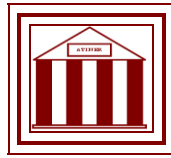


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**Rail Village and Mega-structure -
A Case Study of Hong Kong**

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Xue, C. Q. L. and Xiao, Y. (2015). "Rail Village and Mega-structure - A Case Study of Hong Kong", Athens: ATINER'S Conference Paper Series, No: PLA2015-1696.

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ISSN: 2241-2891
12/11/2015

Rail Village and Mega-structure - A Case Study of Hong Kong

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Abstract

Since 1979, the metro rail in Hong Kong has served the old community and new reclamation land. The planning of rail lines and property developments generally follows the principles of the 5Ds. Because of the number of people, narrow roads and accessible public transportation, 90% of the Hong Kong residents use public transportation. This paper selects five stations on the Tung Chung Line. The authors examine how the station and rail village work interactively and how the mega-structure facilitate such a rail village. The design of the station mega-structure is particularly analyzed in its formation, characteristics and impact the city. The construction and operation of the rail village will inspire the other cities which face a similar problem of large population and crowded environment.

Keywords: Asian cities, High-density design, Mega-structure, Rail village

Acknowledgments: This paper is part of a study supported by the National Natural Science Foundation, China, Project No. 51278438 and Research Grant Council, Hong Kong Government, CityU 11605115. The authors thank the instruction and leadership of Professor Nicholas N. Patricios. Illustrations are credited for their sources, the rest are made by the authors.

Introduction

Hong Kong typifies the overcrowding problem of Asian cities. The total area of Hong Kong—including the main islands, peninsula and its outlying islets—is 1,120 square kilometers, of which 76 square kilometers was acquired through reclamation. Greater Shanghai is six times the area of Hong Kong, and Beijing 15 times. New Zealand's population is 4.5 million, just over half of Hong Kong's, yet with a territory 260 times larger than that of Hong Kong.

In Hong Kong's 1,120 square kilometers of land, the built area covers only a quarter, less than 300 square kilometers, with the rest comprising the country park (40%) and the village land of the New Territories. The greenery coverage of Hong Kong is 67%. Buildable land is always in short supply.¹ During the past 70 years, Hong Kong has suffered from a shortage of buildable land and a population explosion. Buildings rise from the narrow streets toward the sky. "High-density" is inevitable; the challenge is to discover how it can be reasonably designed (Ganesan and Lau, 2001).

Comprehensive Mega-structure and Rail Village

The new town movement engulfed Britain and Northern Europe in the 1950s. To develop more land for the building homes, the Hong Kong government looked at the possibility of building new towns; Kwun Tong and Tsuen Wan were first formed as industrial districts. At the end of the 1960s, the government employed a consultant to study the feasibility of a mass transit railway (MTR). The consultant's report considered that as 80% of Hong Kong's population lived in the narrow linear area between the mountain and the sea, it was very suitable for building an MTR.²

The Kowloon-Canton Railway (KCR) starts from Guangzhou, passes through Luohu and arrives in Kowloon. It began operating in 1913. The first MTR line, the Kwun Tong Line, opened in 1979 and after that the Tsuen Wan Line opened in 1982. In 1985, the Island Line was built through the east and west sides of north Hong Kong Island. The KCR and MTR lines spread through the territory like vessels, and the train stations were surrounded by clusters of offices and residential buildings. In the US, this was first termed a transit-oriented development (TOD).³

¹ The land and reclamation data for Hong Kong are from the Lands Department of the Hong Kong government. <http://www.land.gov.hk/mapping/tc/download/maps.htm>, accessed on June 25, 2012.

² Freeman Fox and Partners, *Hong Kong Mass Transit Further Studies: Final Report*, Hong Kong Government Documents, 1970.

³ For more about transit-oriented-development (TOD), see Robert Cervero, *The Transit Metropolis – A Global Inquiry*, Island Press, Washington D. C., 1998; M. Bernick, R. Cervero, *Transit Villages in the 21st Century*, McGraw-Hill, New York, 1997; H. Dittmar, and G. Ohland, *The New Transit Town: Best Practices in Transit-Oriented Development*, Island Press, Washington, D.C., 2004.

Most of these TODs used high-rise and high-density architectural designs. Because of the number of people, narrow roads and accessible public transportation, 90% of the Hong Kong residents use public transportation, according to statistics from the Transportation Department in 2010. One third of the public transport passengers travel by rail and only 6.6% people drive a private car. The growth rate of private cars in Hong Kong is much lower than that of Beijing and Shanghai.¹

In the 1970s, the government proposed the “ten year housing construction.” A large amount of land in the New Territories was converted for a new town, including Shatin and Tun Men. The MTR network was formed in the 1980s to serve the old residential and industrial areas (Walker and Rowlinson, 1990). The rehabilitation of older areas usually took place around the metro stations. In the 1990s, when the MTRC planned the Tung Chung Line, the Airport Express Line and the Tseung Kwan O Line, every station was integrated with the land development in the vicinity. These sites were designated as “rail + property” (R + P) or transit villages. During the 21st century the construction of the West Rail, Ma On Shan Line and South Island Line, planning was conducted in a more scientific and precise way. In the 1990s, the cost of railway construction was HK\$500 thousand per meter, whereas the construction of the Shatin–Central Line in 2012 cost HK\$5 million.² Building one kilometer of railway costs HK\$5 billion (US\$ 645 million). Only by serving more people can such an expensive railway produce an economic and social value. The densely built residential towers, offices and commercial buildings bring large numbers of passengers and consumers and high revenues. The train station in turn brings convenience to people living nearby. TOD was first referred to in the US and was applied in Hong Kong on a larger and denser scale (Figures 1 and 2).

¹ In 2010, the Transportation Department of Hong Kong counted 12 million people using public transportation, about 90% of the population. This compares with 36% in Beijing. From *Beijing shi jianshe renwen jiaotong keji jiaotong lvse jiaotong xingdong jihua* (Constructing a green traffic plan in Beijing 2009-2015). In Hong Kong, one third of public transport journeys are undertaken by rail; the figure for Beijing was 12% in 2004 and for Shanghai 24% in 2009. Public transportation and policy controlled the growth of private cars. In April 2010, there were 589,951 private vehicles in Hong Kong, less than 100,000 more than 10 years ago. From 2004 to 2008, the number of private cars in Shanghai grew from 317 to 613 thousand (<http://www.stats-sh.gov.cn/tjnj/nj10.htm?d1=2010tjnj/C1313.htm>, retrieved on March 3, 2014). From 2001 to 2009, the number of private cars in Beijing grew from 624 thousand to 2.8 million. (<http://www.bjtrc.org.cn/PageLayout/IndexReleased/Evaluation.aspx?menuid=li3>, retrieved on March 3, 2014). The above data demonstrate the effect of public transportation on urban development.

² For more about the cost of metro construction in Hong Kong, see Wenwai Pao, April 2, 2012, A5.

Figure 1. (a) Rail Development in Hong Kong. Clustered “Rail Village” is Linked by Rail

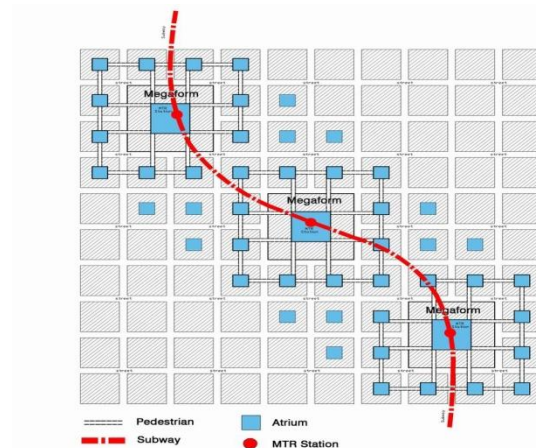
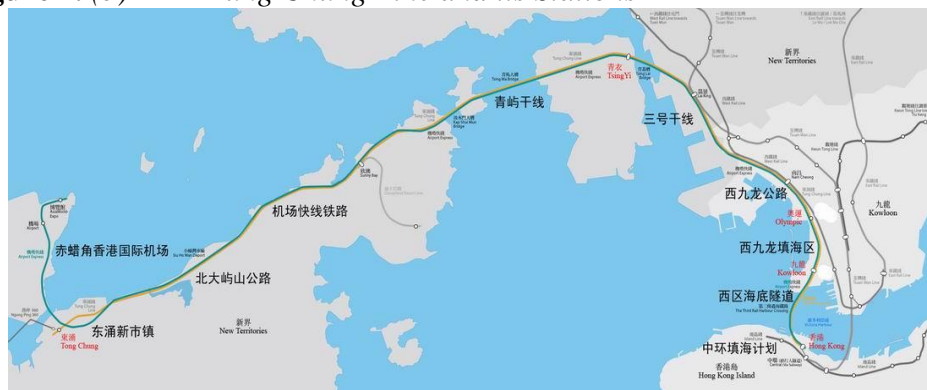


Figure 2. (b) MTR Tung Chung Line and its Stations



For the TOD projects, the current study uses 5D principles to measure Density, Diversity, Design, Distance to transit and Destination accessibility (Cervero and Murakami, 2009).¹ Density: there must be a sufficient number of residents, officer workers and consumers (shoppers) near to the station to ensure a high capacity of passengers for the railway. Diversity: the land use, building type and neighborhood transportation network must be diverse and mixed. Design: the site, building and passageway design should be comfortable and enjoyable for pedestrians and cyclists and should encourage people to use the railway. Distance to transit: the walking distance from homes/work places to the train station should be adequate. Foreign research suggests that a reasonable distance is a quarter (400 m) to half a mile (800 m). When returning home from work, people will accept a longer walking distance (900 m). In Hong Kong, people are willing to walk 500 to 1,000 meters to the station. Destination accessibility: residents within a reasonable radius of the train station can use the rail network to reach various destinations, such as

¹ The 5D principles are from R. Cervero & J. Murakami, Rail and Property Development in Hong Kong: experiences and extensions, *Urban Studies*, Vol. 46, No. 10, 2009, pp. 2019-2043.

workplaces, shopping, activities and other places. The 5Ds demonstrate the effectiveness of a TOD (Christ and Gantenbein, 2010).

Since 1979, the metro rail in Hong Kong has served the old community and new reclamation land. The planning of rail lines and property developments generally follows the principles of the 5Ds. Currently, there are 84 stations along the 187-kilometer metro line. Apart from some special stations, such as Luo Wu, Lok Ma Chau, Sunny Bay and Disneyland, 74 stations contain residential buildings and commercial offices within a reasonable radius. About 42% of the territory's households, 43% of the employed population and 75% of the commercial and office floor areas are located within a 500-meter radius of train stations (Yin, 2014).¹ The rail villages profoundly influence the city planning of the territory.

This chapter selects five stations on the Tung Chung Line. The Tung Chung Line was the first example of the MTRC's spontaneous use of the R + P mode. The Tseung Kwan O Line and South Island Line follow the same principles. The stations on the Tung Chung Line include those in the central business district, new reclamation land and new towns. Therefore, the Tung Chung Line epitomizes the development of the railway since the 1990s (Xue, 2014, 232).

Hong Kong Station

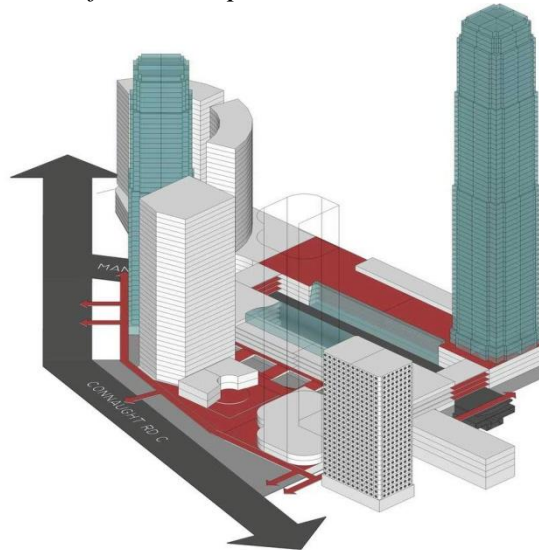
In 1992, the Hong Kong government launched “ten core infrastructure projects” for the new international airport, including Chek Lap Kok International Airport, Tung Chung new town, North Lantau Highway, Lantau Link, Route 3, West Kowloon Highway, West Kowloon reclamation area, West Cross Harbor Tunnel and the Central reclamation plan. The Tung Chung Line and Airport Express use the same main railway line, but different entrances to the station. The 31.3 km line runs along the west part of Hong Kong Island, Kowloon Peninsula and the west part of the New Territories-Tsing Yi, Lantau, Sunny Bay, Tung Chung and Chek Lap Kok airport (Figure 3).

When the airport plan was confirmed, the government filled 20 hectares of sea near to Exchange Square in Central. The coastal line was pushed 350 meters outward. The reclaimed land was used as the terminal for the Tung Chung Line. Above the station is the IFC (International Financial Centre) complex, with a shopping mall, office towers, hotel and serviced apartments on a 5.71 hectare plot of land. In the Airport Express station, passengers can check in their bags and travel to the airport terminal in 30 minutes: “bringing the airport

¹ For more about the data on the MTR, see Yin Ziyuan, *Study on Relationship between Catchment and Built Environment of Metro Station in Hong Kong and Shenzhen*, Ph.D. dissertation, City University of Hong Kong, 2014; and ‘The Public Transport-oriented Development’ Approach in Hong Kong, on the website “Study on the Action Plan for Livable Bay Area of Pearl River Estuary,” <http://www.prdbay.com/UploadFile/20110330140011e.pdf>, accessed on October 25, 2014.

back to the city.” This Tung Chung Line terminal is several hundred meters away from the old Central metro station.

Figure 3. *Composition of IFC Complex in Central*



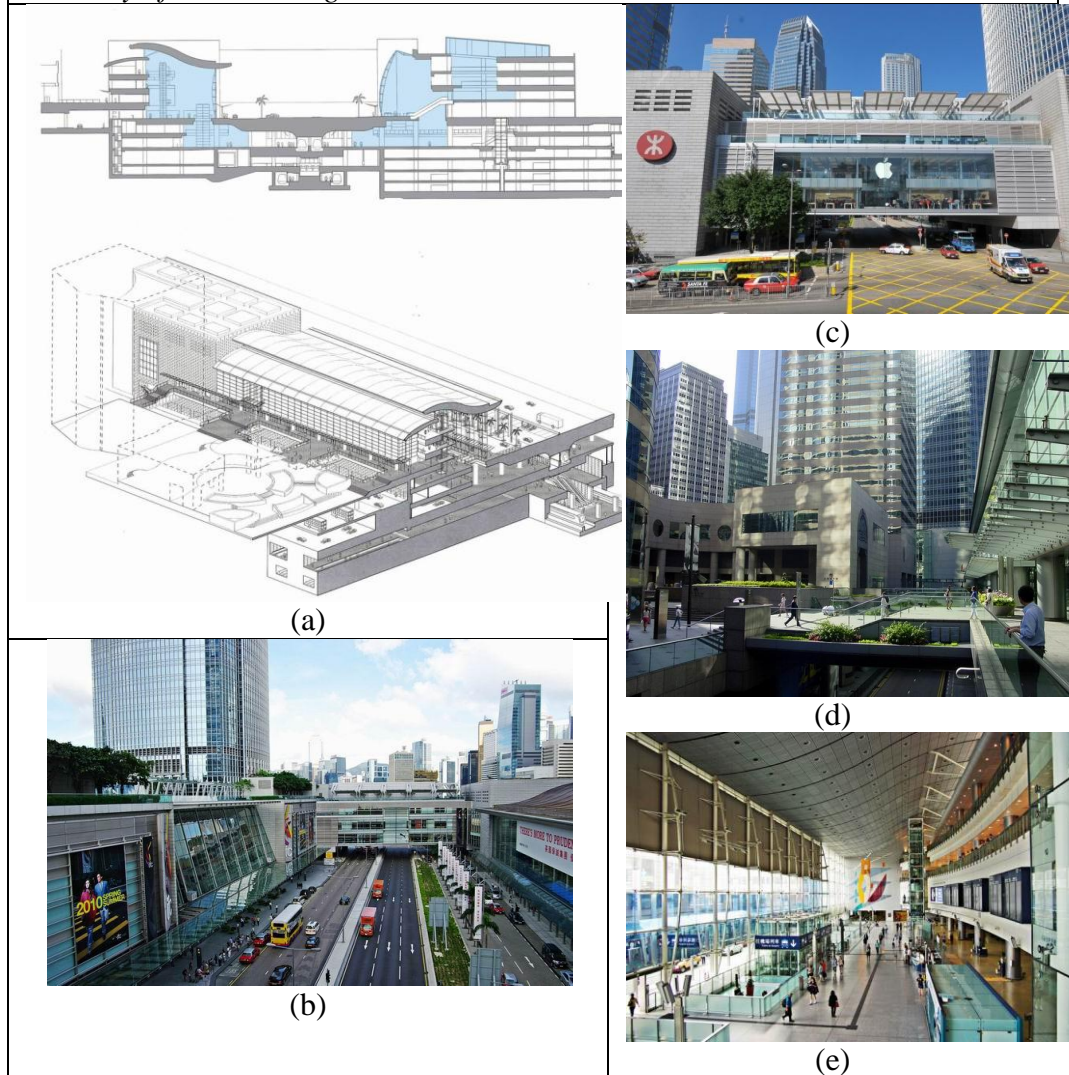
The podium of the IFC has an oval shape, with vehicles passing through the ring. The building complex is plugged into the pedestrian bridge web of Central and eight piers serving the outlying islands. The pedestrian bridge system of Central originated in 1970, when Hong Kong Land built it to connect its own properties, and extends several hundred meters. The central pedestrian bridge starts from the Mid-level and ends at the waterfront, where the IFC complex is located. At the centre of the IFC ring plan is the taxi and bus stop, surrounded by the train station and a three-story high shopping mall with a floor area of 59,460 square meters.¹ On the rooftop of the shopping mall there are bars, coffee shops and a public garden. According to the MTRC, the IFC shopping mall enjoys the highest patronage in Central (Tan and Xue, 2014).² Two office towers, the five-star Four Season hotel and the “Four Seasons Place” serviced apartments rise up from the podium. Phase II of the IFC is a tower of 480 meters. The total floor area of the complex is 436,000 square meters, with offices, a hotel and retail, but no housing. This development of 20,000 square meters was generated as a result of the Hong Kong station. The ratio of the station floor area to the development floor area is around 1:21. The ratio of Kyoto station, the second-largest station development in Japan, to

¹ For all five stations on the Tung Chung Line, the building floor area, residential towers and units, distance and other data were counted and calculated from general building plans, the Centaline Map and relevant property websites. The work was undertaken by the author’s research team in 2014.

² The description of Central and Shatin stations are partly from Zheng Tan and Charlie Q. L. Xue, Walking as a Planned Activity – Multi-level Pedestrian Network and Space Integration in Hong Kong, 1965 to the present, *Journal of Urban Design*, Vol. 19, No. 5, 2014. pp. 722-744.

nearby buildings is 1:20.¹ This ratio shows how effectively a station can generate development in the surrounding area (Xue et al., 2012) (Figure 4).

Figure 4. IFC and Hong Kong Station (a) Section Showing Station, Road and Superstructure (b) Traffic Transition in the Central Part of IFC Complex (c) The Opening Allows Vehicles Entering to the Complex Center (d) Pedestrian Bridges Linking the IFC to the Central Elevated Walking Network (e) Lobby for the Airport Express Terminal. The Isometric Drawing of (a) is from the Courtesy of Rocco Design.

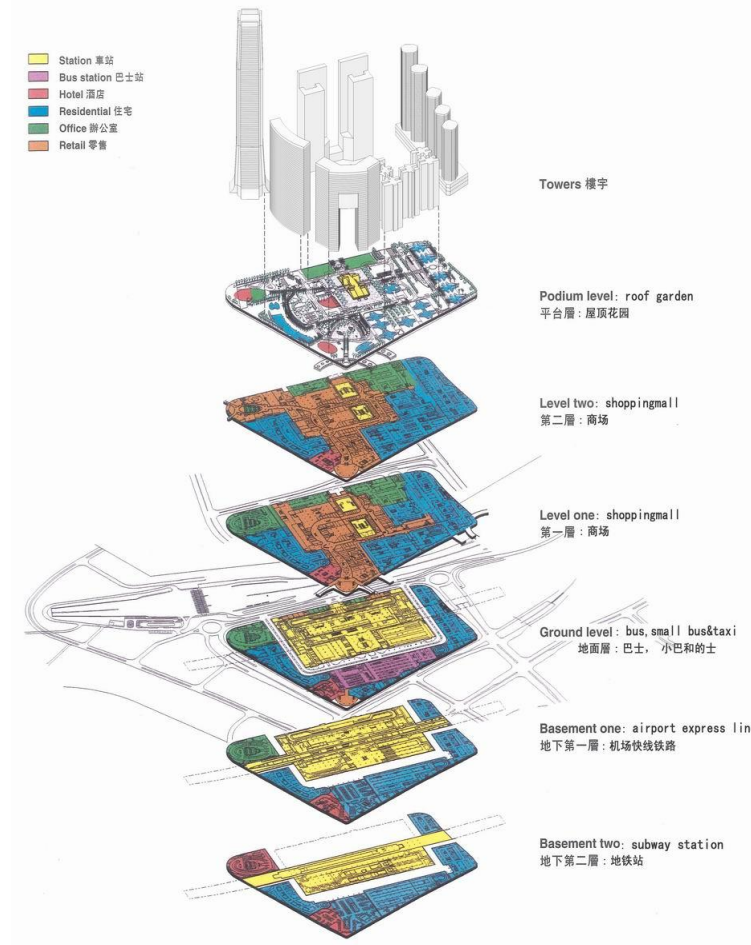


¹ The ratio of Kyoto Station is from Hui Ka Chuen, *Station Complex Mega-structure: Olympic Station/Olympian City – A Study in Urban & Architectural Perspectives*, Bachelor's degree dissertation, City University of Hong Kong, 2011.

Kowloon Station

In the Kowloon Peninsula, Yau Ma Tei, Mong Kok and Tsim Sha Tsui were the earliest developed areas, and as such they have been the most crowded areas in Hong Kong since the early twentieth century. Located in the heart of the Kowloon Peninsula and surrounded by the Victoria Harbor, the growing population in this area has dramatically exhausted the land resources and caused massive traffic problems for continued urban development (Farrell, 1998)

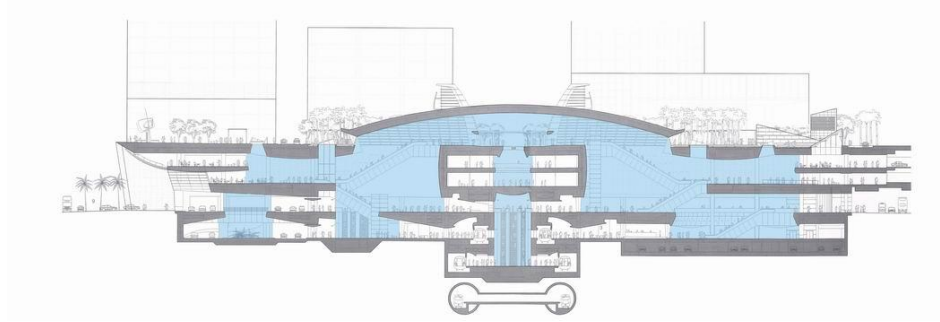
Figure 5. *Relationship of Various Floors in the Kowloon Station Development, Master Planned in 1992.* Courtesy of Terry Farrell & Partners.



Although developments encircling the station are connected to each other by roads and metro lines, these developments are mainly accessed through the metro stations as there are few pedestrian routes between them. The well-organized elevated pedestrian bridges, which connect the train station to the nearby housing and commercial arcades, also encourage users to travel by underground metro. Consequently, the ground is left almost entirely for vehicular use (Figure 5).

However, it was deemed necessary to create a self-sufficient community from the early stages. The urban fabric of West Kowloon has been transformed in comparison with the older parts of Kowloon. The development includes 14 residential skyscrapers and two hotel and office buildings. The ICC tower is 483 meters high, designed by KPF from the US. The floor area of the station is around 20,000 square meters. The ratio of the station to the development above is 1:80—three times higher than that of the Hong Kong and Kyoto stations (Figure 6).

Figure 6. *Section of Kowloon Station and Shopping Mall*



The real estate development of Union Square, attached to the Kowloon Station, was contracted to four main developers. Terry Farrell & Partners was appointed to produce the design for the station and a workable master plan for the whole block. Based on studies of the projects in the literature and an analysis of the built form in a historical context, the design strategy can be summarized as follows.

West Kowloon comprises a three-dimensional city with different functions, spreading out in diverse layers to achieve the maximum density and mix without sacrificing transportation efficiency. The main traffic circulation routes are organized along the ground floor to facilitate easy access from the roads surrounding the development, while also maintaining preferred connections with the underground stations. Shopping arcades and pedestrian routes can be found on the first and second floors, mainly to avoid conflicts with ground-level traffic at peak times. Bridges extend the pedestrian routes to the blocks and other interchanges nearby. On the podium floor, 18 meters above ground, the towers share a common terrace, which serves as a traditional ground floor with controlled access for vehicles and pedestrians (Xue et al., 2010) (Figure 7).

Figure 7. Kowloon Station Complex: (a) A Floating Island (b) From Roof Garden to MTR Station (c) Station (d) Shopping Mall (e) Podium Roof Garden



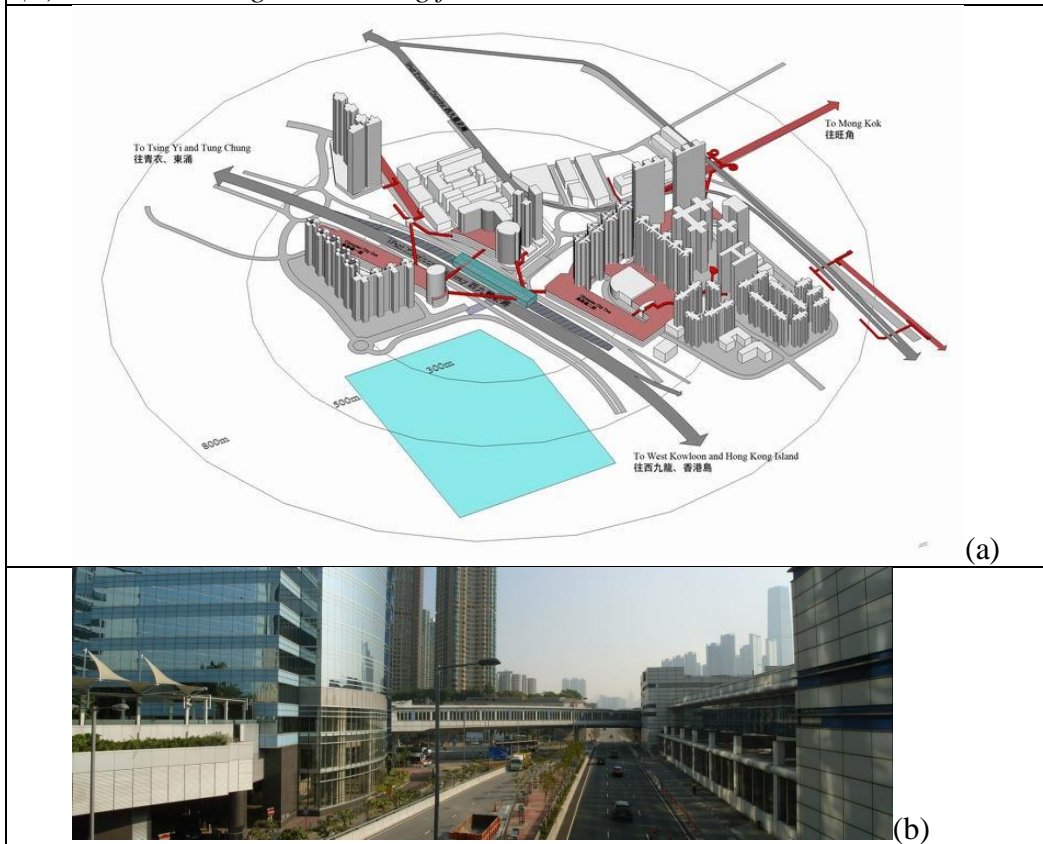
Olympic Station

The Olympic Station can be found 1,000 meters north of the Kowloon Station. If Kowloon Station is an enclosed floating island, the Olympic Station is like an octopus stretching out to the old area of Tai Kok Tsui and Mong Kok. During the early initiation stage, the station was named Tai Kok Tsui. However, it was renamed after the 1996 Olympic Games to honor the achievements of the Hong Kong athletics. The Olympic Station's 16 hectare plot mainly came from the reclamation of West Kowloon. In this area, traffic accounts for 34%, a higher percentage than in the other projects. The plan in the early 1990s set up the station location, connected to the neighborhood by six pedestrian bridges crossing West Kowloon highway and other busy streets. Within a radius of 600-800 meters, old buildings and new estates all enjoy the concept of the Olympic Station (Figure 8).

Figure 8. Olympic Station

(a) The Catchment Area of Station

(b) Four Footbridges Extending from the Station House

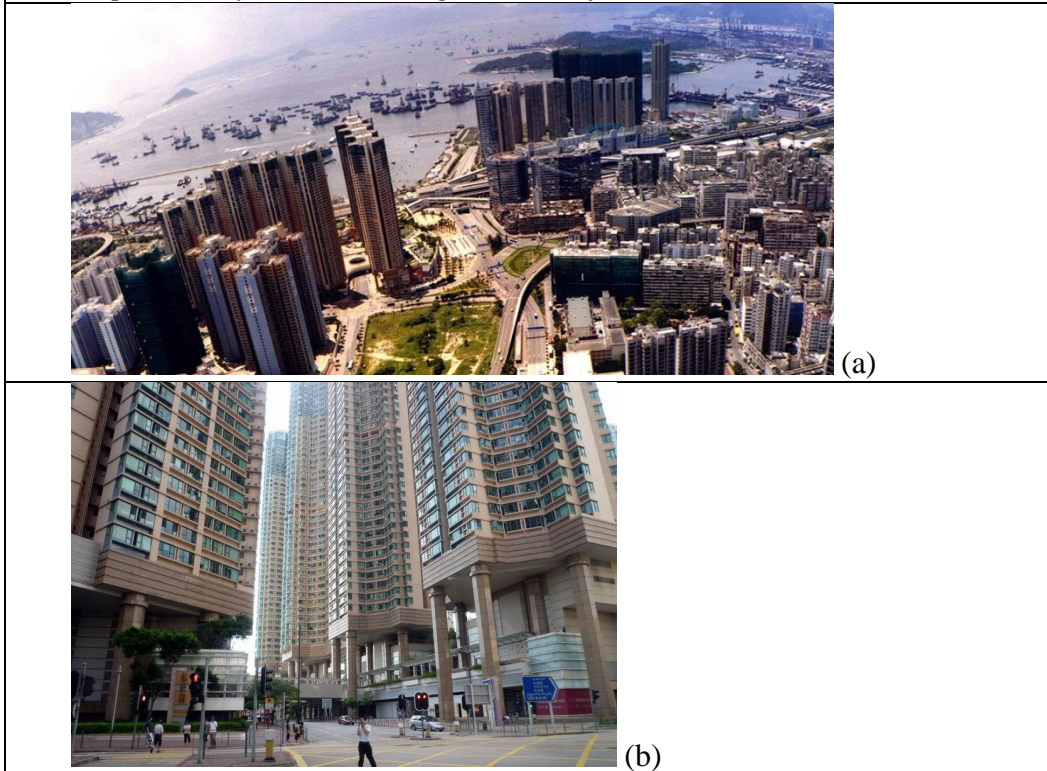


According to our calculation, the gross floor area of Olympic Station is around 15,660 square meters. The nearby projects that were developed directly as a result of the station development include Island Harbor View, Park Avenue, Olympian City, Central Park and Harbour Green, -a total of 23 blocks with 6,764 residential units—four office towers belonging to Hong Kong Bank and Bank of China and the Olympian City shopping mall Phases I and II. The total gross floor area of these properties is 667,652 square meters. The ratio of the station floor area to that of nearby developments is 1:43 (Xue and Manuel, 2001) (Figure 9).

Within a 500-meter radius, in addition to the properties developed by the MTRC, there are other communities and commercial buildings with a total floor area of 889,800 square meters, including The Long Beach, Imperial Cullinan, One Silver Sea, Hoi Fu Court and Charming Garden. From 1998 to 2011, 11 residential estates were built, providing 18,692 residential units for over 50,000 people, housing accounts for more than a quarter of the total development. In this station-led area, the ratio of the reclaimed area to the old area is 1:2.6. There are public spaces with a floor area of tens of thousands of square meters, including a roof garden, park and sport courts (Hui, 2011).¹

¹ The information on Olympic Station are partly from Hui Ka Chuen, *Station Complex Megastructure: Olympic Station/Olympian City – A Study in Urban & Architectural*

Figure 9. (a) *Residential Estates and Commercial Buildings Surrounding the Olympic Station*
(b) *People Mainly Move on Bridge Instead of on Ground*



In daily usage, the three-phase Olympian City shopping mall acts as a physical and psychological center. Phase I of the Olympian City is located in the west part of the development, mainly serving nearby estates. Phase II is in the center of the area, connected to more housing estates and the bus terminal. However, the shopping mall of Phase II is just an L-shaped corridor, making the shopping space monotonous. Phase III crosses Hoi Wang Road by a pedestrian bridge. Its shape and functions are defined by the private housing towers above. The linear shape means that the station extends to the old area of Mong Kok. The walk from Mong Kok MTR to Olympic Station is more than 800 meters. To attract people, the Olympian City management often hosts events such as live broadcasts of the World Cup football, appearances by movie stars, etc. (Fig 10)

Figure 10. *Plan of Olympian City Shopping Mall. One Circular Route Threading the Shopping Space. Drawing is Adapted from the Archive of Buildings Department, Hong Kong Government.*

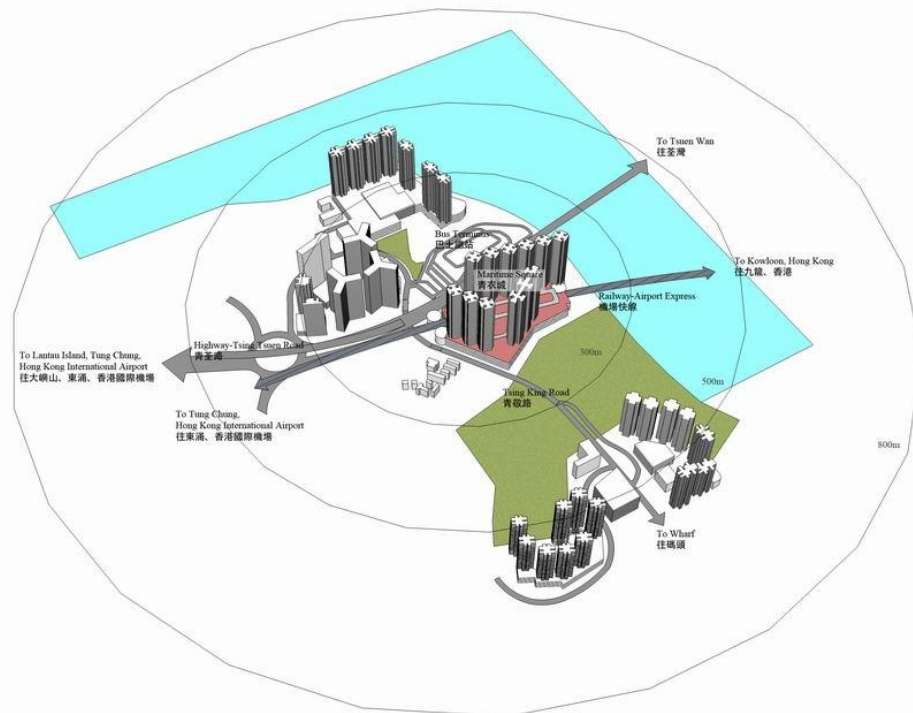


Tsing Yi Station

The Tung Chung Line and Airport Express emphasize speed. Hence there are few stations on this line. The first station in the New Territories is Tsing Yi, after which the Airport Express heads straight for the airport. The Tsing Yi complex contains the station and Maritime Square shopping mall. The bus, shuttle and mini-bus stations are on the ground floor. The first floor is connected to the park and the open bus terminal by several pedestrian bridges. The east- and west-bound Tung Chung Line platforms are on the second and third floors and the Airport Express is on the fourth. All of these station facilities link to the Maritime Square shopping mall, with a gross floor area of 46,000 square meters. Every day, 200,000 people pass through the building complex and Maritime Square is constantly crowded. Above the shopping mall is Tierra Verde, with 12 residential towers of over 35-stories providing 3,500 homes. There is a parking for 920 vehicles in the basement of the shopping mall. The ground floor is a bus terminal, the first and second floors are linked

to the Tung Chung Line and the fourth floor serves the Airport Express line. The podium and towers have a gross floor area of 291,879 square meters on a plot of 5.4 hectares, thus the plot ratio is 1:5.4.¹ The lobbies of Tierra Verde residential towers are within the shopping mall, so the residents can shop on their way home (Figure 11).

Figure 11. *Catchment Area of Tsing Yi Station*



Another large private development next to the Maritime Square is Villa Esplanada, which is connected to the station and shopping mall by a footbridge. Developed by the Cheung Kong Property, Sun Hong Kei Property and China Resources, Villa Esplanada comprises 10 towers of 35 to 40 stories containing 3,000 living units. The two large estates house more than 20,000 residents. In a 500-meter radius, apart from the sea and parks, there are other properties, private or home ownership towers, all above 30 floors. No matter where they live, most of the 200,000 residents of Tsing Yi Island rely on the railway to commute (Yeung, 2002). They arrive at the station by foot or mini-bus. At the end of the working day, the grocery store and restaurants in Maritime Square enjoy heavy patronage from commuters on their way home.

Tsing Yi station also houses a shopping mall and traffic exchange in the same building, similar to Kowloon Station. In Tsing Yi Station, the ground floor has a closer relationship with the nearby streets. The shopping mall opens onto the seashore park and promenade. The Tsing Yi complex only has a shopping mall and residential buildings, and does not provide office space.

¹ The data on Tsing Yi Station in this chapter are from the MTRC website, http://www.mtr.com.hk/chi/properties/prop_dev_ty.html, accessed on June 26, 2012.

Residents of nearby public and private housing estates take the MTR to commute to Kowloon and Hong Kong Island, which conforms to the “destination accessibility.” Using the “development rate” concept, within a radius of 500 meters, other building developments with a total floor area of 336,900 square meters were led by the Tsing Yi Station. The ratio of the station area to the nearby direct developments is 1:3.5. Including the other developments in the 500-meter radius, the ratio reaches 1:10. The 500-meter radius includes large areas of sea and park, therefore the ratio is lower than that of other stations.

Tung Chung Station

Tung Chung is a new town that emerged from the airport construction in the 1990s. There are four phases of development and it is planned to accommodate 250,000 people. The population was 19,000 by 2000; 34,000 by 2006 and 100,000 by 2010 (Figure 12).

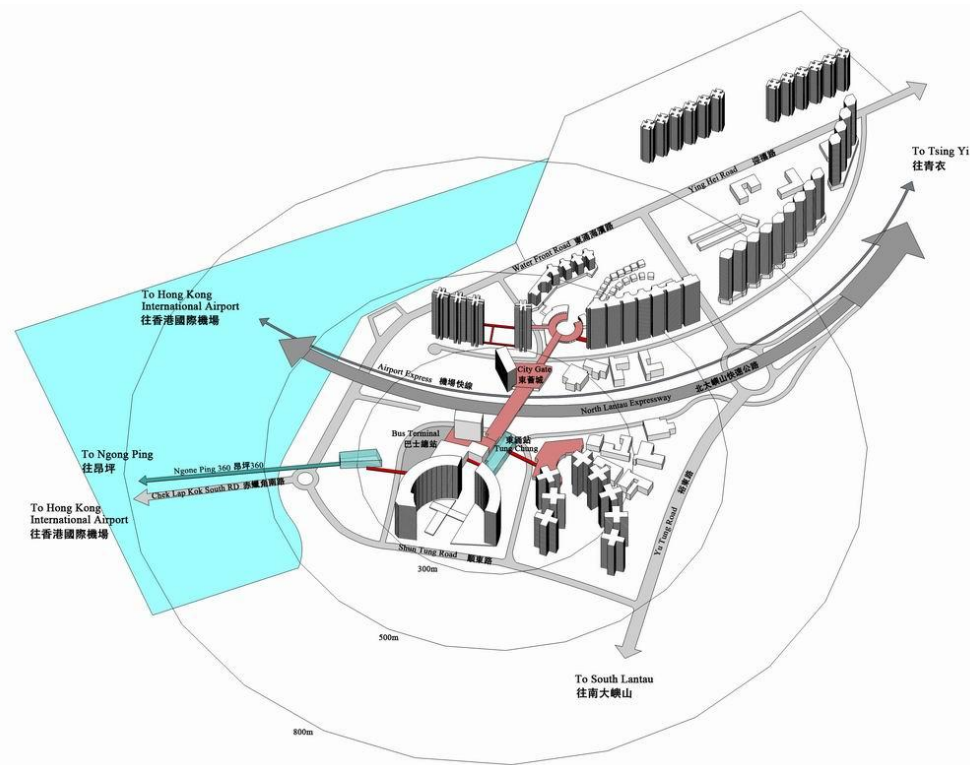
Figure 12. *Residential Estates Arranged near the Tung Chung Station*



Tung Chung Station is the terminal of the Tung Chung Line. The North Lantau Highway and railway run along the seashore, from Tung Chung Station turning to the airport. Tung Chung Station is located at the turning point of the road and railway. The station and cross-highway city gate shopping mall surround the residential estates on two sides. The TOD site is 21.7 hectares. To the east of the city gate there are hotels and the residential estates of La Rossa, Coastal Skyline and Caribbean Coast. To the west is Tung Chung Crescent. These private estates include 32 towers and low-rise town houses, with a total of 12,400 residential units. There are office towers with 15,000 square meters of floor area, the City gate shopping mall and a 440-room hotel, four kindergartens, primary and secondary schools and a wet market. The GFA of these developments is 1,028,910 square meters, with a plot ratio of 1:5. The ratio of the train station to its related development is around 1:66. The rail village displays the station’s function in leading the new town development. The train station is not in the center, but is around 200 meters from the west end of Tung Chung Crescent and 1,200 meters from the east end of Caribbean

Coast. People can walk from the Caribbean Coast to the station through a covered foot bridge or take a mini-bus¹ (Figure 13).

Figure 13. *Catchment Area of Tung Chung Station*



The Tung Chung Station was the catalyst for the Tung Chung new town. The government subsidized home ownership and public housing prospered as a result of the railway (HKHA 2011). To reach the goal of 250,000 residents, the government has continued land formation and public housing construction along the seafront and at the foot of the mountain; 110 hectares of the land has been claimed from the sea (Krummeck, 2009).²

The rail village in Tung Chung is mainly residential, with a small portion of office space. The shopping mall serves the residents. The central public space is surrounded by the shopping mall and the bus and train stations. There are roadside coffee shops and a fountain. In a high-density development with 100,000 residents, it is still possible to find many pleasant places, with natural mountain and ocean views. (Xue and Manuel, 2001) In response to the appeal to find more housing land, the Tung Chung plan was augmented, doubling its current size. The new master plan stretches the development along the seafront, with high- and low-rise buildings around the sub-center and parks (Figure 14).

¹ The data on Tung Chung Station in this chapter are from the MTRC website, http://www.mtr.com.hk/chi/properties/prop_dev_tc.html, accessed on June 26, 2012.

² For the new Tung Chung development plan, see *Am730*, June 20, 2012, p. 8.

Figure 14. *Master Plan of Tung Chung Town, 2014. The Opposite (near) Side is the Man-made Island for Hong Kong-Macau-Zhuhai Bridge.*



Conclusions

The examples in this chapter are comprehensive station developments, mega-structures or multi-phase developments. Their features can be summarized as follows.

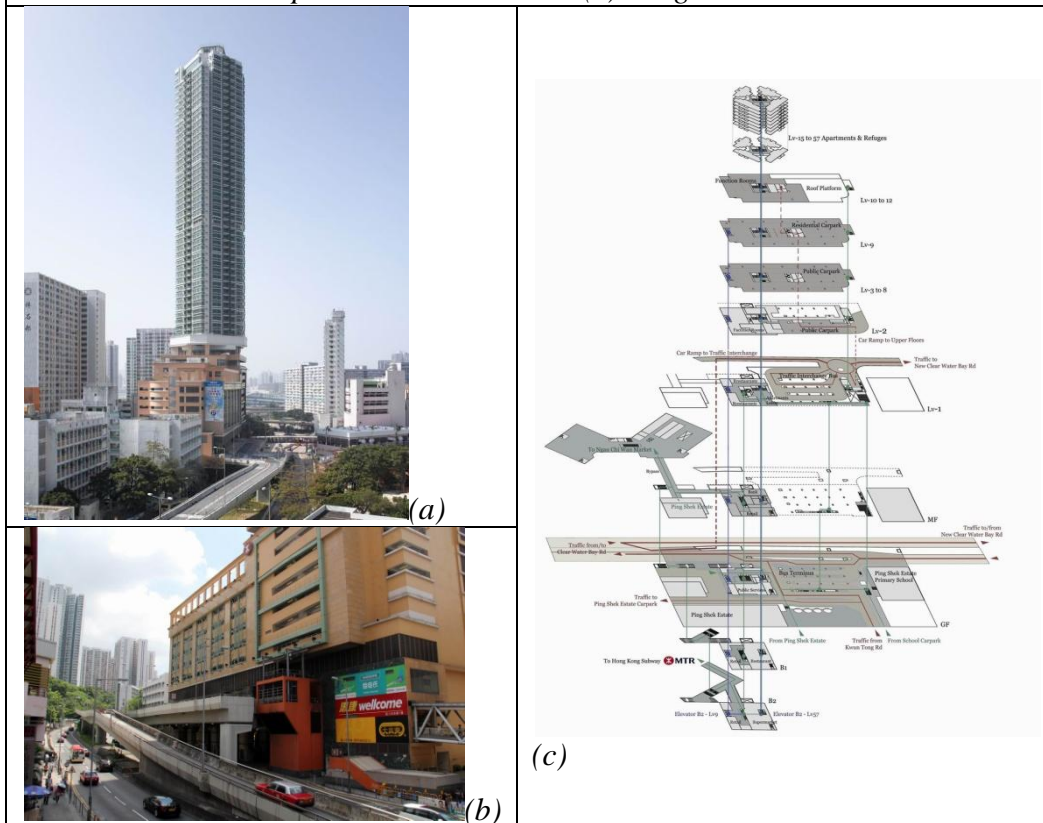
Adapted Mega-structure Prototype

Driven by the real estate economy, the Hong Kong, Kowloon and Tsing Yi stations adopted the mega-structure concept. The Olympic and Tung Chung station buildings each link to a large shopping mall and rail village.

A Station as an Integrated Transport Interchange

Like the Airport Express and the stations on the Tung Chung Line, the principal aim of the Hong Kong, Kowloon and Tsing Yi stations is to bring the airport back to the city. The location of the old Kai Tak Airport, along the harbor and almost directly in the center, was highly convenient. The Kowloon Station aims to provide an extended airport service, similar to a remote airport, complete with in-town check-in and an express train that takes passengers to the terminals in just 30 minutes.

Figure 15. No.8 Clear Water Bay Road, 2006. MTR, Bus, Mini-bus Transition, Daily Shops, Clinics and Leisure Activities All Solved in a “Pencil Building”. (a) Tower. (b) Ramp Leading Cars and Mini-bus to the Upper Floor, while Double Deck Bus Stop is on Ground Floor. (c) Diagram.



The Shatin, Kowloon Bay, Tsing Yi and West Kowloon stations use the station and shopping mall as a podium, upon which stand clusters of skyscrapers. Designed by Ronald Lu & Partners and completed in 2006, 8 Clear Water Bay Road provides another model: a slender “pencil building” convenient for bus stops, MTR stations and retail outlets, with a clubhouse and apartments in the tower. The podium consists of 12 stories and the traffic hall floor is around 25 x 30 meters. The core contains escalators and lifts linking the rooftop to the basement MTR station. Restaurants, coffee shops, convenience shops and clinics are scattered around the podium floors. Through a long vehicular ramp, cars, minibuses and buses enter the Mid-level bus terminal, which is at the same level as the lobby of the residential tower. Residents alight from the bus, with an easy walk to the lobby to return home. The slender building is linked to the old public housing estate, wet market and community building on the opposite street. People’s daily needs for food, living, entertainment and access to public transport are all within a 100-meter radius covered area. 8 Clear Water Bay Road is a typical TOD “pencil tower” (Figure 15).

Elevated Ground Floor

In Kowloon Station, the podium is elevated 18 meters off the ground (the maximum height allowed by the Hong Kong Building Regulations for 100 per cent coverage of the site). Although it still serves as the traditional ground floor of the towers, the mega-structure that has been lifted to the top of this podium level is fundamentally different in terms of its spatial structure and its relationship with the elevated public streets and vehicular traffic on the ground (Frampton et al., 2012).

Towers and Real Estate Properties

As an urban development project involving several of the biggest real estate investors, tower-block housing became the main mean by which building designs met the market requirements. In the 1990s, the central symmetric, eight-unit cruciform plan became popular and now dominates high-rise housing layouts and design. Compared with high-rise “slab” buildings, a centralized high-rise design has greater advantages in terms of ventilation and daylight, a crucial consideration for the warm, humid climate of Hong Kong.

New Experiences of a High Density City

The height, span and density of a “rail village” are completely different from those of the conventional cities and most people’s spatial experiences. For example, the tower jungle above Kowloon Station, the continuous commercial and public buildings in Shatin, the underground concourses between Central and Hong Kong stations and various linking spaces and roof gardens are pleasant places for the users to linger and look at, both inside and out. Externally, these building complexes form a unique townscape. This man-made miracle was brought about by infrastructure and transportation (Lampugnani, 1993).

In addition to the examples described above, almost all MTR stations, during their construction or afterwards, serve as a kind of “rail village.” In the area surrounding a station, the price of the housing is far higher than it is further away. The different performances and forms of rail villages generate experiences in high-density living. Hong Kong demonstrates that living conditions can be maintained at a civilized level even with the highest density in the world. There is no doubt that this is the right direction for sustainable development.

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