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CHINA'S POLYCENTRIC REGIONAL GROWTH: SHANGHAI'S SATELLITE CITIES, THE AUTOMOBILE, AND NEW URBANISM WITH CHINESE CHARACTERISTICS*

Edward H. Ziegler*

I. GROWTH MANAGEMENT IN CHINA

China's economic growth during the past 20 years, with nearly a 10% annual GDP increase, may be the largest and most sustained economic expansion in modern history.¹ As China has become the manufacturer for the world, its growth and development significantly transformed China's built environment. Over 300 million peasants moved from the countryside to China's cities during that time—the largest migration in world history.² Authorities poorly planned and did not control much of this growth.³ Moreover, growth in China is far from over. China's urban areas must develop to accommodate upwards of 500 million more peasants (nearly twice the population of the United States) who China expects to move to China's towns and cities.⁴

China's government is in the process of implementing important new policy initiatives that provide the first steps toward creation of a policy framework on national land use planning and sustainable development for managing urban growth.⁵ These policy initiatives

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1. TED C. FISHMAN, CHINA INC. 12 (2005); Lu Xinshe, *Land Use and Planning in China* 5 (2003), http://www.cip-icu.ca/English/outreach/china/chinaVM_pres.pdf; see generally Fareed Zakaria, *Does the Future Belong to China*, NEWSWEEK, May 9, 2005, at 26; *The Tiger in Front*, ECONOMIST, Mar. 3, 2005, at 3; Michael Elliott, *A New China Rises*, TIME, June 27, 2005, at 28.

2. FISHMAN, *supra* note 1, at 7; Gordon Feller, *Urbanization's Pacifying Power*, WORLD & I, Mar./Apr. 2005, at 50.

3. Howard W. French, *Chinese Cities Chase Expansive Dreams*, DENVER POST, Aug. 6, 2004, at 27A; Dian Tai, *Regulation of Land Use Shows Progress*, CHINA DAILY, Aug. 14, 2004, available at http://www.chinadaily.com.cn/english/doc/2004-08/14/content_365275.htm.

4. Author's personal correspondence; see French, *supra* note 3; Feller, *supra* note 2.

5. Xinshe, *supra* note 1, at 17-38.

provide for an integrated hierarchy of tiered planning for urban growth by the establishment of national goals and policies followed by the adoption of implementing regional and local plans.⁶ This urban growth program requires adoption of local comprehensive plans, zoning maps, and development codes and provides for integrated land development review and the adoption of land information monitoring and assessment systems.⁷

Major goals of this growth management program include providing for economic development through the efficient use of land and resources; minimizing waste and curtailing the excessive infrastructure costs of uncontrolled urban sprawl; promoting rational and efficient infrastructure and transportation systems; and promoting sustainable development policies involving historic and natural resource conservation and environmental protection, particularly with respect to water supply and productive farmlands.⁸

II. PLANNING, THE AUTOMOBILE, AND ENERGY

In the United States, there is no comparable national growth management policy, program, or strategy to those implemented in China.⁹ Urban planning, zoning, and growth management are typically left to local cities and counties acting in pursuit of their own self-interest in the United States.¹⁰ Over the last half century, this framework for growth in the United States has produced a landscape of low-density automobile-dependent sprawl.¹¹ This pattern of hypersprawl development requires an enormously expensive

6. *Id.* at 25-29.

7. *Id.* at 30-36.

8. *Id.* at 21-23; see *International Conference on Land Use Planning and Policy Sustainable Land Decisions in Economically Dynamic and Densely Populated Areas*, Beijing, China, May 10-12, 2004, Chinese Ministry of Land and Resources, German Federal Ministry of Education and Research, and UNESCO; Sarah Schafer & Anne Underwood, *Building in Green*, NEWSWEEK, Sept. 28, 2005; Scott Hillis, *China to Eschew Fast Growth in New Economic Plan*, ENVTL. NEWS NETWORK, Oct. 7, 2005, <http://www.enn.com/today.html?id=8980>.

9. Edward H. Ziegler, *Urban Sprawl, Growth Management and Sustainable Development in the United States: Thoughts on the Sentimental Quest for a New Middle Landscape*, 11 VA. J. SOC. POL'Y & L. 26, 45-60 (2003).

10. *Id.*

11. *Id.* at 52-53.

infrastructure and a huge consumption of energy for transportation.¹² Sprawl increases the urban footprint at many times the rate of population growth and this is true even in metro areas near such “transit friendly” cities (by American standards) as San Francisco, Chicago, and Boston.¹³ The United States, which has less than 5% of the world’s population, now consumes about 25% of global oil production, and private passenger vehicles consume most of this oil.¹⁴ If China ever achieves the present per capita energy consumption of the United States, it will need to consume all the oil now produced throughout the world.¹⁵

In recent years China has taken significant steps toward increasing automobile production and ownership.¹⁶ In 1995, there were an estimated 10 million motor vehicles in all of China.¹⁷ By 2005, only 10 years later, there are an estimated 100 million vehicles in China (with about 30% of that number estimated to be private passenger automobiles, as opposed to buses, large trucks and motorcycles). Last year China was reported to have invested about \$25 billion in its auto manufacturing industry.¹⁸ In 2004, China produced over 2 million automobiles and began exporting cars to other Asian and European countries.¹⁹ By 2007, some expect China to be producing about 14 million vehicles and to begin exporting automobiles to the United States.²⁰

12. *Id.* at 43-45; Keith Schneider, *Sprawl No Antidote to Terror*, Dec. 6, 2001, <http://www.mlui.org/growthmanagement/fullarticle.asp?fileid=11872>.

13. William Fulton et al., *Who Sprawls the Most? How Growth Patterns Differ Across the U.S.*, in THE BROOKINGS INSTITUTE SURVEY SERIES, 19, 20 (2001); see generally Robert Geddes, *Metropolis Unbound: The Sprawling American City and the Search for Alternatives*, AM. PROSPECT, Nov./Dec. 1997, at 40.

14. Schneider, *supra* note 12.

15. See Craig Simons, *Car Culture*, NEWSWEEK, May 9, 2005, at 40, 41.

16. Feller, *supra* note 2, at 59; Stephan Fairfield et al., *Some Observations on Street Life in Chinese Cities*, LAND LINES, Oct. 2004, at 5.

17. Simons, *supra* note 15, at 40.

18. Feller, *supra* note 2, at 50, 59; see generally THE IMPACT OF CHINA'S ECONOMIC REFORMS UPON LAND, PROPERTY AND CONSTRUCTION 146 (Jean Jinghan Chen & David Wills, eds., 1999).

19. Feller, *supra* note 2; Peter S. Goodman, *Chinese SUV Has Europeans in a Buying Tizzy*, DENVER POST, Aug. 4, 2005, at 30A; see generally THE IMPACT OF CHINA'S ECONOMIC REFORMS, *supra* note 19.

20. Feller, *supra* note 2.

Beijing recently created a new high-level State Energy Office to monitor energy resources and to advise the government on resource and energy security issues.²¹ China also recently adopted plans for a strategic oil reserve program, much like the program that now exists in the United States.²² Government officials in China, however, seem intent on preventing China from becoming a completely automobile-dependent society like the United States. Reports in China increasingly link the conservation and efficient use of resources and energy security to the development of a more rational framework for future urban growth and expansion.²³ While automobile ownership in China will likely increase, officials in Beijing are calling for the curtailment of urban sprawl and the implementation of development policies that will preserve alternative (non-automobile dependent) transit modes in China's urban areas.²⁴ China is investing heavily in all forms of public transit, particularly light rail networks in its cities.²⁵

III. URBAN DENSITY, TRANSPORTATION, AND THE ENVIRONMENT

Urban planners in China (and the United States) are increasingly aware of the link between the density of urban development and resulting resource and energy consumption.²⁶ Both resource and energy consumption also typically relate in modern urban areas to the environmental impact of development, particularly the burning of

21. David Zweig & Bi Jianhai, *China's Global Hunt for Energy*, FOREIGN AFFAIRS, Sept./Oct. 2005, at 25, 36.

22. FISHMAN, *supra* note 1, at 111; Energy Info. Admin., *China, Country Analysis Briefs*, Aug. 2005, <http://www.eia.doe.gov/emeu/cabs/china.html>.

23. *See Sound Urban Plans Called*, CHINA DAILY, May 12, 2005, at 4; *see generally* KLAUS HUBACEK & LAIXANG SUN, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS, INTERIM REPORT, LAND USE CHANGE IN CHINA: A SCENARIO ANALYSIS BASED ON INPUT-OUTPUT MODELING (1999); Hillis, *supra* note 8; Zhang Tingting, "Protective Cultivation" Applied in North China on Trial, July 15, 2002, <http://www.china.org.cn/english/environment/36881.htm>; China-U.S. Center for Sustainable Development, *Land Use Program Kicks Off Fourth Year*, Sept. 2004, <http://www.chinauscenter.org/organization/newsdetails.ask?NewsID=32&Nav=2>.

24. French, *supra* note 3; Yan Huang, *Urban Spatial Patterns and Infrastructure in Beijing*, 16 LAND LINES 1, 3 (Oct. 2004); *see* FISHMAN, *supra* note 1, at 117-22; Xinshe, *supra* note 1, at 21.

25. FISHMAN, *supra* note 1, at 117-22; *see generally* Ximing Lu, *Shanghai City Comprehensive Transportation: Planning for Movement and People*, URBAN AGE, July 8, 2005.

26. *See* Lu, *supra* note 25, at 4-13.

fossil-fuels and greenhouse gas emissions. As David Owen points out in his recent article *Green Manhattan*, published in the *New Yorker*, high density development tends to be green development.²⁷ This has to do, in large part, simply with the lower resource, energy, transportation, and environmental costs associated with higher density development.²⁸

In the United States, for example, where more than 80% of all trips are by private automobile due to the low-density pattern of development,²⁹ about 80% of all oil consumption goes toward transportation.³⁰ In China, where over 90% of all trips typically are by walking, cycling, or public transit, energy consumption for transportation is only a tiny fraction of that amount.³¹ This correlation helps explain why the United States, on a per capita basis, has about ten times the energy consumption of China.³²

IV. REGIONAL GROWTH AND CHINA'S SATELLITE CITIES

An interesting aspect of growth management in China today is the emerging policy against continuing the very high density skyscraper-type construction that has characterized so much of the recent new development in many of China's large cities. Many consider China's major cities too crowded and planners are looking to decrease densities in main urban core areas of many major cities.³³

China's officials and planners are embracing the concept of new satellite "towns" in outlying suburban areas of major cities, such as Beijing and Shanghai.³⁴ This will be a complicated and huge

27. See generally David Owen, *Green Manhattan*, NEW YORKER, Oct. 18, 2004.

28. *Id.*

29. PETER CALTHORPE, *THE NEXT AMERICAN METROPOLIS* 47 (Chris Dresser & Doug Foster eds., 1993).

30. Energy Info. Admin., *United States of America, Country Analysis Briefs*, Nov. 2005 at 4, <http://www.eia.doe.gov/emeu/cabs/Usa/NaturalGas.html>.

31. Hermann Knoflacher, *Urban Age So Far – Mobility*, URBAN AGE, July 8, 2005, at 19.

32. Energy Info. Admin., *supra* note 22, at 10; Energy Info. Admin., *supra* note 30 at 11.

33. Yan Huang, *Urban Spatial Patterns and Infrastructure in Beijing*, LAND LINES, Oct. 2004, at 1, 4.

34. See *Greater Shanghai Master Plan for Satellite Cities* (on file with author); Shiling Zheng, *Shanghai*, July 8, 2005, at 28, available at http://www.urban-age.net/0_download/pdf_presentations/Shanghai/02.01-Shiling_Zheng-Shanghai.pdf; *Satellite Towns to*

undertaking, to say the least, as some of these new satellite towns and cities are planned to accommodate anywhere from 500,000 to more than 1,000,000 people.³⁵ Moreover, while planners envision these new towns having major automobile expressway and mass rapid transit (often light rail) connections to the main core areas of a major hub city, the new towns are designed to be largely independent and whole cities, with all the necessary residential, office, commercial, recreational, cultural, educational, and manufacturing facilities, and with all the related utilities and infrastructure necessary to support the expected population.³⁶

V. THE TOWN OF QINGPU: CHINESE NEW URBANISM

These new satellite cities often have what we in the United States would describe as “new urbanist” design characteristics.³⁷ A good example is the plan for the new satellite town of Qingpu located about 35 miles west of the main city of Shanghai. The city is planned for a population of 500,000 to 600,000 people.³⁸ Even with more than half the land of the new city placed in northern industrial zones, the population will be about the same as the City of Denver, though Qingpu will be only about one-fifth the geographic size of Denver.³⁹ Development will first occur in stages outward from the existing city of Qingpu (population about 100,000) and ultimately will require major redevelopment of the city itself and new channeling of the

Ease Population Pressure, BEIJING THIS MONTH, Mar. 1, 2004, available at <http://www.btmbeijing.com/contents/en/btm/2004-03/whatshot/population>; *Beijing to Be Divided into Four Functional Zones*, BEIJING THIS MONTH, Feb. 15, 2005, available at <http://www.btmbeijing.com/contents/en/business/2005-02/briefbj/zones>.

35. Zheng, *supra* note 34.

36. *See id.* at 24; Lu, *supra* note 25.

37. Schafer, *supra* note 8; Ron Nyren, *Dialogue: Global Design & Development*, URBAN NEWS, Nov./Dec. 2005; Design Collective, *U.S.-China Housing Shanghai Demo Project*, <http://www.designcollective.com/Planning/TND%20-%20New%20Communities/US-China%20Housing%20Shanghai%20Demo%20Project/>.

38. *Official Master Plan of Qingpu New Town in Shanghai 2005* (on file with author).

39. *Id.*

Youdu River which will traverse the new city in many places.⁴⁰ Planners will preserve the nearby town of Zhujiajiao, a quaint historic river village, for tourism.⁴¹

In the plan for the new city of Qingpu, the northern half contains industrial and manufacturing zones and sites for public utilities and power generation.⁴² The lower half of the plan consists largely of rather high density residential apartment neighborhoods with a mix of commercial retail, office, schools, recreational, cultural, and public uses planned at designated sites throughout the neighborhoods.⁴³ Parks and other open green spaces are also planned in the development.⁴⁴ A major automobile expressway and rapid light-rail public transit will connect Qingpu to Shanghai.⁴⁵

VI. DENSITY, PARKING, AND PRESERVATION OF ALTERNATIVE TRANSIT MODES

The plan shown for the "East Qingpu" neighborhood highlights some of the design features of this planned mixed-use new neighborhood.⁴⁶ The modified grid street pattern is evident on the plan and much of the residential housing is a short walk to the major town center.⁴⁷ The width of this neighborhood is about one mile across.⁴⁸ Rapid light-rail public transit serves the neighborhood and runs along the major east-west thoroughfare just north of the major town center.⁴⁹

The lighter zoned areas in the East Qingpu neighborhood plan are all residential zones planned for six to eight-story apartment

40. Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China (June-Nov. 2005) (on file with author) [hereinafter Correspondence].

41. *Id.*

42. *Id.*

43. *Id.*

44. *Id.*

45. *Id.*

46. *Official Master Plan of East Qingpu New Town in Shanghai 2005* (on file with author).

47. *Id.*

48. *Id.*

49. *Id.*

buildings.⁵⁰ Blocks in the residential apartment district will vary from about 600 feet to 1200 feet in length.⁵¹ On internal residential streets, sidewalks will be 18 feet wide with a roadbed of about 36 feet in width.⁵² Planners expect the residential densities to be about the same as in parts of Berlin and Amsterdam.⁵³ The density is greater than most “new urbanist” projects developed in the United States, though lower than the density of central Vancouver or Lower Manhattan, both city models for the “true urbanist” planning movement.⁵⁴

Areas in both the town center and in a few of the other neighborhoods are planned for commercial and office uses in 15-18 story buildings.⁵⁵ There are also a few truly mixed use zones along some neighborhood streets that are basically planned for apartment buildings but with street level commercial retail, for shops, restaurants, and neighborhood services.⁵⁶ Planners placed parks, open green space, and landscaped areas throughout the neighborhood plan, a design element not uncommon in new development projects in China.⁵⁷

An interesting aspect of the East Qingpu plan is how pedestrian friendly the plan is.⁵⁸ There will be onsite parking (split between surface and underground of about 3.5 spaces for every 4 units) in the apartment zones to accommodate widespread private automobile ownership.⁵⁹ Unlike most neighborhoods in the United States, however, life will not be completely automobile dependent. One can easily walk, bike or take public transit nearly anywhere. Everyone is expected to be able to live, work, and play without owning or using an automobile.

50. *Id.*

51. Correspondence, *supra* note 40.

52. *Id.*

53. *Id.*

54. See generally Trevor Boddy, *Vancouverism vs. Lower Manhattanism: Shaping the High Density City*, ACHNEWSNOW.COM, Sept. 20, 2005; ROBERT STEUTERVILLE, *New Urbanism and Traditional Neighborhood Development*, in NEW URBAN NEWS (2000).

55. *Official Master Plan of East Qingpu New Town in Shanghai 2005* (on file with author).

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.*

Planners are hoping to maintain a transit-mode split in these new satellite cities as close as possible to the existing transit-to-job mode split in the main city of Shanghai (which now has about 2 million automobiles). That transit-mode split is now as follows: trips to work by walking about 29%; by cycling about 25%; by public transit about 24%; by electromobile about 6%; by motorcycle about 5%; and by private automobile about 9% (and about 2% by other methods).⁶⁰ The key to maintaining the neighborhood as one not automobile dependent is the very limited parking available beyond the onsite apartment parking in the residential areas.⁶¹ The very limited parking near the major town center and near the rapid transit stop is expected to be largely reserved for government officials and private business executives.⁶² Also, some streets will be closed completely to motor vehicles.⁶³ Maintaining this limited parking planning model in the years ahead may prove to be a precarious balancing act as automobile ownership increases in China.

VII. SOME FINAL THOUGHTS: SNOB ZONING AND BUILD OUT PERIOD

In the Qingpu new neighborhood, planners intend it to be simply much more convenient to walk, cycle, or take public transit than to drive a car nearly anywhere in the immediate core area of the city. This plan is a near complete inversion of the modern American land development prototype.⁶⁴

Time will tell, of course, how the city of Qingpu implements this satellite city plan as development goes forward. We will not have to wait long. The build out period for the entire new city of Qingpu is estimated to be 15 years.⁶⁵

60. Knoflacher, *supra* note 31, at 19.

61. Correspondence, *supra* note 40.

62. *Id.*

63. *Id.*

64. See ANDRES DUANNY, ET AL., *THE RISE OF SPRAWL AND THE DECLINE OF THE AMERICAN DREAM* (2000).

65. Correspondence, *supra* note 40.