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China's New Towns, Housing, Sprawl, the Automobile and Sustainable Development

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CHINA'S NEW TOWNS, HOUSING, SPRAWL, THE AUTOMOBILE, AND SUSTAINABLE DEVELOPMENT*

Abstract

This powerpoint presentation looks at the planning and design of China's new satellite cities, particularly sustainable development issues such as urban sprawl, housing, the automobile, and new urbanism, with a comparative view as to how China's urban planning, energy, and environmental policies may affect life in the United States and in an expanding Europe.

By

Edward H. Ziegler**

I. Growth Management in China

China's economic growth during the past twenty years (of 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 has been working to significantly transform China's built environment. Over 300 million peasants moved from the

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¹ TED C. FISHMAN, CHINA INC. 12 (2005). Lu Xinshe, *Land Use and Planning in China* (2003) www.cipicu.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*, THE ECONOMIST, March 5, 2005 at 3; Michael Elliott, *A New China Rises*, TIME, June 27, 2005 at 28.

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countryside to China's cities during that time-- the largest migration in world history.² New towns are springing up in rural areas and existing cities are booming. Much of this growth has been largely uncontrolled and poorly planned.³ Moreover, growth in China is far from over. China's urban areas will have to be developed to accommodate upwards of 500 million more peasants (nearly twice the population of the USA) who are expected 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 national land use planning and sustainable development policy framework for managing urban growth.⁵ These policy initiatives 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 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 are to provide for economic development through the efficient use of land and resources, to minimize waste and curtail the excessive infrastructure costs of uncontrolled urban sprawl, to promote rational and efficient

² FISHMAN, *supra* note 1, at 7; Gordon Feller, *Urbanization's Pacifying Power*, WORLD & I, March/April 2005 at 50; Dian Tai, *Regulation of Land Use Shows Progress*, China Daily, Aug. 14, 2004, http://www.chinadaily.com.cn/english/doc/2004-08/14/content_365275.htm.

³ Howard W. French, *Chinese Cities Chase Expansive Dreams*, THE DENVER POST, Aug. 6, 2004 at 27A.

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

⁵ Xinshe, *supra* note 1, at 17-38.

⁶ Xinshe, *supra* note 1, at 23-29.

⁷ Xinshe, *supra* note 1, at 30-36.

infrastructure and transportation systems, and to promote 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.⁹ Urban planning, zoning, and growth management are typically left to local cities and counties acting in pursuit of their own self-interest. Over the last half century, this framework for growth in the United States has produced a landscape of low-density automobile-dependent sprawl.¹⁰ This pattern of hypersprawl development requires an enormously expensive infrastructure and a huge consumption of energy for transportation.¹¹ 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.¹² The United States, which has less than 5 percent of the world’s population, now consumes about 25 percent of global oil production, and most of this oil is consumed by private passenger

⁸ Xinshe, *supra* note 1, at 21-23. And see *International Conference on Land Use Planning and Policy Sustainable Land Decisions in Economically Dynamic and Densely Populated Areas*, Beijing, China, 10-12 May 2004, Chinese Ministry of Land and Resources, the German Federal Ministry of Education and Research and UNESCO; Sarah Schafer & Anne Underwood, *Building in Green*, NEWSWEEK, Sep. 28, 2005; Scott Hillis, *China to Eschew Fast Growth in New Economic Plan*, ENVIRONMENTAL NEWS NETWORK, Oct. 7, 2005 <http://www.enn.com/today.html?id=8980>.

⁹ Edward H. Zielger, *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.*, at 52-53.

¹¹ *Id.*, at 43-45; Keith Schneider, *Sprawl No Antidote to Terror*, MICHIGAN LAND USE INSTITUTE, www.mlui.org, (2001) 2, <http://www.mlui.org/growthmanagement/fullarticle.asp?fileid=11872>.

¹² Robert Geddes, *Metropolis Unbound: The Sprawling American City and the Search for Alternatives*, AMERICAN PROSPECT, Nov./Dec. 40 (1997); WILLIAM FULTON ET. AL., WHO SPRAWLS THE MOST? HOW GROWTH PATTERNS DIFFER ACROSS THE U.S., SURVEY SERIES JULY 2001 (CENTER ON URBAN AND METROPOLITAN POLICY, THE BROOKINGS INSTITUTE), at 19, 20.

automobiles.¹³ If China ever achieves the present pro capita energy consumption of the United States, it will need to consume all the oil now produced throughout the world.¹⁴

China in recent years has taken significant steps toward increasing automobile production and ownership.¹⁵ In 1995, there were an estimated 10 million motor vehicles in all of China.¹⁶ By 2005, only ten 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).¹⁷ Last year China is reported to have invested about 25 billion dollars in its auto manufacturing industry.¹⁸ In 2004, China produced over two million automobiles and began exporting cars to other Asian and European countries.¹⁹ By 2007, China is expected to be producing about 14 million vehicles and plans to begin exporting automobiles to the United States.²⁰

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

¹³ Schneider, *supra* note 11.

¹⁴ Craig Simons, *Car Culture*, NEWSWEEK, May 9, 2005 40, 41.

¹⁵ Feller, *supra* note 2, at 59; Stephan Fairfield & Ofer Manor, *et. al.*, *Some Observations on Street Life in Chinese Cities*, LAND LINES, Oct. 2004 5 (Lincoln Institute of Land Policy).

¹⁶ Craig Simons, *Car Culture*, NEWSWEEK, May 9, 2005 40.

¹⁷ *Author's personal correspondence.*

¹⁸ Feller, *supra* note 2, at 50, 59. See 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*, THE DENVER POST, 30A; *Impact of China's Economic Reforms*, *supra* note 18.

²⁰ Feller, *supra* note 2.

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

²² FISHMAN, *supra* note 1, at 111; *China, Country Analysis Briefs*, EIA, July 2004, 5-6
<http://www.eia.doe.gov/emeu/cabs/china/html>.

becoming (as has the United States) a completely automobile-dependent society. 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 is surely going to increase in China, 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 fossil-fuels and greenhouse gas emissions. As David Owen points out in his recent article "Green Manhattan" published in the New Yorker magazine, high density development tends to be "green development".²⁷ This has to

²³ See *Sound Urban Plans Called*, CHINA DAILY, Thurs. May 12, 2005 4; Hubacek, *supra* note 10; Scott Hillis, Reuters, *China to Eschew Fast Growth in New Economic Plan*, ENVIRONMENTAL NEWS NETWORK, Oct. 7, 2005 <http://www.enn.com/today.html?id=8980>; Zhang Tingting, "Protective Cultivation" Applied in North China on Trial, China.org July 15, 2002; *Land Use Program Kicks Off Fourth Year*, China – U.S. Center for Sustainable Development, www.chinauscenter.org, 2003.

²⁴ French, *Chinese Cities Chase Expansive Dreams*, *supra* note 3; Yan Huang, *Urban Spatial Patterns and Infrastructure in Beijing*, LAND LINES, Oct. 2004 1. And see Fishman, *supra* note 1, at 117-122; Xinshe, *supra* note 1, at 21.

²⁵ Fishman, *supra* note 1, at 2. See Ximing Lu, *Shanghai City Comprehensive Transportation: Planning for movement and people* (Shanghai Conference), URBAN AGE, July 8, 2005.

²⁶ See Lu, *supra* note 25.

²⁷ David Owen, *Green Manhattan*, THE NEW YORKER, Oct. 18, 2004 111, 112.

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 70% of all oil consumption goes toward transportation.³⁰ In China, where over 80% 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 in the United States over 80% of the crude oil supply goes toward automobile use and transportation and why the United States, on a per capita basis, has about 10 times the energy consumption of China.³²

IV. Regional Growth and China's Satellite Cities

In this context, 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. China's major cities are already considered to be too crowded and planners are looking to decrease densities in main urban core areas of many major cities.³³

²⁸ Owen, *supra* note 27, at 12.

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

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

³¹ Hermann Knoflachner, *Urban Age so far – Mobility* (Shanghai Conference), URBAN AGE, July 2005, at 19.

³² *China, Country Analysis Briefs*, *supra* note 22, at 10.

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

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 undertaking, to say the least, as some of these new satellite towns and cities are planned to accommodate anywhere from 500 thousand to more than 1 million people.³⁵ Moreover, while these new towns are typically planned to have major automobile expressway and mass rapid transit (often light rail) connections to the main core areas of a major hub city,³⁶ 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.³⁷

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.³⁸ 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 500-600 thousand people.³⁹ 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,

³⁴ See *Greater Shanghai Master Plan for Satellite Cities* on file with author; Shing Zheng, *Shanghai, Shanghai Conference* July 2005, slide 24, www.urban-age.net; *Satellite Towns to Ease Population Pressure*, BEIJING THIS MONTH, March 1, 2004; *Beijing to Be Divided into Four Functional Zones*, BEIJING THIS MONTH, Feb. 15, 2005.

³⁵ Shiling Zheng, *Shanghai*, Shanghai Conference, Urban Age, July 2005 at slide 24.

³⁶ See Lu, *supra* note 25.

³⁷ See Zheng, *supra* note 35; Lu, *supra* note 25.

³⁸ Schafer, *supra* note 8; Ron Nyren, *Dialogue: Global Design & Development*, URBAN NEWS, Nov/Dec 2005; *US-China Housing, Shanghai Demo Project*, DESIGN COLLECTIVE <http://www.designcollective.com/Planning/TND%20-%20New%20Communities/US-China%20Housing%20Shanghai%20Demo%20Project/>.

³⁹ *Official Master Plan of Qingpu New Town in Shanghai 2005* on file with author.

though Qingpu will be only about one-fifth the geographic size of Denver. Development will first occur in stages outward from the existing city of Qingpu (population about 100 thousand) and ultimately will require major redevelopment of the city itself and new channeling of the Youdun River which will traverse the new city in many places.⁴⁰ The nearby town of Zhujiajiao, a quaint historic river village, will largely be preserved for tourism.⁴¹

In the plan for the entire new City of Qingpu, the darker shaded areas in the northern half of the plan are industrial and manufacturing zones and sites for public utilities and power generation. 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. Parks and other open green spaces are also shown on the plan. A major automobile expressway and rapid light-rail public transit will connect the new city to the main city of Shanghai to the east.⁴²

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. 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 shown near the top right hand corner of the plan. The width of this neighborhood, as shown on the plan,

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.

⁴¹ Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.

⁴² Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.

is about one mile across. Rapid light-rail public transit serves the neighborhood and runs along the major east-west thoroughfare just north of the major town center.

The lighter zoned areas in the East Qingpu neighborhood plan are all residential zones planned for 6 to 8 story apartment buildings.⁴³ Blocks in the residential apartment district will vary from about 600 feet to 1200 feet in length.⁴⁴ On internal residential streets, sidewalks will be 18 feet wide with a roadbed of about 36 feet in width. The residential densities are expected to be about the same as in parts of Berlin and Amsterdam.⁴⁵ The density, obviously, 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.⁴⁶

Some of the darker zones, both at the town center and in a few of the other neighborhoods are planned for commercial/office uses in 15-18 story buildings. 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. Parks, open green space, and landscaped areas are generously placed throughout the neighborhood plan, a design element not uncommon in new development projects in China.

⁴³ *Official Master Plan of East Qingpu New Town in Shanghai 2005* on file with author.

⁴⁴ *Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.*

⁴⁵ *Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.*

⁴⁶ *See generally* Trevor Boddy, *Vancouverism vs. Lower Manhattanism: Shaping the High Density City*, ACHNEWSNOW.COM, Sep. 20, 2005; Robert Steuterville, ed., *New Urbanism and Traditional Neighborhood Development*, NEW URBAN NEWS 2000.

An interesting aspect of the East Qingpu plan is how pedestrian friendly the plan is. 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. Unlike most neighborhoods in the United States, however, life will not be completely automobile dependent.⁴⁷ One can easily walk, bike or take public transit nearly anywhere. Everyone is expected to be able to live, work, and play, if necessary, without owning or using an automobile.

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).⁴⁸ The key to maintaining the neighborhood as one not automobile dependent is basically the very limited parking available beyond the onsite apartment parking in the residential areas.⁴⁹ 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.⁵⁰ Also, some streets will be closed completely to motor vehicles.⁵¹ Maintaining this limited parking planning model in the years ahead may prove to be a precarious balancing act as automobile ownership increases in China.

⁴⁷ See generally Boddy, *supra* note 46.

⁴⁸ See Hermann Knoflacher, *Urban Age so far – Mobility*, Shanghai Conference, July 2005, slide 19; Fishman, *supra* note 1, at 82. And see Fairfield, *supra* note 15, at 6-7.

⁴⁹ Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.

⁵⁰ Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.

⁵¹ Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.

VII. Some Final Thoughts: Snob Zoning and Build Out Period

It took me a moment to get this, but in the Qingpu new neighborhood it is intended 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. A near complete inversion of the modern American land development prototype.⁵²

Time will tell, of course, how this plan for the satellite city of Qingpu is implemented as development goes forward. We won't have to wait long. The build out period for the entire new city of Qingpu is estimated to be fifteen years.⁵³

⁵² See ANDRES DUANNY, ET AL., *THE RISE OF SPRAWL AND THE DECLINE OF THE AMERICAN DREAM* (2000).

⁵³ *Correspondence with College of Architecture & Urban Planning, Tongji University, Shanghai Tongji Urban Planning & Design Institute, Shanghai, China, June-Nov. 2005, on file with author.*