

## Tiny Footprints: Variations on the Hong Kong Pencil Tower

JASON F. CARLOW

American University of Sharjah

This pair of first-year, graduate-level studios, taught over two consecutive academic years focused on the study and design of Hong Kong's thinnest residential building type, pencil towers. The work focused specifically on extraordinarily compact and slender buildings with single residential units on each floor. In the first stage of the course, students studied the economic, architectural and regulatory conditions that make these extreme buildings possible to build in Hong Kong. The studio worked together to conduct a survey of more than sixty slender towers in Hong Kong and document them through photography, drawing and digital modeling. An analysis of the documented towers revealed extreme ratios of vertical circulation core to livable space, unique massing strategies for reducing building volume and exploitation of building regulation loopholes to maximize rentable area. Through the research students learned valuable lessons about the close relationship between building code and building form in an ultra-dense city with extremely high land value. Efforts from the tower and code research were compiled into a studio reference guide for use during the course of the semester.

In response to the restrictive regulatory and economic context of Hong Kong, students used digital software and contemporary computational design techniques to develop innovative tower systems that operate within new code-based limitations. Students considered the form of tall buildings in relationship to their performance in terms of structural, programmatic, material, environmental and social factors. The interior design and relative efficiency of units were very important to the studio as the compact nature of the apartments required students to make use of every cubic foot available. Many projects yielded integrated furniture systems to create projects that experiment with non-standard modes of dwelling.

Given Hong Kong's proximity to the manufacturing zone of China's Pearl River Delta students sought to find modes of

construction that are site specific in that they relate to regional resources and industrial strengths. Students also looked into construction methods used in other regions in Asia for insights into new possibilities for high-rise construction in Hong Kong. The studio required intensive use of CNC prototyping equipment to consider how these machines relate to other scales and modes of construction today.

In a city where land value is extremely high, communal spaces in residential buildings have been reduced over past decades in the pursuit of commercial profit. The studios asked students to consider how communal spaces are defined and understood within existing tall residential buildings and how can communal space be increased and or improved to perform better in contemporary society. The work provides new ideas for building more socially diverse, better performing housing for densifying urban areas across the world.

Each of the eighteen towers designed takes on a specific set of issues responding to the course brief and developed through the students' research findings. Overall, the studios sought to creatively use field research to create novel, non-repetitive, mixed-use conditions that reveal new possibilities for the world's most slender building type.



# tiny FOOTPRINTS Variations on the Hong Kong Pencil Tower

Jason Carlow, Associate AIA  
Assistant Professor  
American University of Sharjah

"Property price increases in Hong Kong are now accelerating again, despite the economic slowing. During the year to end November 2012, house prices skyrocketed by 23.7% (a 22% inflation-adjusted), the highest percentage increase since June 2011, according to the Ratings and Valuation Department (RVD). Simultaneous residential properties have seen the highest price increases. During the year to November 2012, the average price of apartments smaller than 40sq.m. rose by 27%, 25% for 40-45sq.m. apartments and 4% for 45sq.m. and in apartments. Property prices in Hong Kong have surged 23% (66% inflation-adjusted) over the past three years, propelled by very low interest rates and strong foreign demand."

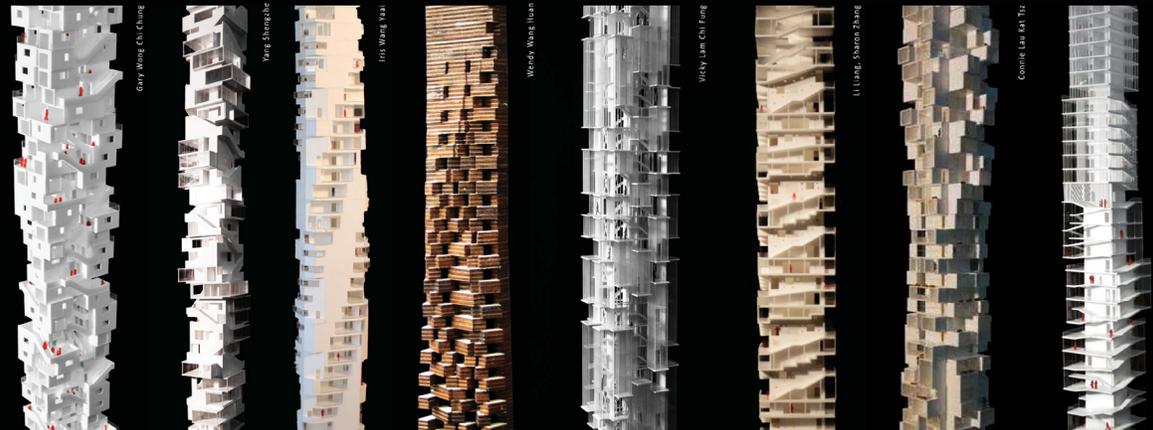
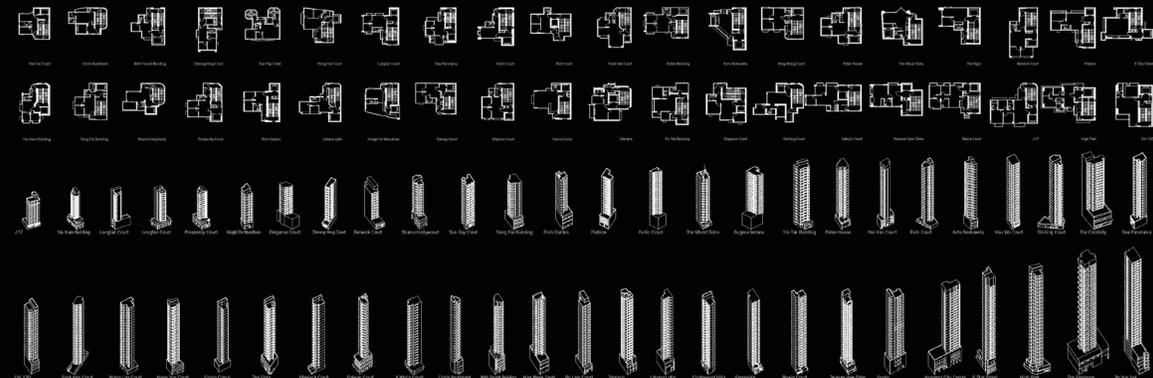
This pair of first-year, graduate-level studios, taught over two consecutive academic years focused on the study and design of Hong Kong's thinnest residential building type, pencil towers. The work focused specifically on extraordinarily compact and slender buildings with single residential units on each floor. In the first stage of the course, students studied the economic, architectural and regulatory conditions that make these extreme buildings possible to build in Hong Kong. The studio worked together to conduct a survey of more than sixty slender towers in Hong Kong and document them through photography, drawing and digital modeling. An analysis of the documented towers revealed extreme ratios of vertical

circulation core to livable space, unique massing strategies for reducing building volume and exploitation of building regulation loopholes to maximize rentable area. Through the research, students learned valuable lessons about the close relationship between building code and building form in an ultra-dense city with extremely high land value. Efforts from the tower and code research were compiled into a studio reference guide for use during the course of the semester. In response to the restrictive regulatory and economic context of Hong Kong, students used digital software and contemporary computational design techniques to develop innovative tower

systems that operate within new code-based limitations. Students considered the form of tall buildings in relationship to their performance in terms of structural, programmatic, material, environmental and social factors. The interior design and relative efficiency of units were very important to the studio as the compact nature of the apartments required students to make use of every cubic foot available. Many projects yielded integrated furniture systems to create projects that experiment with non-standard modes of dwelling. Given Hong Kong's proximity to the manufacturing zone of China's Pearl River Delta students sought to find modes

of construction that are site specific in that they relate to regional resources and industrial strengths. Students also looked into construction methods used in other regions in Asia for insights into new possibilities for high-rise construction in Hong Kong. The studio required intensive use of CNC prototyping equipment to consider how these machines relate to other scales and modes of construction today. In a city where land value is extremely high, communal spaces in residential buildings have been reduced over past decades in the pursuit of commercial profit. The studios asked students to consider how communal spaces are defined and

understood within existing tall residential buildings and how can communal space be increased and/or improved to perform better in contemporary society. The work provides new ideas for building more socially diverse, better performing housing for densifying urban areas across the world. Each of the eighteen towers designed takes on a specific set of issues responding to the course brief and developed through the students' research findings. Overall the research driven studios sought to create novel, non-repetitive, mixed-use conditions that reveal new possibilities for the world's most slender building type in one of the world's densest and most expensive cities.



2013 Studio Participants: Huang Minjun, Vicky Lam Chi Fung, Connie Lau Kat Tsz, Li Zhongqi, Robin Qian Ruobing, Wendy Wang Huan, Iris Wang Yaai, Gary Wong Chi Chung, Yang Shengzhe, Jane Zhang Jianhuan, Joe Zhao Siyuan, Zhuang Haoming  
2014 Studio Participants: Stanley Cheng, Joyce Lee, Jan Hengao, Joni Low, Li Liang, Sharon Zhang, Mae Yeung, Wu Yue, Meng Tingzhen, Jenny Tong, Kenneth Leung, Javidh Shaik