Hong Kong Innovative Housing:
An Economic Driver for 2020s?

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Abstract

Although public, private housing and other types have played different roles in history, considerable changes have taken place after the 1970s with growing affluence in Hong Kong. In the 1990s, globalization and quantum leaps in Information and Communication Technology have called for competence and competitiveness on quality talents. With emerging Generation Z, mobility, new and sustainable lifestyles, Hong Kong will have to explore alternative housing types and forms to support innovation. While conventional public housing was often treated as aids, housing for innovation could become an economic driver to stimulate trade. The new economy has called for the development of multiple entrepreneurships to capture new opportunities as appeared in clusters of activities crossing many realms. Unilateral and multi-lateral interactions may enhance human and financial resources as an energizer to drive the economy. It may interact with technological incubator, six economic pillars as well as new towns to create new thrusts for Hong Kong. This study highlights parts of Michael Porter's "diamond" model and in particular the factor and demand conditions on several cases of emerging Innovation District, University City, Science and Technology Parks on Hong Kong and overseas to identify their housing characteristics and relationships with the Schumpeterian economic paradigm on innovation. They could provide the foundation for a strategic framework for flagship projects such as the East Lantau Metropolis as a Smart City and in other parts of Hong Kong.

Keywords: Innovation, housing, aid and trade, competitiveness, Michael Porter diamond, Josef Schumpeter, Innovation District, University City, Hong Kong East Lantau

Introduction:
## The Case of Housing in Hong Kong, Innovation Waves from the West

The history of mass public housing in Hong Kong is often traced back to the 1953 Shek Kip Mei fire as a major squatter area, where the loss of home by over 50,000 people became a concern. To minimize potential social unrest, the Hong Kong Government decided to set up a new Housing Department to spearhead public housing permanently, which was later elevated to a Housing Authority for mass efforts, based on the "*aid*" paradigm. Many inhabitants worked in early factories nearby or where accessible by public transportation, e.g. Tsuen Wan and Kwun Tong. In 1972, the new

town movement in the New Territories proceeded with full speed by separating residential and industrial uses from one another, e.g. industrial estates in Shatin, Fanling, Taipo and Yuen Long etc. Building standards, infrastructures and open spaces were improved. In the next fifty years, the ratio of subsidized public housing was about 45% most of the time.

In the 1980s, Hong Kong was still able to compete with the other exporting nations among the Four Little Dragons with low costs on raw materials, labor, facilities, transportation and logistics within the territory. Subsidized housing was obviously a contributing factor. However, with the opening up of Mainland China in 1978 and the setting up of Shenzhen and Zhuhai Special Economic Zones and others around the Pearl River Delta, many Hong Kong industrialists have begun to move their factories to the north. With a fraction of the costs in Hong Kong, the PRD and Mainland China has become both a partner with and a competitor of Hong Kong. Using a leapfrogging development strategy on mostly original equipment manufacturing of industrial products, Shenzhen was able to achieve double digit economic growth at over 25% in some years.

Briefly, Hong Kong's business environment (1980s-2010s) can be summarized into two essential conditions, i.e. competitiveness and competence (Porter, 1990; Hamel and Prahalad, 1990; see Fig. A). In reviewing their commonalities and differences of various cases, this study explores in parts their key performances by using whole or parts of Porter's diamond model particularly on Factor Conditions, Demand Conditions, Related and Supporting Industries and Firm Strategy, Structure and Rivalry. Two more elements on "Chance" (luck) and "Government" (policies) will complete the picture, but at this stage will fall outside the scope of this study.

Figure A: **Michael Porter's Diamond Model**
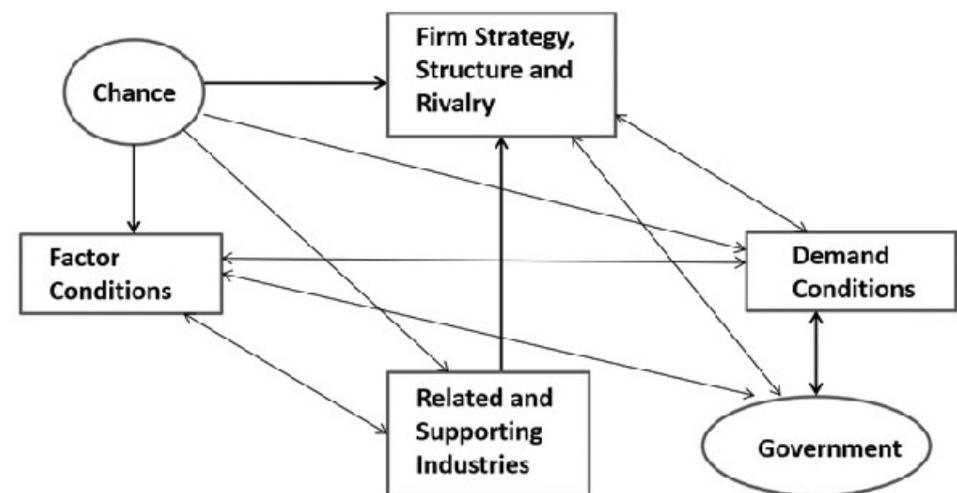
(Source: Porter, 1990, p.127)

Waves of Innovation from the West: Silicon Valley and Seattle

In post-80s Hong Kong, advancement and massification of higher education and strong sense of capitalism in general business had enhanced quality human resources to enter the service sector such as banking, tourism, retail, professionals, education and others, i.e. the *"white collars"*. In the 1990s, waves of ICT had spread to Asia from the Silicon Valley, where innovations began as early as 1970s. The stories on Microsoft and Mac Apple had become landmark cases. Thereafter it was a watershed on changing the competition game from cost-based to innovations, as ICT permeated many realms. In San Jose, single family homes dominated the housing stocks, typical of the North American suburbs. This was where Steven Jobs used his *"garage"* to develop new products, with persistence on *"originality"* and *"sole proprietary"*, i.e. the niche market segment. Aside from cosmopolitan San Francisco with its spectacular maritime setting, the Bay Area was filled with ICT juggernauts, mostly Chinese and Indians, who have been working in the Valley for some years. Most have extensive networks with their homeland with business developments, e.g. Bengalore, Hsinchu, Monte Jade Science and Technology Association and later Chongquancun.

In Seattle, Bill Gates grew up in a well-off family and was widely exposed to the early computers. Gifted in math and science, he had also developed strong empathy on entrepreneurship, for which he even quit Harvard later to form Microsoft. He felt the need to enter the ICT markets early, instead of waiting for a few more years. Gates prefers *"open platforms"* with major products, e.g. linking Operating Systems with IBM, thus maximizing compatibility with most main stream products, regardless of their brands and make. Instead of creating something that is *"new to the world"*, he has wider options to include buying others' products to support his own development. An example is Lotus 1-2-3, which was created by some Harvard business students to do spread sheets. It was sold to Gates at a very low price and still embedded in the Office Excel today.

While Seattle shares some of the liberalism amid deserts, beaches and vineyards of California, its location in the natural resource-rich Pacific Northwest has inherently strong empathy on their alpine country or *"ecolopolis"*. With sparkling clean streams, glacial and fluvial lakes around the Puget Sound offer water sports, sailing and whale watch, it is enhanced by high-tech, intellectual and other kinds of innovation with rich lifestyles and sustainable themes, e.g. Boeing, T-Mobile, Amazon and Starbucks. With the imminent completion of the High Speed Rail, the Seattle-Vancouver Nexus might even have a stronger link in the coming decade, with a traveling time of one hour. The housing types in Seattle are dominated by single family homes over time in an area with rich history on timber, fur, gold rush, port, aircraft and software. The geography is hilly with irregular landscapes, interspersed with sea, rivers, forests, lakes, and fields. The dominating salt water body is the Puget Sound in the west and Lake Washington in the east. Where abundant fresh water supply is available, the Tri-City area and their river confluence in the interior east is a major nuclear energy-producing center.

In multicultural Vancouver under social welfare capitalism, housing has transformed into a good mix of single family homes, multi-family apartments, urban mid- and high-rises. Diverse elderly and underprivileged housing dotted the city to provide varied options for affordable housing. As one of the most livable cities globally, its Chinese population will reach some 58% or about one million in the 2020s. Depending on the locations, housing types will each have their own distinct characters. The college towns of both University of British Columbia and University of Washington have embarked on significant research and development facilities, namely in medical science and ICT, supported by on-campus housing partly open for rental or sale openly on the markets, thus creating a very vibrant and liberal environment. These campuses have long history of land endowments to support quality higher education, which are tied in with their nation building process over the years.

Innovation and Housing in Asia:
Cases on Techno-Entrepreneurship and Job Creation

In Asia, Taiwan, Singapore and Korea had embarked on their high-tech ventures, supported by vast supply of well qualified science and technology researchers and developers. By sustaining training of its IT experts mostly in the US, Taiwan was able to set up its Hsinchu Industrial Park in 1977, a private sector-led venture founded by Kwoh-Ting Li (李國鼎), a former Finance Minister. With strong networks and organizational capabilities, the Park was able to attract numerous venture capitalists, but highly selective on R&D hardware expertise to meet stringent requirements, e.g. original equipment manufacturing for Mac Apple. Even after the 2008 Financial Crisis, these capabilities were still able to allow many to sustain exports. In 2015, the Park has grown to over 130,000 employees, making some of the highest incomes in Taiwan. Most of them live outside of the Park and commute to work. Only a few percentage or about 2,000 people reside within the Park, likely some of the expatriates and on-site administrators. Taiwan has also set up other S&T Parks to balance socio-economic and technological developments on the island, e.g. Taichung. In its Xitun Industrial District, it produces high quality bicycles using new alloys, with some designed and made for Olympics competition. It also hosts the *"Shoes Nest Exhibition"* regularly. In the 2010s, Kaoshiung in the south is growing from a logistic center into an upscale retail hub, by stressing place-making flagship projects near the Port area. With varied mountains and valleys, many Taiwanese farmers have transformed their farmsteads into small hostels to accommodate tourists, i.e. the nature seekers. They have added rich and contrasting humanistic vignettes of green to the hard-felt high-tech scene.

In Singapore, some of the earliest industries were ship building and repair, typical of an early port city. In 1968, Singapore set up its Jurong Town Corporation, mostly for mass manufacturing replications. The latest Singapore One North Science Park is about 500 acres, with Biopolis and Fusionpolis, integrated with quality housing, leisure and recreation. Lucrative company packages may have driven up housing prices, but with some 80% Singaporeans already living in public housing, the effects on the locals will

likely be moderate. The growth path of Science Park Strategy Singapore is towards a government-led global one in infrastructures and signaling. It is also extending its urban planning and development expertise including housing in China by spearheading many mega science and technology parks, some with unique regional and local characters, e.g. Tientsin Eco-Science Park. These parks are integrated with China *"1000 Talent Plan"*, in which housing subsidies are offered as part of a package. The amount may range from RMB0.25m to 1m. In 2015, Singapore is merging its four major public corporations in urban planning and development, i.e. Jurong, Ascendas, Temasek and Singbridge into one to compete better on mega projects, including those in China and overseas. In Asia, the values of S&T Parks are based mainly on the R&D technical capabilities of the talents and the production system in the parks.

The post-1960 South Korea had experienced high growth of an average 10% annually, progressing to become a major exporting nation. Its population is well educated with some 85% having gone through college and 65% with an undergraduate degree. In the late 1990s, it was serious harmed by the Asian Financial Crisis, but had proven to be highly resilient. A strong collective national spirit had called for the nationals to put their valuables such as gold and silver in trusts and support of the nation. It managed a quick recovery by tripling growth in the next few years. Having been ranked as the top country by the Bloomberg Innovation Index, its three most prestigious ones are the *"SKY Universities"* (Seoul National, Korea and Yonsei) and *chaebols* like LG and Samsung, which the graduates aspire to study and work for. These brands are capable to rival world class conglomerates like Mac Apple to compete on markets and technical capabilities. In 2008, the Daegu Gyeongbuk High-Tech Medical Clusters / Technopolis began construction with a target population of 50,000. It is home for institutes of research, including the Daegu-Gyeongbuk Institute of Science and Technology (DGIST). Some 95 percent of all the industrial lots have been bought or rented by 84 companies. Eleven of these companies are currently constructing their facilities in the area, while two companies (Hyundai IHL and Nakamura Tome Precision Manufacturing) are already operating their plants here. Some 16 out of the 20 housing blocks have already been sold or rented. Six companies have secured licenses to erect apartment buildings on these lots, with three of them having already commenced construction works. The authorities will also establish an effective system of academic-industrial collaboration and implement policy measures for improving the living and working conditions in the area. With the infrastructure completed by the end of this year, and the apartments distributed and the new entry passageway completed in the summer of 2014, various amenities will naturally spring up in the area, including commercial, financial, and medical facilities, completing its transformation into a new town. With a hundred or so companies starting their operations by 2015, Daegu Technopolis will position itself as one of the newest and most attractive new towns will create 84,000 more jobs, generating an additional KRW 3.5 trillion for the local economy and creating KRW 6.4 trillion in values added in total.

Innovation and Housing in the West:
Some Cases on Post-2008 Regeneration, Rebalancing Global Competitiveness

Since 2011, the S&T Parks in the western world have evolved from a technical nature to a more comprehensive development model called the *"Innovation District"*. It began in Barcelona, when the City Council in 2011 decided to deal with urban decline holistically, involving some 1,300 factories in El Poblenou. During 1963-1990, some 1,300 factories in textiles, food, wine, construction and metal structures were abandoned. The second case is Boston Seaport-Kendall Square, located in an old port warehouse area and an abandoned industrial district near MIT. Amid a global academic Mecca, it was a key maritime trade link between the Old and the New World, with Boston destined to bid for the Olympics in 2024.

Case: Barcelona Project 22@

In a city of some 1.6m population, this was embarked with an area covering 220 hectares. Its name is transformed from a 22a to a 22@, as a mix of classified industrial soils widely present in the area. Like "sand/silicon" as in Silicon Valley, this soil mix has become the name for this Innovation District Project. It is based on a *"Three Axis on Smart City: International Promotion, International Collaboration and Local Projects"* (Fig. B). The 1992 Olympics was a major effort to redevelop the area. In the next seven years, the Diagonal Revenue (Avinguda Diagonal) was connected to the Central Business District as part of the planning work. The focus was on innovation, knowledge-intensive activities and companies. The Amended Master Plan was also approved by the City Council (2000).

Figure B : Global Innovators: Barcelona Three Axis of Smart City
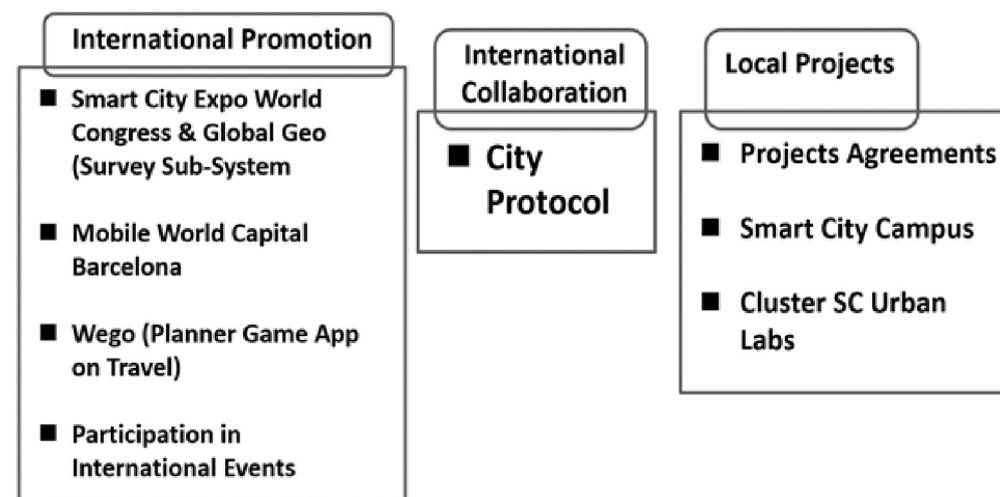
(Source: Arup, 2013, p. 37)

The project has three goals:

1. Urban Refurbishment: Economic and social development to create a diverse, balanced environment with product centers, social housing, facilities and open space for quality of life and workplace;

2. Economic Revitalization: Attract technology companies and knowledge-based industries for information and communication age development;

3. Social Revitalization: Create urban spaces to facilitate networking and collaboration of enterprises, institutions and residents.

Planning Targets: About 4 million square metres gross floor space; with regulated 4,600 housing units and some 4,000 social housing units (minimum 25% rentals); new green space of 11.4 hectares, new facilities on 14.5 hectares of land to create 150,000 new jobs; with an infrastructure budget of Euro1.8 billion.

Targets were achieved with some 70% of industrial land refurbished; 4,500 companies employing 56,000 workers were attracted; 72% of the workers have university degrees; and continuing education in product design and ICT was developed. Major universities present are Pompeu Fabra, Barcelona, Polytechnic of Catalonia, Open University with a student population of 25,000. There are a total of ten universities in Barcelona with total students numbering 200,000. Incubators are to include Biomedical Park, Media Tic Building and Barcelona Activa. Since the year 2000, the population growth was 130,000 with economic growth rate increased from 4% to 15%.

Overall Barcelona needs a rental system to facilitate housing for youths, who may be the most vulnerable in society, particularly after graduation and in search for jobs and career development. Those who did not graduate could be in a worst position. While students could be covered by University Housing, e.g. Melon district for international and local students (Institut Quimic de Sarria / IQS, 2015), transients and travelers would need temporary housing at hostels like Twentytu. The experience of the Olympics should have resolved many of the problems. The current stage is more on raising housing quality and integrating it with the next stage of Innovation District development. As a maritime city with warm climate, Barcelona is fortunate to have abundant cultural heritage as intangible capital to enhance residential, commercial and industrial areas.

Case: Boston Seaport and Kendall Square

In 2013, Boston followed suit to align itself with the ambition on Olympics 2024. In 2009, the Massachusetts International Strategy Framework broadly sets out the key parameters for the State, capitalizing on Boston as a *"World Class Education Hub"*. Having been idling for more than 20 years, the Seaport with an area of about 1,000 acres as a kind of Innovation District is to be built on its unique resources as the oldest historic city in the New World, with strong links with Europe and UK as well as China. The historic ship of *Empress of China* was built by Master John Peck here and the first Captain John Green set sailed to Guangzhou in 1783, arriving at the Old Port at Pa Zhou (琶州) near the Whampoa Military Academy. Its 230th Anniversary was held in 2014, with the Old Port in Guangzhou renewed comprehensively to mark the occasion. At the same time, an opera with the same theme was performed by a team of Chinese and American artists from Hong Kong and New York, where the performance also took place. The current Boston Mayor Walsh and several senior staff attended youth programs jointly organized by both cities to enhance networks for development of their future generations.

Among dozens of innovative strategies at the Seaport, others are in architecture, interiors and furniture, food, culinary, biotech, healthcare and wellness, ICT and media, maritime cultural and creative industries, many of which can be extended to chains of industrial design and production. Many of the *"creative class"* celebrities (Florida, 2014) like I.M. Pei and Frank Gehry have dotted the area with iconic buildings and other works. Boston is also the place with a dozen adventurist traders and ship captains involved with China trade, e.g. Patrick Bennet Forbes. Many have transformed their ancestor houses into museums for education and cultural exchanges. A series of mass transit stops will be provided in the Seaport, with connections to old Boston downtown, Logan Airport and above all the upcoming America2050 high-speed rail. The overall urban forms and lifestyles in the future with mid- and high-density living may have much resemblance to Hong Kong's. Former Mayor Menino wanted to lure the young innovators in the region beyond Highway 128, which is based on cars and technology fronts. New housing like a micro unit suitable for young innovators would range from US$$2,000-2,500. Broad comparisons can be drawn on square footage of 400sf (1-2 person urban apartment), 1,500sf (3-4 person urban unit) to 2,500sf (large family suburban house) (ADD Inc., 2015). These rentals may be high and on the par of Hong Kong, but the intangible value of being there and other savings of not owning or running a car would save some US$500/month. Time savings and networking opportunities are abundant and much more efficient than living in the suburbs and driving to commute.

A Cultural Center, Library and Nations Academy for cultural and knowledge exchanges, continuing education, leisure and recreation are some of the main public facilities open to all. Public and open space would encourage outdoor enjoyment and viewing of historic sites and facilities during the summers. Boston as a maritime city has long waterfronts and coastlines, filled with old and new ports and ferry piers. Many are regenerated with new apartments and some have yacht docking. Several clippers are worth seeing, e.g. the *Mayflower* and *USS Constitution*, with the latter docked in a naval yard. John Fish, CEO of the Suffolk Construction Co. and a leading US builder, chairs the Olympics Committee as well as on the boards of several leading universities. A great sports fan with tremendous entrepreneurship, Fish is highly empathic on the implementation of this flagship project. But he has to be excluded from public

tendering, once taking up this public honorary post. It takes diverse resources and above all a *"culture for change"* to take a city forward as one with rich British, European and New England flavor.

Case: Kendall Square and MIT Nexus

The area capitalizes on a new mass transit station as a gateway to the MIT campus on the east. It centers on several historic buildings such as an old fire station converted into a small hotel and supported by a Marriott Hotel across the street. Retails covering global and local brands are presented here, ranging from bookstores to Legal Seafood (lobster, fish and crab) to *Farmers Market* (fruit, vegetable and green produce). MIT's new Sloan Business School Building as one of the top in the nation is also located here. Its Student Housing Office is deliberately housed here to encourage students to engage in community affairs. Clusters of student and faculty housing are nearby, inter-penetrating the blocks. Innovation offices of all kinds have dotted the area. MIT has a total student population of about 10,000, with 48% non-white and 24% international to achieve diversity. MIT's capabilities to develop startups is ranked 6th among thousands of universities in the US, with startup funds amounting to US$1.0 billion, following Stanford on the top with US$4.1 billion (2014), and then Harvard, UC Berkeley at US$3.8 billion and US$1.3 billion respectively. The clusters of universities in Boston allow cross-registration of courses for decades with a minimum of 51% credit to graduate from that school. By owning and redeveloping several parcels at Kendall Square, the place has become a major case on *"university as developer",* a multiple role which many schools aspire to (Wiewel and Perry, 2005). Their new forms of partnerships are exemplars for those who wish to learn some lessons.

Case Summary: The key policies and implications on housing on the above cases in East and West are summarized in Fig. C. With all the diverse factor conditions, a key commonality is the strategic choice to explore *"new combinations"* or *"do something new"* with housing. In a world of intense competition, it is important for Hong Kong and other high-cost areas to seriously consider some of these strategies. The trend towards competing on a city-region basis may also enhance Hong Kong's position with the PRD on future housing provisions for innovations. Through different policies and initiatives, housing could be re-perceived as an *"economic driver for innovation".*

Housing as Trade: Economic Driver for Innovation?

To position housing as trade and for innovation, the Economic Development Model of Josef Schumpeter (Fig. C) is presented here as a structure. The proposal for *"New Housing"* in question is shown in *"new combinations"*, i.e. the un-conventional polices and initiatives to support and to usher innovations. The housing applicants must pass certain criteria to be true *"innovators"*, rather than the usual income assessments, e.g. education, creative and innovative work, entrepreneurial capabilities, intellectual properties, patents etc. In doing so, an *"entrepreneur" (or venture capitalist)* would appear to be at a higher intellectual level than a *"capitalist for general business"* by

capturing that value added and creativity over and beyond just profit-making. The rest of the model on the cyclical relationships of Firms and Households, Expenditure, Products, Labor and Factor Payments are consistent with the neoclassical conventions.

**Figure C: Schumpeter's Model of Economic Development**
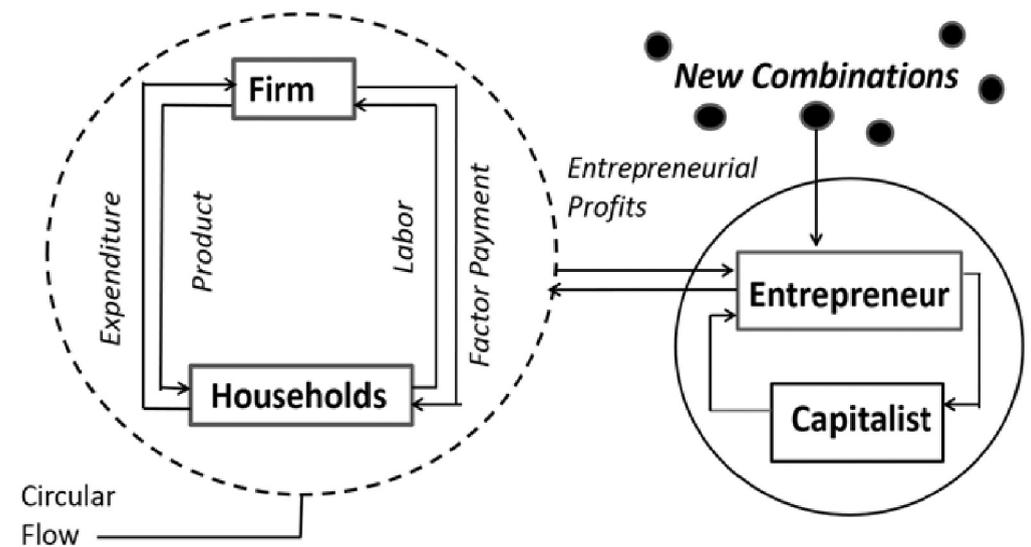
(Source: Pal, 2013)

Since the 1980s, the migration of most industries to the north from Hong Kong has contributed to the intensification and overreliance on a monolithic finance sector. Today, even with a re-focus on the *"Six Pillars"*, presumably it is still based on neoclassicism. With over 80% GDP generated by the financial sector, Hong Kong has much less economic diversity and synergies than before. But in a knowledge-based era, the importance of *"human capital"* might have become equally and in some cases perhaps more important than the financial ones. Hong Kong has dwelt too much on its complacency, rigid comfort zone, narrowing competitive advantage, moderated learning curves on China and a diluted worldly vision. In urban development, the same is also over-focused on the Victoria Harbour and old waterfronts. Since the 1990s, Macau has definitely come a long way from poor public security, but it now has a higher per capita income than Hong Kong. Macau has been able to sing interactive *"chorus"*, more than just self-conducted *"solo"* with China's *"One Belt, One Road"* new silk road international policy. After a few years of hard but innovative work, the University of Macau is able to build a new campus of some 100 hectares in Zhuhai, with classes already commenced in September 2014. Many are working in Macau, but living in Zhuhai to take advantage of much lower housing costs by crossing the Gongbei (拱北) check point almost daily.

Housing demand is often linked to university development, particularly when on-campus ones are inadequate, which is common for most of the Hong Kong universities. Many of the students and faculties would have to compete as renters and buyers on the housing markets, e.g. near Sheung Wan, Hung Hom, Shatin and Ma On Shan. Recently, the tender for a private college at the Queen's Hill site in Tai Po was scrapped abruptly and being replaced. The question is: *"Why take all the trouble to issue the tender in the first place?"* The Hong Kong Government might have covered all the legalities, but ethics on missing opportunities and wastage on private costs by the tenderers were not very well considered. In the urban areas, the takeover of Hong Kong Baptist University (HKBU) of its neighboring Lee Wai Lee Technical College campus in Kowloon Tong was another controversy. Having worked on it for years, the HKBU President was threatening to resign, if they could not get it. After several negotiations, the subject campus might have to be split 50-50 for HKBU and housing use. In retrospect, had the East Lantau Metropolis/Smart City been realized at least in part some ten years ago, it would have resolved or at least moderated many of the current adverse housing situations. Largely created by chronic land shortage, Hong Kong's property and land prices today are unrealistically high, relative to per capita income and average purchasing power.

While the mass of housing provision is skewed towards private provision mainly by large conglomerates, some major local developers like Li Ka Shing are retreating from the local scene. With increasing financial powers, the incoming replacements will probably be the mainland ones. In recapping the public-private housing ratios over the past few decades in 2000s at about 45%, with ownership schemes increased in standardized units, as the HKSAR Government felt that there was an increase in ability to buy and own flats. In 2010s, it is felt that more small rentals are needed, as reflected in the proliferation of *"subdivided rooms"* (劏房). In fact, this could be taken further as potential time-sharing units to attract the *"innovative youths"* and *"creative class"*, including the experienced middle age and well-seasoned elderly. With common use of computers, more flexible housing designs may be more appropriate now. Digitalization could enhance their scope, scale, time, cost and project management to catch up with some of the lags. But the key decision makers would also need that *"human vision"* and drive on *"culture for change"*. To encourage more innovative housing approaches at the policy and strategic levels, a well-respected building professional supports the idea of putting more planners in the Development Bureau. As this study is focusing on *"Housing for innovation"*, the subject of *"Mass Conventional Housing"* is mostly excluded (Fig. D). It would only be right for the HKSAR Government and public functionaries to take their duties and responsibilities to update the broader knowledge-base as a kind of good practice to support new forms of community development, e.g. The *"creative class"* (Florida, 2014).

Figure D: Positioning Innovative Housing as a Potential Economic Driver
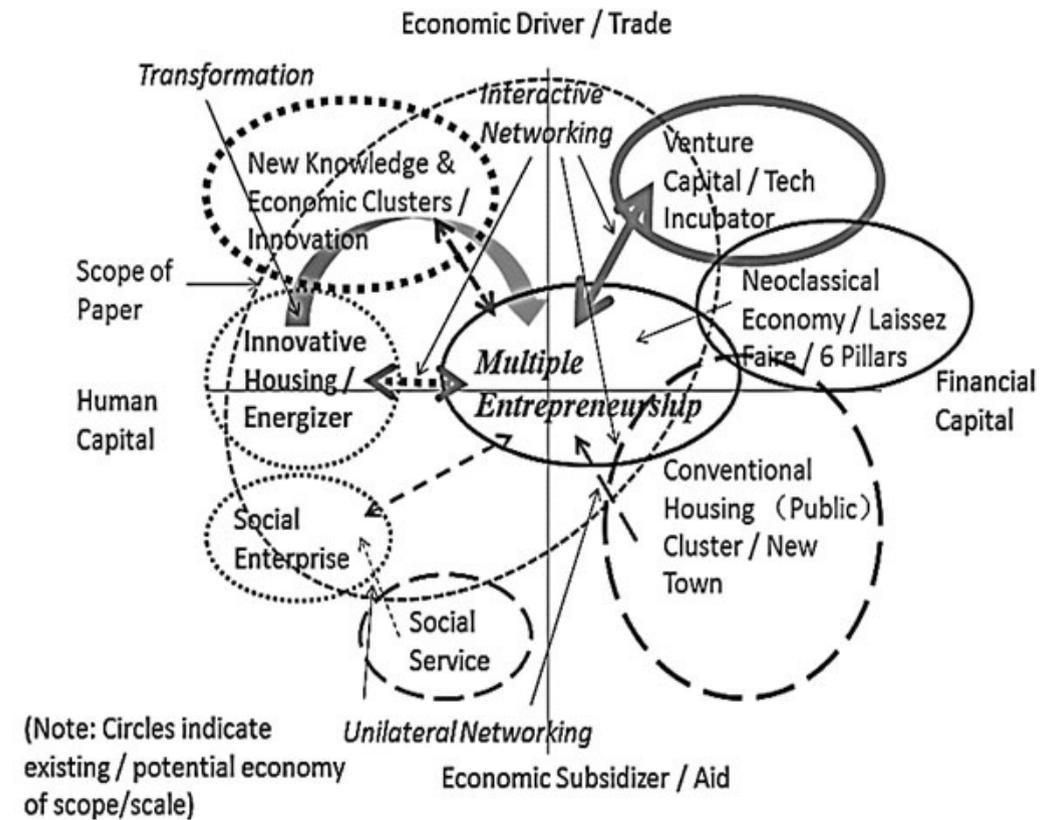
(Source: Ip & Yip, 2015)

HK Housing for Innovation: Time and Culture to Change?

The post-Window 95-98 era was a popularization of the Internet, allowing most people to communicate on the networks. With foreseeable abundant supply of high-powered networks, the use and sharing of offices have emerged and more people can work at home now. The storm created by powerful wireless mobile devices in the past few years has profound effects on lifestyles. Some cars in North America can now be used as fully *"networked"* offices and particularly suitable for certain jobs, e.g. property and insurance agents. In Europe, some would live on boats to go around high housing prices, which appear to be in reverse of Hong Kong's housing policy in the past few decades. In low seasons, a one month trip around one third of the globe on a giant 100,000 ton cruiser would cost about HK$15,000-20,000. Considering almost everything such as meals (all-you-can-eat), lodging, TV and other services are included, it would not be a bad idea to stop at, say 7-10 cities in every 2-3 days, just to stretch the legs.

In turning to the *"high-brows"* and the phenomena of *"Learning Commons"*, many users could share and learn on a well-designed cluster networks. Universities with their great concentration of computers and students as learners could be the first for implementation. In Europe, the Oresund Region has extended through cross-borders with Sweden, Norway and Denmark. Knowledge and skills on advanced techniques in car (Volvo, Saab), biotech (pharmaceutical, Medicon Valley), and military equipment such as mini submarines and many other knowledge platforms are well clustered. Some are released for use in the public realm. Many are innovative military products exported to Singapore and Taiwan. In the 2000s, mobile phones with short product cycles and several times the capabilities had enhanced mobility, with prices significantly reduced. About 6-8 years ago, some techno-entrepreneurs envisioned the costs of a simple netbook would come down to under US$200, but many thought this was a joke. It did and some models have transformed into iPAD compatibles and larger size mobile phones recently. It follows that many have begun to explore on their impacts on the developing world such as China, where its rural nature and quick urbanization policies for new wireless infrastructure may have almost unlimited room.

In PRD and Mainland China, some projects have elevated from its *"crude"* development style (粗放型), largely based on speedy construction, on which brownfield sites are still far from the conditions to nurture sophisticated *"Intellectual Soft Power"*. The outcomes often ended up as an enclave not integrative with the local community, e.g. the University City in Guangzhou. In HK, its Cyberport, Science & Industrial Parks mainly belong to the pre-2010s models and have little clustering effects of myriad urban development factor dynamics, e.g. mass transit linkage, cultural creative class, youth talent micro-unit, mixed and separate use zonings, a variety of places for them to work in flexible time modes beyond 9-5. Housing policies and initiatives were mainly focusing on the senior executives, either as a single *"exclusionary"* function on or near the Park. Alternatives are in the form of package subsidies, but largely excluding the innovative youth, mid-career and intellectual retirement communities.

As a *"Hong Kong Flagship Project"* towards the 21st Century, East Lantau Smart City (Fig. E; Ip & Yip, 2015) as proposed will be drawing numerous innovative talents and experts to usher economic growth and to add diversity in many ways. Although East Lantau as a major source of land supply will take some time to materialize, its housing nature could now be explored for better integration with other policies and plans to minimize the gaps. Lessons learned from Cyberport suggest the need to focus on a truly world-class knowledge-based innovative community, rather than just a property development project. For years, its facilities were underused and have to be filled by *impromptu* activities, e.g. entertainment and concerts, often requiring numerous bus trips from Admiralty to build the crowd. The Science Park in Shatin (沙田) might have a better focus on high-tech start-ups, but is still a monolithic function of science, technology and related entrepreneurialism quite limited in scope. There are few users and residents after office hours and public transport links are very limited.

Figure E: Hong Kong's East Lantau Smart City: Some Development Concepts

(Source: Ip & Yip, 2015)

The vast scale of the future East Lantau community can be more diverse by including a balanced mix of private, public, high, middle and low income housing. These will moderate the land shortage, enhance attractiveness for gazing beyond *"hard and cold"* technologies, minimize gentrification and to enhance affordability. Housing typologies can go beyond typical high-rise towers by returning to certain vernaculars. Emerging *"Innovation Districts"* such as Barcelona 22@ and Boston's Seaport (2008-2013) have recaptured the contrasts of old and new buildings, e.g. Poblenou as a regenerated historic industrial area is also called the *"Catalan Manchester"*. A pedestrianized main street is part of the North American-New World historic urban form with new opportunities for mixed uses, i.e. *"live, work, shop and play"* in the same building or neighborhood to enliven their lifestyles. The Institute of Contemporary Arts

(ICA) and the Seaport Academy (SA) are on site, providing much of the multi-dimensional learning resources. SA's handbook is themed *"Raise Your Sight"*. Students of K8-12 are from the area and elsewhere. Singapore's Little India has retained much of their characters, standing alongside with Chinese and Malaysian cultural industries, including simple food stores and bazaar markets. Shanghai's Xujiahui (徐家匯) as a historic comprehensive cluster offers a wide range of lifestyle choices from over RMB200 per meal to RMB5 for a simple breakfast of "soya bean milk" and "donut" (油條). Its founder Xu Guangqi (徐光啟) and Trinity Church are the two icons, with residents and transients passing by daily. The latter has been featured in many award winning films.

Housing for innovation can be extended to building typologies, shopping, edutainment, sports, media, food and culinary, among which Hong Kong has considerable strengths. Amid fragmented societal values, Hong Kong's East Lantau Smart City may wish to recapture some of the Confucius touch in civic spaces over and beyond largely standardized and enclosed museums. Cultural themes in maritime pirate-naval history such as Cheung Bo Tsai (張保仔) in East Lantau and the PRD can be explored. Extension is possible to older farm produce like *"tribute rice"* (貢米), with which Shatin ("sand and farm", 沙田) and Yuen Long (元朗) were key producers for the emperor in Beijing. These elements will help create much more civic, equitable, sociable, cohesive, innovative and sustainable communities.

Housing Market Segments for Innovation:
Some Key Objectives Towards a Networked Society

Creative and Innovative Youth: Nurturing Human Capital for the Future

The age group of 15-30 could be some of the key human capital to enhance Hong Kong's strengths. This age cohorts are the best to nature-nurture creative thinking with a balance on other analytical skills. The student-teacher relationships are important to build in order to develop some strong directions with due consideration on the students. Some broad frameworks such as the Myers-Briggs Typological Index (MBTI) may be helpful in positioning and analyzing personal characters. Living in campus hostels will help group living, networking, studies and above all cultivate a sense of communal spirit.

Experienced Prime or Middle Age Innovators: Transferring Knowledge Across Generations

In prime career development, they have considerable experience to share, while having a need to explore certain continuing education. Presumably in middle and senior management, they may need updates on current environment and possibly emerging trends and practices in the field. In case of university-industry collaboration, Hong Kong's small-medium enterprises may have problems on doing research and development. The sharing of information of larger groups may be facilitated through a

"Learning Commons", which could be built up by the *Quadruple Helix* of government, university, industry and social sectors. Assuming that many executives are busy, the use of advanced ICT services and gadgets could be desirable. The HKSAR Development Bureau may be the best initiator on such a knowledge platform.

Innovative Elderly and Retirees: Maximizing Social Resource Values and Creating Sense of Belongings

With extended aging of male and female to over eighty, these could be some of the best trainers, if residing in a college town or a school district. As well seasoned in good health, they could help train some of the marginalized youths as well as those desiring for certain career or lifetime direction that the trainer is familiar with. The formation of training sessions could be organized by a lead trainer and marked by the trainer-in-session or in-residence. Aside from dialoguing, the sessions may include other formats such as field trip, factory visits and advice from a specialist in the field to add resource diversity. Some elderlies are great fans of college towns and part of the youthful and dynamic community. In doing so, they can be re-energized in many ways.

Inclusive City and Housing: Building Bridges and Creating Values

In keeping talents and well-knitted members, communities will be more sustainable. It will reduce lead time along many fronts in getting the people acquainted, knowing their needs, wants and desires. From a business perspective, brownfield development usually has more hurdles than green field, as there are meager resources to base on. Migrants and diasporas may have more hurdles than others, e.g. in language, dialect, understanding local customs and practices. But the inclusion principle is a good one to practice to create good sense of belonging. Everyone needs time to blend into a new organization.

Innovative Specialists: Clustering, Cross-Sector Synergies and Added Value

In a knowledge-based era, many boundaries are blurred and there is a need to understand more broadly attributes of certain seemingly remote but in fact related aspects. The quantum leaps of ICT have made art and technology difficult to distinguish as in the movie Avatar. The introduction of housing for innovation may well be positioned as a core subject with many contextual realms. If the *"trade"* approach is accepted as a premise, then the development of innovative housing will need the contribution of diverse people with many roles, i.e. a stronger sense of home and community building. Housing for innovation may rely less on a single or a few large public or a quasi-public housing agent may be a thing of the past. However, intensive training equivalent to those already in social enterprise may need to be redesigned.

The Creative Class and Networking: Diffusion of Innovative Knowledge for Sustainable Development

If housing for innovation is well clustered, it will provide more and better

opportunities to nature-nurture the creative class. By regularly organizing networking activities, there will be more chances to cultivate *"multiple-entrepreneurship."* Exposure to diverse people is important in face of an emerging city-region growing phenomena, where the population will be larger and becoming more mobile. Travelling across borders and dealing with different cultures including languages and dialects will be commonplace.

Housing for Innovation and Implications for Hong Kong: Refining Public Policies and Initiatives

Housing for Innovation Governance

This may require a special administrative unit, but organized differently from the conventional authorities. Its cross-disciplinary nature implies the need for leadership with both general and specialist knowledge and skills to develop a sense of intellectual plurality.

Holistic Development Model

These should transform from a monolithic and technology-based model to holistic Innovation District and University City, with true vision to facilitate a *"culture for change"* and strong sense of commitment. Innovative housing should have a major thrust to nurture future leaders, particularly those fresh of school and others with some experience, but in need of strong directions.

Moderation of Social Discontent

Attention should also be paid to those with strong anti-establishment sentiments, which often have transformed into fragmented sets of values. Proper education on ethics, law and public realms are needed. To minimize future disturbance of major transportation corridors, appropriate clustering and proximity of innovative housing within a one-hour living zone will be ideal.

University as Developer

Local universities could go beyond an *"ivory tower"* and cultivate its multiple entrepreneurship capabilities. In a "knowledge era", college town and *"town and gown"* could be a major attraction. University idling during the summers can make their facilities and amenities useful for world and local games, executive training for effectiveness and for extra incomes.

East Lantau's Economy of Scale and Scope

As a piece of 2,400 hectare reclamation, it will have both challenges and opportunities. Having lagged behind Singapore, Korea and many others on innovation, Hong Kong needs more land to take its development to a much higher level so as to remain competitive with its neighbours, particularly Qianhai (前海) and Hengqin (橫琴)

Island. Both are emulating their seemingly *"free port"* nature from Hong Kong. However, with East Lantau within our boundary as part of a free port, Hong Kong people must progressively enhance their *"culture for change"* to maximize a positive impact.

Global-Local and East-West Fusion

Hong Kong is ideal with its historical and cultural heritage that few could compete in China and Asia. This can be used to build a strong civic sense for local, urban, regional and national building, but might have been diluted after 1997. In response to China's aspirations on international trade, Hong Kong should monitor seriously on *"One Belt, One Road"* and Asian Bank of Infrastructure Investment for new opportunities. In order to sustain its *"gateway"* status, it should enhance its innovative strengths over and beyond the constraints of a comfort zone.

Summary: The Hong Kong Innovative Housing: As an Economic Driver?

Before the 2000s, *"conventional mass housing"* might have achieved their objectives for social stabilization and human survival after a fire or some other natural disasters. However, with the revival of social movement recently amid an affluent society of a different nature, there is a need for HKSAR Government to elevate itself to a high level of intellectual development, i.e. to develop a *"culture for change"*. It is needed at various levels at the entire hierarchy of the society, especially the decision-makers and across many sectors. Housing for innovation could be one way to moderate certain social instability by preoccupying stakeholders in constructive endeavors, particularly the youths and those with hurdles on *"culture for change"* and other practical problems such as livelihood. Housing for innovation needs to work with a cluster of activities together, i.e. comprehensive programs with bi- or multi-lateral interactions. HKSAR Government must therefore envision the needs, formulate the ideas and be able to perceive the outcomes with visions. It will have to work closely with the *Quadruple Helix* of university, industry and social sector to develop early and viable solutions.

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