From Company Towns to 'Technopolis'
Understanding the Evolution of Industry-Driven Urban Development in Hong Kong

Hengzhi Song, Yanlai Zhou, Yujia Zhang, Jiaxiu Cai Jeroen van Ameijde
Chinese University of Hong Kong

Abstract

The concept of the company town, once a key driver of urban development and vehicle for progressive town planning ideas, has been studied for its utopian and dystopian outcomes, and economic and social vulnerabilities. Given its dense population and post-colonial background, Hong Kong has a legacy of company town development that spurred its initial economic growth as a manufacturing hub, followed by property developer-driven urbanization in later stages. Presently, the city is actively striving to diversify its economy and develop its technology industry and is planning several new industry-driven New Town developments. In this context, it is helpful to re-examine the company town model and explore sustainable employment-driven urban planning for future Hong Kong. This research study has begun with categorizing and classifying historic company towns' operational models and types through a critical literature review. It then analysed the development of the company town in Hong Kong through three cases that represent different historical periods. It examined land use, urban morphology, and live-work patterns at the district scale. By investigating the historical context and challenges of company town development, the study contributes to understanding the role of industry-based urban planning in shaping Hong Kong. It offers valuable insights for the design and planning of future Hong Kong, particularly in creating balanced living-working environments and promoting sustainable development.

Keywords
company towns, urban morphology, work-life balance, urban development

How to cite
Alessandro Frigerio, "From Company Towns to 'Technopolis': Understanding the Evolution of Industry-Driven Urban Development in Hong Kong". In Ian Morley and Hendrik Tieben (eds.), *International Planning History Society Proceedings*, 20th IPHS Conference, "The (High Density) Metropolis and Region in Planning History," Hong Kong, 2 - 5 July, 2024, TU Delft Open, 2024.

DOI: 10.7480/iphs.2024.1.7666

INTRODUCTION

Hong Kong has a rich history of economic growth, which is closely related to its urbanization process. Its legacy can be traced back to the colonial period under British rule when Hong Kong emerged as a significant, prosperous, and modern manufacturing centre.[1] The city witnessed significant transformations in its industrial and urban landscape, marked by expanding industry-led urban areas on Hong Kong Island, Kowloon, and the New Territories.

During the late 1950s to the 1970s, a significant influx of individuals migrated from the People's Republic of China. This period witnessed a consistent population growth of approximately one million every decade until the 1970s, primarily driven by China's Open-door Policy. As a result, a surging demand for residential and industrial land development emerged. The local industry underwent substantial progress, encompassing various sectors such as basic cotton textiles, woollen manufacturing, and man-made fibres. Furthermore, the industry zones produced clocks, toys, plastics, and other products, which contributed to Hong Kong's overall economic growth.

Since the establishment of the Shenzhen Special Economic Zone, Hong Kong industries have relocated to Shenzhen because of the relatively cheap labour prices, rent, and markets in mainland China. By the mid-1980s, the relocation trend peaked; over 80% of the factories had been relocated.

With the sovereignty transfer of Hong Kong from the United Kingdom to the People's Republic of China in 1997, the city became a gateway to mainland China. Newly formed cross-border relationships significantly informed the industrial and economic collaboration between the two territories.[2 & 3]

However, in the last two decades, developments in Hong Kong have signalled a shift in the motivations driving urban development, with short-term land property investments becoming a driving factor. This shift can be attributed to the relative profitability of establishing commercial or real estate zones over technology zones, which are highly valued considering Hong Kong's limited land resources.

In the knowledge-based industry era, innovation and technology represent the potential for a city's future competitiveness. With the development of a new policy framework to promote technology and innovation, Hong Kong has initiated various programmes to promote university-industry synergy and foster entrepreneurship. Aiming to diversify Hong Kong's industry and promote technology development, plans are underway for multiple industry-oriented developments in the northern metropolis region.

The integration of industry and community has long been a topic of interest, with the traditional model of the Company Town representing 19th-century and early 20th-century conceptions of this integration. This research revisits the company town model to guide future industrial zone design by reconsidering the underlying driving forces and spatial features of industry-driven urban development.

In the context of these changes, this study focuses primarily on understanding the historical development process of the company town. Based on this model, we classify the evolution of Hong Kong's industrial districts through a critical literature review presented in Section 2. Section 3 offers in-depth research into Hong Kong's industrial development in different historical phases, illustrated by urban morphology studies, to understand the spatial structure, building use distribution and live-work patterns.

This research explores industry districts' underlying urban development motivations by exploring the mechanisms that have shaped the city's urban development in different historical phases. The historical development process of company towns serves as a framework for understanding the past and potential future evolution of Hong Kong.

LITERATURE REVIEW

Company towns, historically described by archaeologists and historians, typically consist of a single company dominating the manufacturing life of an often geographically isolated community.[4] The company owns the land, constructs housing, provides services and public utilities, and influences the community's commerce. These towns flourish within the framework of capitalist logic in open-market societies, primarily pursuing profit and production as the Industrial Revolution impacts.[5] It was once a primary driver of early urban development in some resource- based geography regions, like mining and lumber towns. Although some of the company towns were pre-planned spatially, many were developed gradually in parallel with the development of the enterprises.

Following a top-down approach, the company town model reflects a capitalist framework where manufacturing, residential, and recreational areas are segregated and strictly aligned with the production process. This framework has incorporated diverse social infrastructures into the towns, fostering communities where labourers could reside and work in a single town.[6] To maximize profits and minimize costs, companies provided amenities like housing, schools, and recreational facilities, providing both support and control over their workforce. One of the earliest examples of this principle was Pullman Town in Chicago, implementing amenities aimed to instil loyalty within the workers at a time when workplace protections were severely lacking.

As the company town model often established social order and segregation as an operational necessity, it controversially shaped spatial and social structures. For instance, miners in the Copper mine in Falun, Sweden, experienced lamentable working and living conditions.[7] The sugar mill town of Aguirre, Puerto Rico, used separate living areas for its white Americans, leading to labour strikes against the industry's structured racial segregation and substandard wages.[8]

Most famously, Pullman Town applied paternalistic labour policies, ending in labour emancipation actions in 1894. The carefully designed architecture and landscape layout underscored the disparity in social classes (Figure 1). Unskilled workers undertook the longest walks across the community to workplaces, while executives residing in terrace houses only had to cross the street.[9] Such historical experiences serve as a reminder to approach future new town plan-

ning projects with a more equitable social and spatial organization, as spatial segregation remains a pressing issue in planning research today.[10]

After the Great Depression (1929–1939), company towns experienced a notable decline. While factory workers still suffered from income inequality and substandard living conditions,[11] improvements in national infrastructure and services helped to alter the relationship between workers and corporations. With enhanced access to healthcare and education beyond employers' provisions, companies have less control over the employees. This evolution eventually disrupted the monopoly held by company owners, significantly shifting the social and economic dynamics within such communities.

In recent years, scholars have shown a renewed interest in the company town model. Google, Amazon, and Walt Disney are developing the "future company town" and shaping communities and services around their business model needs.[12]&[13] Some scholars argue that the future of the company town is technology and amenities-rich, with the aim of increasing employee satisfaction and quality of life. Their goal is to improve the retention levels of skilled workers and international talents in the longer term.

In summary, the evolution from traditional company towns towards a technology-driven urban development signifies integrating innovation needs with sustainable urban design. This transformation mirrors the current status of Hong Kong, where innovation and collaboration are needed to foster sustainable industry-driven urban development in the future.

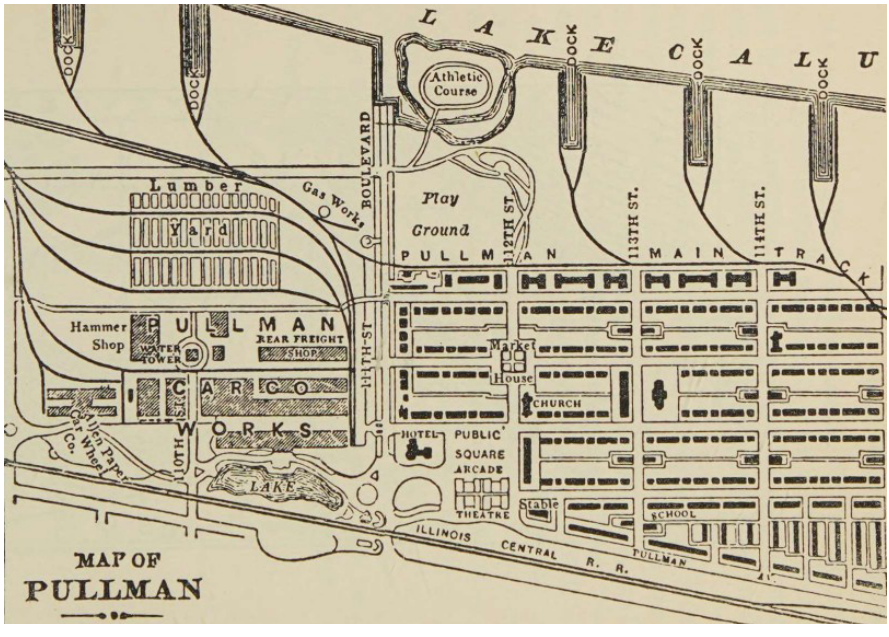

Fig. 1. Planning Map of Pullman 1885. Building types for production and community were carefully designed to emphasize the social disparity. The employer residences were strategically positioned around vital public spaces and facilities such as the central market, church, theatre, and public square.

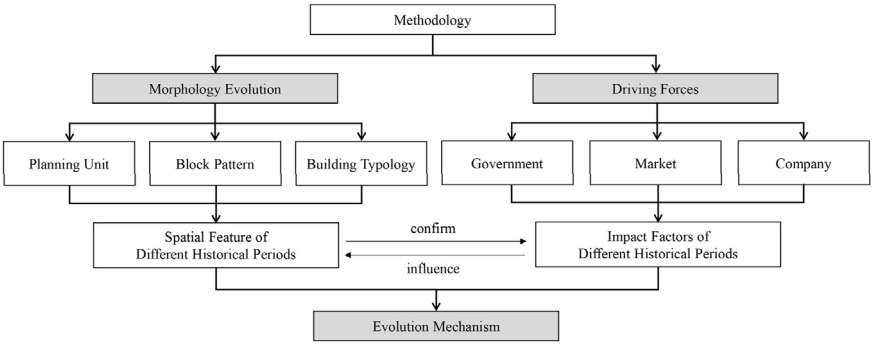

Fig. 2. Methodology Framework. Different driving forces are analysed to confirm the spatial features of different historical periods and interpret the evolution mechanism of urban morphology.

METHODOLOGY

This study focused on three case study investigations, the Taikoo sugar refinery, Kwun Tong industry district, and Cyberport, representing three distinct periods of economic development in Hong Kong's history. To investigate industrial urban development in different historical periods, the case studies represent three urban typologies: colonial company towns, local industry clusters, and science and technology parks.

The main research method employed in this study is an urban morphology evolution study, which aims to compare the historical processes and spatial distribution of residential and industrial land use across different cases. As a methodological approach, urban morphology mapping examines physical elements and interprets the mechanism underlying urban development. However, when analysing the motivation behind the evolving process of urban form, the multiplicity of factors increased the difficulty of interpreting evolution mechanisms. Therefore, urban morphology evolution theory is introduced as a benchmark.

Urban morphology studies mainly utilize historical maps to analyse and explain the factors and mechanisms contributing to urban environment changes. One of the leading scholars in this field[14] has demonstrated forms of conceptual and analytical research through morphology studies and town planning analysis. Urban morphology studies contribute to research into urban environment and social development processes by examining several scales of urban patterns, including planning units, block patterns, and building patterns.[15] Relevant theories primarily involve economic, social, and political perspectives. For instance, Conzen[16] utilizes social structures and economic and cultural activities to interpret development forces. Applied to the evolution of industry-driven urban morphology, these driving forces include the government, the market, and the company (Figure 2).

For this study, we thoroughly analysed, measured, and compared historical map data sourced from HK Maps.[17] The choice of comparison points followed a detailed understanding of each

location's evolution, considering factors such as infrastructure development, land reclamation, and new government policies. Through this process, the study aims to gain insights into the historical development of each case and understand the driving forces that play significant roles in shaping the urban environment.

1884-1970: TAIKOO SUGAR REFINERY

The Industrial Revolution in Great Britain sparked a major social transformation, marked by the declining need for agricultural labour and an explosive demand for industrial workers, influencing the transition in urban development. This change incorporated a divided workflow system and the successful implementation of machinery in Cromford town in the 1770s. The first model of planned industrial housing for skilled and unskilled workers was established as a typical company town, later replicated globally, including the context of Hong Kong.

The process of industrialization in Hong Kong began in 1842 when the British assumed control of the area and established it as a free port. Instructions and guidelines regarding land governance and the constitution of the Legislative Council were received from London, shaping the administration of the territory. To boost export activities, the government issued licenses of monopolies for land, enabling the establishment of resource-based industries such as mining and sugar companies. These licenses were auctioned off to maximize revenue generated from land leasing. The Taikoo Sugar Refinery was one such company that operated as a monopoly during this period.

As the first phase of colonial industrialization, Taikoo Sugar Refinery was a company that witnessed the history of Hong Kong's early industrial development. It is one of the pioneers of company towns that, for almost a century, produced some of the world's highest quality refined sugar and, even nowadays, is still a household brand in many parts of Asia. In the prosperous day of the town's development, the refinery enterprise at the Quarry Bay area was once a typical company town (see Figure 3) that owned a combination of industrial production, freight terminals, shipyard, workers' and managers' housing, recreation, and education.

The urban development of Taikoo Sugar Refinery flourished and transformed with a rich natural landscape, industrial advancements, and market necessities in different historical periods. Originally, local villagers in this area made a living on fishing and utilized the bay for deep-water shipping. Based on the opportunities of the natural landscape, this site was chosen for a sugar refinery and shipping site by British entrepreneurs Butterfield and Swire.

Taikoo Sugar Refinery started its business in 1884, using modern technology in its industrial plant and buildings, deep water docks and piers for ships, warehouses, and process buildings. Transportation and logistics infrastructure was upgraded to collect and transport sugar from Taiwan, Mainland China, and the Philippines, which was sold to global markets. Exports to China, Canada, Australia, the United States, India, and the Middle East have enabled the company to produce a high volume of sugar products.

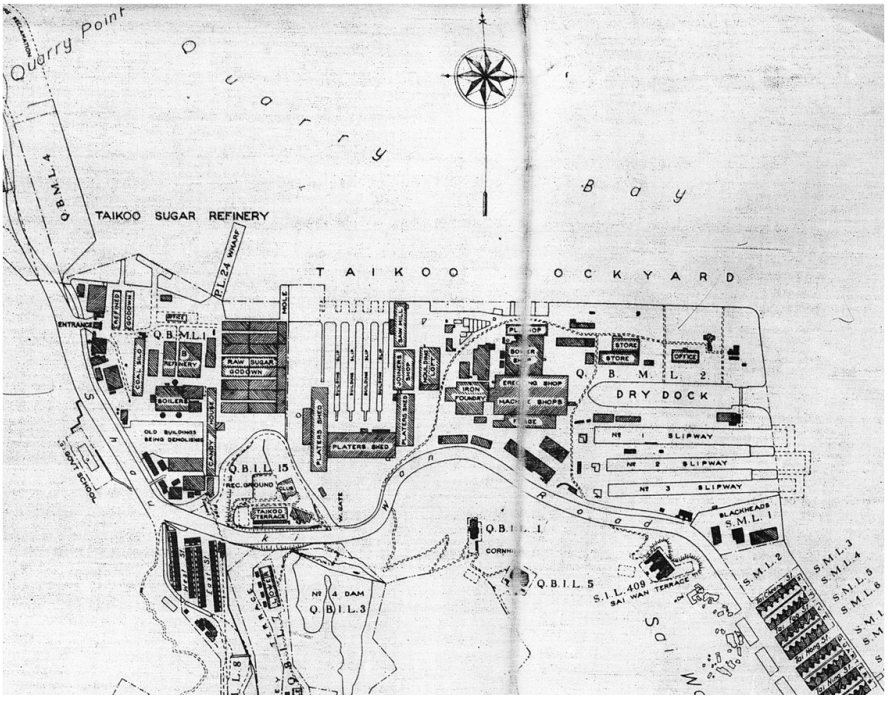

Fig. 3. Map of Taikoo Sugar Refinery and Taikoo Dockyard in 1928, showing several components of a company town, including stores, residences, clubs and production-related buildings.

Government-led development of land reclamation and public roads along the seafront occurred in the early 20th century. As a result, more space was available for larger-scale sugar refinery and dockyard construction. More manufacturing buildings, housing units, and amenities were also constructed in this period.

Although the sugar company was once dominant in its market, it ultimately did not adapt to market changes and fell behind its powerful international competitors. The sugar company was transformed into a private property developer, Swire Properties, in 1972. A significant development containing high-rise private housing and a modern shopping mall, known as Taikoo Shing, was built at the site of the original sugar refinery town.

1 URBAN MORPHOLOGY EVOLUTION

The urban morphology evolution of the Taikoo Refinery town reflects the transformation of its production and social organisation over time. The mapping of the company's spatial elements, configuration, and growth focus on production processes and efficient worker housing (Figure 4).

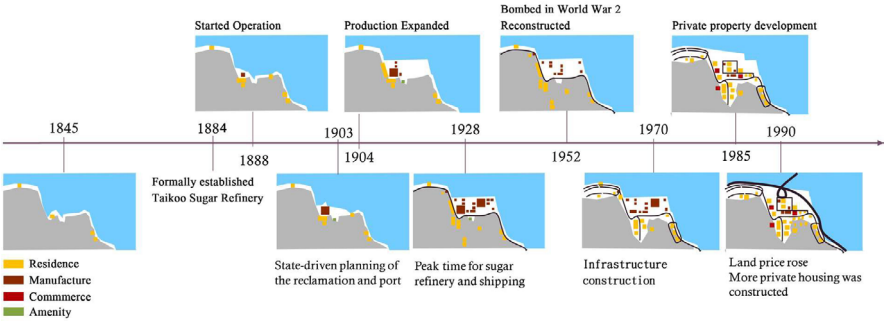

Fig. 4. Urban evolution of Taikoo Sugar Refinery site

In 1881, the Quarry Bay land auction allowed Butterfield and Swire to secure a substantial site where they intended to create a company town.[18] Over the two decades, the government-directed phase of land reclamation finished, stabilizing the town's planning area. As the company planned the construction of factory facilities and workers' housing, the area was subdivided into blocks to accommodate a residential community.

The evolution of block patterns reflects the company's growth tracks and the influence of significant events such as war. In 1884, the factory only comprised a dormitory and basic refinery manufacturing infrastructure. As sugar manufacturing production grew, the infrastructure expanded to include recreational facilities and schools. Despite the devastation caused by bombing during World War II, the government-built railway line supported a booming property market that fuelled the town's post-war reconstruction.

The transformation of building types mirrored the industry-community integration and highlighted disparities in social classes. Employers resided in terrace houses in the mountains, while workers were accommodated in low- cost housing near the production facilities and port. While the spatial distribution differentiated residents based on nationality, race, and employment position, all were provided with relatively advanced and clean living conditions following English design principles and environmental standards.

2 INTERPRETATION OF DRIVING FORCES

In the case of the Taikoo Sugar Refinery, the force driving the evolution was fundamentally tied to the company's decisions and prosperity. The planning of spatial constructs and building fabrics were designed with a functionalist view, prioritizing the company's profit goals. Government infrastructure and facilities laid the groundwork for development, and the creation of reclamation projects, railway lines, and roads significantly enhanced production and logistics. However, the company's rigid internal structure prevented it from adapting to market changes and finally forced it to transform into land property development.

Taikoo Sugar Refinery represents the evolving urban morphology as a typical company town model. It underscores the transformative impact of production and settlement shifts over time. The spatial adaptations mark the company's growth and resilience across two world wars. At the same time, the differentiation in housing for workers and employers indicates the integration of industry and community, revealing disparities among social classes. Taikoo Sugar Refinery's legacy symbolises the symbiotic evolution process between industry-driven companies and the urban environment as the company and site transitioned towards property development.

1901-2020: KWUN TONG INDUSTRY CLUSTER

As industries and enterprises multiplied on Hong Kong Island and the Kowloon Peninsula, Hong Kong swiftly emerged as a prominent manufacturing hub. The surge in population and industrial activities consequently escalated the demand for both residential and industrial spaces in the New Territories. This led to a significant influx of immigrants and entrepreneurs from mainland China who sought to establish their businesses in the burgeoning district of Kwun Tong. Recognizing the need for expansion, the government formulated plans in the 1960s to develop new industrial areas in this district, further facilitating the growth of the industrial sector.

As one of the first large-scale industrial clusters in Hong Kong, Kwun Tong has experienced several transformation phases and is currently in the process of becoming the second CBD of Hong Kong. Its original operational strategy was informed by the principles of company town planning, and the area was gradually developed into a dynamic industrial zone featuring high-density industrial buildings and large-scale public housing.

From 1901 to 1911, Kwun Tong was a small company town for quarry mining. Located on an underdeveloped shoreline opposite Hong Kong Island, the company's operation follows the traditional company town, with land leases and housing provisions controlled by the company. In 1911, introducing hydraulic accumulators led to a significant labour force displacement. The innovation increased operational efficiency and expanded the quarry industry, but concurrently, it reduced areas designated for workers' habitation and manufacturing.

World War II was a key moment in the industrial transformation of Kwun Tong, facilitating advancements in transportation but simultaneously causing a downfall of the quarry industry. Following the sizeable post-war influx of Chinese immigrants and Hong Kong's rapid economic expansion, a government-led reclamation and industry zone program was implemented in Kwun Tong.

Throughout the 1960s, Kwun Tong experienced momentous growth, becoming a hub for various local industries, including textile, paint, and large enterprises such as Crocodile Garments. These significant manufacturers established in-house residence facilities for their employees, paralleling the government's efforts to meet the increasing housing demand by allocating land to build worker dormitories. The phased construction of infrastructure, such as the first metro line in 1979, attracted a sizable working class to Kwun Tong and aided Hong Kong's speedy economic ascension on a global scale. This evolution also promoted industrial

synergy, ensuring that the industrial structure of Kwun Tong was no longer dependent upon the mono-industry company town development model.

Public housing estates were initially constructed as part of land clearance operations and the regeneration of housing, offices and commercial buildings. Consequently, Kwun Tong ceased to be merely an industrial zone, evolving into a densely populated, industry-driven, mixed-use neighbourhood offering amenities such as hotels, retail outlets and other services that fostered its residents' diverse work-life experiences.

URBAN MORPHOLOGY EVOLUTION

The urban morphology evolution of Kwun Tong is characterized by the gradual expansion under government policies on infrastructure, reclamation, and land leasing, which promote industry synergy and high-density development (Figure 5).

The evolution of the planning area in Kwun Tong was a shift from direct resource-based monopoly development to a more structured, grid-based system that paved the way for successful land leasing for industry entrepreneurship. In the early stage, the urban unit of the mining town was resource-centred, closely tied to the quarry, and progressing organically alongside manufacturing operations. Following extensive landfill and land reclamation activities, a grid system layout underscored by road networks was designed as the primary planning unit, which was subsequently adopted for land auction programs and was the first attempt to impose use limitations on each industrial site. The land instruction system implemented in Kwun Tong was localized and designed to be simple and easily adaptable to British law. It closely resembled the land system that the local inhabitants, including immigrants from the mainland and former villagers governed by the Qing Dynasty, were already familiar with.19 Companies could buy and design the factories and housing for each planning unit as part of a competitive and evolutionary eco-system. When companies no longer adapted to the market, original industrial buildings were either adapted or replaced with new buildings.

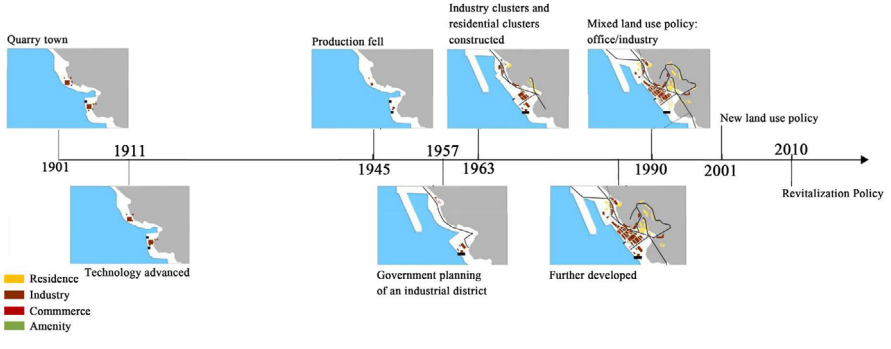

Fig. 5. Urban evolution of Kwun Tong

The evolution of the Kwun Tong industrial area has shown significant growth and synergy among companies, resulting in improved quality of life for local employees. Worker dormitories resembled the company town model but with a conceptual shift from managerial monopoly to supporting employees' preferences and conveniences. Amenities such as parks, theatres, and hospitals were also constructed to enhance the workers' quality of life.

Kwun Tong's building typologies show an evolutionary regeneration process, reflecting the synergy and increasing complexity of companies' manufacturing operations and the land planning process. The singular resource extraction model of the quarry town was replaced by an industry cluster, with growth stimulated by later land leasing policies and land use planning during the 1990s, generating a transition from single industry building to mixed use of industry and office. As a result, the building types began exhibiting increased diversity and a mixture of functions and companies. The specially designed plots can hold numerous small industrial concerns that do not require much space within each rented floor.[20] This shift led to the vertical integration and division of the manufacturing process within a single building, with retail facilities emerging on the ground floor, enhancing the urban environment. Currently, Kwun Tong is no longer an industrial zone but a high-density industry-driven mixed land-use area that offers hotels, retail, and various options for working and living lifestyles.

INTERPRETATION OF DRIVING FORCES

In the evolution of urban morphology in Kwun Tong, governmental interventions have been instrumental in fostering the adaptation to market trends amongst various companies. Contrary to the historical company town operation, mainly controlled by entrepreneurs, the government planned this area as the first satellite city and industry zone to depopulate residents and meet the demand for enterprise development after World War II.

During the immigration period, there was a significant surge in demand for industrial buildings as entrepreneurs recognized the economic opportunities associated with establishing their businesses in the Kwun Tong area. This market-driven process encompassed the development of manufacturing buildings, warehouses, markets, and logistics facilities, catering to the growing needs of the expanding industrial sector. Land lease controls were governed by long-standing policies that offered the possibility of industrial regeneration within the site to adapt to market changes, through building adaptations, demolition or reconstruction. Nevertheless, rising land prices rendered the Kwun Tong region less appropriate for industry development over time.

Kwun Tong began transforming as the government and corporations collaborated to bolster liveable amenities. Workers from all walks of life could use these amenities, dismantling the monopoly of the company-town model. Housing was initially provided for factory workers, but industrial production was gradually replaced with emerging businesses in international commerce and service industries.

Although Kwun Tong is not a typical company town, it followed the guidelines of many company towns' original intentions, like Pullman, which addressed workers' housing problems and pro-

moted amenities. Government policies, infrastructures and support for the operational models of companies and industries have made Kwun Tong a driving force within the broader regeneration of Hong Kong. It is now a town under continuing industrial and social transformation, offering new housing, shopping destinations, and balancing the relationships between life and work.

1998-PRESENT: CYBERPORT

Since its return to China as a Special Administrative Region in 1997, Hong Kong has largely retained its metropole urban development and planning system that is distinctly top-down and market-driven. [21] The government continues to rely on land property land sales and transactions to sustain its financial stability, which is influenced by the market mechanisms. This dependence was evident in the financial decline during the 1997 Asian economic crisis when there was a shortage of land sales at the luxury end of the market.

In the wake of the economic crisis, the 1998 Hong Kong Government embarked upon an initiative to foster growth in rapidly emerging sectors ranging from biotech to information technology. The administration appointed Richard Li, entrepreneur and second son of magnate Ka-Shing Li, as the developer for this project. Bolstered by government finance, the Cyberport venture was initiated and sited in the southern region of Hong Kong Island, an area already equipped with basic community infrastructure. Meanwhile, land reclamation was still being processed. It was Hong Kong's initial attempt at conceiving an urban design for a science and technology hub, mirroring the blueprint of Silicon Valley.

The development of the project was conducted in five stages. During the first phase of the initial decade, shopping complexes and the first two office towers were erected. Subsequently, hotels and phases three and four were constructed. At the dawn of this century, the offices and supplementary facilities intended to foster high-tech corporations were accompanied by a large-scale luxury residential development motivated by the substantial profit derived from real estate development. From 2000 to 2010, construction was predominantly focused on luxury housing units, whereas only one-third of its investment was focused on the technology sector.

In the recent decade, despite the construction of the Cyberport Institute within the Cyberport Learning Centre, leading companies such as IBM and Cisco Systems left the offices due to the unsatisfactory operation of the technology sector ecosystem. Contrastingly, the luxury residential sector thrived, attracting residents and transforming this area into a high-end community, far from its original vision of serving as a platform for innovation.

URBAN MORPHOLOGY EVOLUTION

The evolution of the planning area was consistent with the plan of the industrial park released by the government. Cyberport is a single-company development with a holistic urban design. The subdivision into land plots is based on a road system as the primary access to the different buildings.

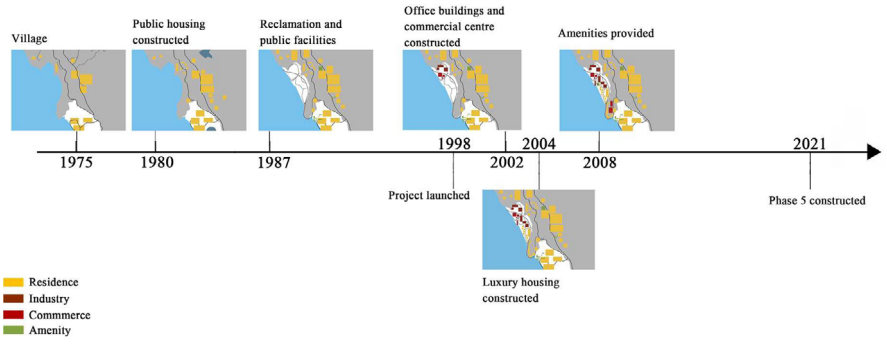

Fig. 6. Urban evolution of Cyberport site

The main office building for innovation and technology is designed to surround the shopping mall and public space. Unlike the traditional company town model, the rich infrastructure and amenities provided in Cyberport are aimed at serving and attracting talents and companies and their high-end residents. Cyberport constructed a self- sustaining community with facilities that meet high-tech occupants' daily requirements. It is the hub of the place where the Cyberport International School, shopping malls, and hospitals are located. Aesthetically designed amenities, including parks, pools, and gymnasiums, also offer lifestyle enrichment to the residents and workers. However, it is still remote and inconvenient for its employees to commute, considering the scarce public transport system compared to Hong Kong Science and Technology Park.

From the building typology perspective, big-scale office blocks and smaller-scale luxury housing create a strong sense of division. Functional and social separations are emphasised in the company town. The top-down design of large-scale office buildings constructed in different phases has proven to be inflexible when meeting market demands and resulted in the departure of leading enterprises.

2 INTERPRETATION OF DRIVING FORCES

As a top-down government initiative taken over by a private company, the mixed success of Cyberport demonstrates how Hong Kong promoted itself into the post-colonial complex by participating in globalization and developing its technology-driven urban development.

The government of Hong Kong has been facing mounting criticism over the secretive way it struck a deal with an influential private company to build the high-tech industrial park since its launch. When investing in land property was much more profitable than developing technology and innovation, there was no doubt that the developer would prioritise private residential development. However, the government has not given sufficient financial support when investing in the Cyberport project, resulting in the private company developing luxury land property to fund the construction and operational gaps for technology and innovation

development. For the companies that rent offices in Cyberport, the innovation ecosystem was ineffective due to the management and marketing being conducted by a property development company. There have been criticisms that most improvements in the urban design and facilities in the area were for residential purposes rather than serving the development of technology.

These phenomena demonstrate the difficulty of mixing residential and leisure development purposes with a technology-based ecosystem and the challenges of balancing community development and high-tech-oriented facilities. The failure of the Cyberport Project as an industry hub highlights the essentiality of effective collaboration between government and private enterprises while planning technology park projects. It proved that leasing such a significant development to a single developer may not be appropriate for developing an incubator and innovation hub. Ultimately, this case underscores the complexity and challenges of mixing residential, recreational, and technology-based development within a single community, as well as the need for sufficient funding and policy support from the government.

In the last two decades, the city has sought to redefine itself in the global landscape by shifting from traditional industries to high-tech development while grappling with its colonial past, as evidenced by projects like Cyberport, Hong Kong Science and Technology Park and the newly planned Technopole in the north metropolises. By launching these mega-industrial urban projects, Hong Kong is actively promoting itself into the hierarchy of the global urban order by moving forward with a more 'entrepreneurial' urban culture into the globalization process that continues to be heavily influenced by the West.

COMPARATIVE ANALYSIS OF CASES IN DIFFERENT HISTORICAL PERIODS

During various historical phases, the evolution of urban morphology in Hong Kong's industry-driven urban development has been influenced by three primary driving forces, as outlined in Table 1. It is evident that the main driving force and several sub-domain forces interact and impact the resulting urban morphology. Therefore, it is necessary to classify the degree of influence in the table to define the principal characteristics of the domain force.

The government's driving force mainly contributes to the scale of planning areas, street systems, and land use policies. During the colonial period, land was divided by the government and sold through public auctions. These auctions facilitated private investment and company involvement, stimulating the early development of Hong Kong. The planning units were considerably large, resembling self-sustaining company towns responsible for their internal business and development. Following World War II, there was substantial development in reclamation, road networks, and metro lines, resulting in the establishment of a basic grid structure of urban morphology. As exemplified in Kwun Tong, the land became privately owned and structured as long, continuous building blocks to maximize street frontage. Strategic initiatives and policies, such as the satellite city plan and industrial zone, envisioned

and developed Kwun Tong as a light industry cluster. Particular building typologies planned, such as the Industrial/Office building, also contributed to the functional mix within a single industry-oriented structure. Public facilities such as residences, parks, hospitals, and public transport systems were constructed to enhance the quality of life for local labourers. In the past decade, Hong Kong has shown strong support for the development of the technology industry. Consequently, different collaborations and operations between the government and Hong Kong have resulted in disparities in urban morphology. For instance, Cyberport exhibits larger building blocks than the Hong Kong Science and Technology Park.

Companies exert influence on building scale in terms of intensity, with the nature of a company town being a direct outcome of extensive product manufacturing. The scale of a company evolves in tandem with the production scale, leading to distinct segregation of manufacturing, residential, and recreational areas. As production methods and lifestyles have evolved over time, so too have the treatment of employees and the spatial distribution and features of residential and production buildings. The industry-residence ratio varies depending on a company's position. For example, Cyberport provides high-end residences to support industry development. Embracing vertical and horizontal distribution of functions, including office spaces, residences and dining establishments has become an urban design principle for innovation projects. Greater emphasis is placed on providing abundant amenities to attract future talents.

Market forces constitute another significant catalyst for urban form transformation. The increased land value resulting from favourable locations stands out as one of the primary drivers behind Hong Kong's urban transformation. Notably, the Taikoo Sugar Refinery was eventually redeveloped as Taikoo Shing. Additionally, Cyberport has also become a short-term land property investment project. Moreover, the rapid increase in the floor area ratio in Kwun Tong's industrial estates reflects how industry-driven urban development responds to a thriving economy. The regeneration of old industry estates and the demolition and reconstruction of outdated structures also exemplify how urban morphology has evolved in line with market trends.

In summary, the evolution of urban morphology in Hong Kong's industry-driven urban development has been shaped by three main driving forces: government influence, company features, and market forces. The government has been instrumental in determining the scale of planning areas, street systems, and land use policies. Company influence has been evident in the scale and mixture of manufacturing, residential, and recreational areas, with a shift towards providing amenities and attracting talent. Market forces, including increased land value and economic growth, have driven transformations in urban form, such as the redevelopment of industrial estates and the adaptation of spaces to meet market demands. Understanding the interplay between these driving forces is crucial for comprehending the main characteristics and trends in the evolution of urban morphology in Hong Kong's industry-driven urban development.

Historical Stages	Driving Force Characteristics			Urban Morphology Evolution
	Category	Key Feature	Influence	
1840s-1970s: Colonial Industry	Government	British urban design concepts and principles	Weak	Planning units, street structure, infrastructure
	Company	Company town development, profit- oriented	Strong	Massive construction of manufacturing buildings, provide amenities
	Weak	International and local trade market	Medium	Port development
1900s-2010s: Industry Cluster	Government	Policy implementation	Medium	rid system structure, infrastructure, function mix land use, public facility
	Company	Industry cluster and synergize	Weak	Mix industrial building with dormitory, restaurant Market
	Market	Thriving economy and local manufacturing	Strong	Dynamic development, high density, demolish and rebuild to adapt to the market
1990s - present: Science and Technology Parks	Government	Strategic concept design	Strong	Institute, labs and well-prepared infrastructure, regional collaboration
	Company	Different development models	Strong	The ratio of residential to industrial land use and the scale of the enterprise determine the building type
	Market	Technology sector outweighs manufacturing	Medium	Incubator, start-ups, medium and leading enterprises within flexible land leasing zone

Table 1. Driving force characteristics in different historical stages and their influence on urban morphology evolution

DISCUSSION AND CONCLUSIONS

Hong Kong has experienced diverse transformations over centuries—from a colonial company town during its initial industrial phase into a regional industrial cluster and subsequently evolving into a global finance and technology hub. While Hong Kong has followed a historical model of top-down planning methods and reliance on market forces, it also reflects the influence of town planning models influenced by the UK New Towns Act of 1946 and the Country Planning Act of 1947. Notably, examples such as Port Sunlight and Telford New Town demonstrate improved living quality and amenities.[22] As a result, sustainable and healthy town planning principles have gradually become embedded in recent industrial urban development in Hong Kong. This shift towards a more 'entrepreneurial' urban culture, [23] which emphasizes inclusive approaches to small-scale enterprise scale and human-centred industrial town design for the context of Hong Kong industry development, is evident in initiatives undertaken in the last two decades, such as Cyberport, Hong Kong Science and Technology Park, and the planned Technopole in the north metropolises. This shift aligns with the ongoing globalization process, which continues to be heavily influenced by Western ideals.

By examining Hong Kong's trajectories and understanding its colonial past and post-colonial complex, we gain insights into the city's ongoing efforts to redefine its industrial position in the global landscape. In recent decades, Hong Kong has actively sought to redefine itself within the global urban order by embracing high-tech development and confronting its colonial legacy.

These changes have been shaped by evolving government policies, company features, market changes, and broader global trends. Despite the unique challenges at each stage, Hong Kong's resilient capacity to adapt and reimagine its industry-driven urban design in response to shifting socio-economic contexts has remained constant.

The government's expanding influence has been pivotal in providing the necessary support for developing industrial regions. Under policy support, the development of these regions became increasingly mixed and adopted for land auction programs with planning and design limitations implemented. Although the construction of factories is being left entirely to private enterprises, the government and public companies have played an increasingly important role in providing facilities such as educational facilities and mobility equipment further to facilitate the integration of industry, academia and research and foster cross-regional cooperation, within the Shenzhen-Hong Kong Greater Bay Area.

Industry transition and diversification have become the defining features of the current era and are the driving forces behind companies' internal development and upgrading efforts. Technology is now leading the development of the industry and directing the way businesses work. Enterprises now engage in design, R&D, prototyping and manufacturing within their own industry chains.

Companies emphasise attracting talent with unique characteristics instead of viewing workers according to standard profiles. They invest in diverse facilities to attract young people, expressed in a company's spatial form and architectural features. Smaller enterprises often cluster together in shared business areas with communal spaces and facilities, emphasizing the social role of shared public spaces.

In conclusion, as we envisage the future of cities, it is vitally essential for urban planning and developmental policies to consciously consider technological advancements along with human-centred spatial planning, sustainability, and social equity to create a balanced, liveable city. As illustrated by this study, re-evaluating the concept of a company town and its historical context can offer valuable insights to inform future urban development. Overall, Hong Kong's journey exemplifies how a city can adapt its urban morphology in response to changing circumstances and industry demands while still ensuring the welfare of its residents.

Going forward, urban design and development policies that consciously integrate technological advancement with human-centric spatial design, sustainability, and social equity will be key to achieving future balanced, liveable, smart cities. As this study demonstrates, revisiting the company town concept and its historical context can ensure that it provides valuable lessons to inform future urban development.

ACKNOWLEDGEMENTS

This research was conducted in parallel to the Urban Design Studio II at The Chinese University of Hong Kong, taught by Prof. Jiaxiu Cai and Prof. Jeroen van Ameijde. The mapping and foundational data collection for this paper have been conducted by Yanlai Zhou and Yujia Zhang.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author.

NOTES ON CONTRIBUTORS

Hengzhi Song is a postgraduate student at The Chinese University of Hong Kong. She has a Bachelor of Engineering degree from South China University of Technology.

Jiaxiu Cai, PhD, is an Assistant Professor at the School of Architecture of The Chinese University of Hong Kong. Her research interests include urban design theories and methods and landscape urbanism. She has published three books on urban morphology and studies the historical continuity in urban design at the theory and application levels.

Jeroen van Ameijde is an Assistant Professor and Director of the MSc. in Urban Design Programme at the School of Architecture, The Chinese University of Hong Kong. His research advances a human-centric and data-driven approach to urban design and placemaking, using computational technologies for urban morphology analysis and human activity mapping.

REFERENCES

Allen, James B. *The Company Town in the American West*. Norman: University of Oklahoma Press, 1966.

Baxter, Jane Eva. "The Paradox of a Capitalist Utopia: Visionary Ideals and Lived Experience in the Pullman Community 1880–1900." *International Journal of Historical Archaeology* 16, no. 4 (2012/12/01 2012): 651-65.

Cecco, Leyland. "Toronto Swaps Google-Backed, Not-So-Smart City Plans for People-Centred Vision." *The Guardian*, https://www.theguardian.com/world/2021/mar/12/toronto-canada-quayside-urban-centre.

Commander, Simon. "One-Company Towns: Scale and Consequences." IZA World of Labor (2018).

Conzen, M. R. G. "Notes on 'Urban Morphology: Its Nature and Development' (1992–1999)." *In Teaching Urban Morphology*, edited by Vítor Oliveira, 51-64. Cham: Springer International Publishing, 2018.

Conzen, Michael P. "Core Concepts in Town-Plan Analysis." *Teaching urban morphology* (2018): 123-43.

Garner, John. The Company Town: Architecture and Society in the Early Industrial Age. Oxford University Press, 1992.

Graham, Susan Brandt. "Community, Conformity, and Career: Patterns of Social Interaction in Two Arizona Mining Towns." *Urban Anthropology* 9, no. 1 (1980): 1-20.

Huang, Ying-Fen. "Spectacular Post-Colonial Cities: Markets, Ideology and Globalization in the Making of Shanghai and Hong Kong." (2008).

Kam Ng, Mee %J Planning Theory, and Practice. "From Government to Governance? Politics of Planning in the First Decade of the Hong Kong Special Administrative Region." 9, no. 2 (2008): 165-85.

Kjellin, Margareta. *Genuine Falun Red*. Stora Kopparbergs bergslags aktiebolag, 1999.

Lai, D. C. Y., and D. J. Dwyer. "Kwun Tong, Hong Kong: A Study of Industrial Planning." *The Town Planning Review* 35, no. 4 (1965): 299-310.

Lang, Jennifer Field. "Taikoo Sugar Refinery and Company Town: Progressive Design by a Pioneering Commercial Enterprise." The University of Hong Kong, 2018.

Lanyon, Charley. "Hong Kong's White Elephants? Jury Still out on Cyberport and Science Park." South China Morning Post, https://www.scmp.com/lifestyle/arts-culture/article/1556997/just-how-useful-have-cyberport-and-science-park-been.

Law, Kris MY, and Angappa Gunasekaran. "Sustainability Development in High-Tech Manufacturing Firms in Hong Kong: Motivators and Readiness." *International Journal of Production Economics* 137, no. 1

(2012): 116-25.

McConnell, Kelsey Christine. "The Controversial History of America's Company Towns." The ARCHIVE, https://explorethearchive.com/company-towns.

N., Alex. "Amazon Is Creating Company Towns across the United States." JACOBIN, https://jacobin.com/2021/07/amazon-warehouse-communities-towns-geography-warehouse-fulfillment- jfk8-cajon-inland-empire.

Ngo, Tak-Wing. "The Legend of a Colony: Political Rule and Historiography in Hong Kong." China Information 12, no. 1-2 (1997): 135-56.

Priem, Richard L., Leonard G. Love, and Margaret Shaffer. "Industrialization and Values Evolution: The Case of Hong Kong and Guangzhou, China." *Asia Pacific Journal of Management* 17, no. 3 (2000/12/01 2000): 473-92.

Roger, Nissim. *Land Administration and Practice in Hong Kong*. Hong Kong: Hong Kong University Press, 2012.

Sesser, Stan. "Hong Kong Faces Criticism over Deal for Cyberport." *The Wall Street Journal*, https://www.wsj.com/articles/SB922046043794744660.

Simson, Alan James. "The Post-Romantic Landscape of Telford New Town." *Landscape and Urban Planning*, 52, no. 2 (2000/12/25/ 2000): 189-97.

Sweitza, Sam R. "A Multidisciplinary Approach to Investigating the Industrial Heritage of Puerto Rico: Research at the National Register Site of Central Aguirre." CRM: *The Journal of Heritage Stewardship* 7, no. 2 (2010).

IMAGE SOURCES

Figure 1 The Pullman State Historic Site, Digital Archive
Figure 2 Author's own illustration
Figure 3 Courtesy of Swire Archive, SOAS, University of London
Figure 4 Author's own illustration, base map from New HK Maps
Figure 5 Ibid
Figure 6 Ibid

ENDNOTES

1. Ngo, Tak-Wing. "The Legend of a Colony: Political Rule and Historiography in Hong Kong." China Information 12, no. 1-2 Tak-Wing Ngo, "The Legend of a Colony: Political Rule and Historiography in Hong Kong," *China Information* 12, no. 1-2.: 135-56.
2. Priem, Richard L., Leonard G. Love, and Margaret Shaffer. "Industrialization and Values Evolution: The Case of Hong Kong and Guangzhou, China." Asia Pacific Journal of Management 17, no. 3 Richard L. Priem, Leonard G. Love, and Margaret Shaffer, "Industrialization and Values Evolution: The Case of Hong Kong and Guangzhou, China," *Asia Pacific Journal of Management* 17, no. 3.: 473-92.
3. Law, Kris MY, and Angappa. International Journal of Production Economics Gunasekaran. "Sustainability Development in High-Tech Manufacturing Firms in Hong Kong: Motivators and Readiness." International Journal of Production Economics 137, no. 1 Jane Eva Baxter, "The Paradox of a Capitalist Utopia: Visionary Ideals and Lived Experience in the Pullman Community 1880–1900," *International Journal of Historical Archaeology* 16, no. 4.: 116-25.
4. Allen, James B. *The Company Town in the American West*. Norman: University of Oklahoma Press, 1966.
5. Garner, John. *The Company Town: Architecture and Society in the Early Industrial Age*. Oxford University Press, 1992.
6. Graham, Susan Brandt. "Community, Conformity, and Career: Patterns of Social Interaction in Two Arizona Mining Towns." *Urban Anthropology* 9, no. 1 Susan Brandt Graham, "Community, Conformity, and Career: Patterns of Social Interaction in Two Arizona Mining Towns," Urban Anthropology 9, no. 1.: 1-20.
7. Kjellin, Margareta. Genuine Falun Red. Stora Kopparbergs bergslags aktiebolag, 1999.
8. Sweitza, Sam R. "A Multidisciplinary Approach to Investigating the Industrial Heritage of Puerto Rico: Research at the National Register Site of Central Aguirre." CRM: The Journal of Heritage Stewardship 7, no. 2 Sam R. Sweitza, "A Multidisciplinary Approach to Investigating the Industrial Heritage of Puerto Rico: Research at the National Register Site of Central Aguirre," CRM: *The Journal of Heritage Stewardship* 7, no. 2..
9. Baxter, Jane Eva. "The Paradox of a Capitalist Utopia: Visionary Ideals and Lived Experience in the Pullman Community 1880–1900." International Journal of Historical Archaeology 16, no. 4 Baxter,

"The Paradox of a Capitalist Utopia: Visionary Ideals and Lived Experience in the Pullman Community 1880–1900.": 651-65.
10. Ng, Mee Kam, Yuk Tai Lau, Huiwei Chen, and Sylvia He. "Dual land regime, income inequalities and multifaceted socio-economic and spatial segregation in Hong Kong." *Urban socio-economic segregation and income inequality: A global perspective* (2021): 113-133.
11. McConnell, Kelsey Christine. "The Controversial History of America's Company Towns." The ARCHIVE, https://explorethearchive.com/company-towns.
12. N., Alex. "Amazon Is Creating Company Towns across the United States." JACOBIN, https://jacobin.com/2021/07/amazon-warehouse- communities-towns-geography-warehouse-fulfillment-jfk8-cajon-inland-empire.
13. Cecco, Leyland. "Toronto Swaps Google-Backed, Not-So-Smart City Plans for People-Centred Vision." *The Guardian*, https://www.theguardian.com/world/2021/mar/12/toronto-canada-quayside-urban-centre.
14. Conzen, M. R. G. "Notes on 'Urban Morphology: Its Nature and Development' M. R. G. Conzen, "Notes on 'Urban Morphology: Its Nature and Development' (1992–1999)," in Teaching Urban Morphology, ed. Vítor Oliveira (Cham: Springer International Publishing).." In Teaching Urban Morphology, edited by Vítor Oliveira, 51-64. Cham: Springer International Publishing, 2018.
15. Ünlü, Tolga. "Planning Practice and the Shaping of the Urban Pattern." In Teaching Urban Morphology, edited by Vítor Oliveira, 31-49. Cham: Springer International Publishing, 2018.
16. Conzen, Michael P. "Core Concepts in Town-Plan Analysis." *Teaching urban morphology* Simon Commander, "One-Company Towns: Scale and Consequences," IZA World of Labor.: 123-43.
17. https://www.hkmaps.hk/viewer.html
18. Lang, Jennifer Field. HKU Theses Online. "Taikoo Sugar Refinery and Company Town: Progressive Design by a Pioneering Commercial Enterprise." The University of Hong Kong, 2018.
19. Roger, Nissim. *Land Administration and Practice in Hong Kong*. Hong Kong: Hong Kong University Press, 2012.
20. Lai, D. C. Y., and D. J. Dwyer. "Kwun Tong, Hong Kong: A Study of Industrial Planning." The Town Planning Review 35, no. 4 D. C. Y. Lai and D. J. Dwyer, "Kwun Tong, Hong Kong: A Study of Industrial Planning," *The Town Planning Review* 35, no. 4.: 299-310.
21. Kam Ng, Mee. Planning Theory and Practice. "From Government to Governance? Politics of Planning in the First Decade of the Hong Kong Special Administrative Region." 9, no. 2: 165-85.
22. Simson, Alan James. "The Post-Romantic Landscape of Telford New Town." *Landscape and Urban Planning* 52, no. 2 (2000/12/25/ 2000): 189-97.
23. Huang, Ying-Fen. "Spectacular Post-Colonial Cities: Markets, Ideology and Globalization in the Making of Shanghai and Hong Kong." (2008).