

Metropolitan spatial dynamics: Shanghai

By: [Susan M. Walcott](#) and Clifton W. Pannell

Walcott, S. and C. Pannell (2006) "Metropolitan Spatial Dynamics: Shanghai" *Habitat International* 30 (2):199-212.

Made available courtesy of Elsevier: <http://www.elsevier.com>

*****Reprinted with permission. No further reproduction is authorized without written permission from Elsevier. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document.*****

Abstract:

As China's largest and wealthiest city, Shanghai's dynamic growth since the 1990s indicates the spatial form of new metropolitan expansion patterns. This research deals with mechanisms shaping emerging patterns, including the rise of a land market, settlement of inner suburbs by urban core and "floating" populations, and peri-urban in-filling. Growth drivers flow from planning and targeting high technology manufacturing based on domestic research and development, foreign companies, and joint ventures as well as new sources of domestic capital based on property development schemes and cooperation between Party cadres and local entrepreneurs. Evidence comes from the 2000 Census, remotely sensed photography, and interviews with city planners. The match between new residential and occupational spaces and transportation infrastructure connections for a more mobile and spatially diffuse population is of concern for future policy.

Keywords: Shanghai; Urbanization; Spatial dynamics

Article:

Introduction

This research seeks to examine the emerging spatial patterns of China's most rapidly developing market-driven metropolis. A broad goal is to see whether the evolution of Shanghai's urban economy is increasingly similar to that in more developed countries and is leading to urban growth patterns that also increasingly resemble those of other global cities such as New York and Tokyo. New processes of cooperation between elite Party cadres and local entrepreneurs have provided new sources of capital for investing in infrastructure and property development for commercial, industrial, and residential projects. These new processes are replacing the traditional state-directed central planning and financed forms of urban development.

By sheer numbers, Shanghai commands attention for its size, economic productivity, and attraction of foreign investment (Table 1). The reach of its markets along transportation corridors also reveals Shanghai's economic power. The region within a "1-day drive" constitutes the largest in East Asia—twice Tokyo's population, triple Manila's size, and quadruple Bangkok's bulk. World Bank figures predict that by 2005, the Yangzi Delta megalopolis, with Shanghai as its core metropolis, will hold a population of 75 million, of which 52% will reside in urban areas. Linked by the National Trunk Highway System, Shanghai's 2-day market will supply 60% of China's GDP, constituting the undisputed core of the nation's economy (Leman, 2002).

Shanghai is China's largest and greatest commercial and industrial city. With 0.1 % of the land area of the country, it supplies over 12% of the municipal revenue and handles more than a quarter of total trade passing through China's ports. Its year 2000 population, according to China's latest census, was 16.74 million and represented an increase of 3.4 million from the 1990 size with an average annual growth rate through the decade of the 1990s of 2.2% and a total increase of 25.5% (Population Census Office, 2001). The average size of a family in Shanghai had declined to less than 3 people during the last decade, and it is clear that most of Shanghai's population growth is driven by migration rather than natural factors based on high birth and fertility rates. Shanghai has for many years had the lowest birth rate in China, a rate lower than large American cities such as New York.

As with most cities in China, Shanghai is overbounded in its administrative territory. The city in the year 2000 was comprised of 17 urban districts and three counties together occupying 6300 km² of land area. The three counties contain substantial rural land and a number of rural residents who continue to farm for their livelihood. The city has the highest population density of all the first order administrative units in China, with 2657 people per km² in 2000. Owing to its continued growth and industrial and commercial development, Shanghai also has the highest index of urbanization among all of China's first order administrative units, with 88.3% of the official population (14.78 million) classified as urban (Population Census Office, 2001).

The search for a theoretical framework to encompass this statistical outline forms a common theme in articles on urban China. The following section suggests the utility of two models in particular whose application to cities such as Shanghai might be usefully tested: the corporatist model, and urban growth regime. Both include the power of a central political player as a key factor, in alliance with other locally organized power centers. Typical of the situation in developing countries (rather than developed political economies which were the original theoretical models), these partners in power can be local bureaucrats and governments, their state owned enterprises, native entrepreneurs, foreign joint ventures or direct investments working through Chinese intermediaries.

Table 1
Shanghai statistical outline

Population (millions)	(\$million) ^a GDP per capita (US\$)	Exports (\$million)	Imports (\$million)	Foreign direct investment
16.74	4,16,229	24,639.61	30,063.75	3,160.14

Source: Shanghai Statistical Yearbook (Shanghai Municipal Statistics Bureau, 2001).

^aIncluding 3.8 million migrants, resident more than 6 months.

Theoretical constructs: urban growth dynamics

Attempts to formulate grand conceptual designs to account for global economic change must necessarily encompass the phenomena of China's dynamic economic shifts and growth since 1978 (Yeung and Lin, 2003). Since the experience of rapid Asian growth occurred after that of more developed countries, theorists first look to pre-existing models for any notions that might be adaptable to Asia's situation. Urban regime theory has served as the dominant interpretive framework for explicating development in western cities for over a decade. Clarence Stone's (1989) profile of Atlanta as an archetypal city operating in this mode of political-economic urban restructuring poses the question as to what extent regime theory applies to transitioning socialist cities. Certainly an interpretation of the goal of urban growth regimes as economically motivated actions leavened with social concerns and applied to analyzing the relationship between economic restructuring, urban redevelopment policies, and political actions logically can be linked to a transitioning Leninist society (Davies, 2002). A useful review of this conceptual framework that also includes a discussion of the "corporatist model" can be found in Knox's (1994) textbook on urbanization. In this model, government power constitutes a key part of a "symbiotic relationship" (Knox, 1994, p. 370) with other private organizations whose representatives participate in the decision-making process. Politically empowered technocrats dominate and guide the process and its conclusion.

Several studies have attempted to link explicitly the American-based urban regime framework to China's experience, including Stoker and Mossberger's (1994) tripartite typology that identified "instrumental regimes" with Atlanta, and "symbolic regimes" with the situation in Chinese cities. As used by Stoker and Mossberger, the partnership is symbolic in that the senior partner of the State (or Party) retains by far the most—or ultimate—control. The key characteristic of an urban growth regime consists of a coalition of governmental and non-governmental actors necessary to construct an effective alliance for action. The symbolic regime's distinction is that it seeks changes via a non-local dependency and utilizes the Party apparatus rather than elected officials as in the United States. Wu (1999) notes that the transitioning nature of China's economy heightens the importance of coalitions of bureaucratic-government actors and capital-supplying non-government business connections in an unblended system of capitalist elements grafted on to a lingering political structure.

In the new urban growth regime of politics and economics “with Chinese characteristics,” economic forces drive development under loosened central planning. Entrepreneurialism encourages the formation of public-private partnerships for projects, but the Party maintains final approval power. Thus, as in the west, individual actors in an ultimately hierarchical system exercise an elite control, while sharing the goal of urban economic development. An excellent study of the manner in which local party elites affect the trajectory of urban development may be reviewed in [Wank’s \(1999\)](#) ethnographic study of Xiamen, one of China’s early special economic zones. Wank provides probing insight into how state agents and local entrepreneurs interact to create patron–client relations for profit and enduring mutual success. Finally, [Ma \(2002\)](#) has reviewed how party elites at varying hierarchical levels and spatial scales operate to assist local change and the impact this has had on China’s urban transition. As he noted, this participation and effect on elites is far-reaching and profound in both urban and rural areas. Shanghai provides an excellent example and model to examine and document recent rapid urban growth and change in China’s transitioning economy.

Spatial patterns

Land use changes since the early 1990s, reflected in population density changes ([Fig. 1](#)), demonstrate a spread outward from the urban edges, and the growth of satellite cities—what in developed countries is disdainfully referred to as sprawl. As in many rapidly growing North American cities, the fastest and most extensive growth occurred on the outer edges of both metropolitan Shanghai and the inner suburban ring. Similar to the US in the 1960–1970s, most of the population loss occurred in the inner urban core, but for quite different reasons as discussed in the following section. These development patterns “with Chinese characteristics” reflect the hand of the government planner partners in Shanghai’s “symbolic growth coalition”. Responding not only to the new commodification of land which made agricultural areas available for higher economic utilization, these high growth subdistricts mirror government policy of dispersing population from overly crowded cores to new areas of employment and transportation linkages. The square outlines revealed most clearly in the year 2000 image reflect the planned and imposed nature of development.

Contrast with the 1993 picture also emphasizes growth of satellite cities in larger clusters around the periphery. Consolidation of earlier settlement areas serves as the launching region for extending population spread outward. Western phenomena such as “leapfrogging” and “scatteration” ([Fujii & Hartshorn, 1995](#)) do not appear to have occurred in the more regulated case of Shanghai’s urban growth pattern, resulting in a more rational land utilization pattern.

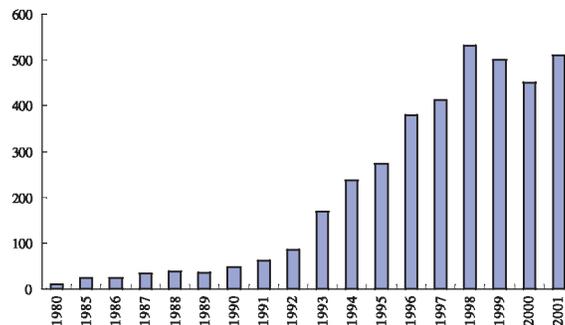


Fig. 1. Urban infrastructure investment, 1980–2001. *Source:* Shanghai Statistical Yearbook.

In an attempt to head off acquisitions of motorbikes and private cars, remedies are in the works for roads overcrowded with bicycles and highly unpredictable bus schedules due to congested traffic. Over the next several decades, a combination of subway and elevated light rail lines are planned to result in 21 metropolitan mass transportation connections. Five bridges and seven tunnels are also planned to connect Pudong with Puxi ([American Chamber of Commerce, 2001](#)). Asia’s first operational magnetic levitation rail line now connects the new international airport in Pudong to the high tech park in Zhangjiang, a fairly short distance for such speed. Another line linking the political capital of Beijing with the economic center of Shanghai will soon go out for global bidding. Investment in transportation infrastructure by the national and municipal government was carefully timed to coincide with national scale land marketization and the demise of large, inefficient state owned enterprises that previously provided worker housing. Now citizens could purchase apartments newly

constructed in the vicinity of new transportation corridors. Other population segments were relocated from extremely dense inner urban areas to peri-urban locations between the suburbs and urban Shanghai boundaries.

The selection of Pudong, a formerly agricultural site and industrial slum on the eastern side of the Huangpu River, as the most modern and newest section of Shanghai with urban functions designed to be world class, pushed the city to its furthest boundary with the Pacific (Olds, 2001). It also linked Pudong to the financial world across the Pacific by enticing foreign capital through its shipping facilities, manufacturing zones, amenity environments, international airport, and deep water port with duty-free warehousing in Waigaochiao district (She et al, 1997).

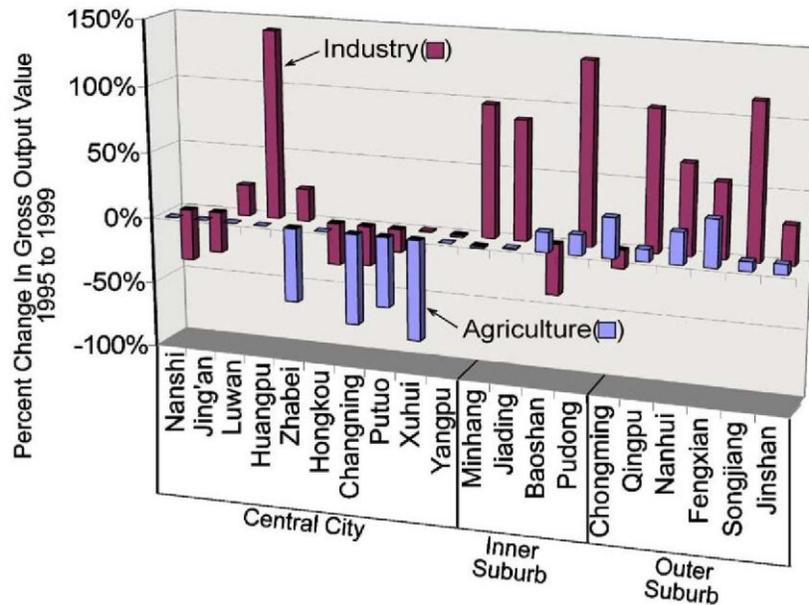


Fig. 2. Change in rural-urban gross output value. Source: Shanghai Statistical Yearbook.

Spatial dynamics

Economic independence and technology prioritization. Decisions to allow Shanghai to retain more of its taxes and invest them in that city’s modernization in the late 1980s launched the current meteoric but sometimes interrupted development owing to global economic perturbations. Investment in urban infrastructure since 1980 began a rapid advance in 1993 with the global economic upturn, peaking in 1998 with a slight decline in the following two years due to investment in other projects (Fig. 2).

Table 2
Shanghai areal development

Area	Hectares	Housing land	Industrial land	Public land	Construction density
CBC	500	45	9.4	45.6	51.6
CCD	3000	69.7	17.2	13.1	45.9
Outer circle	10,000	51.5	19.4	29.1	38.3
Inner circle	62,000	59	21.4	19.6	24.5

Source: Shanghai Statistical Yearbook (Shanghai Municipal Statistics Bureau, 2001).

The amount of building activity in Shanghai fueled by government investment expenditures continues to be astounding. During the same period following Deng’s national “Opening and Reform” movement in 1978 propelling modernization, Shanghai’s economy shifted from over 77% of gross domestic product in secondary sector manufacturing to a more balanced sectoral distribution of 48% in industry and 51% in services in 2000 and 2001 (Table 2). Employment in manufacturing reached almost 60% in 1990 and has declined steadily since to 41% in 2001, while employment in the tertiary sector has grown from 30% in 1990 to more than 47% in 2001, a remarkable expansion of employment in service activities in step with Shanghai’s reemergence as a commercial city.

The push for high technology has provided a major impetus for Shanghai's economic renaissance. Highlighting commodification of high technology ideas in science parks began under the then Mayor Jiang Zemin with establishment of Caohejing High Tech Development District in 1991. Fifteen other area science and technology parks followed, including three more at the national level (China Science and Technology Department, 2000; Ning, 2002). These policies transformed Shanghai from a polluted, aging manufacturing has been on the Huangpu to a sparkling new beacon of China's modernized future led by showcase Pudong—from farms to futuristic French-designed boulevards, the largest metropolitan area park, striking architecture, abundant (and expensive) apartments, and a Mecca for middle class and foreign educated workers (Walcott & Xiao, 2000).

A far-reaching change in urban form resulted as industry was extracted from its mix with residential areas in the central business (CBD) and commercial (CCD) districts and moved into the middle ring of development (Table 3). Shanghai's extraordinary conversion during the 1990s based on an enormous infusion of financing for capital improvements coupled with rapid development of its commercial, manufacturing, and high tech sectors led to a remarkable transformation in the city's spatial form and associated functional activities. Thus, fast economic growth and technology advance are also leading to associated changes in urban morphology and the city's land use. The most important and noticeable features include (1) the spread of population and increase in both manufacturing and services in Pudong, to the east of Shanghai's historic core, and (2) in-filling of population and economic activity between the core and suburban satellites, particularly along new transportation arteries connecting these areas.

Table 3
Inflow of foreign direct investment

Year	Amount (in million US\$)
1986–1991	1448
1992	1259
1993	2318
1994	3231
1995	3250
1996	4716
1997	4808
1998	3638
1999	3048
2000	3160

Source: Shanghai Statistical Yearbook (Shanghai Municipal Statistics Bureau, 2001).

The commodification of property drove another set of far-reaching spatial as well as economic dynamics. The context for spatial development and growth in a rapidly developing major city and metropolitan region such as Shanghai must take into account the framework of a transitional economy unfolding in China in recent years in which there is a paralleling duality of plan and market (Wu, 1999, 2001). As reforms proceeded in the 1980s and a transformed and modified economy emerged under Dengist policies in the early 1990s, new institutional players entered the scene and altered the state planning and enterprise mechanisms that had largely determined the use of urban land in pre reform China.

First, capital was needed to transform and improve urban infrastructure and building stock. In addition to the traditional players of state owned enterprises and planners, new operatives appeared such as foreign investors seeking land for industrial and housing investments. They quickly attracted local partners, most of who were officially connected to enable them to control the approval process for the transfer of urban land. Local officials also saw immediately that capital could be generated through the transfer of urban land use permits, and this soon became a widely used mechanism for raising what was perceived by some as unlimited capital for urban development (Wu, 1999).

In tracking the increasingly strong forces of commodifying land and housing in Shanghai and other cities in China, we must recall the urban reforms initially implemented after the 3rd plenum of the 12th Party Congress

in 1984 followed by the 1988 policy decision to allow the transfer of property rights for fee payment. These key policy decisions were soon followed by other trends such as the drive to accelerate market impulses as evidenced in rhetoric Deng used in numerous speeches following his now famous southern tour in 1992. Since then the forces of privatization and the particularistic manner in which market and elite party forces have intersected to commodify land and land development schemes provide a fascinating example of one form of a transitioning socialist urbanism and economy (Wank, 1999; Zhu, 1999). A related version of this was seen in the rapid multiplying of special economic and economic development zones seen as special places where local and foreign interests would merge and where capital would pour in to develop industrial and housing developments in support of China's emerging link to the global economy (Walcott, 2002).

Shanghai is an especially interesting example of spatial development as China's largest and most important industrial and commercial city, and also as a city that largely stagnated during the Maoist period (1949–1976). Its modern transformation really did not begin until the Dengist period (1978), and most strikingly not until President Jiang Zemin came to power in 1992. The expansion of the city to the east of the Huangpu River and the remarkable development of the Pudong zone offers a compelling example of the various political mechanisms, players, complexity and character of urban land development and spatial change in the context of China's rapidly growing transitional economy. What follows will explore some of these channels of development and growth that will illustrate the role of the central state and its state owned enterprises, the powerful but variable and complex activities of local officials, and the flow of foreign capital and activities related to foreign investments. All of the forces intersect to provide the *mélange* of real conditions that describe the evolution of land use and development in contemporary Shanghai. The drive to develop based on the twin engines of domestic innovation (Plafker, 1994) and foreign direct investment (FDI) technology transfer continues today.

Increasing population and economic activity in areas between established suburbs and major East Asian cities, a process known as periurbanization, result from entirely different causes than those driving "in-filling" in western metropolitan areas. As powerful central government control that formerly stabilized the economic activity of the population devolved during the 1990s, new forms were encouraged to anchor and attract workers in peripheral areas. These included township and village enterprises and rural industries popping up in peri-urban development zones (Webster, 2002). The shift to industrial activity can clearly be seen in Shanghai's outlying districts as population densities increase in specific districts where major industrial developments are in progress. This example of land use change is similar to earlier development patterns in the Pearl River delta region (Lin, 2001).

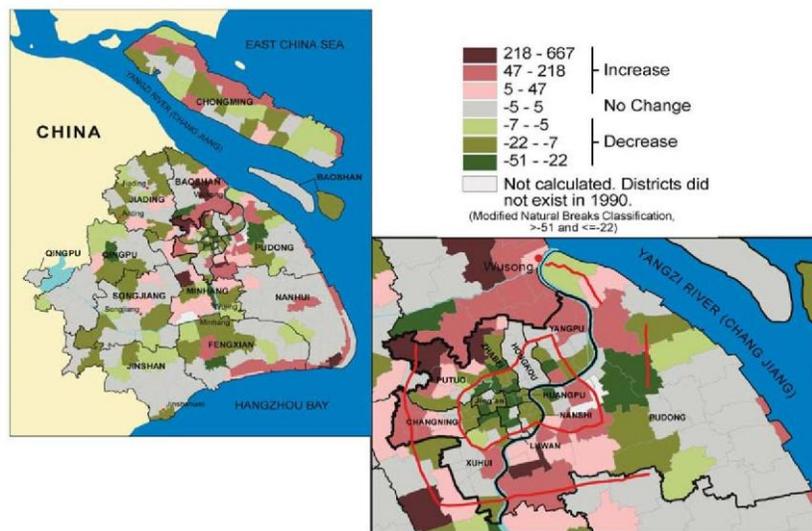


Fig. 3. Population density change. *Source:* Population Census Office.

The shift in output value of product as compared in industrial and agricultural goods parallels the spatial shift in morphology or land use. In Fig. 3, the growth in the value of industrial output is especially striking in most

districts of the inner and outer suburbs of Shanghai, and many of these districts also witnessed some increase or intensification of agricultural product. Concomitantly the central city, except for the Huangpu District and modest industrial gains in Luwan and Chabei, experienced significant declines in the value of agricultural and industrial products as the central city shifted its functions increasingly to commercial and service activities with different morphological features manifested in the cityscape (Ning & Yan, 1995). Most of the central city has indeed become a commercial and service center.

Table 4
Land and building prices in Shanghai zones

Location	Land asking rent (US\$/sq.m./mo)	Land asking price (US\$/sq.meter)	Building asking rent (US\$/sq.m./mo)	Building asking price (US\$/sq.meter)
Jinqiao	\$7.8	\$95	\$3.75	\$300–400
Lujiazui	n.a.	\$550–600	n.a.	n.a.
Waigaoqiao	\$8–10	\$95–120	\$3.75–5	\$350–470
Zhangjiang	\$6	\$50–75	\$6	\$300
Xinzhuang			\$2.2–2.9	\$96–108

Source: Pudong New Area Administration; Economist IU, 2002.

Resuming its function as a thriving Yangtze delta port city from the late 1800s to early 1900s, Shanghai's campaign to attract particularly high-technology foreign business into new districts on the edges of previously developed areas proved remarkably successful. The influx of foreign capital to purchase office and living spaces directly impact the cost of facilities in prime real-estate areas, creating foreign communities based on cost (Table 4). Jinqiao district contains a major industrial park that includes General Motors as well as many other foreign corporate tenants whose top employees also live in the area; Lujiazui constitutes the Wall Street/Manhattan modeled financial district with prices to match; Waigaoqiao is the duty free container port with large warehousing facilities; Zhangjiang High Tech Park features major foreign manufacturing companies such as Motorola, Siemens, and Roche; Xinzhuang reflects more local rates for small and medium foreign and domestic manufacturers, particularly from European countries who particularly promote smaller scale companies.

Table 5
Main social and economic indicators, 1978–2001

	1978		1990		1995		2000		2001	
	GDP	Employment								
Primary sector	4.0	34.4	4.3	11.1	2.5	9.8	1.8	10.8	1.7	11.6
Secondary sector	77.4	44.0	63.8	59.3	57.3	54.5	47.6	44.3	47.6	41.2
Tertiary sector	18.6	21.6	31.9	29.6	40.2	35.7	50.6	44.9	50.7	47.2
Total		100		100		100		100		100

Source: Shanghai Statistical Yearbook (Shanghai Municipal Statistics Bureau, 2001).

Shanghai's economy, as measured by the percentage of its gross domestic product (GDP) in the primary, secondary and tertiary sectors as well as the percentage of the work force employed in each sector, matured steadily since the base year of 1978 when "Opening and Reform" began (Table 5). The primary sector (largely agriculture) was never large and dropped by 75% from 1978–2001, shifting reliance for food to more peripheral areas outside the municipal boundaries. More remarkably, a city known for its manufacturing prowess dropped in this same time period from an over 75% share of GDP in the secondary sector to less than half by 2001. The tertiary sector, a major focus of investment development in Shanghai and one sorely needed for China's modernization, soared from less than one-fifth of GDP (and one-fifth of the workforce) in 1978 to around half of each measurement by the millennium.

Table 6
Manufacturing location oscillation of sites

	Advanced country cycle (Vernon)	Developing country cycle (China)
Stage 1	Innovate, make, sell at home	Make foreign product, export
Stage 2	Lower cost, increase amount: make abroad, sell at home and abroad	Make foreign products, sell at home and abroad
Stage 3	Lower cost and demand: Make abroad, sell at home and abroad	Make own products, sell at home and abroad

Shanghai amply illustrates the relationship between the attraction of advanced foreign firms and growing local strength. Vernon's (1966) product cycle model illustrating the global location shifts of manufacturing originating in an advanced country has its reverse counterpart in Shanghai (Table 6). As China's greatest industrial and commercial city with the largest percentage of economic activity in the secondary and tertiary sector, Shanghai is well on its way through Stage 2, and actively investing in Stage 3 capacity. Both Stage 2 and Stage 3 presuppose the existence of a domestic middle and upper class capable of purchasing and inclined to support domestic products of sufficient quality, perhaps tailored for the domestic market. This is already the case with Legend computers, China's best selling brand. The explosion of car ownership in highly congested Beijing, based on locally produced models often featuring foreign modifications for the Chinese market such as the Volkswagen "Prius", further attests to the maturation of the Chinese urban middle class market.

Finally, we must also acknowledge the benefits accruing to Shanghai from its political links and therefore economic and fiscal support as a result of the political ascendancy of its former mayor and then Chinese president, Jiang Zemin. Jiang became China's highest leader as president in 1992 and assumed increasing power as Deng Xiaoping aged and gradually became infirm. Jiang and his inner circle favored Shanghai and encouraged its reemergence as the lead city in China's growing role as a global economic power in the 1990s. In part, it may be speculated, Shanghai's rise also served as a counterweight to the rapid surge of the Pearl River Delta region and the regional economic power of Hong Kong. China's political leaders, it seems, wanted Shanghai to reassert its role as the country's primate commercial and economic center and a legitimate future rival to such great world cities as Tokyo, New York, and London.

Conclusion

The state's deliberate construction of a framework to at least partially allow capitalization of assets in property and land use rights to promote China's involvement in a global capitalist economic system, within a continuing political structure of control promoting rapid development, fits a modified formulation of an urban growth regime. Following Yeung and Lin's suggestion (2003), theory must necessarily be flexible enough to focus on dynamic processes rather than similar outcomes in developing economies with adapting systems integrating diverse local contingencies. As China's major urban economic engine, Shanghai is in the forefront of changes in the metropolitan system, which include:

- economic independence leading to growth in the tertiary sector and property commodification;
- rapid growth of state investment in fixed assets for construction of essential infrastructure;
- in-filling expansion between the urban cores and suburbs; and
- attraction of capital for development by foreign investors.

Shanghai's pattern fills a niche in China's urban system, which fits its historical role as the Yangtze River delta outlet to the outside world and global economy while maintaining a powerful centripetal force in developing itself internally.

Continuing patterns set in motion during its decade of economic development takeoff in the 1990s, Shanghai's urban spatial growth increasingly exhibits a poly nucleated form familiar in the West. Extensions of transportation lines funnel settlement along arterial spokes, wheels, and orbiting satellite cities, linked by rail and river transportation corridors. Cautionary notes to a too-smooth transition forecast along the lines of more developed and earlier developed countries lie in the stark differences of Shanghai's size, the remaining top-down planning proclivities, the continuing strength of politics over economics when the latter is seen to threaten the former, and problems with financing development that are too numerous and serious (if necessarily somewhat speculative) to detail other than to cite them as a brake on future development. In short, while Shanghai seems to be following precedents in urban spatial development patterns set earlier elsewhere, the Chinese political economy retains unique "Chinese characteristics", referring to the lingering heavy hand of

government at various scales. This enduring feature continues to challenge theorists with the empirical reality of urbanization in major cities such as Shanghai, whose fate ultimately flows from “the emperor far away”.

Thus, a kind of Chinese-modified regime theory appears to be at work in which local, regional, and national forces interact to continue to advance Shanghai’s striking recent growth in ways that are propelling it to recapture its former glory and functions. Further enhancing this is China’s astonishing emergence as a leading global manufacturing power and trading actor with Shanghai as its hub and vanguard. This great city, one surmises, is using its own form of an urban growth regime, in concert with national and global agents, to achieve its future destiny as not only China’s greatest city but also one of the world’s leading industrial and commercial centers.

References

- American Chamber of Commerce. (2001). Getting Shanghai on the right track. AmChat Newsletter (pp. 5–6). Shanghai.
- China Science and Technology Department. (2000). Report on high-tech industry development in Shanghai. Development
- Report on China’s New and High-tech Industry. Beijing: China Science Publishing Department. Davies, J. (2002). Urban regime theory: A normative-empirical critique. *Journal of Urban Affairs*, 24, 1–17.
- Fujii, T., & Hartshorn, T. (1995). The changing metropolitan structure of Atlanta, Georgia: The locations of functions and regional structure in a multinucleated urban area. *Urban Geography*, 16, 680–707.
- Knox, P. L. (1994). *Urbanization: An introduction to urban geography*. Englewood Cliffs, NJ: Prentice-Hall.
- Leman, E. (2002). Can Shanghai compete as a global market? *The China Business Review*, www.chinabusinessreview.com, accessed 9/9/02.
- Lin, G. (2001). Evolving spatial form of urban-rural interaction in the Pearl River Delta, China. *Professional Geographer*, 53, 56–70.
- Ma, L. J. C. (2002). Urban transformation in China, 1949–2000: A review and research agenda. *Environment and Planning A*, 34(9), 1545–1570.
- Ning, Y. (2002). Globalization and the sustainable development of Shanghai. In F. C. Lo, & P. J. Marcotullio (Eds.). *Globalization and the sustainability of cities in the Asia Pacific Region*. Tokyo: United Nations Press.
- Ning, Y., & Yan, Z. (1995). The changing industrial and spatial structure in Shanghai. *Urban Geography*, 16, 577–594.
- Olds, K. (2001). *Globalization and urban change: Capital, culture, and Pacific rim mega -projects*. Oxford: Oxford University Press.
- Plafker, T. (1994). Shanghai enlists scientists to foster economic growth. *Science*, 265, 866–867.
- Population Census Office. (2001). Under the State Council Department of Population National Bureau of Statistics. Beijing: China Statistics Press.
- Shanghai Municipal Statistics Bureau (Ed.). (2001). *Statistical Yearbook of Shanghai-2000*. Shenzhen: China Statistics Press.
- She, Z., Xu, G., & Linge, G. (1997). The head and tail of the dragon: Shanghai and its economic Hinterland. In G. Linge (Ed.). *China’s new spatial economy: Heading towards 2020* (pp. 98–122). New York: Oxford University Press.
- State Statistical Bureau, People’s Republic of China, 2001 (2002). *China statistical yearbook*. Beijing: China Statistical Publishing House.
- Stoker, G., & Mossberger, K. (1994). Urban regime theory in comparative perspective. *Environment and Planning C: Government and policy*, 12, 195–212.
- Vernon, R. (1966). International investment and international trade in the product cycle. *Quarterly Journal of Economics*, 80, 190–207.
- Walcott, S. (2002). Chinese industrial and science parks: Bridging the gap. *Professional Geographer*, 54, 349–364.
- Walcott, S., & Xiao, W. (2000). High-tech parks and development zones in metropolitan Shanghai: From the industrial to the information age. *Asian Geographer*, 19, 157–179.

- Wank, D. (1999). *Commodifying communism: Business, trust, and politics in a Chinese city*. Cambridge, UK: Cambridge University Press.
- Webster, D. (2002). *On the edge: Shaping the future of peri-urban East Asia*. In *The urban dynamics of East Asia*. Palo Alto, CA: Stanford University, Institute for International Studies, Asia/Pacific Research Center Discussion Papers.
- Wu, F. (1999). The 'game' of landed property production and capital circulation in China's transitional economy with reference to Shanghai. *Environment and Planning A*, 31, 1757–1771.
- Wu, F. (2001). Real estate development and the transformation of urban space in Chinese transitional economy: With special reference to Shanghai. In J. R. Logan (Ed.). *The new Chinese City: Globalization and market reform* (pp. 151–166). Oxford: Blackwell.
- Yeung, H. W. C., & Lin, G. (2003). Theorizing economic geographies of Asia. *Economic Geography*, 79, 107–128.
- Zhu, J. (1999). Local growth coalition: The context and implications of China's gradualist urban land reforms. *International Journal of Urban and Regional Research*, 23, 534–548.