

Pursuing New Urban Living Environment In The New Millennium: Projecting The Future Of High-Rise And High Density Living In Hong Kong

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Abstract

High-rise and high density living is a way of life for most of the 6.7 Million population of Hong Kong. The merits and demerits affiliated with Hong Kong's compact urban form continues to attract academic deliberations and debates over the acceptability of such urban form as an alternative to urban sprawl for future city and urban life-style.

This paper traces the development and causes for Hong Kong's high-rise and high-density urban form over the past fifty years or so, and focuses its discussions on the pros and cons of high-rise living based on subjective user survey in late 2001 and early 2002.

Because of an articulated land shortage, acute topography, escalating population growth, and shortage of time, Hong Kong government and planners have little options left but to adopt vertical development, resulted in a densely and mixed use urban habitat packed with closely built high-rise residences and commercial buildings. From the survey, it is clear that mixed and intensive land use, high quality of living and recreation infrastructure, efficient public

transportation network, and segregation of pedestrian and traffic can facilitate the performance of compact urban form. In addition, most of Hong Kong families have been accustomed to high-rise living pattern and the disadvantages such living pattern might cause on its resident's social communication and children education are readily ignored by most of the people.

Based on the analysis of current living situation and development trends in Hong Kong, new pattern of future city form is conceived to be a likely applicable development way in a coastal city with such high density as Hong Kong in the next 50 years. Design countermeasures are presented in this paper to suggest ways of alleviating the pressure of the forever-increasing house requirements in Hong Kong.

Keywords: high-density, high-rise, compact city, social acceptance, life-style.

Introduction

Hong Kong represents a singular case of its own. Hong Kong is unique because it represents an extreme case of overcrowding, escalating population growth, scarcity of land resource, intensification of land-use activities, burdened by an absence of raw materials and natural resources. Yet, the story of Hong Kong as a Sky City attracts wide interest from urban designers and urban managers to acquire clues to successful managing of limited resources, and more importantly the ways to maintain a vibrant and rich living and working culture in a vertical land use approach, the vertical dimension of which astonish the world at large.

However, it is not just the height of buildings that is staggering but what is dramatic is the density of the city as a result of an enhanced plot ratio (Table 1).

Today, Hong Kong has an average density of 6,310-person per square kilometer and a peak urban density of 44,210 people per square kilometer that is among the top in the World. But what matters most, however, is the underlying phenomenon, which brought success for such compact city, as Hong Kong manages to keep its inhabitants relatively cheerful and healthy, letting most

of them to enjoy short travels from home to work, enjoy leisure and spare time, and most of all, enjoy the glittering glamour of city life as a whole.

The aim of the paper is to present an academic critique on high-rise, high-density urban form found in Hong Kong as an alternative solution to future urban form, based on empirical data and field survey.

Background

Population, Land and Resources

Hong Kong has continuous problems of land scarcity and increasing population (Table 2, 3). The fact that only 21.1% of Hong Kong's land area is built-up imposes tremendous pressure on the incessant need to house increased number of people. Hong Kong is one of the world's densely populated cities (Mongkok and Kwun Tong are two localities which exhibit extreme density).

Shortage of land and increasing population has been a major cause for a high-rise and high density Hong Kong. Over 50% of its 6.7 million population (mid-2001 figure) live and work in urban centers, Hong Kong Island and Kowloon, for convenience and efficiency that proliferates the intensification of human activities within urban centers. Latest government census in 2001 reveals that about three million people live in self-owned private homes in high-rise apartment blocks. This is translated into a total of one million numbers of private homes. The rest of the population lives in, similarly, high-rise and high-density rented homes in new towns in suburban Hong Kong known as the New Territories¹.

Socially, Hong Kong population is made up of primarily immigrants from different provinces of Mainland China. To date, the influx is as much as 150 numbers of legal immigrants daily. This seemingly small figure is actually a prime contributor to the population increase of one million every decade as recorded throughout the past decades, with the first generation of immigrants from the Mainland China arriving in early Nineteen Sixties. Thus, the immigrant society

¹ <http://info.gov.hk/censtatd> gives key data of Hong Kong based on the 2001 census.

continues to yield pressing demands for infrastructure and social supports of all sorts throughout the recent history of Hong Kong.

Hong Kong – Challenges

The Planning Department projected that the population of Hong Kong will continue to increase and will reach 7.5 million by 2011 (Figure 1). The challenge for the 21st Century is a complex one represented by several crucial factors.

For Hong Kong, the initial challenge is its ability to cope with changes. It begun with the 'July 1997 Handover', which staged an era of change for the ex-colony's governmental culture as well as administrative structure.

November 1997 brought a second wave of change to the economic structure for many Asian capital markets including that of Hong Kong. Ever since, Hong Kong suffered from record negative GDPs to an estimated +0.5% growth and an unemployment rate of 5.5% in 2001. The economic downturn since 1997 stubbornly prevails and becomes a chronic threat to social stability and social hierarchy, as disparity between the highest income group and that of the lowest income group tops Hong Kong on a recent Asian count. High land costs, which boosted property rent and sale price, together with high salaries, are guilty of being the blocking stones for economic recuperation.

Apart from economic and social challenges, environmental challenge became the third wave of change as awareness continues to escalate and motivate the general public much readily due to a hyperactive news media supported by similar world awareness in this topic. Rising community concern for the environment is a popular growing social concern in most cities around the world. Hong Kong is no exception. It is interesting, however, to differentiate that most members of the public are more concerned with the quality of life as indicated by the standard of living, costs of living, emerging lifestyles, etc. rather than the quality of the environment; though they do not easily see an inseparable connection between these two concerns, most citizens realize that environmental challenge has a strong impact on quality of life. Recently, the search for better

quality of life becomes a subject of research for many cities, such as Tokyo, London and Hong Kong. The University of Hong Kong, for instance, initiated inter-city comparative studies of urban sustainability contributors such as density, lifestyle, and space usage².

Hong Kong definition of high-density and high-rise living

For Hong Kong, the multiple use of space and land use has a long history of practice. The use of multiple spaces is a unique character of Hong Kong; its definition, however, is blurred because it is responsive to changes in societal preferences that in turn are subject to changes over time.

Extendable space -- Concept of space borrowed

The author of the book ‘Hong Kong borrowed place, in a borrowed time’³ hinted a Hong Kong mentality for survival, which may be interpreted as an existence of uncertainty. The thought that one only remains in Hong Kong on a temporary basis, and sooner or later one would leave Hong Kong for good, to somewhere else for a better life, was a saddening but determined mindset for the ‘temporary’ settlers of Hong Kong. On a slightly different context, the discussion here may be referred to another facet of Hong Kong's transient way of life, where everything is too space-constrained and congested as to constitute a phobia, it became an irresistible need for many families to ‘borrow’ space whenever one feels the need (Figure 2). Some nicknamed such act of space-borrowed to be a self-help act of extendable space, practiced by countless number of local home dwellers, those who would ‘extend’ or ‘borrow’ a space out of metal cages and wooden floors added onto existing windows of living rooms and kitchens. For the law enforcers, these are better known as illegal space. But the concept of borrowed space does not necessarily be confined to the ‘extended’ living or dishwashing space. There is another category of ‘borrowed’

² Since the first international conference on Mega-cities was organized and held in the University of Hong Kong by the author in February 2000, the Center of Architecture & Urban Design for China and Hong Kong at the University has initiated and set up a research network between various researchers from cities interested. These are the city of Tokyo, Shanghai, Kuala Lumpur, Oxford, Eindhoven, Madrid, New York and Sao Paulo. The Mega-cities discussion will be staged in the Universidade de Sao Paulo, Brazil in October 2002.

³ An infamous book by Hughes, the Far East Correspondent, on the future of Hong Kong with 1997 approaching. The book described Hong Kong Today, Hong Kong Yesterday, and Hong Kong Tomorrow. The sub-title ‘Borrowed Place – Borrowed Time’ is first used by writer Han Suyin in her article “Hong Kong’s Ten-Year Miracle” published in Life (1959).

space in Hong Kong, which refers to the extension of social space by means of restaurants, coffee shops or street eating. In Hong Kong, where most apartment homes have a relatively small area, many families prefer to entertain their guests or friends in commercial places as an extension of their homes (Figure 3). In this way, the 'borrowed' space concept becomes a cross over of residential and commercial land use. As an extension of living spaces, restaurant becomes the dining room and the living room becomes Karaoke Lounge across the street. This is particularly true as one skim through the built-up city to see numerous MILU (Multiple and Intensive Land Use) buildings in residential areas. The overlapping, and mixing of functions in buildings make one become puzzled as to whether the building should be classified as commercial or residential or not.

Concept of space proximity

Density figures associated with population per square kilometers suggests that in Hong Kong, where built forms are close to each other, the physical and psychological interactions between spaces, between people, and ultimately between man and environment are often conflicting and unacceptable! For example, the two urban areas which exhibit a world record figures of over 40,000 populations per sq. Km suggests such habitable space to be ultra condensed and packed (Figure 4)!

On the contrary, field studies suggest that this lack of distance apart, or ill definition of territorial space is, for most locals, a natural way of life that exists almost as old as the city itself. More interestingly, such closeness in space does not necessarily lead to uneasiness for the inhabitants, as one would expect from textbooks on urban space (Lau survey 2001)⁴.

Concept of Cultural Adaptation and sharing

⁴ This is a 9-month research survey carried out by the author on subjective responses of households towards various aspects of high-rise living. A total of 102 families in Hong Kong was interviewed and asked about their opinion towards the pros and cons of high-rise living. Of the 102 surveyed, 98 households enjoyed high-rise living as an acceptable form of urban living.

As suggested, in the case of Hong Kong, space proximity is taken as a tolerable way of life rather than an acceptable spatial attribute. Field studies and survey⁵ suggested that there is clear evidence that almost all residents prefer an improvement to their living area more than anything else.

Such observations from field studies and survey may be explained further by views collected from interviews with psychologists⁶ who explained social acceptance for close proximity space by the concept of adaptation.

A Clinical Psychologist, Dr. Edmond Lau recalled that the Chinese have a long history of different families living in clans as in the Wu-tung Courtyard Houses found in Beijing, Lei-Long Houses in Shanghai, or the Walled Villages (Wai Cheun) of the New Territories, Hong Kong. Indeed there is an analogy with most other human settlements throughout history of mankind for social and defense purposes. Yet, Dr. Lau gave another explanation towards the tolerance towards living in close proximity space. He thinks that Chinese have a long history of living with several generations under one roof. Effectively, this means the living-in of three generations comprising grandparents, parents, and children for social supports among the family members. Space sharing is a long adaptive act. In the eyes of the Psychologist, such practice of social bond gives rise to an adaptive act of space sharing for the local families, which is translated, into an acceptance for space proximity in a high-density environment.

Concept of Compactness

Hong Kong, where everything is so closely packed, is a perfect case of Compact City. Here one may find the intensification of land use and mixed use in majority of cases found in the urban centers. The Oxford Center of Sustainable Development pioneered the study of Compact Cities in an effort to map and analyze the making of and impacts of compact cities in both developed as well as developing cities. Researchers from different cities have been invited to document and

⁵ The development of satellite new towns in Hong Kong takes four phases. Which begun from 1959. They are Tsuen Wan, Shatin, Tuen Mun, Tai Po, Fan Ling and Sheung Shui, Yuen Long, Tseng Kwan O, Tin Shui Wai, Tung Chung and Tai O.

⁶ Mr. Tony Wilson, Chief Architect, Architectural Services Department. Hong Kong Government presented his analysis of Hong Kong's city development by the 3C concept, at a joint HKU-ASD research presentation to the Technical University Berlin in Nov 2000.

analyze the contributors to a successful compact city based on Hong Kong. In this exercise, Hong Kong offered itself as a specimen for studying compact urban form because the city possesses most of the theoretical attributes of a Compact City - a urban system with high density, high floor-to-area ratio (plot ratio), mixed land use, short distancing and a multitude of interconnected and efficient public transit system. A notable subject of study, however, is a measure of transport efficiency, expressed by the homework travel time measure. For Hong Kong, the average travel time between home and work ranges from 30 minutes to 45 minutes per journey, which compare comfortably with metropolis like Tokyo that has a 90 minutes or more per journey.

Concept of Verticality

The vertical city image of Hong Kong is portrayed by thousands of two hundred meters tall towers of residential apartments, or offices of similar heights. Recently, the projection of extending the Vertical City to 100 stories or 450 meters tall is no longer a dream but rather an imminent reality for urban practitioners. Vertical concentration means convenience and efficiency for the Hong Kong dwellers! The UN Statistics Year Book of 2000 adds that the vertical city of Hong Kong, where stacking floors on top of each other like sardines are actually one of the most energy efficient built form exists worldwide. A recent survey (conducted in 2001 and 2002 in Hong Kong) interviewed 102 number of residential households who live in private and self-owned apartment buildings reveal majority of whom likes to live on higher floors for the enjoyment of better views and fresh air more than anything else (such as monetary benefit being on a higher floor). The same survey also indicated the concern over damaging effect on the growing up of children who live their lives in high-rise apartments. Mothers are asked of the distancing and separation from the ground because of high-rise living. The reply represents that a significant support to high-rise compact living (Figure 5). Japanese Researcher has raised similar concerns to Japanese residents in 1993. As expected, there was a difference in the response and considerable reservation towards high-rise living due to particular concern of child's physical detachment from ground activities. The remedy, as observed by researchers working together from both Hong Kong and Japan is the sophisticated design of an artificial ground on a podium acting as a substitute of the ground, introduced as a common feature to high-rise residential towers.

Concept of Sky City

In Hong Kong, activities do not happen on ground alone, always, they happen above ground! In this multi-layered city of Hong Kong, all kinds of human activities have taken place on two or multi-levels, as seen in a multitude of double layered web-like network of pedestrians walkways crisscrossing in and out of buildings or over pedestrian pavements and over vehicular traffic roads in most commercial or residential areas of the city. The segregation of pedestrian and vehicular movements arise not from planning theories but from the necessity as there are too many people on too narrow pavements, outnumbered by cars (Figure 6).

For a long while the practice of sky city supports the physical growth of the city. Double-decker bus, double-decker ferry and double-decker tram, double level pedestrian system, double-decker footbridges, and even double-decker elevators all are exemplifiers of the concept of sky city! Added to that is the emergence of sky malls in some of the city's new commercial developments. As one architect remarked in his first visit to Hong Kong, almost all things happened on different levels other than the ground! This is a true 3-dimensional Sky City!

Development of High-density High-rise Living in Hong Kong: A way of spatial planning

Stage 1

Like a lot of cities, it started with the fusion of commerce and residential activities, with the classic layout of shop on ground floor with residence in the rear, or on first floor. In those early days of Southeast Asia, this type of development is named Shop House, with most of which designed and constructed for climatic responsiveness. When the city expanded, the 2-stories shop houses took little time to transform into multi-stories residences on top of multi-stories shop houses.

Stage 2

The first major deployment of the multiple use of space could be found in a mass private housing development in the early seventies.

Case Study 1: Mei Fu Shan Chuen development

The Mei Fu Shan Chuen (Figure 7) is the first conceptualization of high-density and high-rise urban design by way of modularized housing for Hong Kong. It was a phased private project, which started from 1969, completed in 1970, and followed by successive phases of expansion over the years until 1989. Mei Fu today has 117 towers of 15 stories tall apartment buildings crowding on four adjoining sites constituting a self-contained township for its 46,245 mid-income group of residents or 13,068 households living on a small but compacted urban site close to business and fiancé centers on both sides of the Harbor.

The development is a blown-up version of the shop on ground and residence on floors above, made practical by a coalition of land use functions on the ground and upper levels such as bus terminus, food markets, gardens, sports ground, cinema and shops, thus, making it a self-sufficient city (Figure 8)! Over a period of almost 2 decades, the former seaward petroleum fuel storage yard and jetty site of Mobil Company is transformed into a livable city by the sea. The Mei Fu (Chinese name translation of Mobil) Model soon became a model for many more to come in the following years.

Stage 3

The success of the Mei Fu Experiment has a lot of impact on the acceptance of high-rise and concentrated living by the populace as well as government planners and developers. What followed and flourished over the next decades were not a repetitive copy of the Mei Fu Model but instead a gradual advancement of a highly sophisticated self-sufficient and mixed land use concept that became a driving force for the next generation of multiple use of space. For sites which are much restrictive in areas, designers have no hesitation but to stack up the living and non-living activities in a vertical layout. What evolved are towers of multi-stories residential apartments sitting on top of a relatively big podium in which all ancillary facilities are found. The second-generation model i.e. the fully developed podium model became a refined MILU norm for the period from the nineteen eighties to present. Its emergences were supported by the

amendment of the building controls statues, which sets the rules for a high-rise urban form (see table 1).

Case Study 2: Metro-City Residential Development, Tseng Kwan O New Town, Hong Kong

Tseng Kwan O (TKO) (Figure 9) is one of the 10 satellite towns⁷ of Hong Kong. Being the latest addition to the new towns, it is separated from most parts of Hong Kong by an hour over journey (our survey shows that most people's commuting time from home to work in the Central District is 30 to 60 minutes, facilitated by an ultra-efficient public transportation system).

The town is built over the old site of Junk Bay – a seashore site for recycling steel parts and bodies from obsolete ocean vessels. Artificial land was created by massive reclamation achieved in a relatively short span of time, followed almost immediately by massive housing construction. Here one sees forests of bamboos shots-like apartment buildings popping up under the barking sun and monsoon breezes of the South Pacific seasons. The towers are as tall as 40 stories and more recently reaching 60 stories, making the town of TKO a showcase of extreme high-rise high-density livable urbanity.

For the TKO Metro-City Development, it took its shape to the fullest in three phases with occupation from May 1997 to April 2000.

Phase One contains 2,048 households or 6,700 residents in 6 towers of 43 stories tall. Phase two houses 11 towers of 38 stories tall, has 3,344 households or 13,376 residents. Phase three comprised of 4 towers of 43 stories tall buildings that have about 1,376 households or 5,600 residents.

What is significant about these towers is not their astonishing vertical scale, but rather an underlying guiding principle that governs the spatial and functional relationship resulted in hundreds of similar developments in TKO. Here, one finds a unique Hong Kong fixation of a MILU application on a relatively small land parcel that afforded a floor area ratio of 10 times the

⁷ The development of satellite new towns in Hong Kong takes four phases, which begun from 1959. They are Tsuen Wan, Shatin, Tuen Mun, Tai Po, Fan Ling and Sheung Shui, Yuen Long, Tseng Kwan O, Tin Shui Wai, Tung Chung and Tai O.

land area, realized by 21 towers of over forty stories tall which houses a total of 6,768 families or 9,600 population.

The unique feature of such MILU development is the fact that all of the residential super-high-rise towers sit on top of a 100% built over podium of 15 meters or 4 stories tall. In this case, the three phased developments are developed from three land parcels connected by 24 hours accessible covered walkways, and conveniently connected to the Mass Transit Railway.

On the bottom floor is a terminal for both long haul and local commuter buses, maxi-cabs and taxis. Next to the transport terminal are post office and food market and supermarket. Within the podium situates a two level car park for residents and shoppers. There is also a shopping mall, which improvises retail, food, entertainment and all kinds of supplies and goods outlets. On the roof is yet a different land use, comprised of landscaped park, playground, indoor and outdoor swimming pool, club house, tennis courts and jogging paths, all for the exclusive use by residents living in the towers above the podium.

The Metro-City case exhibits the art of connectivity as discussed in the concept of connectivity. The Metro-city podiums, like hundreds of other similar MILU podiums in the area, are connected with each other by covered walkways, making it in effect a connectable town of multiple layers.

It is interesting to note that the three developments have in fact their own podiums of shopping malls, shared clubhouses, car parks, and other recreational facilities.

The Survey

The author conducted a survey to investigate the subjective response of residents of high-rise, high-density living in Hong Kong. The survey was conducted in the period of September 2001 to February 2002.

The objectives of the survey is summarized to be:

- (1) To investigate users' responses towards high-rise living in existing residential buildings in Hong Kong that are mostly 30-40 stories high and constructed in the period of 1990s.
- (2) To formulate underlying principles for social acceptance towards high-rise living in the Hong Kong context.
- (3) To predict local social acceptance towards a high-rise living which is moving upwards and higher. The question in mind is 'Will Hong Kong residents accept to living in 100 stories and higher super-high-rise towers?'
- (4) To compare with the findings of Japanese research on high-rise living in 1993.

At the end of the survey, a specimen of 100 families was surveyed. The specimen is considered adequate as they represented a wide range of different scenarios for the Hong Kong living environments, summarized as:

- (a) Two-thirds (68%) of the specimen lives in different urban areas on Hong Kong Island and the Kowloon Peninsula, while one-third (32%) live in the new towns in the rural areas of mostly the hinterland to the north of Kowloon known as the New Territories.
- (b) 99% of the families live on different floors of existing high-rise residential buildings, with an exception of one who live in a two stories village type house, which has been disregarded in the analysis.
- (c) 36% of the families live on 25th Floor and above, with the remaining on different floors on high-rise buildings ranging from 15 stories to 43 stories overall.
- (d) Majority families belong to the mid-income group (Table 4, Figure 10, 11). The randomly distribution of interviewed families gives the following breakdown – there is a small proportion of mid mid-income families with monthly family income ranging HK\$30,000-50,000 (17 out of 100 families); a large proportion of well-off middle families receiving \$50,000 and above (77

out of 100 families); and an insignificant proportion of the surveyed families (7 out of 100 families) that have a low income of around HK\$20,000 per family. [HK\$7.78=U.S.\$1.00]

(e) Almost 60% of the families have children of varying age (from age 7 months to 15). Children are defined for the purpose of the survey to be age 15 or under.

(f) No attempt has been made to identify the contribution from grandparents in the families surveyed as this is deemed a topic for a separate exercise.

Questionnaires are designed and provided to these families through students and social contacts on a random basis. From those who returned the questionnaires, contacts were further made to solicit home-visits for interviews and photo taking. The overall response pattern for home-visits and photo taking is 40% and 35% respectively due to difference in attitudes towards personal privacy.

Concern 1 – Views

84% of the residents surveyed perceive that View is a main advantage or benefit of living in a high-rise tower (Figure 12).

This is a story of a young working couple in Hong Kong. Mr. And Mrs. Chiang moved into their newly acquired apartment two years ago. They had lived on the 6th floor of a 30 story residential development on Hong Kong Island, developed a craze for height in their new home. Because of that, the couple had no hesitation to invest on a seaward unit on the 30th floor of the newly designed waterfront complex that comprise 9 towers on a podium of retail complex and roof gardens and residents' club. The panoramic and picturesque view of Hong Kong Island over the Victoria Harbor is an eye-refresher for both of them day in day out.

On entering the Chiang's apartment, one is stunned by the superb view of Hong Kong Island, with the beautiful Victoria Peak as backdrop, and vibrant Victoria Harbor in the foreground. There is no doubt of what attracted Mr. and Mrs. Chiang to live here. The couples told the interviewer that the stunning view of Hong Kong, seen from every space in the apartment is an ultimate joy for them and their visitors. For the couple, relaxing in their computerized massage

chair facing the Harbor view after dinner is an instant cure of stress and strain from daily work and was the main reason behind living on heights.

As in most other residential developments in Hong Kong, access to recreation facilities for residents and access to public transport network -subway and commuter buses (that offers connection to work within 30 minutes door-to-door travel time), and connection with neighboring retails and entertainment complexes is the secret to the wide-spread acceptance to high-density and high-rise living in Hong Kong. In this respect, Mr. and Mrs. Chiang are veterans in the sports game of bowling and goes to bowl in the shopping mall from time to time. Alternatively, they would visit the sound-surround cinema-plex or choose to socialize with their friends in a variety of eat-out places in the podium malls that are within walking distance.

Concern 2 – Quietness, fresh air and breezes

Apart from view enjoyed from the high-rise residences, the next perceived advantage of high-rise living is the enjoyment of quietness (47%), and fresh air (44%) (Figure 12).

Mr. Mok lives on his own unit on the 33rd Floor at Metro City. The 80 Sq. M. area apartment is a big sized home for two persons - Mr Mok and his father.

In the daytime, Mok works as an employed Architect in the City. Mok is a commuter and goes to work in air-conditioned public bus day in and day out. After work, he spends most of his leisure time in piano practicing and entering open competitions in piano performance.

He meets most of his friends at the local music schools found in the retail podium. After the music school, the company would eat and relax in one of many local cuisines in one of the three podium of Metro-City's. Mok's father is a retired person and spends most of his daytime either on the roof garden or with friends in the retail podium. So, for both father and son, most of their after-work and leisure time are spent at different locations of the retail podium close to where home is (Figure 13).

It is therefore interesting to note that the father and son spend most of their working and leisure activities within the community where they live. This is identical with Mr. & Mrs. Chiang, both of who work in the city but spend their leisure time in short distance from home.

When interviewed, Mok's reaction to high-rise living is a pleasurable experience of peace, quietness and enjoyment to fresh air and breezes due to extra stories over the rest of neighboring towers. For him, there was little concern over the distancing from work due to an effective public transport facility.

Mok's relationship with his neighbor is indeed an intimate one. In this case, his bedroom is designed with a large-sized window facing onto another residential tower of a near-by development. The window-to-window relationship is defined by a mere distance of 10 Meters or so apart, between the two towers, and invites doubts over privacy intrusion.

But interestingly, the response from Mok, who bought and resides in the apartment for three years, has little worry over the concern. For him, this is just another aspect of living in Hong Kong, and his reaction conforms to the Psychologist's depiction of a cultural adaptation in the social sharing of space.

Concern 3 – Effects on young children

98% of the families surveyed do not see any bad influence on the growing up of their children due to high-rise living. The few families who had bad experience or worries over undesirable impact on child growth caused by high-rise living are connected with their children's social interactions with other young ones. For these families, they would take more initiatives to compensate such disaffects or worries by taking their children to community centers or child centers for social contacts on a more regular basis.

Mr. and Mrs. Ho live in a massive residential complex on the southern shore of Hong Kong Island. Like most of his neighbors, Mr. Ho traveled daily to his office in the Central District by huge double-decker air-conditioned bus operated by the public bus company. Mrs. Ho stayed back at home to take care of their 7 years old son. The family lives in an apartment of about 65

Sq. M. on the 41 st Floor of one of 34 towers of the Southern Horizon Development, home to 5,000 families.

Families like Ho's are subject to investigating the impacts on the growing up of children in high-rise buildings in Hong Kong. Special questionnaire was devised with reference to Japanese researches and Japanese social experience. As a matter of fact, most parents in this group of families surveyed belong to the age group of thirties, meaning that majority of them were themselves actually brought up in high-rise residential buildings (During the Seventies, high-rise residential buildings ranged from 15 to 20 stories high, as compared with 30 to 40 stories in the Nineties). So the study was directed towards young parents who experienced growing up in high-rise living and aware of any impacts on their young ones.

The case of Mrs. Ho who gave up working in her office after giving birth is not uncommon although there are equal amount of mothers who remain working and rely on the support of either grandparents or more is the case today on employed amahs. (In Hong Kong, there are as many as half a million Filipino women employed legally as live-in domestic helpers.)

When asked about the impacts on her young one, Mrs. Ho gave a very positive answer against any noticeable undesirable impacts on concerns such as physical growth, social contact skills and maturity of her young son. This confirms the response pattern of other parents in this group of interviewees.

It is noted however, most mothers are satisfied with the provisions of recreational facilities available at their housing complex to counteract the worries over spatial need and social need to facilitate children's growing needs, the commonly found facilities are:

- Green space
- Trail and paths in landscaped surrounding
- Outdoor playground for young children
- Residential club facilities to include indoor games play rooms for children, indoor or outdoor swimming pool, reading and socializing space for children and mothers.

For Mrs. Ho, such requirements are well provided, as the South Horizon project is well known for its environmental and landscaping design. With three sides bound by the Aberdeen Sea, the towers enjoy good breezes, ventilation, attractive sea views, excessive planting and outdoor/indoor recreational facilities for residents.

Discussions

Discussion 1 – Future preference for house type: house, low-rise or high-rise?

This question was posed to the residents with an assumption that the residents had enjoyed a major improvement on their financial situation and desired to sell their existing homes so that they would acquire and live in a new residence of their choice.

Of those who replied, it is interesting to note that there is as high as 77% who still prefer high-rise living, followed by 16% who prefer shift over to houses, and 7% who prefer to live in low-rise buildings.

Tony Wilson, a government Chief Architect who has practiced in Hong Kong for over thirty years, used to explain the three contributing factors for a high-density and high-rise city – Changes (population), Compact (living), and Connectivity (the 3C Factor). From this, the author further develops his own interpretation of the rationale behind the above response. For the author, the success to high-rise and high-density living depends on three pre-requisites: Comfort, Convenience and Connectivity. Failure to meet any of the three would topple the acceptance for high-rise and high-density living. This is clearly echoed by the residents' response that they enjoy Comfort, Convenience, and Connectivity in high-rise living, and for the same reason, they would continue like living in high-rise towers.

Discussion 2 -- Comfort and Convenience

From the survey, it is clear that comfort and convenience are two related important factors for measuring the standard and quality of life. Here, comfort also meant security, safety and Comfort

Discussion 3 -- Connectivity and homework travel time

In his book, *A Scientist in the City* (1997), author James Trefil referred to an interesting discussion of “45-minutes” as a universal threshold to determine the acceptable maximum distance between home to work.

As expected, the “45-minutes” law has its stronghold in Hong Kong. In many of the surveyed cases, the travel time between home to work fall within 30 to 45 minutes.

As in the words of local Architect Rocco Yim, the city architecture of Hong Kong demonstrates a deep appreciation for connectivity of buildings in a cramped and at times dreadful urban set-up. In the case of Hong Kong, the acceptance of the connectivity concept is measured by local developers and designers’ sensibility and readiness to connect buildings, and therefore, to connect movements and activities. In reality, Yim argues that the connections between buildings require not only an engineering ingenuity but, at the same time, a sense of aesthetics expressed in the art of making these connections.

Yim described this connective architecture as the 'Aesthetics of Connection', as seen in over 90 numbers of office buildings in the Central Business District, which are all connected in an efficient and elegant manner.

The same concept of connectivity is also found in other land-uses such as residential areas. For those expensive residences with breath-taking views built on mid-levels localities throughout different parts of Hong Kong, the rapid concentration of residences took no time to convince the government to plan a series of mile long escalator network to move people from home uphill to work downhill and vice versa. To day, the first of such escalator system was in use as a people-mover system. The so-called Central District escalator network or better known as the ‘Soho’ has an unexpected benefit. Within the first year of its operation, land-uses along the escalator network were transformed and re-vitalized by pubs and cuisines of all tastes, resulted in a re-generation of the area from a dilapidated state into a ultra-modern and stylish hang-out area for all ages.

In the urban areas, typical residential development conveniently adopts the podium concept by locating one to several towers on top of a podium which would accommodate the artificial ground on its roof and a multi-level car park within. Connection will be made to a neighboring public transportation node such as that of a subway station to offer connectivity and convenience to its residents (Figure 14). The development of the podium concept to combine, share and extend MILU function becomes an effective tool for public and private sector to combine and share community-based facilities. This practice is magic in the extension of rural area into satellite towns, as experience in Hong Kong (Figure 15). In the rural areas, almost all of the residential podium developments in a new town would connect by covered footbridges to help share the connection with public transport facilities such as trains or major transport terminal, as well as the sharing of retail and car park facilities in different podia (Figure 16).

The art of connectivity is visible in the new towns of Hong Kong. Shatin New Town was the first of these to incorporate connectivity in its town plan which mandatory required all developers to make connections with each other by means of overhead all-weather 24 hours access pedestrian bridges at the costs of developers (and ultimately the cost is transferred to the residents via the sale price of the residences). Today, connectivity is a daily acts for all kinds of land uses in urban and rural areas.

Discussion 4 - preferring a high-density, high-rise urban form

For Hong Kong, the occurrence of a high-density and high-rise urban form was probably due to extreme pressure from a shortage of land supply versus the demand for housing and other human activities. As pointed out, urban density in Hong Kong today achieved a world record. In retrospect, such ultra high urban density is caused by social and economic hardship experienced in the early days of the mid-sixties of the last millennium that sparked off exodus of refugees from Mainland China into Hong Kong. The Government then had no choice but to improvise it with mass housing schemes by means of economical and land resources within shortest possible time. In the forty years that followed, the mad-like rush was to meet the housing demand of a million populations increases every decade. Soon, it became apparent that low-cost public housing alone was insufficient to cope with the incessant demand for housing, and the private sector soon began constructing speculative housing consisted of residential towers with saleable

flats targeted for mid-income families. The Government responded by a regulatory land sales policy that in no time became an inexpensive and effective tool to generate revenue for the Government.

If population-increase was the initial cause for the high-density urban form model, it is undeniable that economic consideration was a secondary but equally significant cause responsible for the high-density urban model. For decades that followed, land sales revenue account towards as big as 20% of the Government's annual budget, which facilitates Hong Kong to be one of the world's lowest taxation economy and a free capital market that draws in huge amount of international investment funds.

At the same time, economic achievements of Hong Kong in the area of textile, garments and toys industry have contributed towards the economic strengths of its people, which in turn led to an improvements in the standard of living and life quality.

The author summarizes the making of high-density and high-rise urban form in Hong Kong by four stages:

Stage 1 1960s-1970s

- a. Substantiated growth in population.
- b. Limited resources
- c. Low quality and minimum standard

Stage 2 1970s –1980s

- a. Regularized supply of land
- b. Economic benefits brought by a high land price policy – the birth of a low taxation and free capital market
- c. Emergence of Hong Kong as a financial capital market in the world
- d. Emergence of Hong Kong as one of world's top 40 economies.

Stage 3 1980s – 1990s

- a. Establishment of Environmental Protection Department
- b. Country park and marine park ordinance enacted.
- c. Operation of Mass Transit Railway and many highway systems

Stage 4 1990s onwards

- a. Economic boom brought increase in GNP and salary levels.
- b. Escalating of property price continued.
- c. Changes in political governance and economy

Discussion 5 - Measure of Livability of High-density, high-rise Urban Form

The Paper presented several case studies to illustrate the development of a high-density and high-rise urban. It is worthwhile to note that because of the immense pressure from market demand, real estate developers and government planners adopted an empirical approach towards the collective search for a socially and economically viable solution. These case studies ended with experiments concluded during the Nineties that resulted in an ultimate model of an urban form that in turn bled a livable city.

The Hong Kong case study ended by referring to social, economic and health measure to justify the success of a high-density, high-rise urban form.

As it happens, majority of the world's Mega-cities are in Asia (Beijing, Shanghai, Bangkok, Jakarta, New Delhi, Dhaka, Tokyo) all of which exhibit the problem of overcrowding and overpopulation. Recent study⁸ by the author shows that there is a growing demand for high-rise

⁸ The co-author Lau and researchers in Hong Kong and Tokyo were awarded a grant from the Japan Foundation, Japanese government in 2000 to carry out a joint research study entitled '*Re-thinking our future cities, Hong Kong and Tokyo as model for Asian cities – empirical investigation of social, technological and ideological impacts of diverse cultures in making of cities into the 21st Century*'. The study resulted in the single out of socio-cultural preferences as the ultimate deciding factor in the choice of the lifestyle. After the end of the study, the author is engaged on an extended 2-year study to compare the lifestyle for young couples in the city of Tokyo and Hong Kong.

and multi-function developments in central Tokyo. For most of these Mega-cities, high-density living rather than the Urban Sprawl model becomes a daily practice instead of an skepticism.

For Hong Kong, high-density, high-rise is integrated with a high floor-to- area ratio (plot ratio) way of urban planning which continues to offer urban dwellers an exciting and comfortable lifestyle that prospers, and more significantly, influences the present and future prospects of the 600 or so expanding cities in China. Again to quote the words of Dutch researcher on Hong Kong, Stan Majoor, “the lessons from Hong Kong are valuable, because it demonstrates that high level qualities can be attained through ‘labyrinth’ design and attractive mixing of public, private and semi-public spaces.”

	Maximum Domestic Plot Ratio				
Residential Density	R1***		R2	R3	R4
Metroplan Area	Existing Development Area	8/9/10* (HK Island) 6/7.5** (Kln & N.T.) 8 (Tsuen Wan, Kwai Chung, Tsing Yi)	5	3	-
	New Development Area and Comprehensive Development Area	6.5			
New Town (excluding Tsuen Wan)	8.0		5.0	3.0	0.4
Rural Area	3.6		2.1	-	-
<p>* Maximum domestic plot ratio of 8, 9, 10 depends on Site Class A, B, C respectively.</p> <p>** The maximum domestic plot ratio is in accordance with those stipulated on OZPs and site class is not relevant.</p> <p>*** R1 -- High density zone, with large capacity of public transport, such as railways, or public transport interchange, podium for commercial use. R2 -- Medium density zone, with high capacity of public transport system but no commercial floor space. R3 -- Low density zone, with very limited public transport, or area subject to constraint for urban design traffic, or environmental reasons. R4 -- Detached or semi-detached houses up to 3 storyes high, including carpark.</p>					

Table 1: Residential Densities in different regions of Hong Kong (Sources: Hong Kong Government, Planning Department, 2002)

Table 2: Land Use of Hong Kong (Sources compiled from: The Quaternary Geology of Hong Kong, May 2000; Hong Kong Government, Census and Statistics Department, 2001)

Situation	Covered by sea	land	Reclaimed land
Percentage	60	38	2

Total area within HK region = 2,904sq km
 Land = 1,076sq km
 Sea = 1,828sq km

Land use	Urban or build up land	woodland	shrubland	grassland	agricultural	reservoirs	other
Percentage	21.1	17.3	21.9	28.2	5.2	2.2	4.1

Table 3: Percentage of Different Types of Housing in Hong Kong in 2001 (Sources complied from: Hong Kong Government, Housing Authority and Housing Department, 2001; Hong Kong Government, Census and Statistics Department, 2001)

Types of Housing	Public rental housing	Housing Authority subsidized sale flats	Hosing Society subsidized sale flats	Private permanent housing	Temporary housing	Non-domestic housing
Percentage of population	31.9	16.1	0.8	49.0	1.1	1.2

Table 4: Percentage of Monthly Family Incomes in 2001

Class	Poverty	Below average	Average	Above average	Total
Monthly family income (in HK\$)	<3,999	4,000 - 14,999	15,000 - 19,999	>20,000	-
Family Number	163,423	648,702	262,086	979,201	2,053,412
Percentage of total families	8.0	31.6	12.8	41.6	100.0

Figure 1: Population Growth in Hong Kong

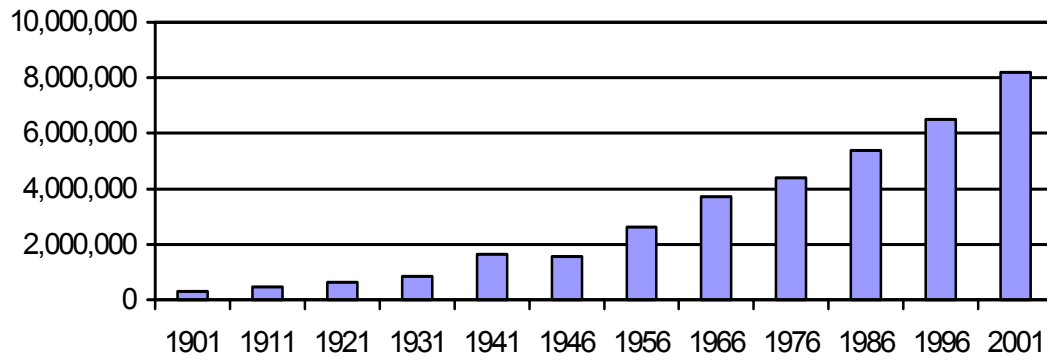


Figure 2: Extension of Space



Projection of space from the window is one of the most usual means of Hong Kong domestic householders to expand their living space, though usually the projection is composed by illegal structure.

Figure 3: A Chinese Restaurant



In Hong Kong, when most apartment homes have a relatively small area, many families prefer to entertain their guests or friends in commercial places as an extension of their homes.

Figure 4: Different Regions, Respective Land Area and Population Densities of Hong Kong (Source compiled from: The Quaternary Geology of Hong Kong, Hong Kong Government, Census and Statistics Department, 2001)

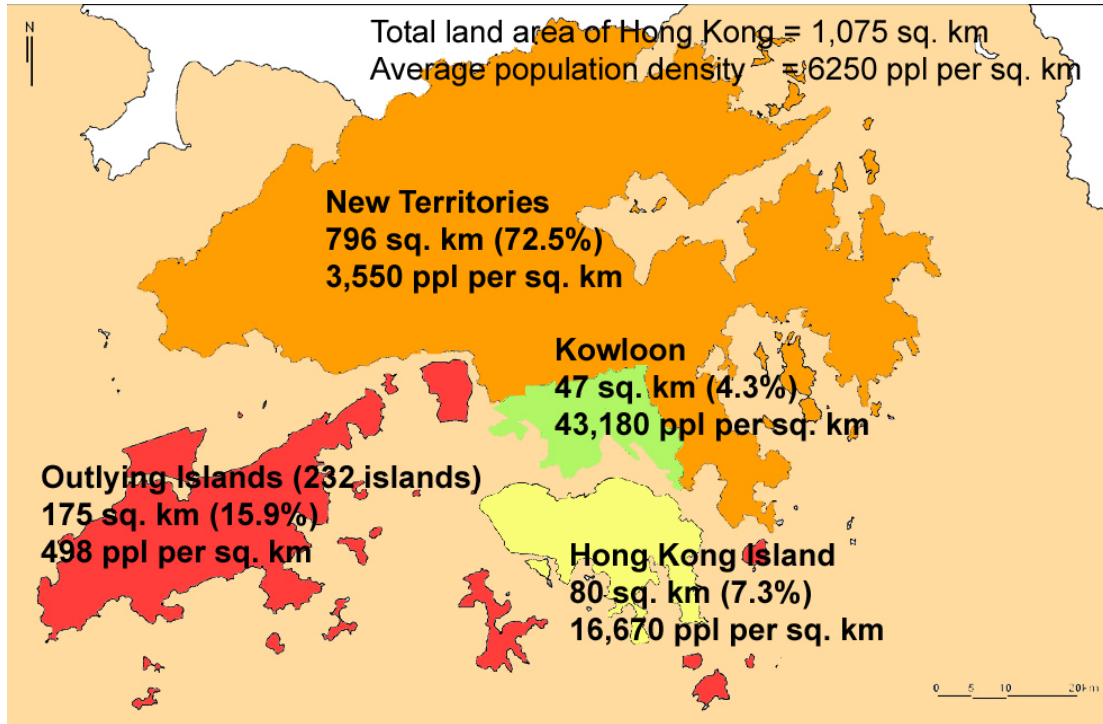


Figure 5: Preferable analysis of preferable housing types.

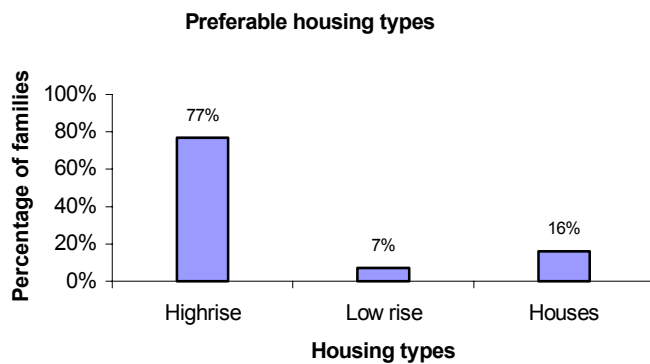


Figure 6: Central escalator system and pedestrian bridge



The escalator passes from Connaught Road Central, through Hang Seng Bank Headquarters & Central Market, goes uphill Cochrane Street, Hollywood Road, Shelley Street, Robinson Road & last at Conduit Road. Along the escalator, it is linked by varies commercial buildings and residential blockings. Also, in 1998, that region, together with the escalator, was developed to an international catering and entertainment area, which was named Soho, as describing the area **S**outh of **H**ollywood Road. It is now becoming a famous tourist spot of Hong Kong.

Figure 7: Case Study 1 Mei Fu Shan Chuen



Mei Fu Shan Chuen started developed in 1969, and now has 117 towers of 15 stories tall apartment buildings crowding on four adjoining sites constituting a self-contained township for its 46,245 residents or 13,068 households living on a small but compacted urban site.

Figure 8: Shops on ground and residence on floors above

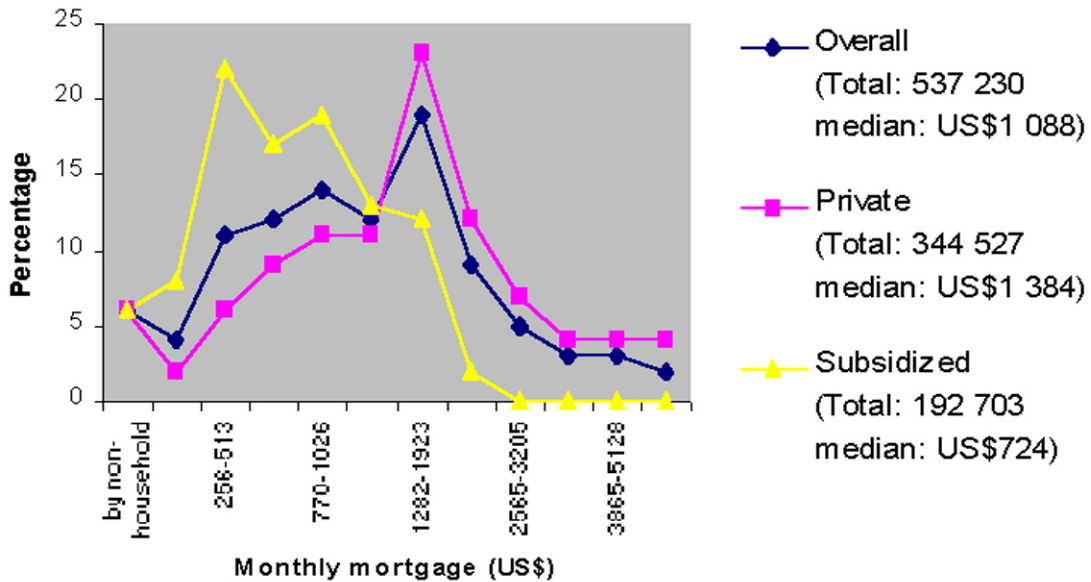


Figure 9: Case Study 2 Tseng Kwan O



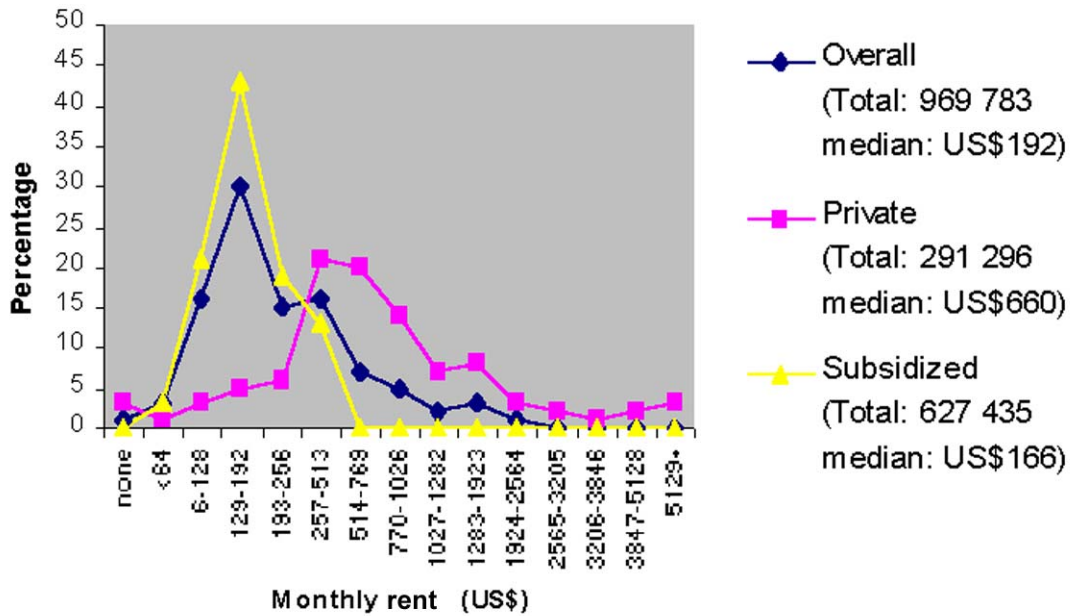
The podium is served as an artificial ground, on which sitting the recreational facilities and green spaces for the residents.

Figure 10: Percentage of Monthly Domestic Mortgage



Monthly domestic mortgage

Figure 11: Percentage of Monthly Rent



Monthly domestic rent

(Sources compiled from: Hong Kong Government, Census and Statistics Department, 2001)
 US\$ 1 = HK\$ 7.8

Figure 12: Advantages of high-rise living

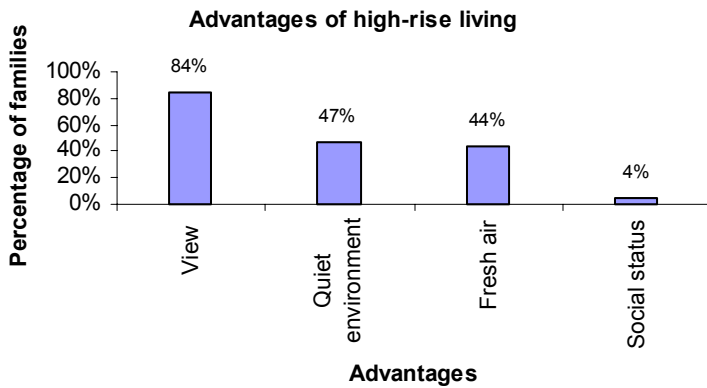


Figure 13: Green space on podium

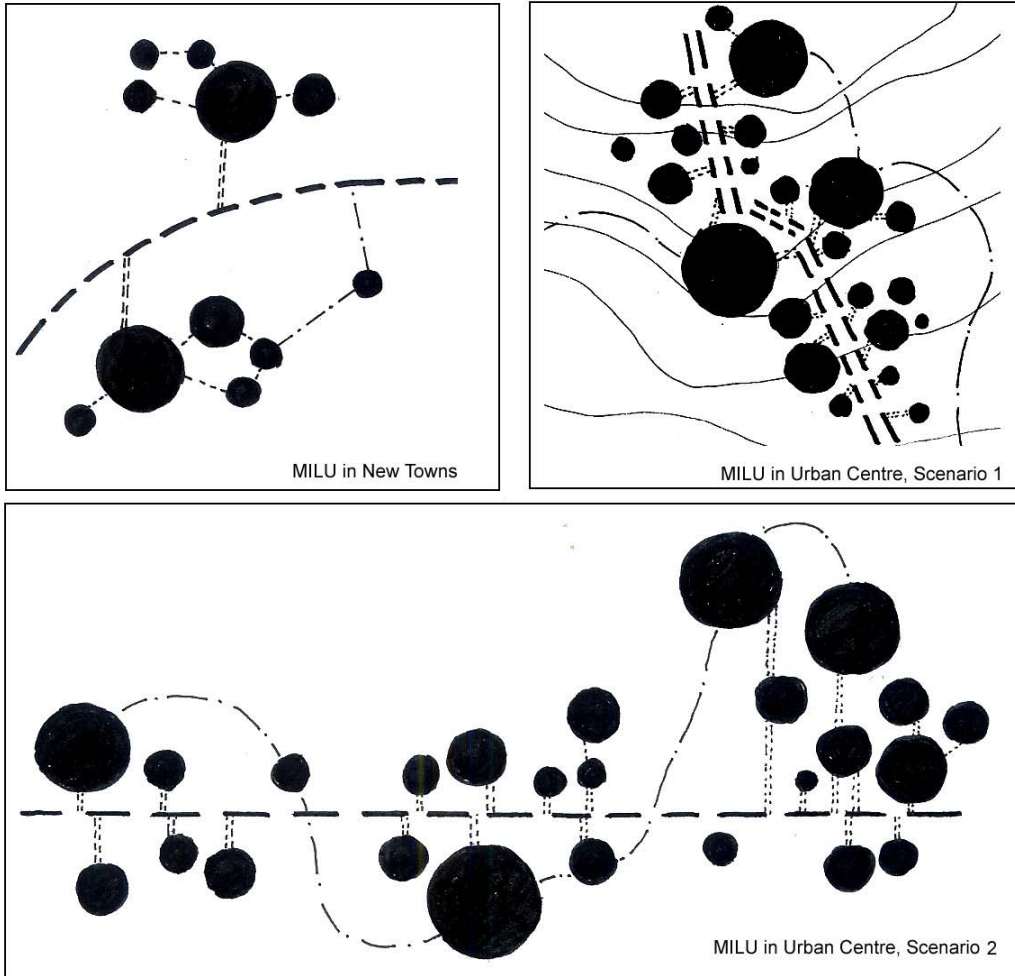


Figure 14: Segregation of Traffic and Pedestrian Flow



This is a typical view of M.I.L.U. in Hong Kong: Office towers on top of a podium/ civic open space, pedestrian bridges linked with the podium and public transport interchange beneath the podium.

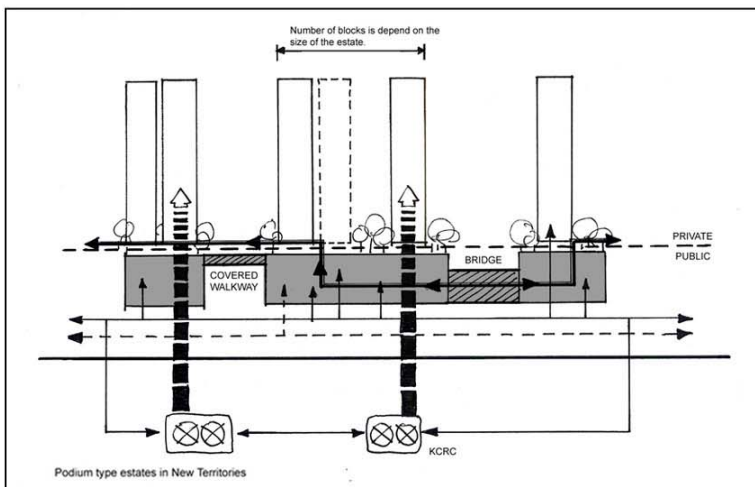
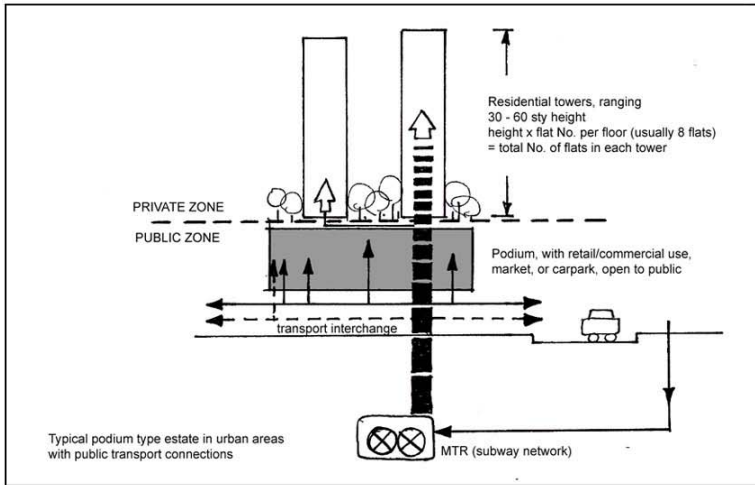
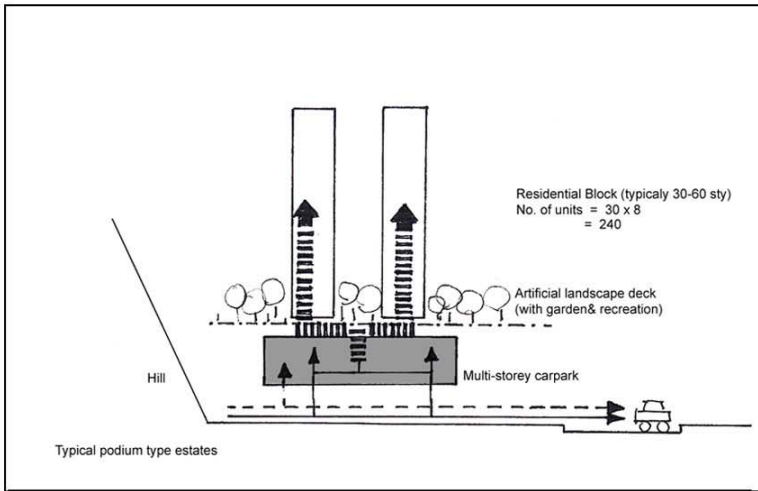
Figure 15: Conceptual diagram of MILU



Conceptual Diagram of MILU Application in Hong Kong

- MILU residential estate
- - - - rail based public transport
- ≡≡≡≡ up-hilled escalators
- · - · - other means of public transport connection
- ≡≡≡≡ connection
- - - - walkway/bridge

Figure 16: Schematic Section of Podium Development



- |||||➔ RESIDENCE
- ➔ GENERAL PUBLIC
- - -➔ TRAFFIC

Schematic Section of Podium Development in Hong Kong

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