

Wuhan: City of Rivers and Lakes

BASIC INFORMATION ¹		World Rank ²	Similar to			
Urban Area Population: 2000	4,700,000	53	Dallas-Fort Worth, Shenyang, Kuala Lumpur, Belo Horizonte			
Urban Land Area: Square Miles: 2000	225	150	Auckland, Lima,			
Urban Land Area: Square Kilometers: 2000	580	153	Campinas, Manchester			
Population per Square Mile	20,900	040	Istanbul, Shenzhen,			
Population per Square Kilometer	8,050	216	Recife, Izmir			
Note: Caution should be employed on city population figures in China because of significant definitional differences. See Cities in China and China City Populations Figures: Cautions below.						

12 September 2007

City of Rivers and Lakes

Wuhan is the capital of Hubei, a province with a population of 60 million, 1.8 times California in an area less than one-half as large.

There are few more challenging places in the world for developing a large urban area than the Wuhan. Wuhan is located on the Yangtze River in the middle of China's lake country. As a result, much of the urban area is water. Despite being 450 air miles (750 kilometers) from China's Pacific coast, the Yangtze River (Chang Jiang)³ at Wuhan is a minimum of one-mile (1.6 kilometers) wide. The Yangtze River is wider than the Hudson River at New York and wider than Hong Kong Harbor between Kowloon and Central (Hong Kong Island). , As a result, it is possible that Wuhan's core is divided by a wider body of water than that of any other major urban area in the world. Another river, the Han, enters the Yangtze from the north (west) at Wuhan.

On both sides of the river, inside the urban area, on the periphery and on the outside there are large natural lakes. Combined with Wuhan's hot, humid climate and the resulting greenery, the lakes provide unusual and attractive urban vistas, especially from East Lake, the largest located within the urban area.

As a result, Wuhan's urban footprint is larger than it if were on a plain without lakes and the broad river, like Denver, Moscow or Milan. This considerably complicates the provision of major roadways, which must generally circumvent the lakes. It also makes public transport much more difficult to provide, since service

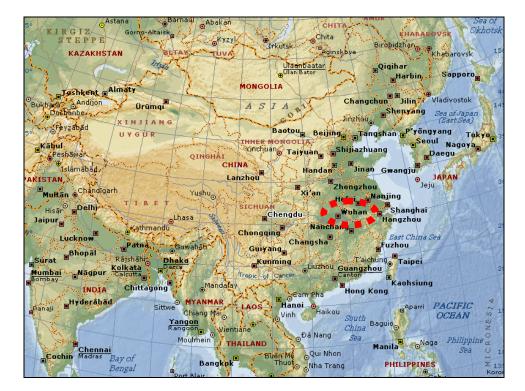
¹ For definitions of urban terms see <u>http://www.demographia.com/db-define.pdf</u>.

² Among urban 707 areas with more than 500,000 population (<u>http://www.demographia.com/db-worldua.com</u>), 2007.03 edition with revisions to publication date of this document).

³ The Yangtze River runs generally west to east and like virtually all rivers winds a good deal. Thus, those parts of Wuhan that are on the "left bank" are considered to the north (Hankou and Hanyang) and Wu Chang, on the "right bank" is considered to be to the south. The actual directions are somewhat different, due to the winding of the river.

levels must increase service levels geometrically as service areas increase (each doubling of land area requires a quadrupling of service to maintain comparable public transport mobility).

While Wuhan is located on generally flat land, there are some hills.



Wuhan in Context

Wuhan is mainland China's 6th largest urban area, following Shanghai, Beijing, Shenzhen,⁴ Guangzhou, Hong Kong, Dongguan and Tianjin. It is also the largest inland province urban agglomeration, somewhat larger than Chengdu, the capital of Sichuan. Wuhan is among the 60 largest urban areas in the world, similar in population to Dallas-Fort Worth, Belo Horizonte, Kuala Lumpur and Shenyang.

The two rivers divide the agglomeration into three parts, which are Hankou to the northwest, Hanyang to the northwest and Wu Chang to the south (Figure). The administrative center is in Hankou. The city of Wuhan was created by the merger of the cities of Wu Chang, Hankou and Hanyang in 1927. From district data, it appears that Wu Chang has the largest share of the population (2,200,000), followed by Hankou (2,000,000) and Hanyang (500,000).

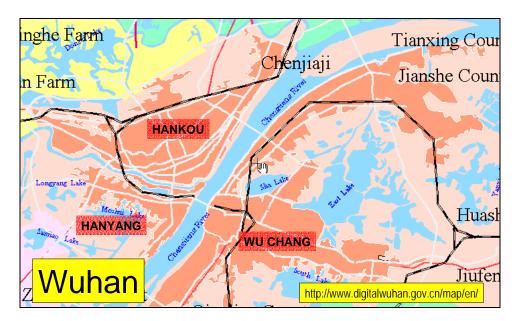
The division of the urban area into three parts by the rivers and the large central business districts that exist on both sides of the Yangtze give an impression an urban area that is larger than Wuhan.

Wuhan is one of the world's true conurbations --- an agglomeration that has grown together from more than one agglomeration (other notable examples are Osaka-Kobe-Kyoto, the Rhine-Ruhr-Wupper region of Germany, Dallas-Fort Worth and Katowice-Gliwice-Tychy in Poland).

⁴ While virtually adjacent, Shenzhen and Hong Kong are not a single urban area because of travel restrictions that limit movement between the two.

Wuhan Population by Sector Estimated: 2000					
Sector	Population				
Hankou	2,000,000				
Hanyang	500,000				
Wu Chang	2,200,000				
WUHAN	4,700,000				

Wuhan is dominated by lakes like no other major urban agglomeration. East Lake in Wu Chang covers more than 10 square miles (16 square kilometers). Wu Chang also includes at least two other large lakes, including South Lake and Sha Lake. Hanyang has Moshui Lake and others, while Hankou has smaller lakes in the middle of the central business district. Moreover, the urban agglomeration is ringed with additional large lakes, including a large lake on the way to the airport. East Lake is the largest of the urban lakes and tree-lined roadways have been built across the lake, which provides attractive recreational access (Plates 133-144).



Hankou

The main business center is in Hankou district, which is on the north side of the Yangtze River and to the east of the Han River. Like the central business districts (CBDs)of many Asian urban areas, Wuhan's downtown is comparatively dispersed. This is not to suggest that it does not have large buildings. The tallest buildings are more than 60 floors. The tallest is the nearly completed Minsheng Bank Building (Plate 42), which is 68 floors, 1,087 feet and 331 meters tall. According to *Infoplease.com* this height makes the building the 19th tallest in the world --- taller than all buildings in the North America, Western Europe and Oceana outside New York and Chicago.

Hankou's tall buildings are widely dispersed through an area of nearly 10 square miles (16 square kilometers) - -- larger than New York's Manhattan CBD, at less than 8 square miles (less than 13 square kilometers).

Wuhan's "Asian" CBD form is radically different from American, Canadian or Australian CBDs, which, with the exception of New York, are very small. For example, the second largest CBD in these countries, Chicago, covers only 3.3 square miles (5.3 square kilometers). The average large American CBD covers less than 1.5 square miles (2.4 square kilometers). As urban historian Robert Fogelson shows, the concentrated American



CBD form was the creation of public transport --- in the pre-automobile era. The more dispersed Asian CBD form severely complicates the ability of public transport to provide quick service from other parts of the urban area. The more dispersed CBD's make it difficult for many people to walk from public transport stops to their destinations, a problem avoided by the intense concentration in American, Australian, Canadian and New Zealand CBDs.

This dispersion means that there is plenty of room for residential living, much of it in the older mid-rise buildings that preceded the recent prosperity (Plates 23-26, 45-49 & 154). In many areas, these building are being replaced by more attractive, higher-rise condominium and commercial buildings.

There is considerable industrial, commercial and residential development in suburban areas outside the ring road. As is the case in other Chinese urban areas, these are typically served by very wide streets, from 6 to 10 lanes.

Wu Chang

Wu Chang, located on the south side of the Yangtze River, has major universities and a very substantial CBD itself (Plates 63-72). Like Hankou, the commercial buildings are widely spread. They are generally along the 3.5 mile (5.5 kilometer) north-south axis of Zhongbei Road. The greatest concentration of buildings is near the large square of Hong Shan Plaza, two-thirds of the way from north to south. There is also considerable industrial development in the northern part of Wu Chang. The commercial and residential sectors of Hankou border East Lake to the west, north and south. To the east of East Lake, there are industrial areas and large freight railroad yards and facilitates.

Hanyang

To the west, Hanyang lies across the Han River from Hankou and north across the Yangtze River from Wu Chang. Hanyang is a principally a residential and industrial area. As in the rest of Wuhan, there is considerable construction in Hanyang.

Crossing the Yangtze

The Yangtze River is crossed by three bridges. Yangtze River Bridge #1 (Plates 11, 60, 156, 160, 168 & 169) was completed in 1957 and connects Hanyang to Wu Chang at the point that the river is the narrowest. This impressive bridge is more than 1.5 miles (2.5 kilometers) long, including approaches. The top deck has four lanes of traffic for automobiles and buses, including electric trolley buses. There is also a walkway for pedestrians (Plates 160-168) The second deck provides a crucial rail link on the Beijing to Guangzhou railway. Traffic is heavy on both bridge decks. It appears that most of the rail volume is passenger trains, though long freight trains (70 or more cars) also operate. Passenger trains were observed at up to 20 cars. Trains cross the bridge every few minutes.

Yangtze River Bridge #2 was opened in 1995 and carries six lanes of road traffic and no rail traffic between Hankou and Wu Chang, north of Yangtze River Bridge #1. Pedestrians are allowed on this bridge. Yangtze River Bridge #3 is located some distance south of Yangtze River Bridge #1, between Hanyang and Wu Chang and is the southern (or western) crossing of the ring road. A more northerly bridge is under construction, which will serve the northern (or eastern) ring road crossing. Planning officials advise that ultimately seven Yangtze River bridges are envisioned.

Local Transport

Despite smaller ratios of automobiles to population, Chinese urban areas such as Wuhan are developing in an automobile oriented manner. The bicycle, the traditional dominant urban mode of the communist era is no longer a serious means of urban transport in Wuhan (or in many other urban areas of China).

Wuhan has a high capacity arterial street system. Most major streets are at least four lanes and some are up to eight lanes. Local authorities are widening streets to serve the inevitably growing number of automobiles. As a result of these infrastructure improvements, traffic appears to be considerably better than in urban areas that have not sufficiently invested in arterial streets, such as Jakarta or Chicago. Indeed, Wuhan's arterial street system would be the envy of many metropolitan areas in the United States and all in Western Europe. Sydney's planners should be sent to Wuhan to learn about traffic movement. Atlanta's traffic congestion would be minimal if it had built an arterial system like Wuhan's. Most of Wuhan's traffic signs are also in English, which makes getting around easier. Additionally, as in other Chinese urban areas, streets tend to be lined with trees, except in the most dense commercial districts.

Transport is rapidly modernizing in Wuhan. A web-based travel service claims that taxicabs far outnumber private cars and other vehicles. This may have been the case a few years ago, but casual observation suggests that private automobiles represent from 60 to 80 percent of traffic on roadways. Nonetheless, the intensity of taxicab service is great and a significant share of Wuhan's travel appears to be by taxicab. Moreover, the Chinese are not opting for small cars alone. New sport utility vehicles (SUVs) and large cars, such as Audi 8's, Shanghai GM Buicks and Nissan Teana's are quite popular.

There is a full-freeway ring road around Wuhan, along with the usual expressway system that links the urban area to the rest of the nation. By 2020, China intends to have nearly as many freeway miles as the United States.

While Chinese urban areas have a reputation for intense air pollution (Plates 15 &16), this seasoned smog expert (as anyone must be who lived in Los Angeles during the smog peak) that the air smelled better than Los Angeles in the 1960s and 1970s. This is unlike India, where there are many highly-polluting cars --- or the cores of European cities, where the sheer volume of traffic seems to neutralize the best air pollution control equipment on cars. Here, it appears the larger problem may be industrial air pollution.

However, in Wuhan buses are dominant. Thousands of buses provide service throughout the most highly developed parts of the agglomeration and well into the suburbs beyond the ring road. An elevated rail line, similar to Skytrain in Vancouver or Bangkok is now operating and is easy to use. Like the core oriented elevated rail lines of Delhi, Bangkok or Kuala Lumpur, Wuhan's line provides good vistas of the core urbanization. This is, of course, different than the views one sees from underground Metros or subways, from which one cannot tell the difference between the views of New York, Paris or Toronto (except, perhaps, at the stations). Wuhan has ambitious plans for Metro construction.

The Chinese Economic Miracle: Wuhan Version

Any thought that the Chinese economic miracle has been limited to the east coast urban areas is quickly dashed by a visit to Wuhan. Just like the east coast urban areas, Wuhan is a virtual construction site. Old buildings are being demolished throughout the urban area to provide room for larger residential and commercial buildings. This can be seen happening in each of the highly urbanized sectors of Hankow, Hanyang and Wu Chang. Construction is also apparent in the suburbs along and beyond the ring road.

As is to be expected at this stage of China's development, much of the residential construction is high-rise and high-density. But it is not confined to the core. High-rise condominium buildings are under construction and have been completed along and outside the ring road. This will be far better for traffic congestion, because overall densities are comparatively low as a result of the large amount of space between residential towers and developments.

At the same time, there are detached housing developments (Plates 119-127). Of course, again because of limited incomes, the detached houses tend to be for the more affluent. Like Australia and coastal California, there does not appear to be a starter detached house market. In China, it is because it has not yet developed due to insufficient income. In Australia and Coastal California, it is because the starter detached housing market has been destroyed by planning policies (so-called "smart growth" or "urban consolidation")⁵ that severely ration land for commercial development.

Unlike urban planners in the West, who are seeking to reduce the amount of living space per person, Wuhan's planners have undertaken a program to expand living space per person by approximately 30 percent. Lower, not higher densities are being sought.

Shopping: A Nation of Scholars & A Nation of Shopkeepers

Central Hankou has a multi-story Wal-Mart store. It is served by a dedicated system of bus routes, all conspicuously painted with Wal-Mart logos and colors. Perhaps even more than England, China has emerged as a nation of shopkeepers. Many streets are lined with small shops selling everything from drinks to machinery.

In the United States, Chinese students have a reputation for superior academic performance. It is not hard to understand after visiting a large bookstore in Wuhan. The Xinhua bookstore is located in a major shopping district of Hankou, near the large Wal-Mart supercenter. Xinhua has at least four floors of books. Xinhua is to Wuhan what Foyles on Charing Cross Road was to London before the coming of the international book store chains. Xinhua is well stocked, but it can be difficult to access the books. Much of the space in the store is occupied by people reading. They sit on both sides of the stairwell, so it can be difficult for people walking up or down to pass. Readers sit between the bookshelves, on virtually any unused space. Western bookstores began to provide space for people to read some years ago, but the density of readers is considerably less than at Xinhua.

Airport

The airport is located 15 miles (25 kilometers) to the northeast. Wuhan's international airport is now operating over-capacity (Plates 172-175). Like Los Angeles International and Charles de Gualle in Paris, some flights are served by shuttle buses from the main terminal. But in the construction zone that is China, this situation will soon be resolved. A large new terminal is under construction as Wuhan will join other large Chinese urban areas with new airports, such as Shanghai, Beijing and Guangzhou.

Practical Information on China

Air Conditioning: The Chinese seem determined to live in comfort as their American cousins. Virtually all major commercial establishments and residential buildings are air-conditioned. Even the older communist era residential buildings have been retro-fitted with room based air conditioners.

Hotels: Hotel rates are reasonable in China, unlike India. However, like India, three-star hotels are both clean and comfortable. The only problem is that little English is spoken. Nonetheless, the language difficulties can generally be overcome as hotels will usually have access to people who speak English.

⁵ See 3rd International Demographia Housing Affordability Survey: <u>http://www.demographia.com/dhi-ix2005q3.pdf</u>.

Money Exchange: Some western hotels have money exchange services. Other hotels do not. Generally, money must be exchanged at the Bank of China, which has multiple branches throughout Chinese urban areas. The larger branches have somewhat bureaucratic procedures and considerable demand, so it is recommended that more money be exchanged, so that visits to the bank (and time) can be minimized.

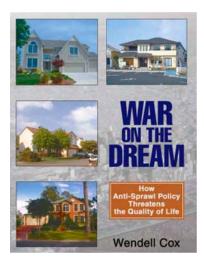
Car Rental: Generally, it is not possible to rent cars in China unless you have a Chinese drivers license. This means that touring is best done by taxicab. It will typically be less expensive to take multiple taxis to specific locations rather than renting taxis for a certain number of hours through hotels.

Air Travel: There has been a proliferation of airlines in China, most owned by the central, provincial or even municipal governments. With a land area larger than the United States, air travel fills a long-distance niche that simply cannot be served by surface modes of transport (cars and trains). Already, the share of personal travel by air in China is nearly double that of Japan and Western Europe and rivals that of the United States (more than 10 percent).

"Cities" in China: The term "city" has many meanings and Chinese usage makes the word even more nebulous. Cities, or municipalities (areas of municipal administration) in China are routinely larger than their urban areas. Some municipalities are considered provincial level (Shanghai, Beijing, Chonging and Tianjin). Other municipalities are considered sub-provincial (such as Wuhan, Xi'an and Chengdu) and have a degree of autonomy from provincial governments. Chinese municipalities are the largest in the world, both in area and in population. Unlike in China, few, if any, of the world's largest municipalities are larger than their respective urban areas. Moreover, many municipalities in China are far larger than any reasonable definition of a metropolitan area (labor market area).

China City Population Figures: Cautions: Because of their very large municipalities that have far more rural than urban space city population figures in China are not a reliable indicator of urban populations. For example, the Xi'an municipality has more than 7,000,000 residents, yet the urban area has only 3,000,000 residents. The Chongqing municipality has more than 30,000,000 and covers a land area the size of Indiana. The Chongqing urban area, however, has 3,000,000 people. Comparison data is provided in the figure below for Chengdu, Wuhan and Xi'an.

C.	moorison of Mun	icipalities (Cities)	with Urban Aro	as: China Examples				
Comparison of Municipalities (Cities) with Urban Areas: China Examples								
MUNICIPALITY (CITY ADMINISTRATIVE AREA) Land Area Land Area								
	Population	(Square Miles)	Density	(Square KM)	Density			
Chengdu	11,000,000	4,700	2,300	12,100	900			
Wuhan	8,300,000	3,300	2,500	8,500	1,000			
Xi'an	7,300,000	2,900	2,800	10,000	700			
URBAN AREA (URBAN AGGLOMERATION OR URBAN FOOTPRINT)								
	Urban Area	Land Area (Square Miles)	Density	Land Area (Square KM)	Density			
Chengdu	3,500,000	135	25,900	350	10,000			
Wuhan	4,700,000	225	20,900	580	8,050			
Xi'an	3,000,000	180	16,700	465	6,450			
OUTSIDE PRINCIPAL URBAN AREA								
	Urban Area	Land Area (Square Miles)	Density	Land Area (Square KM)	Density			
Chengdu	7,500,000	4,565	1,200	11,750	650			
Wuhan	3,600,000	3,075	1,200	7,920	450			
Xi'an	4,300,000	2,720	1,600	9,535	450			
URBAN AREA SHARE OF MUNICIPALITY								
	Urban Area	Land Area (Square Miles)	Density					
Chengdu	32%	3%	1126%					
Wuhan	57%	7%	836%					
Xi'an	41%	6%	596%					
Jrban area estimates by Demographia using maps, and "qu" (wards or districts) data.								



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Summary and Chapter Titles:

http://www.demographia.com/wod1.pdf

Urban Tours by Rental Car: About the Series

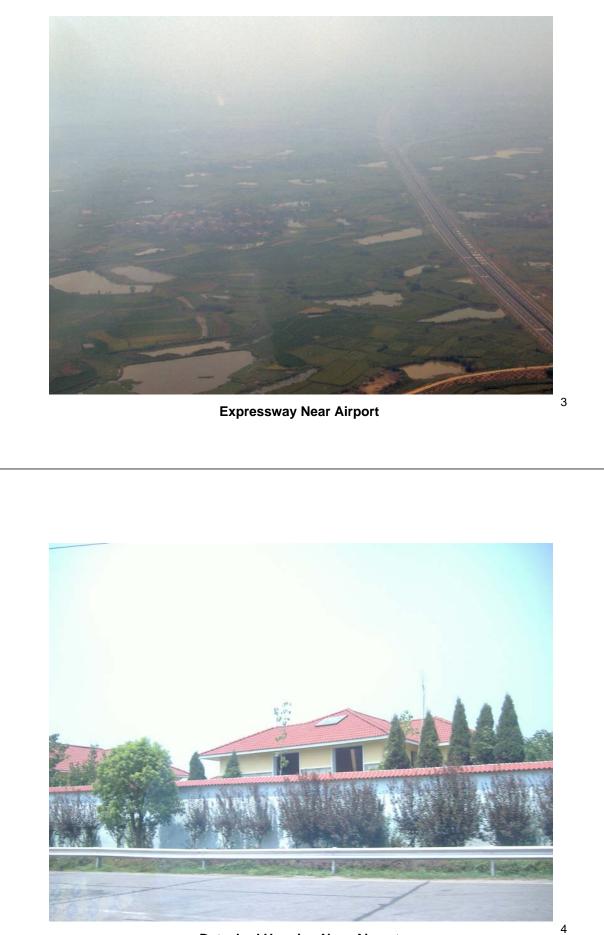
Urban Tours by Rental Car offers perspectives on urban development obtained by automobile tours through urban areas. Rental cars are not the favored method for visiting cities, especially those outside one's own country. Instead, tourists and urban planners favor packaged tours or local public transport systems. Both are splendid ways for seeing the city as it used to be --- the very reason for most tourist visits. The historical core areas contain monuments, prime government and religious edifices and quaint neighborhoods that are often centuries old. This is particularly important to tourists from the newer urban areas of the American, Canadian or Australian West, where history extends not far before World War II. It is further understandable that few tourists travel thousands of miles to see the newer suburban areas that look very much like home. But most tourists do not profess to be students of the urban area.

For the urban planner interested in understanding the whole urban area, it is not enough to study the core alone, regardless of its architectural attractiveness, romanticism, history or affirmation of an individually preferred life style. No one, regardless of the depth of their education can develop reliable conceptions from an unrepresentative sample, and urban cores are the very essence of unrepresentative samples. Both public transport and packaged tours miss the larger part --- the expanse of sprawling residential and business development that rings virtually all major urban areas. They may be of little interest to many urban planners, but they should be.

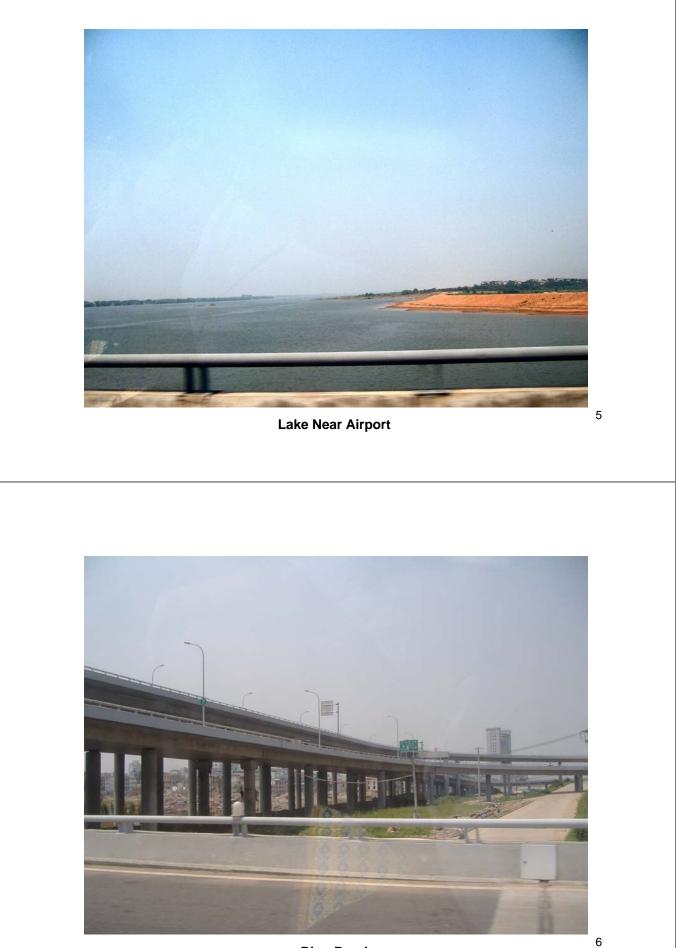
Stripping away regional architectural facades, one might as well be in the suburbs of Phoenix, Portland, Perth or Paris. Here, the automobile is king, because no public transport system has been developed that can effectively serve destinations outside the core (at least at a price any society can afford). While public transport market shares are higher in European suburban areas than in the New World, much of the difference is attributable to lower incomes and less automobile access. Indeed, public transport's principal weakness, lack of automobile competitiveness, is itself a contributing factor to the rising motorization occurring from the suburbs of Copenhagen and Nagoya to the suburbs of Lagos and Mumbai. To oversimplify this phenomenon as being a "love affair with the automobile" is the equivalent of saying that Singaporeans or Brazilians have a love affair with air conditioning. Human beings prefer comfort to discomfort and they prefer free time to time over which they have no control.

It is no wonder that tourists return to the United States thinking that all Paris looks like the second arrondissement (less than one percent does) and that urban planners think all of Milan looks like the architectural treasures that surround the Cathedral. In fact, the sprawling suburbs of Europe, Japan, Canada and Connecticut resemble one another in many ways. For any seeking to study the urban area in its entirety -- not just the favored haunts of core-dwelling elites --- there is no alternative to "getting behind the wheel." Thus, *Urban Tours by Rental Car*.





Detached Housing Near Airport



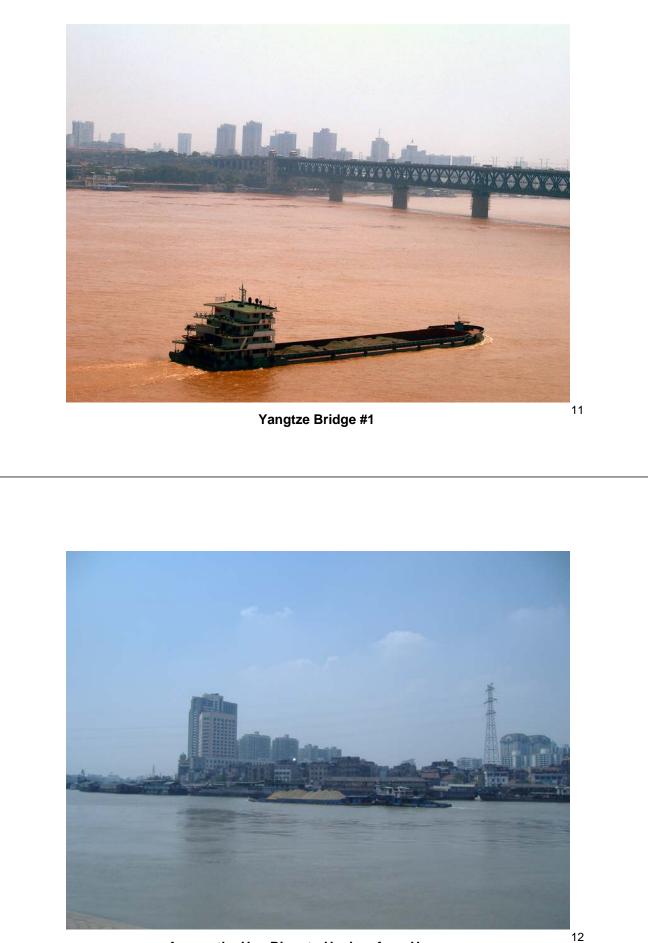
Ring Road











Across the Han River to Hankou from Hanyang

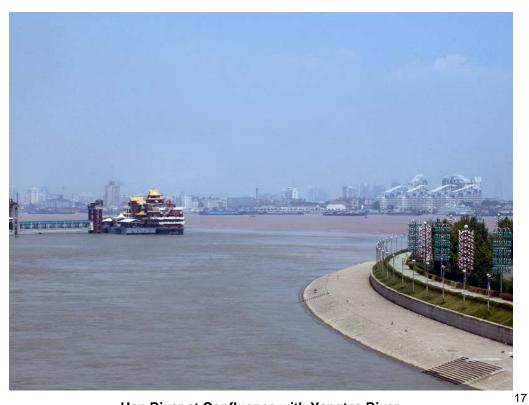


Han River Bridge Between Hanyang & Hankou

Hankou

14





Han River at Confluence with Yangtze River





20

Hankou





Hankou









26





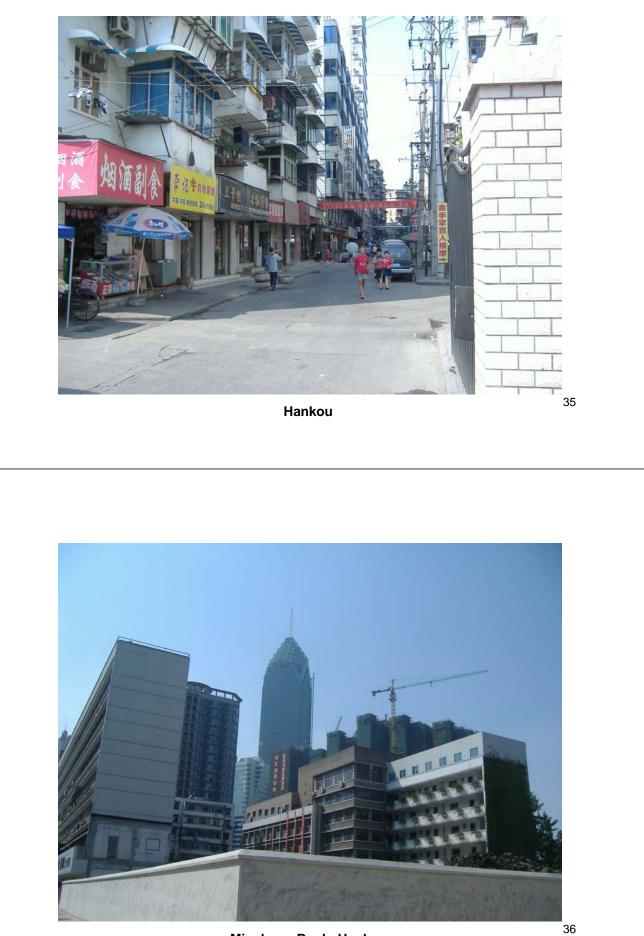
Wal-Mart in Hankou

Wal-Mart Dedicated Transit System

30







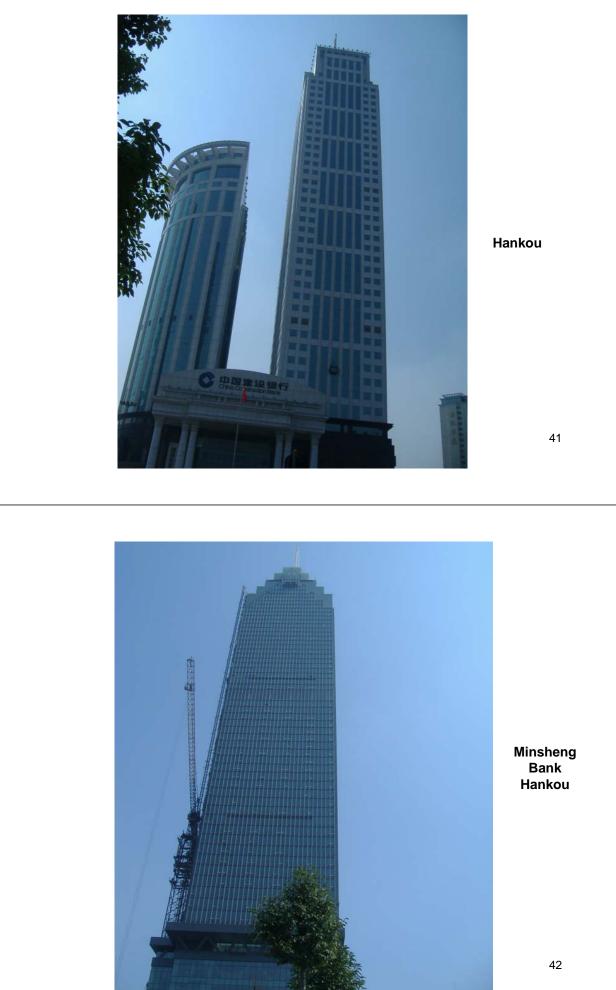
Minsheng Bank: Hankou





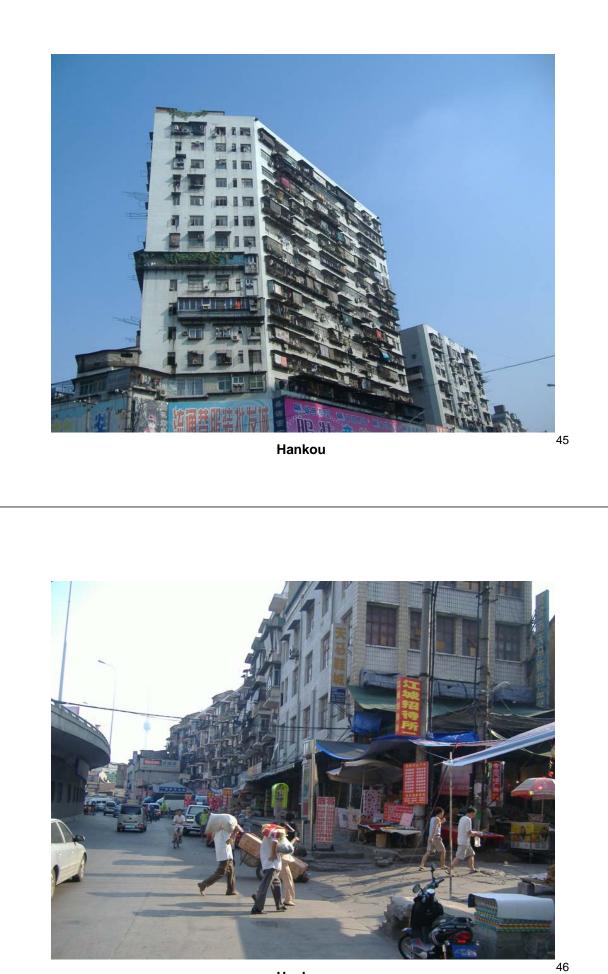














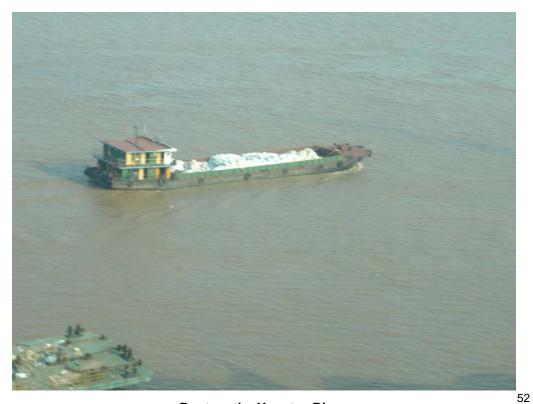




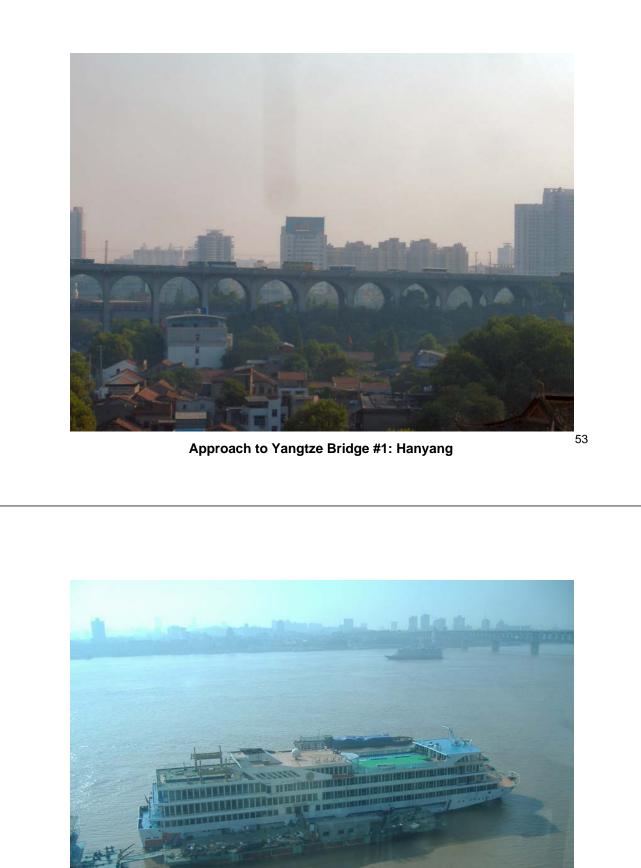
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Wu Chang



Boat on the Yangtze River



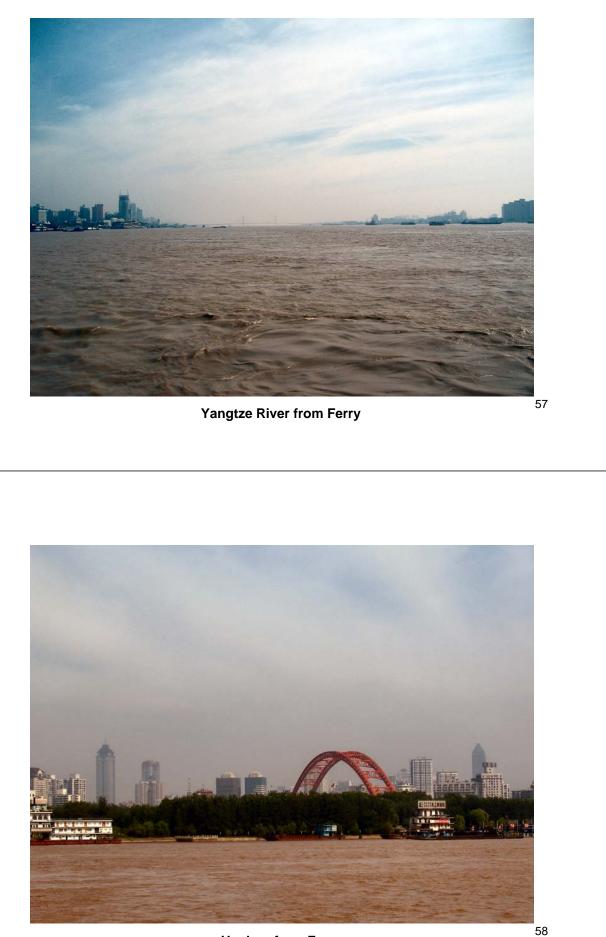
Passenger Ship Under Refurbishment: Hanyang

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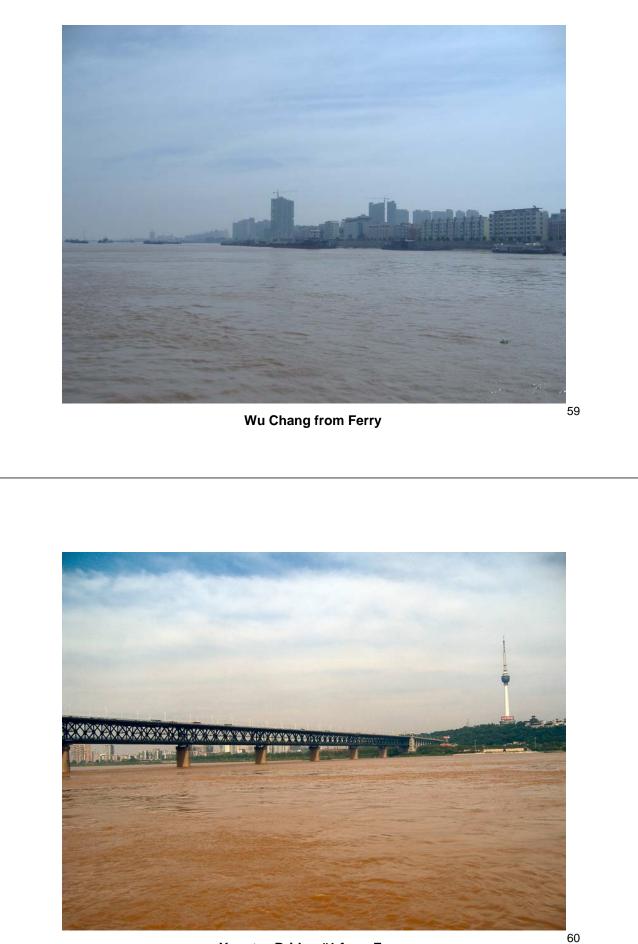


Telecom Tower: Hanyang

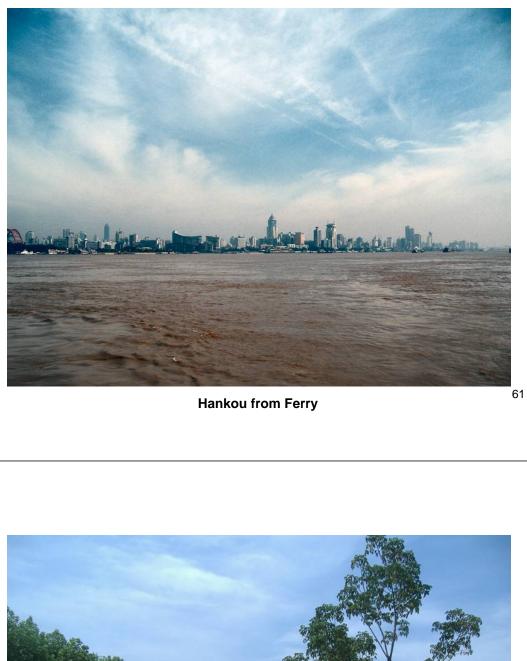
Yangtze Bridge #1



Hankou from Ferry



Yangtze Bridge #1 from Ferry





Wu Chang



Wu Chang



64

Wu Chang







Wu Chang: Hong Shan Plaza

67



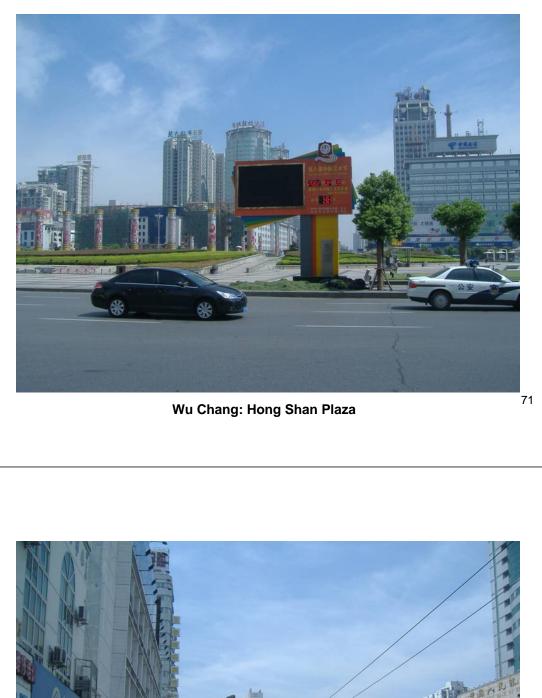
Wu Chang: Hong Shan Plaza



Wu Chang: Hong Shan Plaza



Wu Chang: Hong Shan Plaza



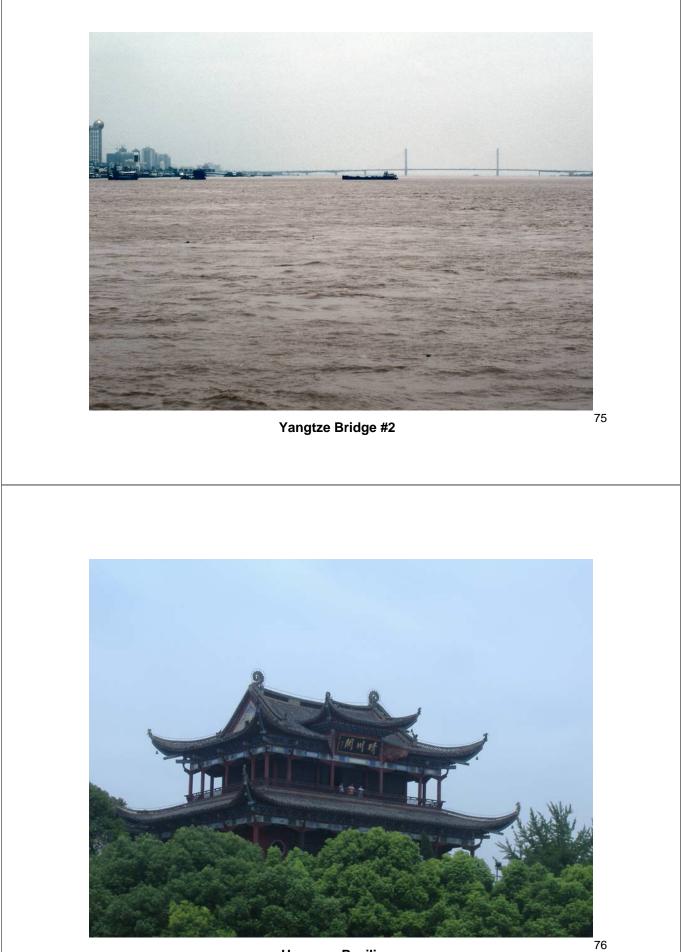


Wu Chang



Hankou from Wu Chang





Hanyang Pavilion

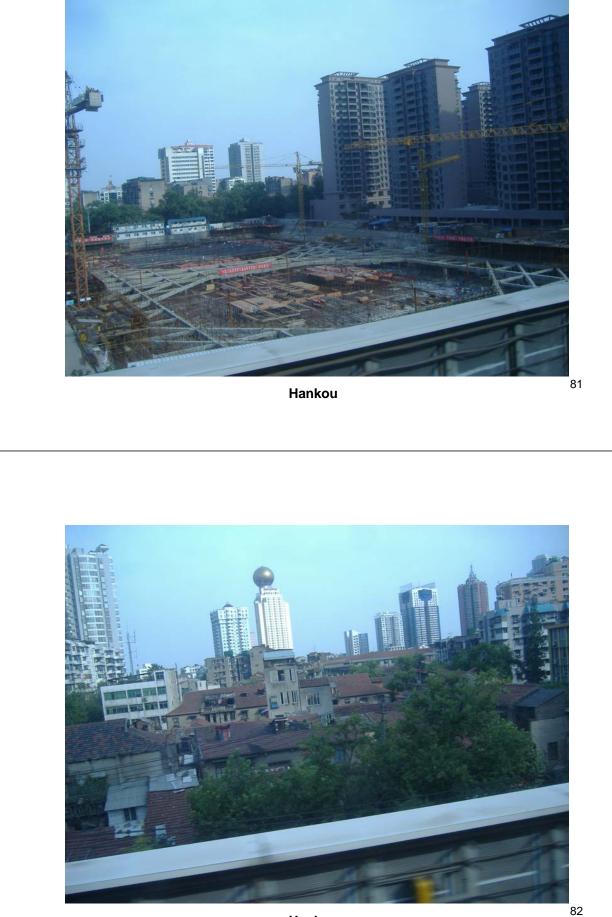




Hankou: Elevated Rail Line



Hankou







Elevated Rail Line: Hankou



Hankou



Hankou



88

Hankou



Hankou

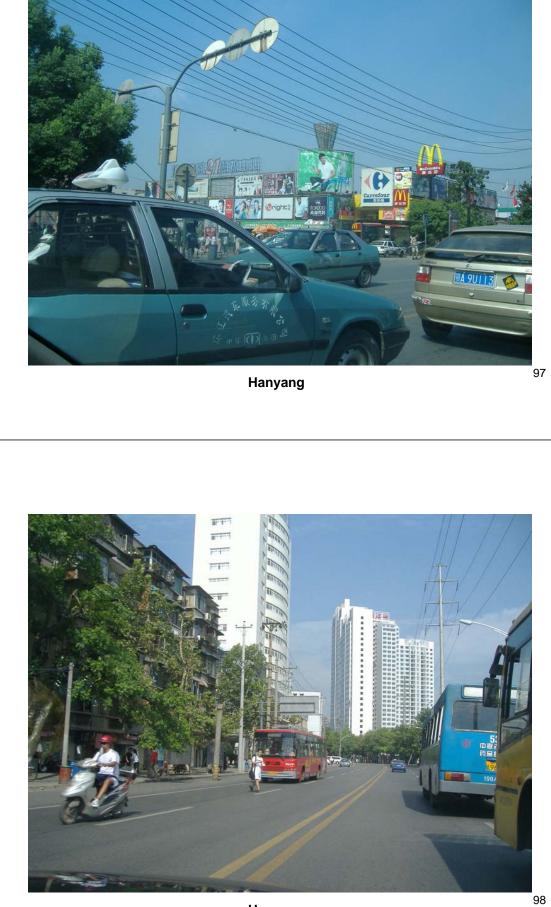














100





102









Hanyang: Lexus Dealer



Hanyang



New Development: Western



New Development: Western

New Development: Western



New Development: Western



New Development: Northern



Adjacent Rural Development (Northern)

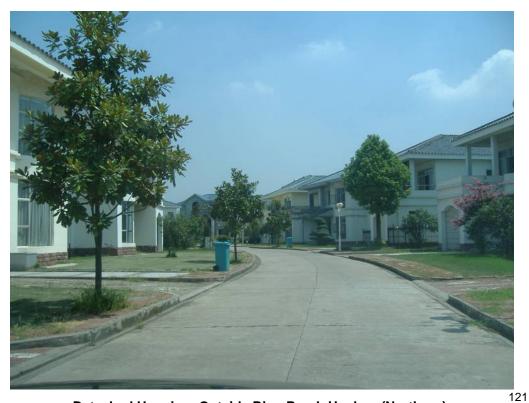


New Development: Northern



Detached Housing: Outside Ring Road: Hankou

Detached Housing: Outside Ring Road: Hankou (Northern)



Detached Housing: Outside Ring Road: Hankou (Northern)

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Detached Housing: Outside Ring Road: Hankou (Northern)



Detached Housing: Outside Ring Road: Hankou (Northern)



Detached Housing: Outside Ring Road: Hankou (Northern)



Detached Housing: Outside Ring Road: Hankou (Northern)





Yangtze Bridge #2



Wu Chang



Wu Chang: East Lake

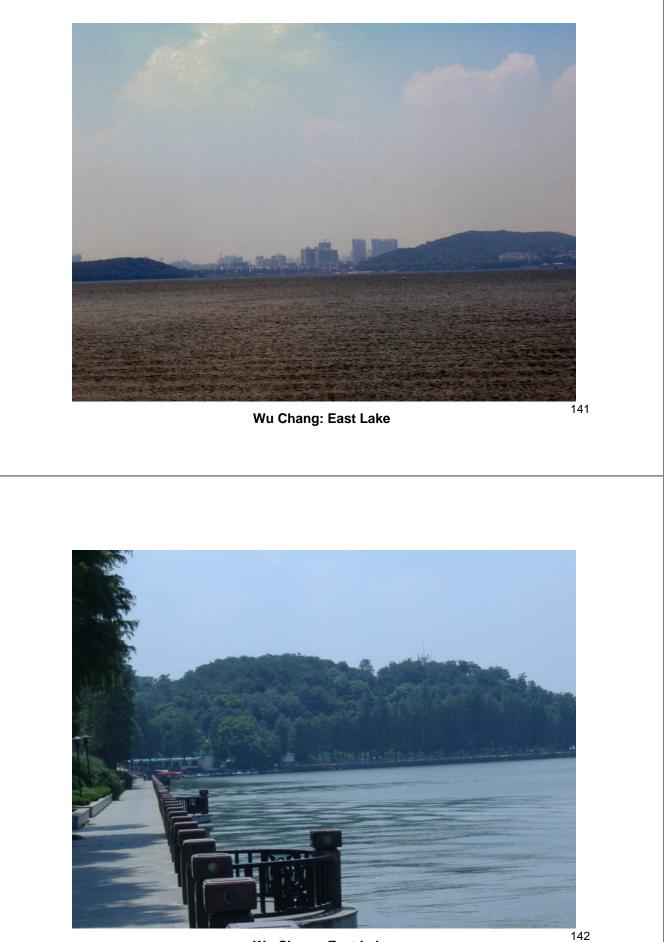




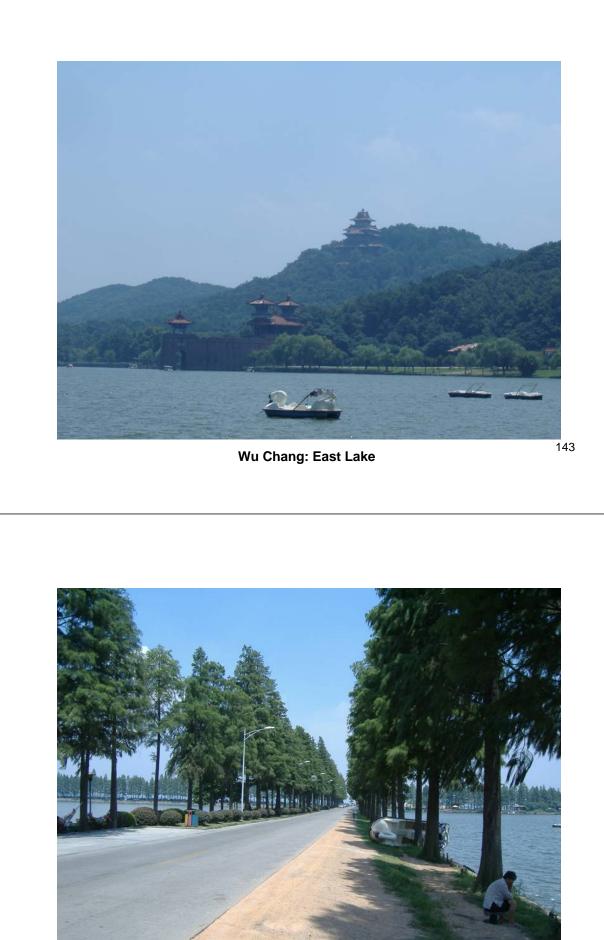
Wu Chang: East Lake



Wu Chang: East Lake



Wu Chang: East Lake



Wu Chang: East Lake



Wu Chang: East Lake



Wu Chang







Hankou



Hanyang



Hanyang



Appoach to Yangtze Bridge #1: Hanyang

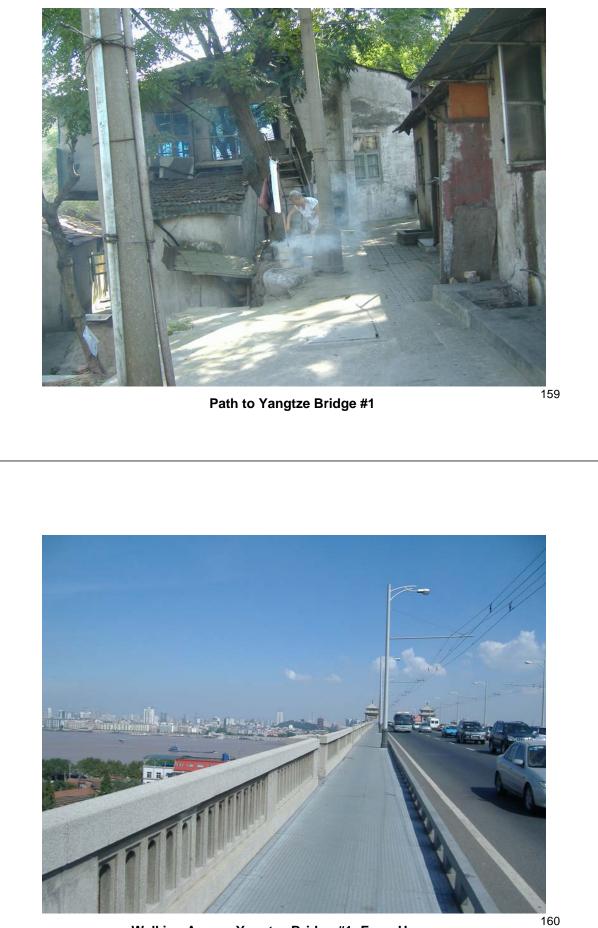


Pedestrian Mall: Hankou

157



Hankou: Western Concession Building



Walking Across Yangtze Bridge #1: From Hanyang



Hanyang & Wu Change from Yangtze Bridge #1



From Yangtze Bridge #1



Hankou from Yangtze Bridge #1



Wu Chang from Yangtze Bridge #1



Wu Chang from Yangtze Bridge #1



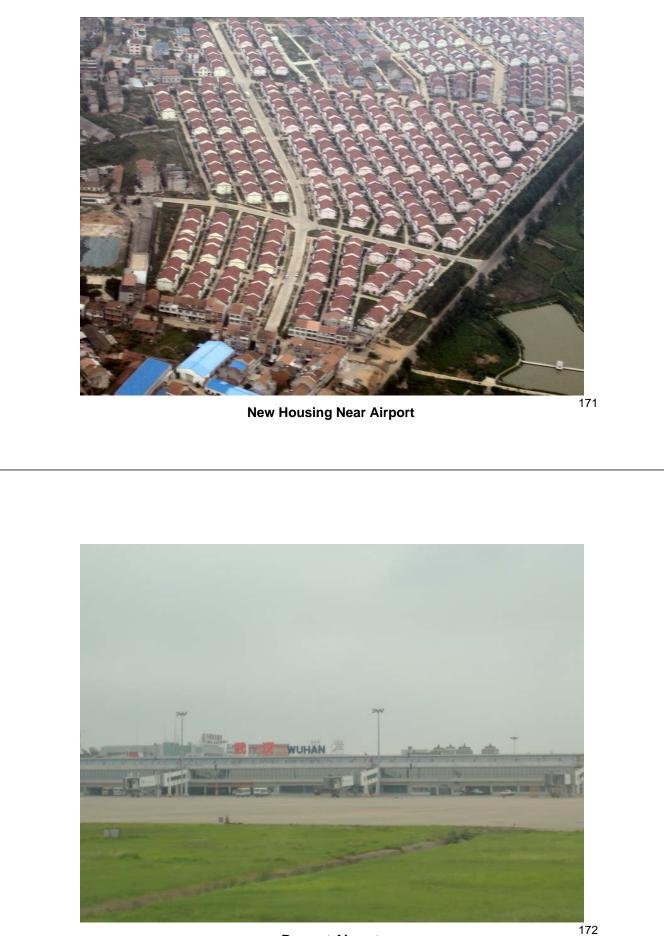
Wu Chang from Yangtze Bridge #1 (Yellow Crane Tower)



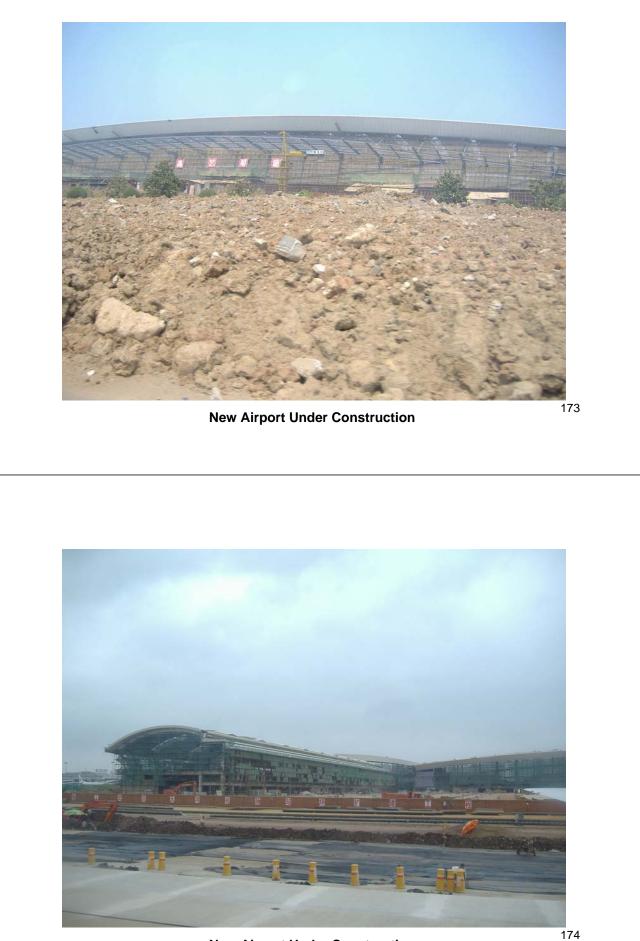
Southbound Passenger Train on Yangtze Bridge #1



Hanyang



Present Airport



New Airport Under Construction



New Airport Under Construction























Hankou



Hankou



Wu Chang & Bridge #1 from Hanyang: Across the Yangtze

Urban Tours by Rental Car: WUHAN





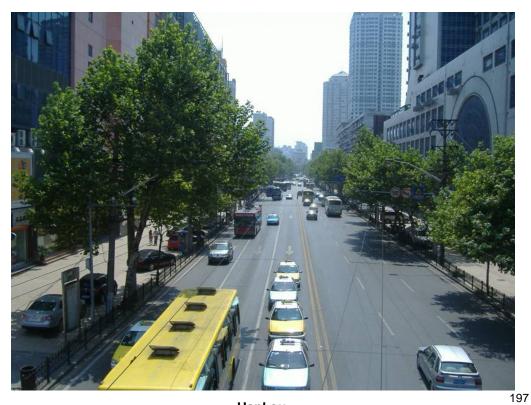
Hankou

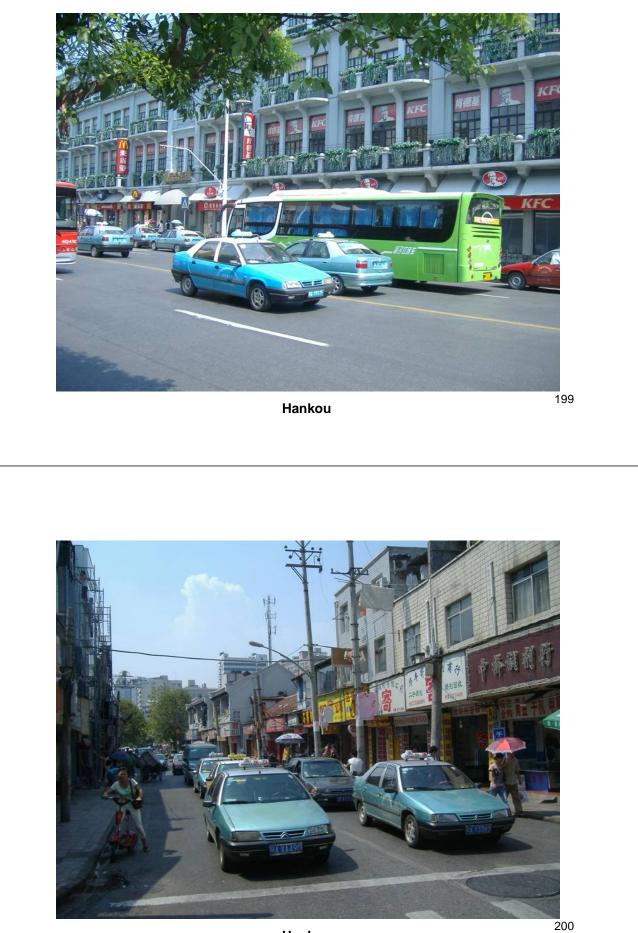


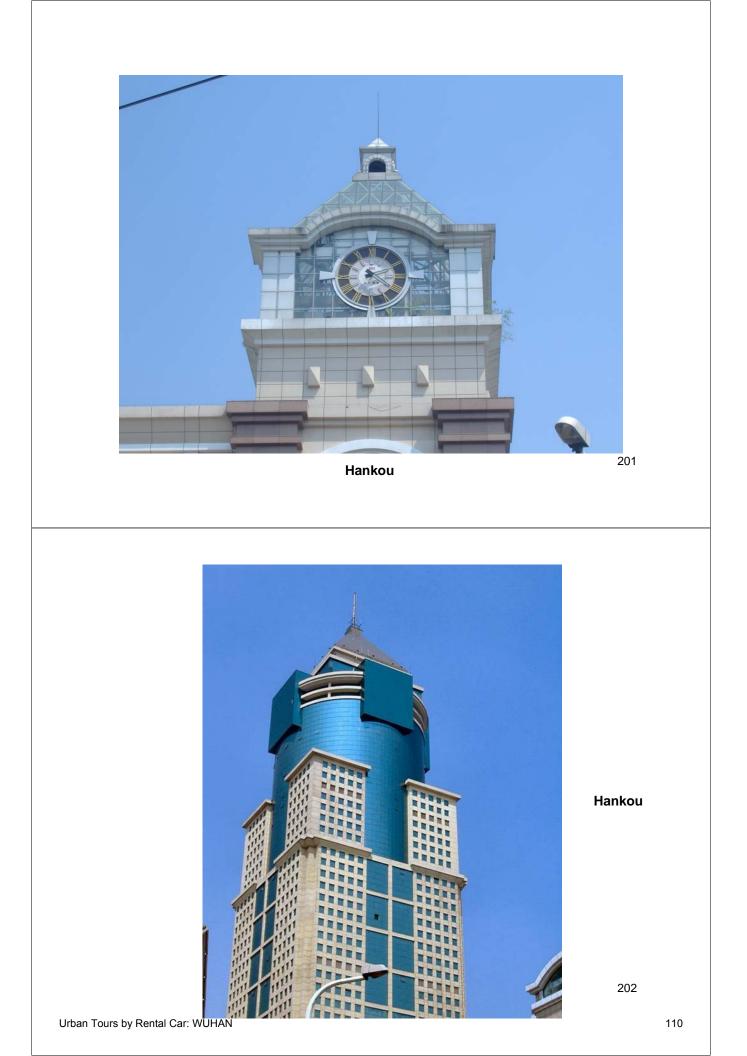


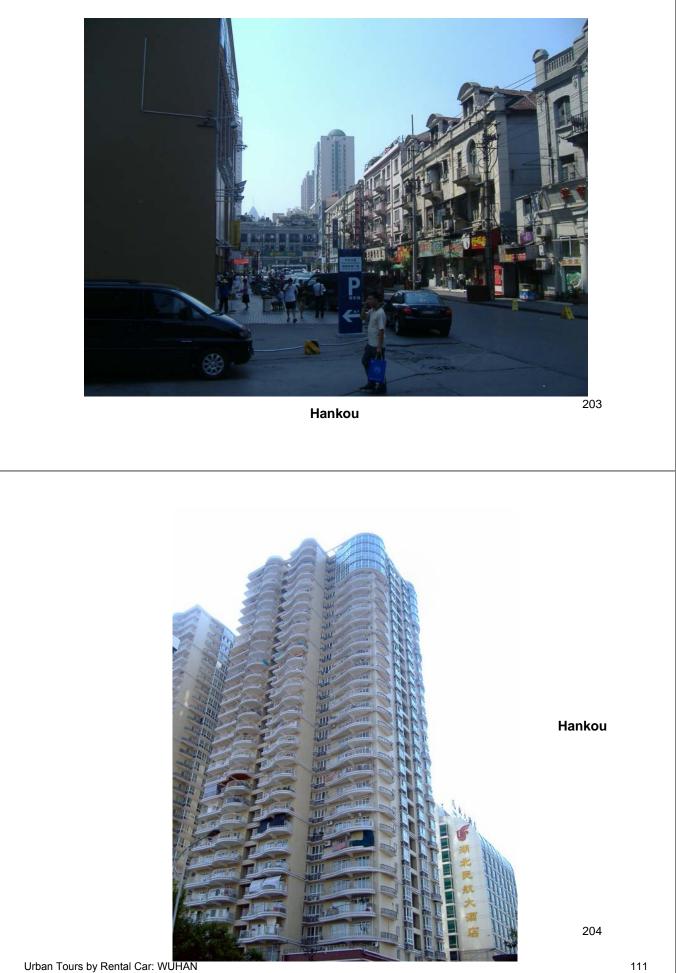


















Wu Chang from Hanyang Across the Yangtze



Hanyang



Hankou: Western Development Area (Outside Ring Road)



