cities, especially in the face of mass urbanization and the increasing effects of climate change worldwide.

Founded in the USA in 1969, the CTBUH member network embraces more than a million professionals working in all building industry sectors in almost all countries of the world. With offices in Chicago, Shanghai, and Venice, the Council runs hundreds of multidisciplinary programs across the world each year, through its regional chapters and expert committees; its annual conferences and global awards program; through funded research projects and academic collaborations; and via its extensive online resources and physical outputs. The Council is perhaps best-known to the public as the arbiter of tall building height and the global authority that bestows titles such as “The World’s Tallest Building”. Operating on a global scale, the CTBUH serves as a platform for both cutting-edge information-share and business networking for all companies and professionals focused on the inception, design, construction, and operation of cities, and the buildings they comprise.