

The Hong Kong Mass Transit Railway

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Hong Kong Transit

Accommodated by both public and private transport, Hong Kong boasts one of the most sophisticated and efficient transport networks in the world. Most notably, over 90% of daily journeys around the island are on some form of public transport making it the highest rate of any city in the world.¹ Hong Kong's transit system features an array of public transportation systems that encourages a multi-modal approach: Taxis, buses, mini-buses, trams, railways, escalators, moving walkways, and ferries. From this diverse selection of public transportation modes, the most popular, efficient, and sustainable choice of transportation for a majority of the island's dense populace is the city's railway system.²



Considered the backbone of Hong Kong's multimodal transit system, the Mass Transit Railway (MTR or Metro) and Kowloon Canton Railway (KCR) provide over 150 stations through ten major lines that connect Hong Kong and her many neighboring islands.³ Now known as the MTR, the system has proven itself as a crucial cornerstone for everyday commuters since its inception in the 1970s. Despite the MTR's success and patronage, one must not forget the necessity of a multi-modal form of transportation in Hong Kong (in large part due to its natural topography as a city embedded in extremely undulating and mountainous terrain). According to the Hong Kong Transport Department in 1999, bus service patronage was the highest among public transportation at 3.9 million riders daily, whereas the number for railway patronage (MTR and KCR) was second at 3.7 million riders daily.⁴ Though this may suggest that buses are considered a more popular mode of transport, it must not be seen as a two competing components for public patronage, but two systems at work in congruence with one another. The Hong Kong Transport Department has recognized this multimodal facet of heterogeneous commuters in the city and has designated a state-augmented multimodal network (SAM). The SAM network approach utilizes government power to

¹ Chan, 171

² Chan, Tat-Tai, *The competition between buses and the MTR in Hong Kong*. <http://sunzi.lib.hku.hk/hkuto/record/B31945429.2009-09-23>.

³ MTR Corporation Official Web site. 2009. <http://www.mtr.com.hk>

⁴ Transport Department. 1999. *Third Comprehensive Transport Study: Final Report (CTS-3)*. Hong Kong

help normalize the associated costs with multimodal commuters. They do so by promoting fare competition and imposing regulations on social welfare (regarding transportation) as well as on the profitability of transit companies (MTR).⁵

The system of public transportation in Hong Kong- like many metropolitan communities- thus, relies on a combination of public transport modes with the railway networks as the key component to everyday commuters around Hong Kong.

History and Considerations

The high utilization rate of public transportation in Hong Kong today demonstrates the enormous success of the MTR. However, this success alone would not have been without a history of transport policies and regulations directly aimed at promoting public transit throughout the island's economic development. It is common to associate economic development with infrastructure development and consequently road construction. This notion of road building as an integral block to economic activity is seen most prominently in the United States beginning with westward expansion through federally subsidized road and highway construction.⁶ Even with huge economic productivity and development throughout the second half of the 20th century, Hong Kong's road construction has been extremely limited, increasing by a little over 2% annually over that last twenty years.⁷ This is partially due to Hong Kong's aforementioned topography and associated difficulties in massive road construction, but also a function a long history of effective transport policies.⁸

The implementation of a city-wide railway system was prompted by increasing traffic problems during Hong Kong's industrialization and economic development beginning in the 1960s.

⁵ Transport Department. 1999. *Third Comprehensive Transport Study: Final Report (CTS-3)*. Hong Kong: Government Printer.

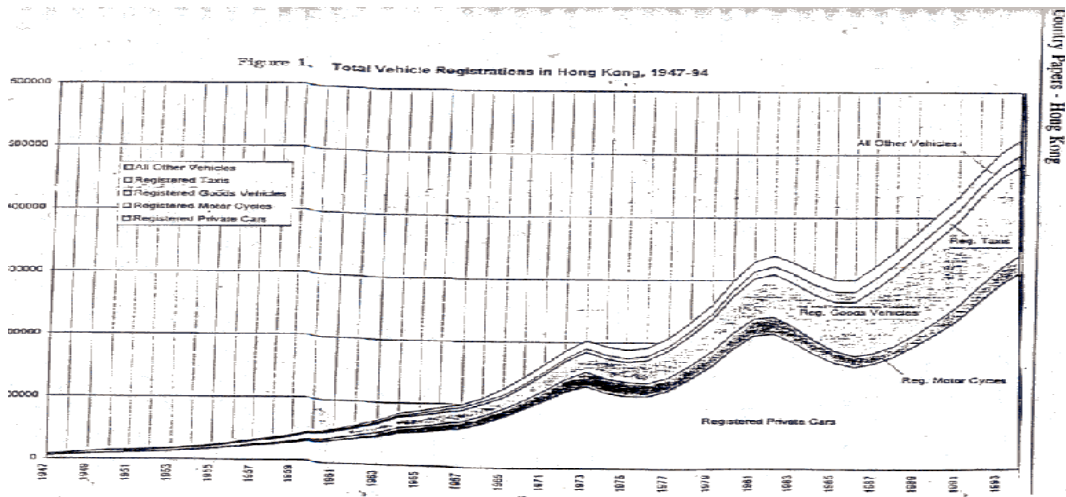
⁶ The *Third Comprehensive Transport Study* refereed to a fundamental law of traffic congestion, Down's Law specifying that an increase in traffic capacity on commuter expressways in urban areas results in a rise in travel demand that erodes much of the capacity-enhanced traffic improvement. Thus the study proposed that the city cannot just simply have positive supply measures like increasing roads, but needed a sustainable design and alternative transportation modes: railways.

⁷ Hau, 268

⁸ Hong Kong has the 4th highest population density in the world today is ranked among the top 15 wealthiest countries/economies lending itself to high automobile ownership for the many who can afford such luxury. This only accounts for 4% of the individual population and 14% of household car ownership. Hong Kong's road network according to the economist's world figures in 1995 was rated the world's most crowded and used road network in terms of vehicles per unit road length and the number of vehicle-kilometers per kilometer of road network.

The results of a governmental study produced the first “Green Paper” that proposed three essential components to improving Hong Kong transit: **1) improved road systems, 2) expansion and improvement of public transportation, and 3) increased efficiency in road use.**⁹

By the early 1970s with construction of the railway already tackling the issue of public transportation expansion (2), the government enacted a series of demand management measures to reduce road congestion and consequently increase efficiency in road use (3).¹⁰ The graph below illustrates rise in automobile ownership as industrialization hit the island. One will also find the regulatory effects on automobile registration after 1973 and 1981 with decreases in registration after each period.



⁹ Hau, 273-276; In the early 1960s, the government of Hong Kong appointed a British transport consulting firm Freeman, Fox, Wilbur Smith & Associates to assess mass transport on the island. The release of their report (Hong Kong Mass Transport Study) initiated construction in 1967 with the first MTR line opened twelve years after in 1979. During this time, the consultants followed up with another joint study with the Public Works Department in 1973 that produced the first Comprehensive Transport Study. Recommendations from the study provided the cornerstone for the government’s first Green Paper on internal transport policy.

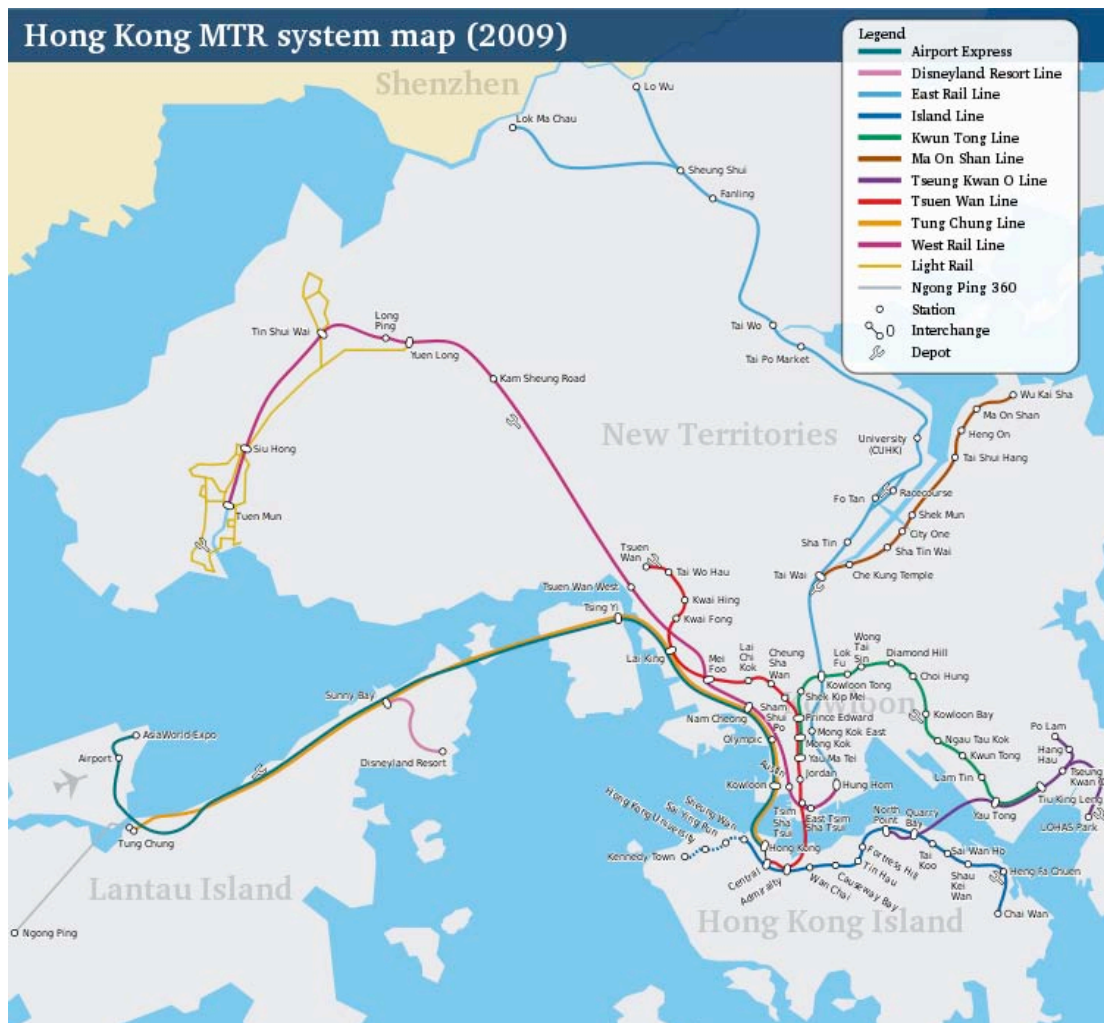
¹⁰ A 15% First Registration Tax (FRT) on the value of the vehicle – private cars and motorcycles- was accessed as the first step toward revamping Hong Kong’s transportation. At the same time, Annual Vehicle License Fees (ALFs) were introduced furthering decreasing auto-ownership. By 1975, the government had increased the FRT to 30% and also introduced this tax onto both freight vehicles and taxis. Unfortunately, private automobile ownership still increased alongside a burgeoning Hong Kong economy. In response, the government continued to take drastic steps to combat road congestion. By the early 1980s, the government had doubled the FRT to 70%-90% of a vehicle’s value (which rate varied by class), tripled annual license fees, and imposed a \$0.7 duty on each liter of light oils. The government also promoted the purchase of smaller, more efficient cars with tax incentives and subsidies. These policies were directed at private automobile ownership and seen as a stern measure against road congestion.

¹¹ Hau, 277

Since then, rates have not seen any drastic alterations.¹² In line with this evolution of Hong Kong's transport policies, public transportation projects have since created an intricate network of affordable and efficient mode of transit. And it continues on today. Thus, the success of Hong Kong's railway systems should not be understood as solely a function of the governments positive supply measures (road construction, public transit development), but also attributed to many demand management steps taken by the government since the 1970s.

¹² Currently, FRTs vary from 35% to over 100%, based on the size and value of the car.¹² Efforts have not stopped and the government has since introduced alternative methods such as Electronic Road Pricing (ERP) and Area Licensing. However, ERP and Area Licensing have failed to last with lacking public approval and extremely high associated costs.

MTR Today



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Operations

Carrying an average 3.7 million passengers every weekday, the MTR is regarded as one of the world's leading railways for reliability, safety, customer service and cost efficiency.¹⁴ The MTR network comprises ten railway lines serving Hong Kong Island, Kowloon and the New Territories. While most daily commuters find themselves within the immediate realm of Hong Kong and Kowloon, the MTR also offers a Light Rail system for serving the local communities in the New Territories with a fleet of buses provide convenient feeder services. The extension of the MTR

¹³ MTR Corporation Official Web site, 2009, <http://www.mtr.com.hk>

¹⁴ Transport Department, 1999, *Third Comprehensive Transport Study: Final Report (CTS-3)*. Hong Kong: Government Printer.

network to the New Territories with feeder services has allowed for an emerging trend of suburbanization without emphasizing the need for private automobiles. Not only has this revolutionized commuting in the region, but the MTR also operates various dedicated high-speed rail links to Hong Kong International Airport¹⁵, Asia World-Expo (the city's newest exhibition and conference center), Disneyland, and even connections to large cities in China like Guangzhou, Shanghai, and Beijing.¹⁶

Over time, the MTR has developed from a subway system to a comprehensive railway system with state of the art light rails (mag-lev technology) conjoining a network of islands in the most efficient means possible. Due to the archipelagic geographic layout of Hong Kong, road, tunnel, and bridge systems bear the heaviest burden for commuters and a light rail capable of ameliorating one of the world's most congested road networks- especially at major node points such as tunnels and bridges- cannot be understated.¹⁷



Entrance to Kai Tuk Tunnel during peak hours

¹⁵ In 1989, Hong Kong decided to construct a new international airport on Lantau Island to replace the overcrowded Kai Tak International Airport directly on Hong Kong Island. For many without private transportation, the new airport seemed to pose a serious problem. The Lantau Airport Railway thus turned into 2 MTR lines directly connected to the existing Metro system. Furthermore, the airport express offers flight check-in facilities at Kowloon and Hong Kong Station. This alternative check-in area offers an extremely convenient commute and time-saving routine. Free shuttle buses from hotspot locations such as hotels are also provided. It is the second most popular means of transport to the airport after buses (socio-economic reasons) and in 2006, represented 23% of share of the traffic to and from the airport. (Annual Report 2006. MTR Corporation Limited. 2006. pp. P.21. http://www.mtr.com.hk/eng/investrelation/2006frpt_e/F110.pdf. Retrieved 2009-09-22)

¹⁶ Though it may seem obvious for rail-links to China, such transportation methods were unheard of a decade ago before the re-colonization of Hong Kong under Chinese rule after Britain's 100 year control over the territory.

¹⁷Today, a trip from Hong Kong to Kowloon via the Kai Tak Tunnel can take over 30 minutes to cover its 1 mile journey during rush hours. For the MTR, 5 minutes. *see photo above

Reliability and Safety

An obvious advantage of the metro system in Hong Kong and anywhere else in the world is that the trains are unaffected by traffic or weather conditions (Certain lines may close during severe typhoons that often result in flooding). Operational hours for the MTR run for nineteen hours from 5:00 am to 1:00 am the following day.¹⁸ Service timetables are also adjusted daily based on passenger demand during peak hours for normal working days. The number of trains will increase as will their speed during these hours to accommodate for this demand.



MTR during peak hours

While it may sound dangerous, the MTR prides itself in both safety and reliability with trains that are operated with automatic signal control and protection systems regulating the distance between trains, determine the optimal rates of acceleration and braking, as well as the coasting speeds on different sections of a line.¹⁹

Beyond the MTR's own due diligence for safety, they effectively encourage and promote safe travel and habits for its millions of daily commuters. The metro is fitted with poster campaigns and cautionary signs reminding travelers of proper behavior: no smoking/eating/drinking, cell-phone etiquette, waste disposal, and countless general rules of conduct. The government also provides a web of security with a police railway division solely responsible for the MTR. Within their bylaws, they have jurisdiction over issuing penalties, fines, and imprisonment for any law breakers. All MTR stations are stocked with closed-circuit television cameras (CCTV) as well.

In addition to these measures, in June 2000, the MTR Corporation proceeded with its plans to retrofit 2,960 pairs of platform screen doors (PSDs) at all 30 underground stations on the Kwun Tong Line, Tsuen Wan Line, and Island Line in a six year program. The program made MTR the world's first railway to undertake the retrofitting of PSDs on a passenger-carrying system already in operation. Found mostly in Asia and Europe, these PSDs vary from country to country and even station to station, some provide full barrier from station floor to ceiling while only provide half-

¹⁸ MTR Corporation Official Web site. 2009. <http://www.mtr.com.hk>

¹⁹ Chan, 180

height barrier gates. These doors make station platforms safer by preventing people from falling onto the rails (purposely or otherwise). Beyond safety though, The MTR network in Hong Kong is also a fully air-conditioned system, thus part of introducing PSDs was to combat high energy costs associated with air-conditioning and ventilation

As compared to other metro systems in the world such as those found in Eastern Europe, architecture of MTR stations in Hong Kong is less artistic and focuses on structural practicability. As one of the more dense cities in the world, MTR stations are built with durability and accessibility in mind. Along with PSDs in 2000, the MTR has also retrofitted them for accessibility for the disabled: wheelchair space and accessibility to trains and floor tiles for the blind.²⁰ The emphasis may focus on structural practicability, but in 1998, a “Art in MTR” Initiative was launched where live performances, art exhibitions and displays of artwork by emerging and unknown artists.



LEFT: Full Height PSDs; Right: Partial Gate designs: Subway Art



²⁰ MTR Corporation Official Web site. 2009. <http://www.mtr.com.hk>

Customer Service

Aside from maintaining high levels of reliability and safety, the MTR system has introduced a range of amenities, services, and conveniences for their daily customers. MTR stations are often placed in high traffic retail areas creating multi-purpose nodes with a multitude of retail purposes. The MTR Corporation has itself invested in MTR malls and underground shopping centers that often extend above ground as full-fledged commercial and retail buildings. Their website boasts new projects and construction of megamalls as a means to improve the experience and attract new MTR customers. Their newest mall is promoted:

“Introducing the mall we’ve all been waiting for, Elements. Over one million square feet of pure shopping bliss, designed by world-renowned Benoy, subtly themed after the five Chinese elements. Elements brings together some of the world’s most sought-after brands and services. What’s even better, is that a lot of these are completely new to Hong Kong, and many others have opened flagship stores here. Dining is also a big draw, with big names in both Oriental and Western cuisine. Just add a wraparound glass wall, and you’ve got the makings of the perfect harbour-view dining experience. Shopping, leisure, dining, entertainment and culture have never before come together in such a big way. The fundamentals of Hong Kong shopping are changing, and Elements is where it starts.”²¹



**Left: Underground Mall connection to MTR;
Right: MTR's newest mega mall**

²¹ MTR Corporation Official Web site, 2009. <http://www.mtr.com.hk>

Octopus Card

In 1997, the MTR launched the Octopus Card that has become one of the most popular smart cards in Hong Kong. The Octopus Card is the world's first rechargeable **“contactless”** smart card system (similar to debit) initially used for the Hong Kong's mass transit system. The contactless smart card allows for efficient and speedy payment of MTR travel without swiping. This provides many advantages to users who can maintain the card in their wallets or purses and still “swipe” for electronic payment. There becomes no need to carry coins or pay in exact fees, and has since become the most popular smart card in Hong Kong. Currently, there are over 13 million Octopus Cards in active circulation, exceeding the island's population by 3 million.²² These cards can be purchased at any MTR or KCR service center and recharged at automated stations across the island or online. Manufactured by Sony, Octopus Card is widely accepted not only by the different modes of public transportation, but also convenient stores and supermarkets as well as fast food restaurants. They work in 7-11s, McDonalds, drug stores, and anywhere you can find an Octopus Card reader. Certain cards may be customized for ID purposes and can even be configured for individual home locking systems. Certain schools even use these cards for daily attendance and almost everyone in Hong Kong owns one.



Octopus Card Reader on vending machine



“Contactless” Smart Card Design

²² Octopus Cards Official Web site. 2009. <http://www.octopuscards.com/consumer/en/index.jsp>

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