# CHINESE URBAN LOCATION PATTERNS

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## Introduction

In the December 1986 issue of the Journal of Economic Literature, Janos Kornai [8, p. 1691] pointed out that "...[t]here are only three countries where a genuine reform process is in progress: in order of starting, these are Yugoslavia, Hungary, and China." Given the implied discontinuity in development patterns implicit in this statement, it is not surprising that all three countries have attracted the scholarly interest of economists. In the case of China, the timing of reform, dating from 1978, and the relatively closed nature of the economy from the 1950s till that time have whetted the appetite of the western community of scholars for information concerning recent developments in this country. Not surprisingly, a country accounting for approximately one of every five persons on the globe is likely to be the subject of intense scrutiny.

## Urban Dimensions of the Chinese Economy

The People's Republic of China represents an especially fertile ground of inquiry for the urban economist. As early as 1949, China had 57.6 million persons living in urban areas. By 1985 that figure had grown to 138 million (State Statistical Bureau [14, p. 71]). In 1986, China had 57 cities with a total population over 1 million and 22 cities exceeding that figure for nonagricultural population. Shanghai with 7.0 million and Beijing with slightly under 6 million inhabitants led this list (State Statistical Bureau [14, pp. 74-74]) Like many countries in the developed and developing world, China's urban population increased more rapidly than total population over the 1949-1985 period (an annual increase of 5.36 percent versus 0.96 percent respectively) (State Statistical Bureau [14, p. 71]). Despite these statistics indicating a

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congruency with the behavior of other nations, additional data point to a rather unique urban development pattern. China, for instance, remains a country characterized by a rather low urbanization rate. In 1949, 10.6 percent of the population was urbanized; by 1985, only 36.6 percent lived in cities (State Statistical Bureau [14, p. 71]).[1] Further, the spatial distribution of Chinese cities is somewhat unique (Yeh and Xu, [17, pp. 1-20]).

Beyond the statistical record, the variety of forces influencing city growth in China is of interest. Prior to 1949, China's urban development pattern was influenced by its status as a de facto colony. City growth was influenced, to a limited degree, by the needs of internal trade and the location of domestic governmental units. But more important to the urban development pattern was international trade and the semi-colonial status of the economy. It is during the early twentieth century that foreign influence, as exemplified by the treaty ports, dominated the overall urbanization patina. Thus, on the eve of World War II, the Chinese port-dominated city pattern probably was similar to that of the United States in the immediate postcolonial era.

Recent Chinese urban experience has been dominated by the ambivalent role of government policy in city-building. Since 1949, Chinese urban development patterns have gone through several phases largely influenced by government policy. Quite naturally, after the completion of World War II and the revolution, the initial focus of development efforts were directed toward rebuilding the economy. This period and the overlapping period of interest in the Soviet development model stressing heavy industry certainly abetted, if not encouraged, further urban growth. The views of the political leadership, even before the revolution, however, could be characterized as anti-urban (as in Ma [9, p. 95]). These views were articulated in, for instance, the restrictions on rural-to-urban migration promulgated by the central government. After eschewing the Soviet development model in 1957, the anti-urban bias in economic development policy became more

[1]The 1985 figure probably overestimates the percent urban because it includes the total population living in areas under the administrative control of town and cities. A more accurate figure measured on the basis of nonagricultural population would be significantly lower (e.g., 11.3 percent of the national population is enumerated as nonagricultural inhabitants of the largest 324 cities. Total population of these cities account for 20.2 percent of that of the nation).

pronounced, culminating in the programs of the Great Leap Forward and the Cultural Revolution (see Yeh and Xu [17, pp. 2-5]). The percentage of population classified as urban fell in 11 of the 16 years between 1960 and 1975. In 1960, 19.7 percent of the population was urban; in 1978, 17.9 percent (State Statistical Bureau [14, p. 71]). Finally, after the death of Mao in 1976 and the 1978 adoption of the Four Modernizations, we enter the contemporary era of Chinese urban policy. During this period of change, although the earliest reform successes were in largely agricultural rural areas, policy became less anti-urban (see Yeh and Xu [17, p. 2], Tan [16, pp. 138-148], and "China's Economy" [3, pp. 3-22]).

Although these overall trends in urban development continue to be of interest, the purpose of this paper is to take a more micro view of urban growth patterns in China. It is our intention to look at the location of economic activity within cities in China. An attempt will be made to describe the influence of past and current development patterns on city structure. Emphasis will be on the diversity of cityscapes found in China. The paper will attempt to sort, in a preliminary fashion, the various factors explaining the observed spatial development patterns. Finally, the paper looks at the likely future development of urban structure.

## Spatial Structure of Chinese Cities

The initial reaction of the urban economist to Chinese cities is probably not very different from that of the average tourist. One is immediately struck by the population mass of these cities. After visiting several cities, however, definite differences or variations in spatial structure become apparent. Traditional (or pre-1949) Chinese cities such as Shanghai and Guangzhou (Canton) exhibit the pattern common to American cities of the 19th century. They are relatively compact in pattern (given their population size) and have relatively well-defined central business districts (CBDs). In these cities, recent patterns of decentralization or suburbanization are reminiscent of American development patterns following World War II. Although clearly focused on a CBD, these cities also contain subcenters; the overall impression is that of a spatial structure similar to contemporary New York or Boston. Although seemingly most common in cities located along coastal areas, this pattern is also evident in certain interior cities such as Chongqing (Chungking). If coastal Guangzhou, for instance, can be compared to Baltimore in its physical layout and cityscape history,

Chongqing could be compared to Pittsburgh. These American cities reflect their 19th century heritage; their Chinese counterparts illustrate their pre-1949 ancestry.

At the other end of the spectrum are urban areas such as Beijing (Peking) and Shenzhen. In physical layout, these cities remind one of Los Angeles rather than Philadelphia. They are multinodal cities. In the case of Beijing there is clearly a ceremonial central district based on the area around Tiananmen Square, but it serves limited economic functions. The adjoining economic area, although identifiable as the historical central business district, presently represents only one economic node among many roughly equal nodes. Much new construction in cities such as Guangzhou is suburban or decentralizing in nature, but this activity in Beijing seems more homogeneous throughout the urban area.

Shenzhen represents a particularly interesting example of this genre of city. The Shenzhen Special Economic Zone (SEZ) was established by the National People's Congress in August 1980. Other SEZs established at this time include Zhuhai, Shantou, and Xiamen. By 1987, the Shenzhen SEZ had a population of over 470,000; of the four original SEZs established in 1980, it is one of the most successful to date. It is the epitome, therefore, of what might be called a Chinese New City. Shenzhen is a series of economic centers: Shenzhen itself, Louhu, Shangbu, Xiangmihu, etc. Although not as spatially contiguous as the Beijing urban agglomeration, urban development in the SEZ is ubiquitous. If Beijing's spatial pattern is reminiscent of Los Angeles, Shenzhen's reminds one of Orange County, California.

Although Shanghai and Beijing or Shenzhen may characterize the extremes of Chinese urban areas as far as spatial layout is concerned, a middle ground does exist. This type city is illustrated by Dalian. Dalian was controlled by the Russians until 1958. Similar to other coastal cities, its focus remained trade oriented (in this case toward the harbor facilities) well into the 1970s. In the 1980s, the Dalian Special Economic Zone was established. Compared to developments in Shenzhen, however, this zone is in its nascent stage of development. Further, while in proximity to the Dalian conurbation, it is not contiguously located with the city. Thus, Dalian's current spatial

development pattern is (at least) dichotomous.[2] Historic Dalian reflects the development pattern common to Shanghai; the Dalian SEZ, although in its formative stage, represents a development pattern more congruent with Shenzhen.

The diversity in the internal structure of Chinese cities is difficult to quantify, given the definitional problems alluded to in endnote 1. If we use population density as an indicator of structure, the coefficient of variation for a sample of 20 administrative cities or municipalities (all with a population over 300,000) is 1.48; a similar calculation for 14 city areas (minimum population 400,000) yields 1.21 (see China Handbook Series [4]). A coefficient of variation calculated for population density in the U.S. 25 largest cities (minimum population 464,000) is 0.80 (from Statistical Abstract [15]). Although not definitive, these statistics are indicative of the variety found in locational patterns within Chinese cities.

## Factors Explaining the Urban Spatial Structure

The internal spatial structure of Chinese cities reflects a combination of economic forces with social and political institutions unique to the Chinese situation. The economic forces that dominated the pre-liberation period can be summarized best using the outline developed by Moses and Williamson [10] in their seminal study of U.S. urban growth patterns. The social institution, which has influenced especially the post-1949 development pattern, revolves around the danwei system. Finally the planning process inherent in a socialistic country such as contemporary China represents a factor permeating the overall fabric of the developing urban mosaic.

In explaining the evolution of American city structure, Leon Moses and Harold Williamson [10] emphasized the structure of transportation costs. Specifically three types of transportation costs were delineated: 1) the cost of movement of persons (or labor) within cities, 2) the cost of intraurban movement of intermediate and final products, and 3) the cost of interurban or interregional shipment of goods. In the Chinese case, we can neglect the first factor in explaining the historic and contemporary urban development pattern for reasons outlined below.

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[2]In addition to the two nodes mentioned above, a third development axis centered on the coast and catering to tourists is also in the early stages of development.

As in the case of 19th century U.S. cities, historical Chinese cityscapes can be explained largely by the interplay of (2) and (3).

Pre-liberation China's pattern of urban development reflected a situation where intraurban transportation costs of goods were inordinately high. The major form of goods movement involved the application of a form of animate energy: either movement by individuals or by horse and cart. Interregional movement of commodities over land was also costly. The only form of relatively inexpensive transportation was by water. Early Chinese cities, like their American counterparts, therefore developed primarily along or in proximity to the coasts or along the river system. They were core-dominated and outward focused. Coastal Shanghai and historic Dalian both illustrate this development pattern, as does Wuhan on the Yangzi River. Improvements in interregional railway and highway transportation have been significant in the post-revolutionary period, but waterborne commerce remains a crucial component of the overall picture (see [14, p. 324]).[3]

Examining the decentralization of persons within late nineteenth and twentieth century American cities, Moses and Williamson emphasized the relative efficiency of trolleys and street cars in the earlier century and the advent of the automobile as the dominant mode of people movement in the current period. In China, these modes have been relatively unimportant. Looking at contemporary China, one can state that the automotive revolution has not yet occurred. In 1985, China had 794,452 passenger vehicles (less than one car per 1,000 persons) and 2,231,981 trucks. Of these numbers, only 19,342 cars and 264,839 trucks were privately owned (State Statistical Bureau [14, pp. 308, 310]). Highway transportation accounted for 9.7 percent of freight ton-kilometers and 36.8 percent of person-kilometers (State Statistical Bureau [14, pp. 322-324]).[4] In the case of China, it is not the relative efficiency, but the relative unimportance of people movement that explains urban patterns of, for instance, Beijing. Crucial

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[3]1985 indices of freight volume (1952 = 100) for major modes of transport are: railway 1,349.8; highway 2,443.1; waterway 5,203.3.

[4]In terms of tons carried, the highway percent is higher: 28.2 percent. Since 1975, highway passenger-kilometers have increased roughly fourfold. Highway share of passenger volume increased from 29.89 percent (1978) to 36.75 percent (1985).

to this relative unimportance of people movement in historical and contemporary Chinese cities is the existence of danwei.

A literal translation of the term danwei is "a people place set apart." The danwei "has become a term used to signify the spatial integration of work, residence, and social life in cities (see Bjorklund [1, p. 21])."[5] Historically Chinese cities developed around closely knit neighborhood units integrating economic and social life. To a significant extent, this is a manifestation of the group orientation of Chinese society in contrast to the more individualistic mores found in the West (see Schlesinger [13, p. 32]). After liberation, these units were institutionalized in the planning process as new production and service units were established. Persons were assigned to residences according to their workplace. Thus commuting times were minimized and walking or riding bicycles became the dominant mode for commuting to work. In Moses/Williamson's [10] terminology, intraurban people movement was relatively efficient despite absence of "railroad-type" modes of transportation or the auto.

Although danwei may vary significantly in size (according to the size of the work unit involved), the largest reflect economically and socially self-sufficient communities. Often there is no distinct separation of social, domestic, and work space (Bjorklund [1, p. 21]). The danwei has as one of its major responsibilities the provision and allocation of housing among its constituents (see Bjorklund [1, p. 25]).[6] In the post-liberation period, therefore, the danwei became the principle vehicle leading to the decentralized and multinodal structure of Chinese cities such as Beijing and Shenzhen. The spatial grouping of similar danwei (classified in terms of production activity) and utilization of truck transportation for intraurban movement of goods facilitated the decentralization of production facilities (see Henderson [7, pp. 45-56]).[7] Population or labor movement, minimized through the use of

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[5]This article contains an excellent description of the economic, social, and political functions of the danwei.

[6]Urban land is priced at zero and, therefore, must be officially allocated. Not surprisingly, this results in artificially low rents and a chronic housing shortage. The role of the danwei in arbitrating this shortage is crucial.

[7]The price system also encourages local officials to capitalize on localization economies by clustering similar activities. Raw material prices are low relative to prices for processed goods. This encourages

danwei, remained efficient. The result was the advent, in western terminology, of urban sprawl or the automotive city; in China, however, this was and is occurring without the car!

We have not mentioned either capital or agglomeration economies as determinants of urban structure. Both factors appear to be of secondary importance. Capital investment was closely controlled by the national planning authorities (at least until 1978). Even today, large capital improvements must have the approval of the appropriate central authorities. In such a situation, it is unlikely that the cost of capital will vary within Chinese cities. A more significant determinant of capital availability will be the interregional bias of investment funds (i.e., anti-urban, interior versus coastal cities, etc.). In an economy at the level of development characteristic of the Chinese economy (average per worker income of around $27 per month) and due to the existence of the danwei, the face-to-face contact and economies of scale underlying urbanization economies are unlikely to be important determinants of city structure. The tertiary sector in China, not surprisingly, is relatively underdeveloped.[8] Those urbanization economies that do exist are likely to be localized at the danwei or neighborhood level.

The danwei is not only crucial in explaining the development of China's post-liberation urban spatial structure, but it is likely to be pivotal in predicting future trends. What is likely to be the effect of reform-induced decentralization of economic planning? More foreboding, what is likely to be the spatial impact of internal combustion revolution or automotive age on the structure of Chinese cities?

## Future Trends In Urban Structure

Although possibly not unique, the current internal structure of Chinese cities is certainly intriguing. China's pre-liberation history largely influences the coastal cities and their core-dominated structure

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forward integration of local production processes. Use of a turnover tax may encourage this tendency.

[8]Although direct indicators of tertiary output are difficult to find, the percent of Chinese total product originating outside agriculture, industry, and construction was 15.6 percent in 1949 and 8.2 percent in 1985. Thus, of the two types of agglomeration economies referred to in the literature, localization economies are important in China while urbanization economies are not.

resembles that of 19th and early 20th century American cities. Recent decentralization is reminiscent of that found in the post-World War II suburbanization of the U.S. Yet China's new cities, those cities that have been reconstructed after being devastated by war, and the new economic zones in established cities remind one of automotive cities such as Los Angeles or Dallas in their multinodal pattern. Clearly, however, the automotive revolution has not occurred in China yet. What we see are automotive cities without the auto. These cities have been evolving, instead, in response to the dictates of social planning policies and the possibly unique Confucian or group social mores of the Chinese population.

The future pattern of Chinese urban development at the micro or internal scale undoubtedly will be influenced by two important factors: the proliferation of the internal combustion engine as the prime mode of intraurban transportation and the decentralization of the planning process resulting from the reform movement of the 1980s. And, assuming that the impetus of reform continues to improve the standard of living as it has done in rural areas, underlying these two factors will be an overall improvement in the level of affluence.

The number of cars (and trucks) in China is on the increase. Adopting a wider perspective and including motor scooters, cycles, and other vehicles powered by an internal combustion engine, one might conclude that China currently is poised on the brink of the automotive age. Although urban transportation is still dominated by walking and bicycles, traffic (in the motorized sense) is on the increase. Congestion of urban roadways is not an unknown phenomena in China, although at this point it seems most common: 1) on narrow streets within the older sections of cities, 2) in the area of tourist attractions, and 3) in those areas where commercial (e.g., truck and bus) traffic dominates (see Pierce [12, p. 1]).

Given the multinodal layout of modern Chinese urban areas, one might expect the advent of the auto age to be accompanied by an exponential increase in intraurban transportation problems. Two factors mediate this conclusion. First and most importantly is the danwei. The danwei, as the territorial unit encompassing social, work, and residential functions, minimizes contact with the outside world. As pointed out by Bjorklund [1, p. 24], the first undertaking of the typical new danwei is the construction of walls. These walls are real as well as symbolic barriers to access to the city at large. To a greater extent than in the typical

American city, urban inhabitants in China do not live in cities, but in what we would call neighborhoods.

The second factor that, at least in the short run, will mitigate the impact of the auto is the work/leisure mix of the Chinese economy. The typical work week in China is six days. The typical work days extends from the early morning hours to early in the evening. In 1985, 47.7 percent of the population was in the labor force. The labor force increased at an annual rate of 2.7 percent between 1953 and 1985 (3.5 percent, 1981-1985), while population increase was 1.8 percent (1.2 percent, 1981-1985) (State Statistical Bureau [14, pp. 15, 18]). Thus, labor force participation is on the increase. There is limited leisure time to shop, recreate, and socialize. This further reinforces the influence of the danwei in reducing intraurban movement of the population. Increasing prosperity as well as the pressures brought to bear by the young seeking experiences outside the danwei may change this assessment in an evolutionary manner over the long run.

If the concept of the danwei (in its various manifestations) is the key to contemporary and future intraurban locational patterns, then the planning mechanism is crucial to the future viability of the danwei. Throughout the post-liberation period, the danwei has played a pivotal role in the social control policy of the party and central government (Bjorklund [1, p. 24]). With the decentralization of economic planning under the reform movement and with the continuing modernization of the economy, the social control function of the danwei (i.e., the integration of the party in the fabric of its structure) is likely to be emphasized even further . But what of its economic functions?

Reform or the decentralization of planning in China is a relative phenomena much like that outlined by Kornai for Hungary (Kornai [8, pp. 1687-1737]). What is emerging is termed, by the Chinese, socialism with Chinese characteristics. To the outside observer, the similarities between the Hungarian experience with reform, described by Kornai, and what is happening in the domestic Chinese economy is remarkable.[9]

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[9]Reform in the international arena, with its emphasis on foreign investment, joint ventures, and other economic ties with the West seems more radical in China than in Hungary. Whether reality matches rhetoric in the future, especially as constrained by a current shortage of foreign exchange, remains to be seen.

With regard to heavy industry, reform has had relatively little impact. Although factory managers operate with more degrees of freedom in scheduling production, awarding bonuses, hiring and firing workers, and making other short-run decisions, pricing and major investment decisions still are controlled ultimately by the central bureaucracy. As far as the urban spatial structure generated by these large facilities, little seems to have changed. The group mentality (as opposed to individualism) that underlies the danwei remains in force. Bonuses, for instance, while theoretically rewards for individual effort, typically are awarded to groups (e.g., workers in the machine shop of an integrated facility). The danwei is likely to continue to be the major institution utilized for initiating projects to both increase productivity and improve the quality of life for those employed in those industries producing capital goods (Bjorklund [1, p. 26]).

It is in the areas of light industry or consumer goods and services that the future of the danwei and therefore the urban spatial structure of modern China is most threatened. Although many of these businesses are, by American standards, small in terms of capital investment and labor (and therefore support small to moderate size integrated neighborhoods), it is precisely in these industries that the most rapid growth is likely to occur as income levels increase. It is for these establishments that the decentralization of planning and reform appears to be having the greatest effect, as seen in the proliferation of retail establishments and manufacturers/vendors. Although the word competition is not part of the Chinese reform vernacular (and appears not to enter the daily decision-making in heavy industry) the growth of advertising, from formal ads to the more common hawking of wares, seems a portent of things to come.

The growth of consumer goods industries and services is likely to place definite strains on the danwei system. The size and (relatively) competitive nature of these activities likely mean an increased stress on economic efficiency at the cost of reduced social engineering. Is the manager of a tourist hotel in Beijing likely to invest in the modernization of apartments for his or her workers at the expense of expansion of the production unit? Currently urban companies that expand beyond the capacity of their contiguous danwei to absorb workers and their families establish detached areas linked by bus to the place of employment

(Bjorklund, [1, p. 25]).[10] An alternative is the decentralization or suburbanization of production (China Daily [2]).[11] In the future, these options appear to be less likely to be utilized by small (especially service) units as they expand; the weakening of the danwei system is likely to be an unintended by-product (China Daily [2]).[12]

Specifically, three factors, in addition to the effect of the reforms, seem to work against the status quo. First, as the economy is modernized, especially in the consumer goods and services sectors, urbanization economies are likely to become more important and the clustering of these activities is likely to preclude the integration of production and residential units. Second, these type activities are more likely to employ younger workers who desire wider social experiences than those offered by the immediate neighborhood. A closely related factor pertaining also to labor is the likelihood, as education levels rise, for multiple family workers to be employed at different locations within the city. The 91 percent increase in urban labor force participation between 1957 and 1981, reported by Chow [6, p. 160], as well as the overall participation rates alluded to above are clear harbingers of such a likely trend. Third, as incomes increase, consumer demand for higher order goods and services is likely to increase.[13] These goods, with their inherent economies of scale, cannot be provided by the smaller danwei and therefore are likely to further the integration of the danwei with the outside world.

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[10]The overwhelming shortage of housing in all areas of major cities significantly will limit the flexibility of the system to respond to these pressures.

[11]The long-term viability of decentralization is tied to the provision of capital infrastructure such as roads, highways, subways, etc.

[12]The reform effort itself may be in jeopardy due to this unintended by-product. After the student uprisings of early 1987, additional party cadre were assigned to university faculties. It is reasonable to hypothesize that these officials will attempt to wield their influence through the existing university danwei.

[13]Centrally imposed limits, such as population control, late marriages, administrative allocation of jobs, and constraints on rural-urban migration, may serve to mediate the impact of demand side pressures emanating from income growth.

## Conclusion

Historically, the spatial structure of pre-liberation Chinese cities evolved along patterns easily explained using the framework provided by Moses and Williamson. In the post-liberation period, these factors have been tempered by the economic and social planning instituted by the central bureaucracy. The foundation of this planning has been the group ethic that is deeply rooted in the Chinese culture. The result has been a unique pattern of spatial development. Although the older areas of historic cities exhibit a core-dominated pattern of development and pedestrian and bicycle congestion, newer areas, rebuilt cities, and new cities reflect a multinodal pattern consistent with, but predating, the automotive age. These latter areas, however, exhibit little of the congestion characteristic of their American counterparts.

The future development pattern of the Chinese city will be affected by the increased use of the internal combustion engine and the characteristics of economic reforms currently being pursued. Core-dominated cities are likely to become increasingly congested as automotive traffic is added to the existing pedestrian and vehicle traffic. Such developments will add to the pressure for further suburbanization. Multinodal cities, however, are likely to be granted a reprieve. The modal switch to the internal combustion engine will be slower. As indicated in the previous section, however, the length of this reprieve will be influenced by the pace of development, the degree of decentralization of planning, and the continued viability of the danwei as a vehicle of economic, residential, and social interaction.

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