

**Migrant Settlement and Spatial Transformation in Urban China:
The Case of Shanghai**

Weiping Wu

Associate Professor
Urban Studies and Geography
Virginia Commonwealth University
Richmond, VA 23284-2021, USA
Tel: 01 (804) 827-3413
Fax: 01 (804) 828-0127
email: wwu@vcu.edu

For presentation at the
World Bank Third Urban Research Symposium
Brasilia, Brazil
April 4-6, 2005

Migrant Settlement and Spatial Transformation in Urban China: The Case of Shanghai

Introduction

Despite China's overall impressive record of economic growth during the last two decades of reform, income disparities between urban and rural areas, as well as regional imbalances, remain large (Fan 1997 and Wei 2000). Such disparities are a key driving force behind the country's largest tide of internal migration in history. By official estimates, between 70 and 100 million rural migrants are living in urban areas and over 80 percent of them settles in coastal areas. A prospering city by the sea, Shanghai alone has received in excess of three million migrants. The majority of migrants move to seek employment, and family migration is on the rise. With sheer magnitude, they are bringing significant challenges to cities that are already undergoing socioeconomic transformation during the transition from a planned to a market economy.

Elsewhere in many developing cities, squatter settlements and urban slums have been the principal locations receiving rural migrants, many of whom are never fully integrated and become a permanent urban underclass. Congregation of migrants in urban villages also aggravates existing socio-spatial segregation and is a major influence on urban spatial development. On the other hand, some migrants choose to live in concentration to help maintain previously established social relations and assert their group identity. They bring with them informal channels for the flow of capital, skills, and social connections that can improve their economic opportunities and living experiences in cities.

Theoretical constructs of migrant settlement patterns have evolved primarily in the context of Latin American cities. Turner (1968) suggests a two-stage settlement process for rural-urban migrants in urbanizing countries. New migrants (labeled as bridgeheaders) initially

seek deteriorating rental shelter, primarily in the central city but sometimes scattered across town for good access to jobs. As their income level improves, they move to build peripheral informal shanties for residential stability or ownership and then upgrade shanty dwellings over time into more substantial houses. Once this transition from rented rooms to self-help housing is made, migrants become consolidators. Turner's notion of upward housing mobility of migrants, from slum renters to squatter owners, concurs with the popular belief contrasting "central-city slum of despair" and "peripheral shantytown of hope" (Conway 1985, Eckstein 1990, and Ulack 1978). But in a number of countries with continuing urbanization, inner-city slums are no longer found to be the major receiving areas for new migrants due to the expansion and redevelopment of the commercial core and in turn the rapid rise of land costs. As a result, peripheral squatter settlements become the primary destinations (Conway 1985, Gilbert and Varley 1990, and UNCHS 1982).

Migrants are attracted to different parts of a city for different reasons. Proximity to existing or potential employment is a major determinant of their locational behavior. The formation and development of any informal settlement are often linked to changes in the economic activity of the surrounding area (Conway 1985, Gilbert and Varley 1990, Klak and Holtzclaw 1993). Others point out the importance of kinship and friendship ties, acting as social institutions (Abu-Lughod 1961, Banerjee 1983, Collier 1976, and UNCHS 1982). Migrants' first place of residence in the city is largely predetermined by the location of kin or friends. A typical migrant gravitates to a small area of the city where people from his home place are already living and this results in the formation of "small enclaves of ex-villagers" (Abu-Lughod 1961: 25).

My previous research has shown that informal settlements are not a viable option for China's migrants, unlike in many other developing countries, largely due to municipal

authorities' intolerance of migrant congregation and squatting (W. Wu 2002a). In Shanghai, for instance, there are some small clusters of temporary housing that do not seem to belong to any enterprise or institution and resemble squatter settlements on open farmland or areas undergoing development. Municipal authorities have monitored migrant distribution closely and organized numerous cleanup efforts in congregated areas, although some clusters (about 20) seem to make regular reappearance (Zhang 1998 and personal interview with Shanghai Floating Population Office).

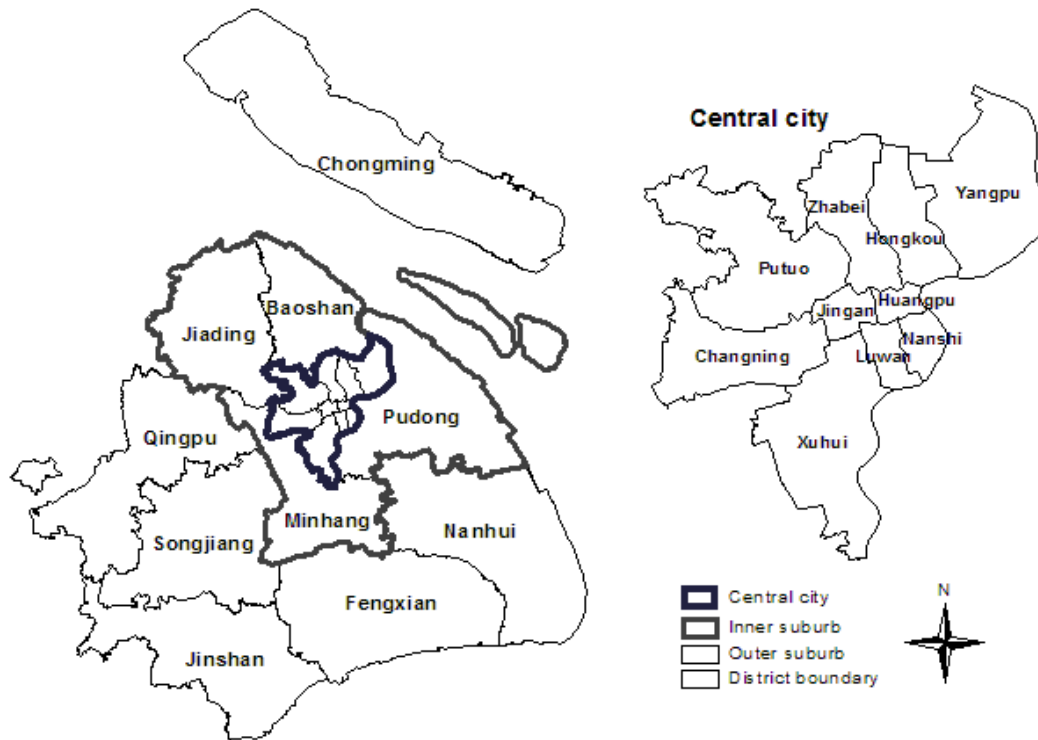
But a number of large migrant communities, often with sectorial specialization (e.g. Zhejiang Village for garment business and Henan Village for scavenging), have been in existence in Beijing for over a decade (Ma and Xiang 1998, Wang and others 1998). Located mostly in suburban areas where rental housing is readily available, these migrant enclaves or villages are formed by migrants from the same province or region. Unlike most migrant communities in other developing countries, Beijing's migrant villages are existing built-up areas where migrant population outnumbers the locals. Migrants rent from local residents or live in markets constructed by local governments or private businesses. Whereas the problem of residential crowding is still widespread, these also are not ghettos of despair as migrants are hard workers seeking economic opportunities (Ma 2003).

Given the persistence of China's migration trends over the last two decades, migrants have begun to assert their influence on cities' spatial structure. This paper attempts to understand the relationship between migrant residential distribution and spatial development of Shanghai, China's largest metropolis. Three research questions motivate the paper: (1) How is migrant residence distributed geographically across Shanghai? (2) How does this spatial pattern compare to distribution patterns of the local population and employment activities? (3) What are

some key geographic factors underlying the spatial distribution of migrants? The focus of the paper is temporary migrants (*liudong renkou*) without official changes of household registration (*hukou*), which makes up the bulk of China's internal migration. Local population refers to registered permanent residents and permanent migrants (*qianyi renkou*) with formal changes of *hukou*.

With a population of over 16 million (including both locals and migrants) and land area of 6,377 square kilometers, the Shanghai metropolitan area is governed by the Shanghai Municipal Government, equivalent to a provincial government because of Shanghai's special administrative status. There are 19 districts/counties (before 2000 there were 20), 16 with urban designation (*qu*) and three rural (*xian*), in three geographic zones (see Figure 1). These units are then divided into subdistricts (*jiedao*) for urban areas or towns (*zhen*) for rural areas (referred in this paper simply as subdistricts). Between 50,000 to 100,000 residents live in each subdistrict, whose functions in population censuses resemble those of census tracts in the United States. There are governmental agencies administering migrants at all three levels: municipality, district, and subdistrict. Each subdistrict is further divided into a number of neighborhood or village committees (referred here simply as neighborhoods), which are the smallest residential administrative units.

Figure 1: District names and boundaries.



Results of this paper are based on spatial analyses and a regression model at the subdistrict level, which is the best resolution of available information for Chinese cities. Data are drawn primarily from the 2000 Population Census and 1996 Basic Establishment Census, supplemented by results from my own survey of 1,789 migrants in 1999. Because of limited data availability at the subdistrict level, I have little choice but to use population and employment data of different years and collection methods. The 2000 Population Census is residence-based, and the Shanghai data define migrants as those without local *hukou* and having stayed for more than one day. The 1996 Establishment Census, however, is workplace-based and intended to survey the local economic structure, basic economic activities, labor force, and distribution of

production factors. My own migrant housing survey was conducted between December 1998 and March 1999 in 22 neighborhoods of Shanghai's 17 districts/counties (out of a total of 20 at the time) and 11 enterprises/institutions, resulting in 1,789 complete questionnaires from migrants. Multi-stage stratified cluster sampling procedures were used to ensure representation across the three geographic zones: central city, inner suburb, and outer suburb. Although some migrants may not live in the same subdistrict as where they work, my own survey indicates that three quarters of them live within ten minutes of walking distance from their work place.

After a discussion of general trends in spatial development of Chinese cities and specific patterns in Shanghai, the paper demonstrates metropolitan-wide geographic distribution of migrant residence and how it compares with that of the local population and employment activities. What follows next is an analysis of some key macro or geographic factors underlying the residential patterns of migrant settlement, primarily based on a multivariate regression model. The example of Pudong District also is used to illustrate the attraction of urban periphery for migrants.

Changing spatial structure in urban China and Shanghai

New trends in urban spatial development

Any study of migrant settlement patterns requires some understanding of how existing city residential areas are distributed geographically by socioeconomic status (Vaughan and Feindt 1973). As China undergoes graduate transformation from plan to market, its large cities are seeing substantial changes in spatial structure and urban form. Four major types of neighborhood exist in urban China: (1) traditional ones in the old-city area developed before 1949; (2) work-unit compounds, largely associated with industrial development, developed

between 1949 and 1978; (3) mixed-use suburban communities or satellite towns, developed from the late 1970s onward; and (4) rural-urban fringe or peri-urban villages formed after the late 1970s (F. Wu 2002a). During the reform period (after 1979) accelerated urban growth has led to increasing concentration of economic functions on the outskirts of the built-up city proper, in the form of high-tech development zones, and office and industrial parks. Moreover, these peripheral areas often house a large number of wholesale markets for agricultural products because of proximity to suburban farms.

Recent housing reforms have allowed housing to be commodified and developed with both domestic and global capital, giving rise to a variety of residential spaces that are replacing the cellular-type of housing structure built around work units. There is also evidence that after two decades of land reform the importance of location, which was irrelevant in socialist cities without land markets, has led to the emergence of a land rent gradient similar to that of western cities (Ma 2003). In the central city, the residential profile of some better locations is upgrading while that of others remains dilapidated, although the pressure is ever rising for real estate development of locations with good accessibility. In the close suburbs or rural-urban transitional areas, there is an increasing residential juxtaposition of rural villages, resettlement housing for central-city residents, migrant communities, and new commodity housing projects (F. Wu 2002b).

Some evidence in Shanghai suggests that housing commodification and socioeconomic differentiation brought by the plan-to-market transition is leading to the resurgence and continuation of the pre-1949 spatial division detailed in the next subsection (Ma 2003, F. Wu 2002b). Even cities without a history of socio-spatial differentiation are showing signs in the transitional period. Beijing, for instance, has seen the formation of a small number of wealthy

housing areas in the suburbs although the concentration effect is not as pronounced as in western cities. Aggravated living conditions of the central city and real estate development propaganda have promoted the urban affluent to move to the eastern and northern inner suburbs of the city (Hu and Kaplan 2001). Ironically these same areas also attract the largest number of migrants, while some migrants concentrate in the old central city (Gu and Shen 2003). In Guangzhou, the capital city of Guangdong Province, different population segments such as cadres, workers, and intellectuals concentrate in separate areas primarily as a legacy of work-unit based housing provision. These spaces show varied levels of population density and housing quality (Yeh, Xu and Hu 1995).

Shanghai's evolving spatial patterns of population and employment activities

More or less following an inverse concentric pattern, Shanghai has a history of residential differentiation and migrant enclaves, dating back to the pre-1949 period. Urban space was differentiated into upper and lower ends in the central city. Shantytowns in this period were located along the boundaries of foreign concession areas and in areas designated for Chinese residents (Lu 1995, F. Wu 2002a). After more than thirty years of socialist development, there were still signs of such shantytowns in several districts located immediately outside of the central downtown. But residential differentiation had been reduced markedly with many years of building public housing and accelerated efforts to redevelop shanty areas. Some of the latest redevelopment occurred in the late 1990s, including in three notoriously crowded neighborhoods in Putuo District.

A mixed pattern of land use and industrial fragmentation characterized the central city in the pre-1949 period (Wu 1999). The lack of a proper planning framework, when foreign

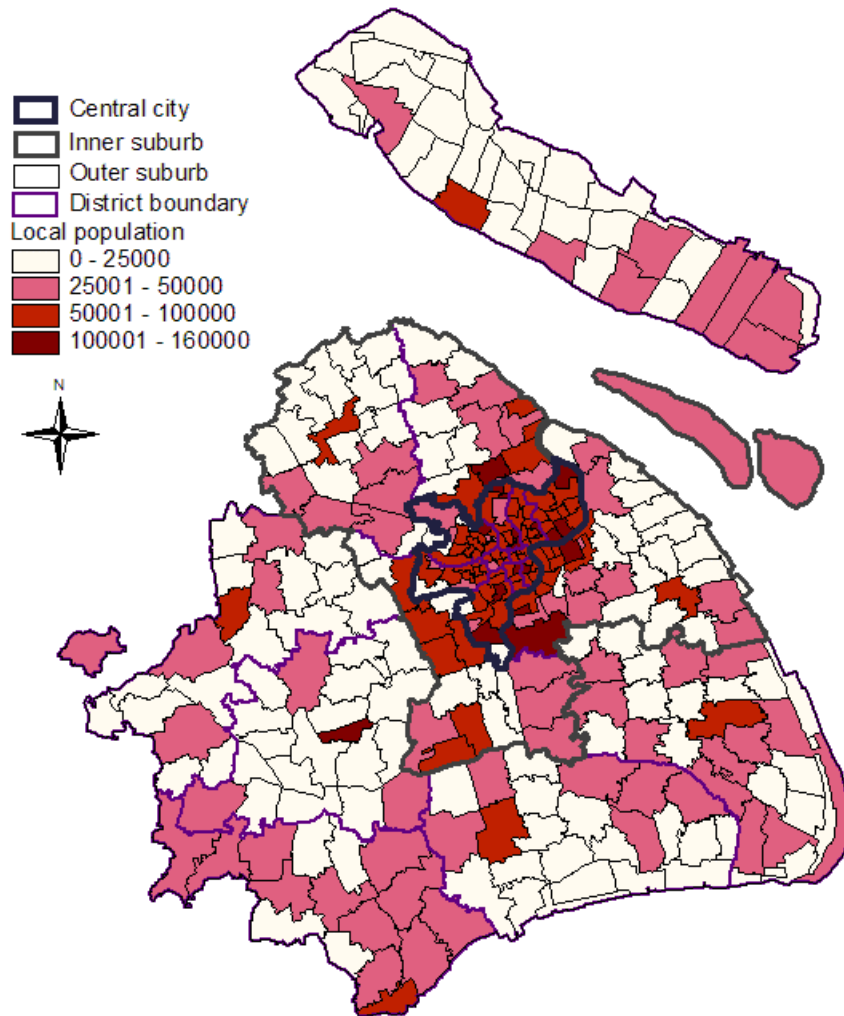
concessions and Chinese districts were separate jurisdictions administratively, led to a situation whereby factories and houses were located rather randomly and often encircled each other. With no space for expansion, many industrial enterprises often stored materials on the streets and pose environmental hazards for residents. This problem was further aggravated by Mao's policy on industrial self-sufficiency and the system of administrative allocation of land before 1979 (Hodder 1996). Even in 1990, about 79 percent of industrial establishments were located in the central city while the remaining 21 percent in the inner suburbs (this account excludes the outer suburb, see Ning and Yan 1995).

The central city, with some of the highest population densities in the world (in the range of 50,000-60,000 people per square kilometer in some neighborhoods), has been decentralized in recent decades albeit with uneven results. New housing construction outside the central city and redevelopment within are two important mechanisms of population decentralization. For instance, the development of the Pudong New Area serves to accommodate close to a million residents relocated from the central city (Wu 1999). Some central areas previously residential are increasingly under pressure for redevelopment, largely for commercial and office uses. Accelerated industrial relocation during the 1990s also has facilitated residential resettlement. Between 1991 and 1998, about 12,000 work units as well as 400,000 households were moved from downtown to the city's outskirts (*Shanghai Daily*, 1 September 2000). But redevelopment through real estate is selective. In the central core, some residential areas with extreme dilapidation and high density have been left out of recent redevelopment because of high costs associated with resettlement (F. Wu 2002a). As a result, there are many instances of awkward juxtaposition of flashy, high-rise commercial buildings and dilapidated, pre-1949 dwellings.

The satellite-town program, launched after the 1950s and primarily for the purpose of industrial development, has begun to attract more population since the 1980s (accommodating about two-third of a million residents in 1990). Five of the seven satellite towns are in the current inner suburb, including one in Baoshan, two in Jiading and two in Minhang, while the sixth in Songjiang and seventh in Jinshan are in the outer suburb. The functions of small towns in the suburbs have diversified and their population size also has increased, primarily as the result of rural industrialization (see Ning and Yan 1995). Introduced in the early 1980s as part of a new rural development strategy in China, rural industrialization has been promoted not so much as a way to serve and support agriculture but as a way of generating employment opportunities. It is expected to reallocate surplus rural labor from cultivation to more productive activities so as to discourage rural-urban migration (Ho 1995).

With the combined effect of residential resettlement, new housing construction, central-city redevelopment and satellite-town program, Shanghai's residential patterns have changed steadily since the 1980s. The core of the central city, including Huangpu, Nanshi, Luwan, Jingan and Hongkou districts, has lost significant amount of local residents (in the range of 15-20 percent); but the periphery of the central city has seen some gains, particularly in Xuhui District. Population growth in the four districts of the inner suburb has been substantial, in the range of 20-25 percent, while the outer suburb's population level has remained stable (Gao and Jiang 2002). Specifically, inner suburban subdistricts immediately outside of the central city are accommodating a large number of local residents at a fairly high level of density, even though the central city is still the residential core (see Figure 2).

Figure 2: Local population, 1999. Unpublished source.

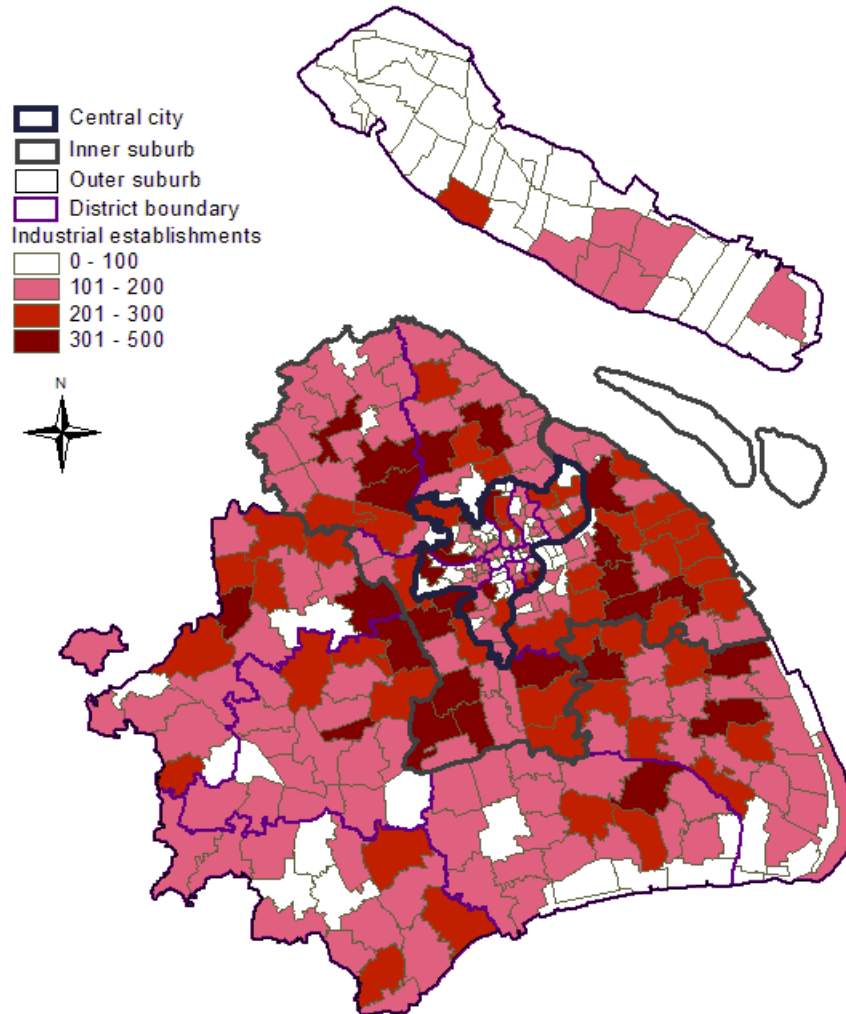


To solve problems associated with fragmented industrial land use, Shanghai has recently relied on relocating factories in the central city to new urban districts. A number of industrial parks (often called Economic and Technology Development Zone, ETDZ) have been created in the inner suburb, including Jinqiao Export Processing Zone and Zhangjiang High-Tech Zone in Pudong, Minhang ETDZ, Hongqiao ETDZ, and Caohejing High-Tech Park. This process of industrial relocation, albeit slow and with mixed results, has freed up a significant amount of

space in the central city and led to an industrial concentration in the inner suburb (see Figure 3). In addition, the seven industrial satellites continue to accommodate a large number of industrial establishments. By 1996, only about 23 percent of the city's total industrial establishments were still located in the central city. But industrial fragmentation remains at the metropolitan level, aggravated by the chaotic location of rural and township enterprises across suburban areas. About 27 percent of the land is currently for industrial use, a level much higher than the average for other large Chinese cities (about 15 percent) and comparable cities elsewhere in the world. This may be largely attributable to the fact that nearly 44 percent of Shanghai's industrial land use is scattered and not in concentrated forms such as industrial parks (Xiong and Luo 2000).

In addition to industrial redistribution, at the heart of Shanghai's new development is a set of service cores scatter throughout the city's old and newly developing districts. Each of these cores, including Nanjing Road (Huangpu District), Huaihai Road (Luwan District), Hongqiao (Changning District), Xujiahui (Xuhui District), the Passenger Rail Station (Tianmu Road, Zhabei District), and Baoshan Road (Zhabei District), has become increasingly commercial in character, with shops and offices displacing residential and industrial space (Gaubatz 1999). The building of Pudong's Lujiazui central business district, an area of 1.7 square kilometers on the east bank of the Huangpu River, adds to the city's service alignments. In contrast to spatial patterns of industrial establishments, commercial and service establishments tend to be more concentrated in the central city.

Figure 3: Industrial establishments, 1996. Source: SBECO (1997).



The geography of migrant settlement

Migrant access to urban housing

Because of official restrictions imposed at urban destinations, seasonal or temporary migration may reasonably characterize most of China's migrants who search for work to augment income.

These migrants continue to be regarded as temporary and have difficulty getting a local registration even after they have lived in the cities for years (although some cities are considering

relaxing the rule). Since the household registration system still links residency with employment and social welfare, migrants have limited access to local schools, citywide welfare programs, state sector jobs, and the urban housing distribution system.

My previous research shows that most migrants in Shanghai resort to renting or staying in dormitories. Most often they rent private housing in areas that used to be or still are agricultural within the metropolis. In more central locations they can rent the so-called “public housing” from urban residents who have purchased ownership right to their housing. In addition, there is the rental of rooms built without proper permits in mostly suburban areas or of rooms designated for institutional purposes. On the other hand, when migrants find jobs in state and collective enterprises, they obtain the access to institutionally-provided dormitory housing—a legacy of the welfare housing system. By in large, overcrowding and lack of facilities is a feature of migrant housing. Migrants also tend to live in dwellings that have less stable structural features and are used for working or storage purposes in addition to serving as residence (W. Wu 2002b).

It is no exaggeration to say that once in the city, migrants continue to be on the move. With substantially higher mobility rates than local residents, they experience much more residential instability. But such mobility is not necessarily driven by the need for tenure or even amenity. Few migrants make the transition from bridgeheaders to consolidators after years of living in the city, a trend in migrant settlement seen elsewhere in other developing countries. Instead, most remain trapped in the private rental sector or staying in dormitory housing. Home ownership is yet to become attainable for migrants, and self-help housing is largely absent because of the intolerance of municipal authorities.

The main explanation would lie with institutional barriers migrants encounter in the urban housing sector. The double divide – rural v. urban and nonlocal v. local – leaves them

with little choice but to settle in unstable and substandard housing. Therefore, there is a general disadvantage experienced by all migrants in the city. Inevitably there are variations among them. Those few with capital and skills have fared better and gained entry into the league of homeowners. But most cannot afford commodity housing, the only real property sector open for migrant ownership. A local urban household registration continues to be an important qualification for accessing many types of urban housing, particularly those that are more affordable. Migrants cannot acquire either the use right or ownership of municipal and work-unit public housing directly because only sitting tenants (local urban residents) can do so. Both the Economic and Comfortable Housing and affordable rental units also are reserved for local urban residents only. On the secondary housing market where older housing units are traded, participation generally requires a local household registration although theoretically migrants can purchase housing there after completing a lengthy process of official approval (Wu 2004).

Spatial patterns of migrant residence

Distribution of migrant residence has seen a marked shift in Shanghai during the last two decades (see Table 1). In the mid-1980s when the city first began enumerating the migrant population, comparable amounts lived in the central city and inner suburb. But with continuing urban expansion and downtown redevelopment, the inner suburb has become the primary receiving area for migrants since the early 1990s. Shanghai, therefore, may resemble a number of developing cities with continuing urbanization, where central-city housing is becoming less attractive to migrants due to commercial redevelopment and in turn the rapid rise of housing costs.

Table 1. Geographic distribution of Shanghai's migrants, 1986-1997 (percent)

	<i>Central city</i>	<i>Inner suburb</i>	<i>Outer suburb</i>
1986	39.6	41.0	19.4
1988	26.1	51.9	22.0
1993	15.4	65.4	19.2
1997	25.3	56.3	18.3

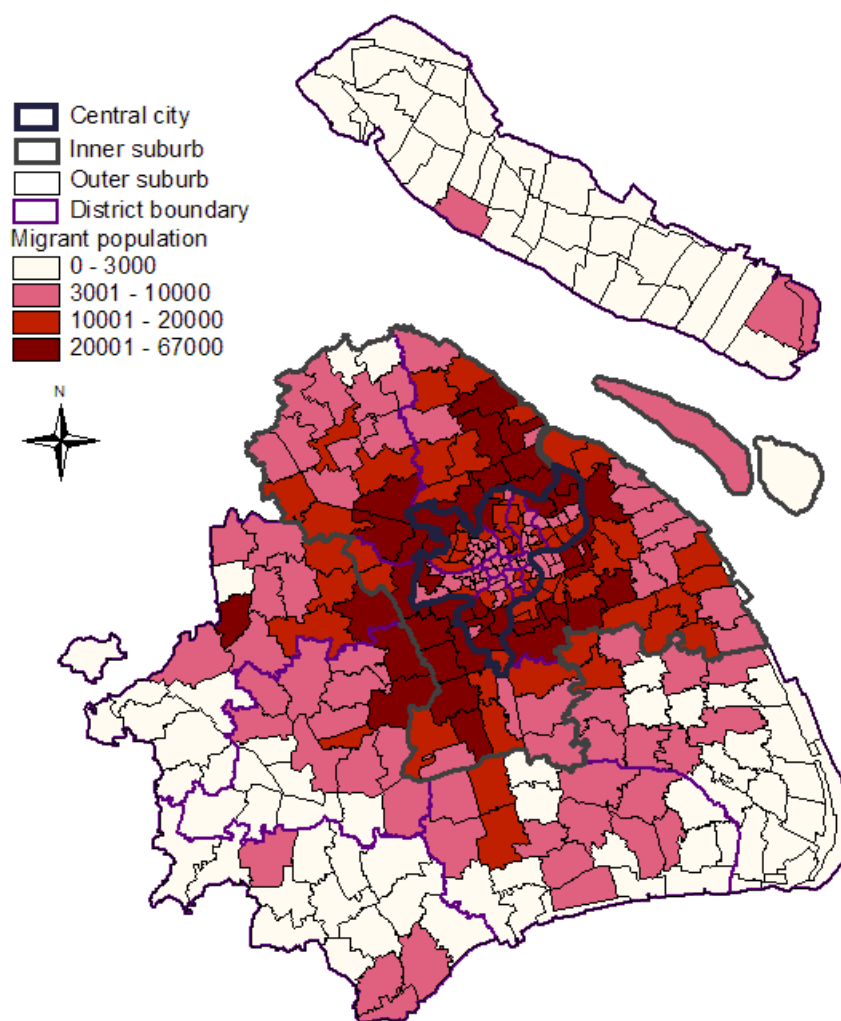
Sources: Wang (1995) and Zhang (1998).

Note: These results are based on the 2 percent migrant surveys conducted by the municipality in various years and, as a result, are merely indicative of migrant residential distribution. These official surveys were aimed at the "floating population" that includes tourists, people on business and other short-term visitors in addition to temporary migrants. The division of the three geographic zones also is slightly different. The central city includes 26 subdistricts lying inside of the first ring road, which is smaller than the central city defined in this paper (see Figure 1). The inner suburb, which basically represents the urban periphery, consists of the rest of the subdistricts in this paper's central city and the four districts in this paper's inner suburb. Outer suburb is defined the same way as in this paper, referring to the six outlying districts and counties.

With the exception of a few subdistricts within the central city, the largest amount of migrants now seems to concentrate exclusively in the inner suburb (see Figure 4). In particular, subdistricts in Minhang are attracting a very large number of migrants. It appears that a number of subdistricts immediately flanking the central-city boundary are now residential centers for both migrants and, to some extent, the locals (see both Figure 2 and Figure 4). They are primarily in the districts of Minhang, Baoshan and Pudong (inner suburb) as well as Putuo, Xuhui and Yangpu (periphery of the central city). This ring area can be characterized as Shanghai's urban periphery or rural-urban transitional area (*chengxiang jiehebu* or China's

equivalent of *Desakota*). It is situated at the edge of the city property or built-up area and as the intermediary between agricultural use in suburban areas and urban land use in the center. It is similar to the concept of peri-urban areas. The urban periphery in Shanghai's 1997 survey, for instance, consisted of subdistricts in the far edge of the central city and the four districts of the inner suburb (see notes in Table 1). Migrant concentration in the urban periphery is not unique in Shanghai, as other large cities such as Beijing and Wuhan show similar distribution patterns (Gu and Shen 2003, Yang and others 2003).

Figure 4: Migrant population, 2000. Source: SFPCO (2002).



Another important indicator measuring migrant concentration is the share of migrants in total population (see Figure 5). Eleven subdistricts, primarily in the inner suburb (districts of Baoshan, Jiading, Minhang and Pudong) and slightly beyond (in Songjiang and Qingpu districts), are areas where migrants make up large proportions of the total population (see Table 2). In six of these subdistricts, migrants even outnumber local residents. In general, these areas are suburban towns (as indicated by the name *zhen*) where the ratio of employment to local population is much higher and industrial establishments more numerous. This suggests that employment opportunities are an important attraction for migrants to these areas. Since most migrants come to Shanghai in search for work to augment agricultural income, it is natural that they base their locational decisions on where the jobs are. Migrant concentration also seems to occur in areas where the density of local population is much lower and the number of local (non-migrant) service establishments smaller (see Table 2).

Figure 5: Share of migrants in total population, 2000. Source: SFPCO (2002).

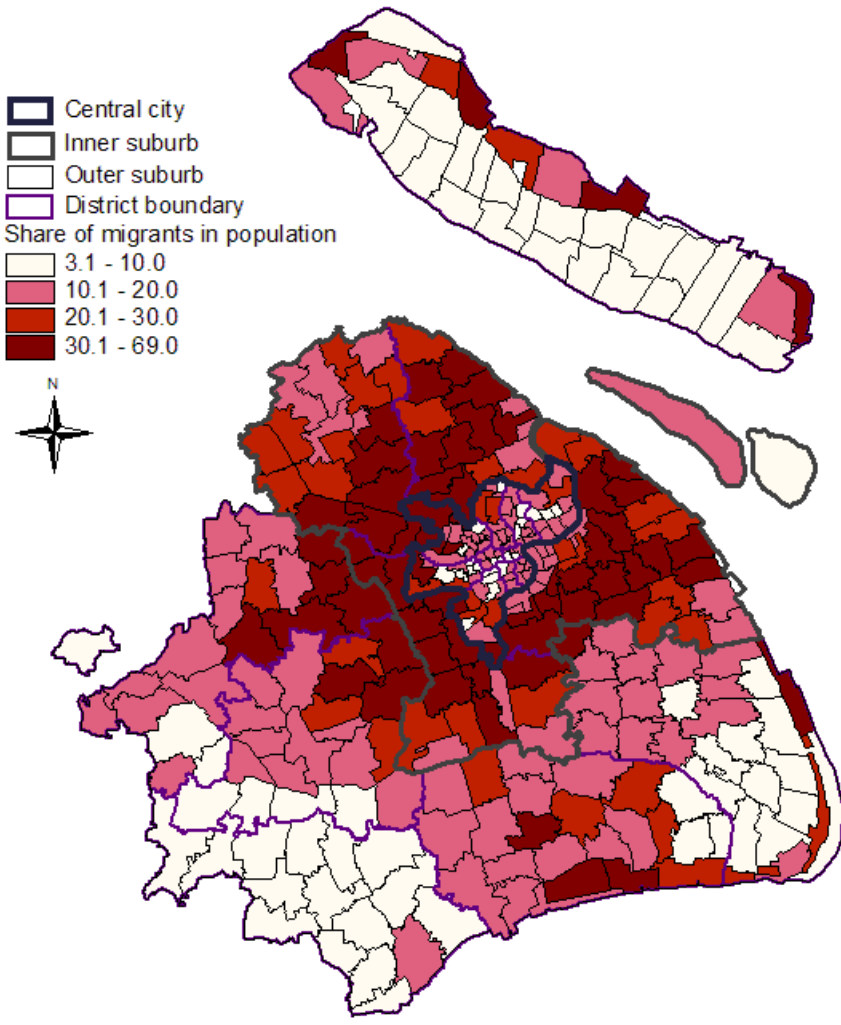


Table 2. Subdistricts with large proportions of migrants

<i>District</i>	<i>Subdistrict</i>	<i>% migrants in total population 2000</i>	<i>Density of local population 1999 (per sq. kilometer)</i>	<i>Ratio of employment to local population 1996</i>	<i>Industrial establishments 1996</i>	<i>Service establishments 1996</i>
<i>Central city</i>						
Xiuhui	Hongmeilu	51.9	5234	4.5	320	177
<i>Inner suburb</i>						
Minhang	Caohangzhen	55.3	980	1.1	156	61
	Hongqiaozhen	45.1	2157	1.6	321	168
	Qibaozhen	47.2	3401	1.4	353	195
Baoshan	Yanghangzhen	51.4	1011	0.3	330	174
Jiading	Fengbangzhen	48.3	846	0.9	264	103
	Jiangqiaozhen	45.9	1316	0.6	191	78
Pudong	Jinqiaozhen	52.4	1233	3.3	333	246
	Zhangqiaozhen	52.4	1172	0.8	214	151
<i>Outer suburb</i>						
Songjiang	Jiuting	57.0	625	0.8	314	110
Qingpu	Xujing	46.4	628	0.9	472	273
Average		50.3	1691	1.48	297	158
City average		19.0	11481	0.80	161	270

Sources: SBECO (1997) and SFPCO (2002).

Note: Both industrial and service establishments include only registered establishments.

These suburban towns have diversified their economies with rural industrialization since 1979. Each houses a large number of manufacturing establishments, particularly township enterprises. Many industrial enterprises prefer to hire migrant workers because of their willingness to work hard but for less pay. About 75 percent of migrants in the manufacturing sector work for state-owned, collective or foreign-invested enterprises (based on own survey results). On the other hand, these towns still do not have the same level of existing services as central-city areas. This may actually be an attraction to many migrants as opportunities to open small businesses are more abundant and competition with established local establishments is less fierce. The 2000 Population Census results show that 27.4 percent of all migrants work in

Shanghai's service sector, outnumbering those in manufacturing (25.9 percent). My own survey also indicates that close to 88 percent of migrants working in the service sector are self-employed, compared to about 45 percent in all sectors and a mere 5.4 percent in manufacturing.

Overall, migrant residential distribution displays an inverted U shape across the metropolitan area. Peak concentration occurs in the periphery of the built-up area (about 15-18 kilometers from the city center), where the proportion of migrants in total population and absolute size of migrant population are both significantly higher than in the city center and outer suburb. In some areas where migrants congregate in large numbers, living environments and residential conditions seem to worsen. One of the most common problems is deteriorating sanitary conditions in such areas (Zhang 1998). Some dwellings are built illegally, with primitive materials and unstable structures, and are potential safety hazards.

Geographic factors underlying migrant residential distribution

Migrants are attracted to different parts of a city for a variety of reasons. As for geographic factors, the literature points to the critical importance of employment opportunity. The above description of Shanghai's migrant distribution also indicates a similar pattern. To determine if employment as well as other factors are significant predictors of migrant residential distribution, I have constructed a data set for the 319 subdistricts in Shanghai. A number of indicators are selected to approximate employment opportunities, including the ratio of employment to local population, employment and number of establishments by sector and ownership type, and revenue generated by establishments of different sectors and ownership types. In addition, local population density, subdistrict size, and per capita housing area are additional variables. Results

from bivariate analyses of variance show that several indicators vary significantly across subdistricts in the three geographic zones (Table 3).

Table 3. Population, employment, and housing by district (mean values)

<i>District</i>	<i>% migrants in total population 2000</i>	<i>Density of local population 1999 (per sq. kilometer)</i>	<i>Ratio of employment to local population 1996</i>	<i>Per capita housing area 2000 (sq. meters)</i>	<i>Number of subdistricts</i>
<i>Central city</i>					
Huangpu	10.6	59672	2.29	10.8	4
Nanshi	12.7	67685	0.68	10.8	5
Luwan	10.6	54635	0.90	13.4	4
Xuhui	19.8	19788	1.18	18.4	12
Changning	15.4	24948	1.04	17.5	10
Jingan	10.5	48854	0.91	13.8	5
Putuo	19.9	28024	0.71	16.9	14
Zhabei	15.3	36068	1.10	15.5	9
Hongkou	12.2	39743	0.68	15.8	10
Yangpu	12.0	27267	1.10	15.8	11
<i>Inner suburb</i>					
Minhang	32.7	2243	1.31	25.3	17
Baoshan	28.0	3295	1.38	23.4	18
Jiading	26.5	1258	0.69	31.5	20
Pudong	27.3	8190	0.81	23.6	39
<i>Outer suburb</i>					
Nanhui	13.6	1036	0.47	39.0	28
Fenxian	18.6	767	0.51	34.1	24
Songjiang	19.6	825	0.68	33.7	20
Jinshan	7.2	1006	0.54	38.2	16
Qingpu	20.7	1195	0.66	32.2	20
Chongming	11.8	805	0.33	42.6	33
Central city	15.1	35014	1.00	15.7	84
Inner suburb	28.2	4702	0.98	27.6	94
Outer suburb	15.2	934	0.52	36.9	141
	ANOVA p=0.000	ANOVA p=0.000	ANOVA p=0.000	ANOVA p=0.000	319

Sources: SBECO (1997) and SFPCO (2002).

Notes:

- a. In 2000, the districts of Huangpu and Nanshi were merged into one district named as Huangpu.

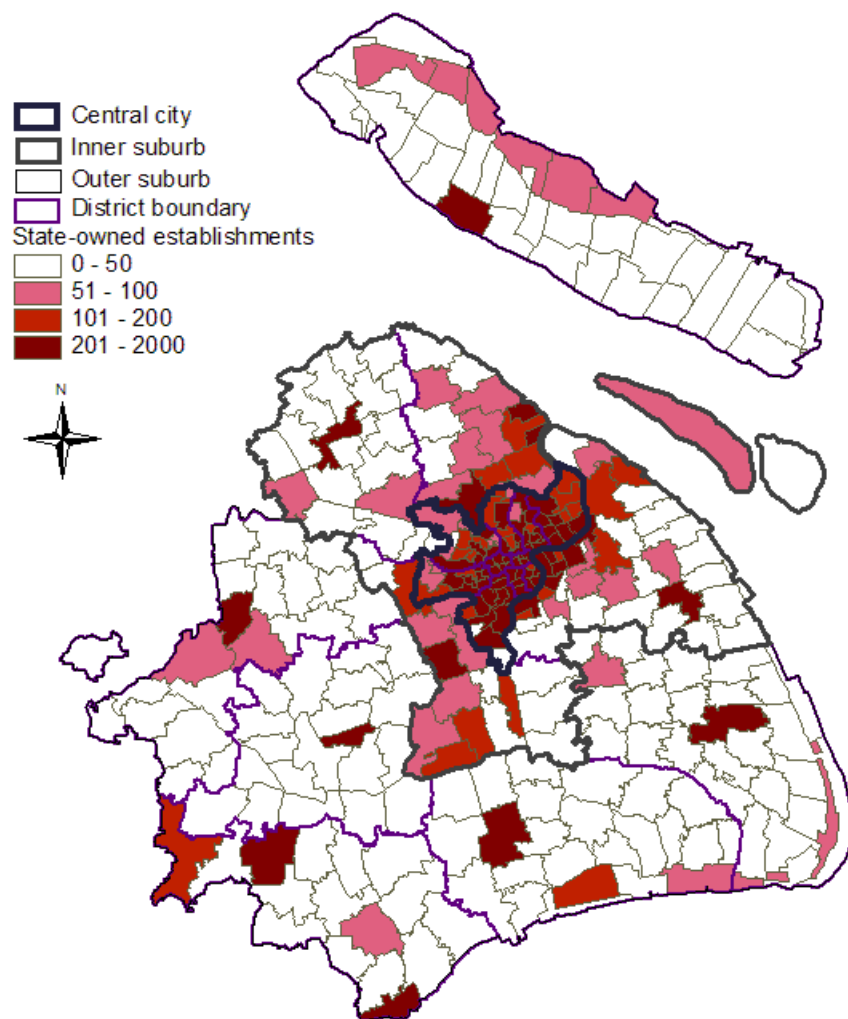
- b. The one-way ANOVA is done at the subdistrict level, with a total of 319 subdistricts, for the three geographic zones.

A linear regression model uses, as the dependent variable, the share of migrants in total population and not the absolute number of migrants. The latter is likely associated with the overall size of the subdistrict (e.g. number of jobs and residents, and physical size). After a correlation analysis, only variables with significant association with the dependent variable are used in the model. The model is then run using both stepwise and enter methods, generating very similar results. This paper presents only results from the stepwise regression that guarantees the significance of all included variables. Since regression coefficients are unit dependent, my discussion focuses on standardized regression coefficients in assessing the extent to which each independent variable is influential.

The results of the regression model indicate that employment opportunities are one of the most important determinants of migrant residential patterns. In particular, there appears to be a close relationship between the number of industrial establishments in a subdistrict and the level of migrant concentration. The strong T value is statistically significant at the level of .0000. This confirms the bivariate relationship discussed earlier, as both industrial and migrant concentration tends to occur in the ring of urban periphery (see Figures 3 and 5). My own survey results also suggest that migrants working in industrial enterprises are more likely to be living in institutionally provided dormitories on-site (about 44 percent of them do so, compared to 29 percent of all migrants). Additionally, another indicator of employment opportunities, ratio of employment to local population, is another good predictor of where migrants tend to concentrate.

It is not surprising that the strong association between state-owned establishments and migrant concentration is negative. The state-owned sector is the least receptive to migrant employment and still concentrates in the central city (see Figure 6). Only about 20 percent of migrants I have surveyed work in state-owned establishments while close to 50 percent are self-employed and 21 percent work in either collective or private establishments. Jobs in state industries and institutions are more available to local residents and permanent migrants with local *hukou*. Enterprises hiring labor migrants are required to obtain specific quotas from the municipal labor bureau, although some companies circumvent such rules to cut labor costs. As a result, the majority of migrants are restricted to non-state jobs undesirable to the local population, such as in construction, domestic services, factory and farm labor, and retail trade. Due to the large presence of migrants in small-scale trades and services, they also are contributing to the formation of an urban informal sector.

Figure 6: State-owned establishments, 1996. Source: SBECO (1997).



The combined influence of the six independent variables included in the regression model is very strong, as indicated by a high value of R-square in Table 4. There is a significant caveat with the model, as it does not include a good indicator of the existence of migrant social networks. The number of migrants in previous years can be such an indicator, under the assumption that the more migrants already living in a district, the more will be attracted in the future. But no census had been taken for migrants prior to the 2000 Census in Shanghai (with the exception of Pudong District), so there is little possibility of incorporating this variable in the regression model. On a different note, the model results suggest that the lower the local

population density of a subdistrict, the higher the proportion of migrants. Thus migrant concentration is unlikely to occur in central-city subdistricts densely populated with the locals.

Table 4. Regression on the share of migrants in total population

<i>Independent variable</i>	<i>Standardized coefficient</i>	<i>t-value</i>	<i>Significance</i>
Ratio of employment to local population	0.247	5.361	0.000
Industrial establishments	0.377	8.584	0.000
State-owned establishments	-0.496	-8.704	0.000
Local population density	-0.252	-3.758	0.000
Per capita housing area	-0.565	-9.238	0.000
Employment in foreign-invested enterprises	0.061	1.279	0.202
Service establishments	0.084	0.915	0.361
Other establishments	-0.085	-1.376	0.170
<i>R</i> ²	0.541		

Per capita housing area, a reasonable proxy for housing availability, seems to be negatively related to migrant concentration. It is clear, therefore, that housing availability is a secondary consideration to migrants in their locational behavior, compared to employment opportunities. Much less migrant concentration occurs in the outer suburb where per capita housing space is larger than that of the inner suburb. As a result, the geography of migrant settlement resembles much more that of employment opportunities and particularly that of the manufacturing sector.

The urban periphery is where both employment opportunities and rental housing are plentiful, and therefore is the primary receiving area for migrants. My own surveys in Shanghai and Beijing show that the majority of migrants rent. Private rental housing accommodates the largest number of migrants. In the urban periphery, private housing is more common because of the previous rural status of many subdistricts. Local rural residents have been allocated ample land to build private living quarters. As a result, rental housing is more readily available and

costs less. A room of about 10 square meters rents for around 200 yuan a month on average. In reality, there is already a large rental market operating in these areas, as rents tend to stabilize by location. The incentive on the supply side is particularly strong where farmland has been acquired for development but old village neighborhoods still remain. Some of these neighborhoods are currently being vacated and have become concentrated living quarters for migrants. Administrative reorganization during the urbanization process and subsequent neglect or incapacity also have allowed the rental market to operate unregulated much more easily than in the city's established urban areas. Under less strict government supervision, local residents in these areas also have reverted to building low-quality rental housing on vacant or farmland to make a quick profit. This administrative fluidity is less prevalent in rural areas where traditional village communities are more intact.

Pudong's situation, in particular, speaks to the attraction of the urban periphery for migrants. In addition to an expanding manufacturing sector, there are often many recently built commercial and residential areas, with some farming and rural housing in a number of pockets. Two adjacent villages, for instance, are dotted with heavy industrial facilities, including shipyards, several chemical factories, an energy plant, and a gas company. Many villagers have found jobs in nearby factories and leased out their remaining land to migrants for farming. These areas, therefore, offer plentiful opportunities for migrants to find work, in all sectors including manufacturing, construction and agricultural. In addition, the multitude of small, roadside businesses also accommodates many migrants. As a result, between 1988 and 1998, the volume of migrants in Pudong increased about ten-fold, from around 40,000 to 395,000 (Pudong Floating Population Office 1998). About 15 percent of Shanghai's migrants lived in Pudong in

1997, more than the 12 percent that Pudong's local residents made up of the city's total (Zhang 1998).

Concerned with the mounting task of controlling the burgeoning migrant population in scattered rental housing (over 40 percent of them do so), the district government of Pudong has taken some steps. A new mechanism is through the building of residential compounds specifically for migrants. There are various ways to build and manage such compounds, including a dormitory complex in Pudong Shipyard and a migrant housing complex in Qinyang Township converted from temporary housing previously used for relocated urban residents. Pudong also was the first district to conduct a migrant census in 1998, which identified areas with significant migrant concentration (personal interview with Pudong Floating Population Office).

Conclusion

The spatial structure of large Chinese cities has been undergoing substantial change as housing and land markets develop and socioeconomic stratification rises. Shanghai, for instance, is experiencing a revitalization of pre-1949 spatial divisions on the one hand and a new configuration of peripheral development on the other. Many local residents have been moving away from the central city even though density there remains much higher than the suburbs. Accompanying such moves is industrial relocation. As a result of selective real estate development, in the central city there is often awkward juxtaposition of flashy commercial or residential high-rises and aging neighborhoods with dilapidated dwellings. Meanwhile, in the urban periphery there is an increasing mixture of rural towns, resettlement housing for central-

city residents, new commodity housing projects, high-tech development zones, and industrial parks.

The influx of a large number of migrants adds a new element of complexity to the process of spatial restructuring in Shanghai. Migrant residential distribution appears to coincide with the trend of local population decentralization. While there was a somewhat even distribution between the central city and inner suburb during the 1980s, migrants are increasingly settling in the latter. A number of subdistricts in the outskirts of the built-up area are now residential centers for both migrants and locals, primarily in the districts of Minhang, Baoshan and Pudong as well as Putuo, Xuhui and Yangpu. The overall migrant distribution resembles an inverted U shape, with concentration peaking in the urban periphery and outnumbering local population in some subdistricts.

This distribution pattern is not accidental as migrants are attracted to different parts of a city for good reasons. The regression analysis shows that the best predictor of migrant concentration is employment opportunities, including the number of state-owned establishments, and industrial establishments. Subdistricts with a large number of manufacturing enterprises but a small state sector, as well as a low density of local population, are likely to see a high share of migrants in total population. Per capita housing area is another important factor, but secondary compared to employment opportunities. Given that ownership is yet to become an attainable goal, housing comfort and tenure are less relevant as a motivation for migrants in making settlement decisions, unlike migrants in many developing cities elsewhere. If restrictions on migrant settlement in Chinese cities are lifted, housing considerations may become more paramount and migrant residential distribution may display new patterns.

The geography of migrant settlement will continue to influence the reshaping of Shanghai's spatial configuration. Increasing migrant concentration, given that most migrant housing is in much worse conditions than local housing, may aggravate existing residential differentiation. In addition, settlement patterns will be an important determinant of the future socioeconomic standing of migrants, as where and how they live are likely to affect their general level of satisfaction with urban living and the ease or difficulty to adapt to the new environment. Such residential characteristics as tenure and conditions of dwelling, access to facilities and services, and geographic location are essential to migrants' quality of life. Attributes associated with urban living, including the higher density of urban housing and use of community facilities, also will have profound social impacts on the lifestyle of migrants.

Acknowledgements

Support from the National Science Foundation (BCS-9974540) and the United States Department of Education (P019A80016) is deeply appreciated. I would like to thank members of the research team at Shanghai Academy of Social Sciences' Institute of Population and Development Studies for survey support and Professor Jianping Wu at the East China Normal University for informational support. This paper would not be complete without the able research assistance by Kimberly Klinker, Mary Reynolds, Irayda Ruiz, and Jianming Zhao.

References

- Abu-Lughod, Janet. 1961. "Migrant Adjustment to City Life: The Egyptian Case." *The American Journal of Sociology* 67, 1 (July): 22-32.
- Banerjee, Biswajit. 1983. "Social Networks in the Migration Process: Empirical Evidence on Chain Migration in India." *Journal of Developing Areas* 17, 2 (January): 185-196.
- Collier, David. 1976. *Squatter Settlements and the Incorporation of Migrants into Urban Life: The Case of Lima*. Center for International Studies, MIT.
- Conway, Dennis. 1985. "Changing Perspectives on Squatter Settlements, Intraurban Mobility, and Constraints on Housing Choice of the Third World Urban Poor." *Urban Geography* 6, 2 (April): 170-192.
- Eckstein, Susan. 1990. "Urbanization Revisited: Inner-City Slum of Hope and Squatter Settlement of Despair." *World Development* 18, 2 (February): 165-181.
- Fan, C. Cindy. 1997. "Uneven Development and Beyond: Regional Development Theory in Post-Mao China." *International Journal of Urban and Regional Research* 21, 4 (December): 620-639.
- Gao, Xiangdong and Quzhen Jiang. 2002. "Changes in Shanghai's Urban Population Distribution and Suburbanization (*dui shanghai chengshi renkou fenbu biandong yu jiaohua de tantao*)." *Urban Population (chengshi renkou)* 26, 1: 66-69.
- Gaubatz, Piper. 1999. "China's Urban Transformation: Patterns and Processes of Morphological Change in Beijing, Shanghai and Guangzhou." *Urban Studies* 36, 9: 1495-1521.
- Gilbert, Alan and Ann Varley. 1990. "Renting a Home in a Third World City: Choice or Constraint?" *International Journal of Urban and Regional Research* 14, 1 (March): 89-108.
- Gu, Chaolin and Jianfa Shen. 2003. "Transformation of Urban Social-Spatial Structure in Socialist Market Economies: The Case of Beijing." *Habitat International* 27: 107-122.
- Ho, Samuel P.S. 1995. "Rural Non-Agricultural Development in Post-Reform China: Growth, Development Patterns, and Issues." *Pacific Affairs* 68, 3: 360-391.

- Hodder, Rupert. 1996. "Industrial Location," in Y. M. Yeung and Sung Yun-wing, eds. *Shanghai: Transformation and Modernization under China's Open Policy*. Hong Kong: The Chinese University Press, p. 225-248.
- Hu, Xiuhong and David H. Kaplan. 2001. "The Emergence of Affluence in Beijing: Residential Social Stratification in China's Capital City." *Urban Geography* 22, 1: 54-77.
- Klak, Thomas and Michael Holtzclaw. 1993. "The Housing, Geography, and Mobility of Latin American Urban Poor: The Prevailing Model and the Case of Quito, Ecuador." *Growth and Change* 24, 2 (Spring): 247-276.
- Lu, Hanchao. 1995. "Creating Urban Outcasts: Shantytowns in Shanghai, 1920-1950." *Journal of Urban History* 21, 5 (July): 563-596.
- Ma, Larry J. C. 2003. "Some Reflections on China's Urbanization and Urban Spatial Restructuring." Paper presented at the *Urban China Research Network Workshop on Urban Studies and Demography in China*, April 30, Minneapolis, MN.
- Ma, Laurence J.C. and Biao Xiang. 1998. "Native Place, Migration and the Emergence of Peasant Enclaves in Beijing." *The China Quarterly*, No. 155 (September): 546-581.
- Ning, Yue min and Zhongmin Yan. 1995. "The Changing Industrial and Spatial Structure in Shanghai." *Urban Geography* 16, 7: 577-594.
- Pudong Floating Population Office. 1998. *Floating Population in Shanghai Pudong New Area—Statistical Data*. Processed.
- Shanghai Basic Establishment Census Office (SBECO). 1997. *Results on the First Basic Establishment Census of Shanghai, 1996*. Beijing, China: China Statistical Publishing Housing.
- Shanghai Fifth Population Census Office (SFPCO). 2002. *Tabulation on Shanghai's Fifth Population Census (shanghaishi diwuci renkou pucha zilao)*. Shanghai, China: Shanghai People's Press.
- Turner, John F. C. 1968. "Housing Patterns, Settlement Patterns, and Urban Development in Modernizing Countries." *Journal of the American Planning Association* 34, 6 (November): 354-363.
- Ulack, Richard. 1978. "The Role of Urban Squatter Settlements." *Annals of the Association of American Geographers* 68, 4 (December): 535-550.
- United Nations Center for Human Settlements (UNCHS). 1982. *Survey of Slum and Squatter Settlements*. Dublin: Tycooly International Publishing Limited.
- Vaughan, Denton R. and Waltraut Feindt. 1973. "Initial Settlement and Intracity Movement of Migrants in Monterrey, Mexico." *AIP Journal* 39, 6: 388-401.

- Wang, Hansheng and others. 1998. "‘Zhejiang Village’: A Unique Way for Chinese Peasants to Move into the Cities." *Social Sciences in China* 19, 1 (Spring): 22-37.
- Wang, Wuding, ed. 1995. *Shanghai's Floating Population in the 1990s (jiushi niandai Shanghai liudong renkou)*. Shanghai: Eastern China Normal University Press.
- Wei, Yehua Dennis. 2000. *Regional Development in China: States, Globalization, and Inequality*. London: Routledge.
- Wu, Fulong. 2002a. "Real Estate Development and the Transformation of Urban Space in Chinese Transitional Economy: With Special Reference to Shanghai," in John R. Logan, ed. *The New Chinese City: Globalization and Market Reform*. New York: Blackwell, p. 151-166.
- _____. 2002b. "Sociospatial Differentiation in Urban China: Evidence from Shanghai's Real Estate Markets." *Environment and Planning A* 34: 1591 - 1615.
- Wu, Weiping. 1999. "City Profile: Shanghai." *Cities: The International Journal of Urban Policy and Planning* 16, 3 (May 1999): 207-216.
- _____. 2002a. "Temporary Migrants in Shanghai: Housing and Settlement Patterns," in John R. Logan, ed. *The New Chinese City: Globalization and Market Reform*. New York: Blackwell, p. 212-226.
- _____. 2002b. "Migrant Housing in Urban China: Choices and Constraints." *Urban Affairs Review* 38, 1 (September): 90-119.
- Wu, Weiping. 2004. "Sources of Migrant Housing Disadvantage in Urban China." *Environment and Planning A* 36, 7 (July): 1285-1304.
- Xiong, Luxia and Zong Luo. 2000. "The Efficiency and Pattern of Shanghai's Industrial Land Use (*shanghaishi gongye yongdi de xiaolu yu buju*)." *Urban Planning Forum (chengshi guihua huikan)* 126: 22-29.
- Yang, Yunyan, Yanping Tian, Chengdoing Yi and Xiong He. 2003. "Intra-city Migration and Spatial Dynamics in Wuhan: An Empirical Study." Paper presented at the International Conference on Globalization, the State, and Urban Transformation in China, Hong Kong Baptist University, December 15-17.
- Yeh, Anthony Gar-On, Xueqiang Xu and Huaying Hu. 1995. "The Social Space of Guangzhou City, China." *Urban Geography* 16, 7: 595-621.
- Zhang, Shenghua, ed. 1998. *The Current Status and Future of Shanghai's Floating Population (shanghai liudong renkou de xianzhuang yu zhanwang)*. Shanghai: East China Normal University Press.