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CHINA MUST NOT “WAIT UNTIL THE EVENING”: RESISTING MASS MOTORIZATION’S ASSAULT ON BICYCLES AND MASS TRANSIT

Adam Karp

Abstract: China, and other developing nations, stand at a transportation planning crossroads—whether to follow the American highway/privatized motorization model or to optimize their existing mass transit/nonmotorized transportation model. This Comment charts the history of transportation development in China and indicates its destination in light of China’s recent embrace of the car industry as a “pillar” of the nation’s economy. It then considers motor vehicles’ adverse effects, and assesses the value of mass and nonmotorized transportation as viable alternatives. In order to stall or reverse a process not supported wholeheartedly by the Chinese citizenry, this Comment determines whether China’s internal city planning regime, environmental laws, and court system allow citizens to participate in and to challenge monumental decisions such as those affecting transportation development and the environment. Concluding that bottom-up strategies are currently ineffective, this Comment then considers top-down pressure through the United Nations Framework Convention on Climate Change (“UN/FCCC”). If not dissuaded, developing countries will undergo a chain reaction of mass motorization, building up a greenhouse gas emission debt many times over what may be reduced by the First World. Of the existing top-down strategies, the COP-3, slated for December 1997 in Kyoto, Japan, seems promising.

I. INTRODUCTION

*One must wait until the evening
To see how splendid the day has been.*

—Sophocles

The People’s Republic of China (“PRC”) currently enjoys rapid economic development,¹ but it must reconcile its potential to become the largest global market in the twenty-first century² with serious environmental problems and an “urban [transport] thrombosis . . . that slowly deprives” its

¹ While China’s GNP per capita of \$490 (1993 est.) shrinks in comparison with \$25,850 for the United States, the national product real growth rate is staggering at 11.8 percent (1994 est.) versus a meager 4.1 percent for the United States. Chris Edwards, *Current Economic Trends in Asia and the Pacific*, in *THE FAR EAST AND AUSTRALASIA* 33 (27th ed., 1996). The percentage change in GNP growth between 1980 and 1993 was 8.2 percent, higher than even Hong Kong, Singapore, and Japan. *Id.*

² See *China to Be World’s Largest Car Market*, BC CYCLE, Nov. 12, 1994, available in LEXIS, News Library, TXTNWS File.

cities “of [their] lifeblood.”³ Air pollution levels, heinous by anyone’s standards,⁴ and global warming warnings⁵ threaten to subvert plans to make the passenger car industry the “pillar” of the Chinese economy.⁶ Transportation infrastructure, in an effort to accommodate a newfangled “car culture,” is changing lanes from non-motorized and mass transit to a sprawling car-dependent mentality and freeway fever, similar to that of American Robert Moses.⁷

Ironically, China currently stands where New York City stood under Moses fifty years ago. Increasingly in the special economic zones (“SEZs”), urban renewal projects such as those in the Pudong New Area will require expenditures and human displacement of such magnitude as to rival the mid-century transformation of New York City.⁸ Perhaps China’s blind idealism will be tempered without *waiting until the evening*, before it chain-reacts throughout Asia.

³ MICHAEL RENNER, WORLDWATCH PAPER 84: RETHINKING THE ROLE OF THE AUTOMOBILE 46 (1988).

⁴ See *infra* part III.A.

⁵ See *infra* part III.B.

⁶ Chang Weimin, *Auto Sector Confident It Can Be Engine of Economic Growth*, CHINA DAILY, Feb. 24, 1997, at 51, available in Westlaw at 1997 WL 8258702.

⁷ Robert Moses could be China’s philosophical urban planning predecessor. Biographer Joseph Caro describes him as:

America’s greatest builder But what did he build? . . . To build his highways, Moses threw out of their homes 250,000 persons He tore out the hearts of a score of neighborhoods, communities the size of small cities themselves, communities that had been lively, friendly places to live, the vital parts of the city that made New York a home to its people.

By building his highways, Moses flooded the city with cars. By systematically starving the subways and the suburban commuter railroads, he swelled that flood to city-destroying proportions. By making sure that the vast suburbs, rural and empty when he came to power, were filled on a sprawling, low-density development pattern relying primarily on roads instead of mass transportation, he insured that that flood would continue for generations if not centuries, that the New York metropolitan area would be—perhaps forever—an area in which transportation—getting from one place to another—would be an irritating, life-consuming concern for its 14,000,000 residents.

JOSEPH CARO, THE POWER BROKER: ROBERT MOSES AND THE FALL OF NEW YORK 19-20 (1975). Robert Moses is a real *moshe kapoyr* (Yiddish for “reverse Moses,” a fitting term given his last name, the catastrophic results of his colossal vision, and his reluctance to publicly acknowledge his Jewish ancestry). For Moses’s apologia, see ROBERT MOSES, PUBLIC WORKS: A DANGEROUS TRADE (1970) (autobiography).

⁸ “National reforms and increasing levels of political support for Shanghai from Beijing have led to a process of ‘creative destruction’ which may be unmatched for sheer scale in recent world-wide urban history.” Kris Olds, *Globalizing Shanghai: The “Global Intelligence Corps” and the Building of Pudong* 14 CITIES (forthcoming 1997). “As any recent visitor to the city can attest, the whole city seems like one large construction site (perhaps a bombed out city would be a better analogy). In late 1995, for example, there were approximately 8000 construction projects underway in Shanghai.” *Id.*

The switch from bicycles and buses to private motorization requires moderation. Any significant transportation development must be tempered with an enlightened view of history, a responsible view toward the future (in the context of global warming, extremely high population densities, large social and fiscal costs, the disadvantages and harm caused by individual automobile ownership, China's multilateral obligations), and an openness to new, more reliable data (the finiteness of nonrenewable fossil fuels,⁹ the health effects of airborne pollutants,¹⁰ salubrious alternatives¹¹). Despite a litany of environmental laws and regulations from the national to the municipal level, and well-intentioned pronouncements, there is little evidence that China has refrained from proposals that sacrifice the environment to economic gain. This Comment investigates ways available to ensure¹² China's implementation of sustainable transportation development; this necessarily includes discouraging and challenging Chinese policies that depart from this goal.

Part II charts the history of transportation development in China and indicates where it is going in light of China's embrace of the car industry as a "pillar" of its national economy, and considers the likelihood of a mass motorization chain reaction throughout Asia as a consequence of this governmental decision. In addition, Part II illustrates the future of transportation planning in China by focusing on the Lujiazui Financial District in Pudong, the National Trunk Highway System, and the Guangzhou City Transport Project. Part III discusses motor vehicles' adverse effects, and assesses the value of nonmotorized vehicles, mass transit, and policies supporting these modes as viable alternatives. It then recommends California's Transit Village Development Planning Act to Guangzhou as an example of the sort of last-minute reforms automobile-dependent regions may require.

⁹ U.S. Energy Information Administration, *U.S. Petroleum Demand* (visited Nov. 10, 1996); U.S. Environmental Information Administration, *Table 14: Estimated Undiscovered and Ultimately Recoverable Conventional Oil Resources as of January 1, 1993* (visited Nov. 10, 1996) <<http://www.eia.doe.gov/oiaf/ieo96/tbl14.gif>>.

¹⁰ Johanna Son, *Asia-Transport: "Car Culture" Choking Region's Cities*, INTER PRESS SERVICE, Dec. 29, 1995, available in LEXIS, News Library, INPRES File.

¹¹ See *infra* part III.C-F.

¹² Under the United Nations Framework Convention on Climate Change, the Conference of Parties ("COP"), the "supreme" decision-making body of the Convention, "must make decisions 'necessary to promote the implementation of the Convention.'" Daniel Bodansky, *The United Nations Framework Convention on Climate Change: A Commentary*, 18 YALE J. INT'L L. 451, 533 (1993). "Some developed countries sought a stronger formulation, giving the COP the mandate to 'ensure' (rather than 'promote') the effective implementation of the Convention . . ." *Id.* at 533 n.487.

Part IV describes how the average Chinese citizen's ability to challenge administrative decisions under the City Planning Act of the People's Republic of China of 1989 ("CPA") and the Environmental Protection Law of the People's Republic of China of 1995 ("EPL"), as amended, register complaints with municipal governments, and use the Chinese court system to bring actions against government units and state-owned enterprises is more or less futile. Only intergovernmental environment-protecting treaties and conventions such as the United Nations Framework Convention on Climate Change ("UN/FCCC"), and using the United States's court system to restrain U.S.-based corporations like General Motors from escaping the requirements of the National Environmental Protection Act ("NEPA") on the ground of extraterritorial immunity,¹³ will work.

II TRANSIT TRANSITION IN CHINA

A. *How China Was and Is Today*

As a child, the last emperor of the Qing dynasty, P'u Yi (1908-1912)¹⁴, would tool around the Forbidden City on a bicycle as peasants who could not afford such extravagance watched in awe.¹⁵ Since the 1949 revolution, however, the proletariat has transformed China into the "Kingdom of Bikes," with 300 million of the world's fleet of 800 million (1988 est.).¹⁶ Shanghai¹⁷ and Tianjin¹⁸ appear to be the bicycle capitals of the world. More than one out of every three Chinese use bicycles exclusively (1994 est.).¹⁹ China has one of the highest densities of bike

¹³ This Comment will not discuss this issue. For some leads, see Jennifer K. Rankin, Comment, *U.S. Laws in the Rainforest: Can a U.S. Court Find Liability for Extraterritorial Pollution Caused by a U.S. Corporation? An Analysis of Aguinda v. Texaco, Inc.*, 18 B.C. INT'L & COMP. L. REV. 221 (1996); Robert Quan Lee, Comment, *International Environmental Law—The Presumption Against Extraterritorial Application of the National Environmental Policy Act: Has the Iron Curtain Been Lifted?* Environmental Defense Fund v. Massey, 986 F.2d 528 (D.C. Cir. 1993), 29 LAND & WATER L. REV. 533 (1993).

¹⁴ NEW YORK PUBLIC LIBRARY DESK REFERENCE 900 (Sheree Bykofsky et al. eds., 2nd ed. 1993).

¹⁵ MARCIA D. LOWE, WORLDWATCH PAPER 90: THE BICYCLE: VEHICLE FOR A SMALL PLANET 8 (1989).

¹⁶ *Id.* at 5.

¹⁷ In Shanghai, citizens make 73 percent of all vehicle trips on 6.8 million bicycles (growing 17 percent annually). PETER MIDGLEY, WORLD BANK TECHNICAL PAPER NO. 224: URBAN TRANSPORT IN ASIA: AN OPERATIONAL AGENDA FOR THE 1990S 14 (1994).

¹⁸ Tianjin has 4.5 million bicycles used for a startling 80 percent of all vehicle trips. *Id.*

¹⁹ Wu Weinong, *Will Cars Push Bikes Off Chinese Roads?*, CHINA DAILY, Dec. 5, 1994, at 41, available in 1994 WL 11427922.

ownership worldwide with one bicycle per 2.2 inhabitants in Shanghai and ratios as high as one bicycle per 1.43 inhabitants in other Chinese cities.²⁰ Worldwide production of passenger cars (35.7 million in 1990)²¹ was surpassed by China's production of bicycles in 1987²²—41 percent of the 99 million bicycles built globally.²³ Yet despite China's serious investment in cycling, the United States still has more bicycles per person than China (.42 versus .27; 1988 est.)²⁴ and the lowest percentage of daily passenger (not vehicle) trips made by bicycle.²⁵

To many local officials the legacy of P'u Yi has ended, for the new "emperors" drive cars. Restrictions on bicycle use have been implemented to make room for motorized vehicles.²⁶ Ironically, bicycle use has increased as bus use declined.²⁷ One reason for this is that bus transit times have slowed tremendously averaging just eight to ten kilometers per hour in the central business district ("CBD").²⁸ At this snail's pace, bicycles pave transportation fast lanes over all alternative modes. Not surprisingly, the Economic Information News predicted that bicycle demand will continue rising.²⁹

²⁰ Walter Hook, *China Mustn't Copy Western Transport*, CHINA DAILY, Oct. 15, 1996, at 42, available in Westlaw at 1996 WL 8532369.

²¹ MOTOR VEHICLE MANUFACTURER'S ASSOCIATION: FACTS AND FIGURES '91 at 30 (1991) [hereinafter MVMA].

²² MIDGELY, *supra* note 17, at 14.

²³ LOWE, *supra* note 15, at 13.

²⁴ *Id.* at 11.

²⁵ *Id.* at 32. Manhattanites make eight percent of all vehicle trips by bicycle. Since to a statistically significant extent there is more than one passenger per vehicle, one would expect the percentage of all passenger trips by bicycle to be lower. *Id.*

²⁶ In 1993, Guangzhou banned bicycles from 11 main streets during rush hours, and the Bund in Shanghai excludes them entirely. Beijing officials have considered similar bans in central Tian'anmen. See Weinong, *supra* note 19. They reason that heavy bicycle use increases the wasteful "stop and go" practice among motor vehicles, forcing them to consume one or two times as much petrol as Western countries. *Id.* But see *infra* note 249.

²⁷ In 1992, in Tianjin, one person rode a bus while four bicycled, but today the ratio of bus riders to cyclists is one to seven. *Id.* A survey of 10 large Chinese cities touts even greater ratios, with a one-to-twenty ratio of bus riders to cyclists in 1995 as opposed to one-to-ten in the 1980s. *Poll Shows Drop in Reliance on Public Transport*, XINHUA NEWS AGENCY, Oct. 16, 1995 (visited Oct. 20, 1996) <<http://wnc.fedworld.gov/cgi-bin/retrieve>>. "Growing demand in rural areas and some cities to curb the traffic jam is an important element for the development of (sic) bike market." *China: Demand for Bikes Exceeds 30 Million*, ASIAINFO DAILY CHINA NEWS, Apr. 3, 1997, at 2, available in LEXIS, News Library, ASINFO File.

²⁸ Yang Yingshi, *Realistic Approach Needed for Traffic Woes*, CHINA DAILY, Oct. 21, 1995, at 11, available in 1995 WL 11203869.

²⁹ Indications of this include the 1992 statistic of 217 bicycles per 100 families in China and the fact that one in 10 families bought a new bike in the first half of 1994. See Weinong, *supra* note 19.

Worldwide passenger car ownership was 464 million in 1993, and world motor vehicle ownership was 609 million.³⁰ The United States fired the mass automobile production starting gun at the end of World War II.³¹ As time passed, the United States faced competition from Western Europe and Japan but still produces one-fourth of the global fleet.³² In 1993, the United States had one car for every 1.78 people while China had one car for every 675.7 people.³³ At these ratios, the Organization for Economic Cooperation and Development ("OECD")³⁴ countries owned over three-fourths of the global fleet but comprised less than one-sixth of the world population (one car for every 2.33 First Worlders).³⁵ The remainder of the fleet, 24 percent, is spread out among 85 percent of the population (one car for every 37.7 Third Worlders).³⁶ If China fully embraces the automobile in the next millenium, the United States, Western Europe, and Japan will be vying for a sizable share in a huge market.³⁷

B. *How China Wants to Be*

China, like many developing countries, is now positioned at a crossroads—should it follow the highway sprawl of the United States and Western Europe or the comprehensive urban mass transit systems instituted by neighboring developing nations and Denmark and the Netherlands? World Bank technical writer and renowned researcher on non-motorized vehicles Michael Replogle assessed the situation: "[T]here is a growing transportation crisis in many lesser developed countries. This crisis is the product of . . . a mismatch between the supply of transportation infrastructure, services, and technologies and the mobility needs of the

³⁰ UNITED NATIONS DEPARTMENT FOR ECONOMIC AND SOCIAL INFORMATION AND POLICY ANALYSIS, STATISTICAL YEARBOOK: 1993 517 (1993) (40th issue).

³¹ 1950 posted worldwide automobile use at only 53 million, the United States using and producing 75 percent of the world share. RENNER, *supra* note 3, at 9.

³² *Id.*

³³ The OECD countries had 2.73 people per car. See WORLD RESOURCES INSTITUTE & UNITED NATIONS ENVIRONMENTAL PROGRAMME ET AL., WORLD RESOURCES 1996-97 82 (1996) [hereinafter WRI].

³⁴ Including the United States but excluding Mexico, Czech Republic, and Hungary for the purposes of a 1993 calculation.

³⁵ MVMA, *supra* note 21, at 30.

³⁶ *Id.*

³⁷ *China to Be World's Largest Car Market*, *supra* note 2, at 1. Demand has been estimated to reach 400,000 per year by 2000, between 1.2 and 1.6 million by 2005, and three million by 2010. *Id.* The forecast has proven accurate given the jump in car sales from 78,000 in 1990 to 234,000 in 1993. *Id.*

majority of Third World people."³⁸ The decision comes down to whether the benefits of motorization outweigh the squandering of precious national resources for the private mobility of a select few.

China's history with cars, like that of most developing nations, is short. In 1970, China had one car for every 27,707 people.³⁹ In 1985, the ratio dropped to only 2022 people per car, with over a half million cars.⁴⁰ In eight years, there were nearly three times as many cars in China (1.78 million in 1993, or about one-third of one percent of the global fleet).⁴¹ During the 1990s, the Chinese government has attempted to overhaul its few motor vehicle plants and launch itself into the lucrative status-symbol industry of private car ownership through joint ventures with Europe, the United States, Japan, and Korea.⁴² In 1994, the Strategic Development Research Team of China's Family Car forecast that China will produce 3.5 million cars annually by 2010, with two-thirds sold to private motorists.⁴³ Such an industry would raise 420 billion yuan per year from sales alone, another 80 billion yuan from tax revenue, and a bonus of 15 million new jobs.⁴⁴ Private ownership is expected to rise to 40 percent by 2005 and 60 percent by 2010.⁴⁵

There are dissenters within the Chinese bureaucracy, however. Guangzhou Mayor Li Ziliu warned that solutions to traffic in Guangzhou would not include merely building more highways and subways.⁴⁶ "It's already a victory that we have only traffic jams and not a total halt in traffic," Mr. Li said.⁴⁷ On 21 October 1995, Chinese Planning Director Lin Jianing advocated expansion and maintenance of public transport in spite of the relatively inconspicuous number of cars on the road.⁴⁸ "Blind

³⁸ RENNER, *supra* note 3, at 52.

³⁹ *Id.* at 12.

⁴⁰ *Id.* at 12.

⁴¹ WRI, *supra* note 33, at 82.

⁴² See *China Seeks More Modern Car Industry, Bars to Foreigners*, BC CYCLE, Apr. 20, 1994, available in LEXIS, News Library, TXTNWS File. See also *China: BMW Eyes China's Luxury Car Market*, XINHUA NEWS AGENCY NEWS BULLETIN, June 30, 1995, available in LEXIS, News Library, TXTNWS File. *Japan: Japan, China Join Forces to Promote Car Industry*, JAPAN CHEMICAL WK., Jan. 27, 1994, available in LEXIS, News Library, TXTNWS File.

⁴³ Tony Walker & Shi Junbao, *Chinese Gear Up for Huge Rise in Cars by 2010*, FIN. TIMES, Oct. 26, 1994, at 4, available in LEXIS, News Library, TXTNWS File.

⁴⁴ *Id.*

⁴⁵ *China to Be World's Largest Car Market*, *supra* note 2.

⁴⁶ Josephine Ma, *Good Management "Key to Traffic Flow"*, S. CHINA MORNING POST, Nov. 1, 1994, available in LEXIS, News Library, TXTNWS File.

⁴⁷ *Id.*

⁴⁸ *China to Limit Personal Car Sales and Use*, DEUTSCHE PRESSE-AGENTUR, Oct. 21, 1995, available in LEXIS, News Library, DPA File.

development of private cars” might satisfy the interests of the Ministry of Industrial Production to put a car in every family garage, but for the sake of public health, traffic safety, and congestion concerns, such a policy must be curbed.⁴⁹

Though 1996 was a year for criticism of the automotive industry policy, Lu Fuyuan, vice-minister of the Ministry of Machine-Building Industry, who was pushing “resolutely” toward the goals set by the State Council in 1994, may nonetheless be vindicated in 1997.⁵⁰ January 1997 production of all motor vehicle types surged to meet a rising demand so encouraging that industry officials, corporate executives, and other experts have called for the “rapid development of the industry.”⁵¹ Zhang Xiaoyu, director-general of the automotive department of the Ministry of Machine-Building Industry, expects 1.6 million passenger cars, buses, and trucks to be produced in 1997, up seven percent from last year.⁵² The Robert Moses-like idealism of the Ministry is exemplified by Lu’s faultfinding in policies restricting passenger car use in major cities: “[B]y world standards a city of Beijing’s size should have [three] to [four] million vehicles, instead of the little more than [one] million currently in use.”⁵³ Never mind that at the end of 1995 Beijing’s traffic facilities were “exhausted” with just one million automobiles.⁵⁴

C. *The Modernization Through Motorization “Chain Reaction”*

“The Asia-Pacific region faces the most explosive growth in motorized transport in history,” says the Sustainable Transport Action Network in Asia and the Pacific (“SUSTRAN”).⁵⁵ As developing nations discover the treasure to be had from car sales, a governmental “chain reaction” away from investment in mass transit and other areas in favor of promoting individual car ownership may result. In the past this has been accomplished with tempting joint ventures and preferential policies.⁵⁶ With

⁴⁹ *Id.*

⁵⁰ Weimin, *supra* note 6, at 51.

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Id.*

⁵⁴ Cao Min, *Improved Bus Plan Emphasized*, CHINA DAILY, Feb. 18, 1997, at 31, available in LEXIS, News Library, CURNWS File.

⁵⁵ Son, *supra* note 10.

⁵⁶ See *Shanghai Pudong New Area, Preferential Policies* (visited Feb. 11, 1997) <<http://www.china-on-web.com/pudong/policy.htm>>.

car markets reaching saturation in industrialized nations like the United States, it is “[l]ittle wonder China is one of Mr. Clinton’s ‘most favoured nations.’”⁵⁷ Just recently the State Council approved a US \$1 billion joint venture between General Motors (“GM”) and Shanghai Automotive Industry (Group) Corp. with plans to produce 100,000 mid-size Buick sedans per year to start, and eventually 300,000 per year. GM Vice President Rudolph Schlais “[expects] to control 50 percent (of the mid-size car) market share in the year 2000.”⁵⁸

If China brings automobile ownership to a per capita ratio comparable to the United States (562 cars per 1,000 people), 674.2 million passenger cars, or 35 percent more than the world’s current fleet, would be needed. Assuming adequate resources, if all countries follow the United States’s lead, total car ownership would increase to 3.146 billion, giving extraordinary profits to the automobile, oil, and highway construction industries.⁵⁹ While it is unrealistic to consider that this growth will occur within the next three decades (world motor vehicle ownership is projected to reach only 700 million in 2000 and 800 million in 2010⁶⁰), this extrapolation nevertheless predicts the potential maximum demand for automobiles.⁶¹ Alternatively, a world modeled after China’s 675.7 people per car ratio would have only 8.3 million.⁶² World oil consumption in 1995 was 21.7 to 23.1 billion barrels, or 130 quadrillion BTUs.⁶³ At current consumption levels, the world will deplete its oil reserves within 90 to 130 years; at the predicted 2015 world oil consumption levels, the currently-known oil reserves will last 60 to 85 years.⁶⁴

⁵⁷ Ian Roberts, *China Takes to the Roads*, 310 BRIT. MED. J., May 20, 1995 at 1311, available in 1995 WL 12113330.

⁵⁸ *GM Chinese Assembly Ops Joint Venture Approved by Chinese Govt*, EXTEL EXAMINER, Mar. 10, 1997, available in LEXIS, News Library, CURNWS File.

⁵⁹ EDUARD BOS ET AL., WORLD POPULATION PROJECTIONS 1994-95 18-21 (1994).

⁶⁰ WRI, *supra* note 33, at 83.

⁶¹ In a world modeled after the more modest car ownership ratio of 71.5 cars per 1000 population (or 13.99 people per car; 1993 est.), as found in Central and Eastern Europe, China would have 88.5 million cars, bringing the planetary total to 371.7 million cars (just under the world car registration level of 1985). MVMA, *supra* note 21, at 32.

⁶² WRI, *supra* note 33, at 82.

⁶³ U.S. Energy Information Administration, *World Consumption of Oil Relative to All Other Energy Sources, 1978-2015*, (visited Nov. 10, 1996) <<http://www.eia.doe.gov/oiaf/ieo96/fig25.gif>>. For more detailed calculations, contact the author.

⁶⁴ See generally *supra* note 9. U.S. petroleum demand for gasoline reached eight million barrels per day in 1996. The U.S. EIA projects that world oil consumption levels will reach 34 billion barrels or 200 quadrillion BTUs by 2015. *Id.* For more detailed calculations, contact author.

D. *Transportation Planning Examples in China*

1. *Pudong New Area and the Lujiazui Financial District*

The Pudong New Area, "China's largest development project to date," epitomizes Shanghai's Renaissance.⁶⁵ Shanghai's Vice Mayor Xu Kuangdi wants to restore what used to be a pre-1949 cosmopolitan financial center to a "golden highway," where China's blossoming tertiary sector⁶⁶ would serve as an integral hub for international economic, financial and trade matters well into the next century.⁶⁷ In order to prepare the ground for the resurrection of the Yangtze River Basin, "China's principal economic powerhouse, or 'Dragon's Head,'"⁶⁸ Shanghai must invest \$1.75 billion annually until 2000 for infrastructure improvements.⁶⁹ The nucleus of the Pudong New Area, the Lujiazui Central Finance District, covers twenty-eight square kilometers⁷⁰ and is situated opposite the Bund and Puxi district, the colonial-era business area for foreign companies.⁷¹

It is this "21st Century Bund"⁷² that was the subject of the 1992 Lujiazui International Consultation Process ("LICP"). Displeased at the dearth of sophisticated urban planning expertise in Shanghai, Mayor Zhu Rongji sought non-Chinese advice from "foreign monks," those he fancied had the benefit of an outsider's perspective and wisdom.⁷³ With the help of the French, this was the "first time in post-1949 Chinese history that the government [opened] up a high-profile large scale project to foreign involvement."⁷⁴ By May 1992, a local Shanghai-based team and the following four "foreign experts" were chosen to participate in the consultation: Richard Rogers Partnership ("RRP") (Britain), Massimiliano Fuksas (Italy), Toyo Ito (Japan), and Dominique Perrault (France).⁷⁵ In November 1992, all four firms submitted their proposals for the Shanghai

⁶⁵ Olds, *supra* note 8.

⁶⁶ Tertiary sectors include high-tech and light industry, financial institutions, and business management and commerce headquarters. *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Id.* The Pudong New Area encompasses 522-km². *Id.*

⁷¹ *Id.*

⁷² Coined by Kris Olds. *Id.*

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

municipal government's review and integration into their master plan for Lujiazui.⁷⁶

In early 1993, the Shanghai team presented three options: the first borrowed heavily from the RRP's proposal; the second reiterated the Shanghai team's proposal; and the third incorporated ideas from all proposals into the 1991 pre-LICP plan, but remained largely unaltered from the pre-LICP plan.⁷⁷ The third option was eventually chosen at least in part due to its pragmatism.⁷⁸ Though understandable in light of the large number of foreign-held leaseholds, one casualty of pragmatism could have been what RRP considered "Shanghai's critical environmental issues—energy use, housing, traffic congestion and pollution"⁷⁹

Whether China has duly considered the critical issues highlighted by RRP's plan is unclear.⁸⁰ Shanghai has dedicated itself to building an inner and outer ring road for Pudong, but if some roads are elevated, which is highly likely, it is doubtful whether bike ramps will be raised as well.⁸¹ Lessons to be learned from the LICP include the fact that now internationally-renowned "foreign monks" may exercise considerable control as "long-term consultants" over the decision-making planning

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ Pragmatic because it "required the least changes to existing infrastructure, virtually all of the leased sites were left in their original location, and overall urban form was made more distinctive through the reorganization of building massing." *Id.*

⁷⁹ Silas Chiow, *Shanghai's Great Leap Forward: A New Master Plan for Pudong*, COMPETITIONS, Summer 1994, at 26, 28.

The hallmark of Rogers' approach is his understanding of, and approach to, the transportation network which integrates the entire city of Shanghai into its folds. It is an overlapping system of separate, but interrelated networks that creates a pedestrian-friendly city and prevents buildings from becoming islands unto themselves. The light rail system is the most significant element in the transportation network. It forms a circular loop within the center of the development zone, divides it into six sectors centered on six stations, each with a parking structure with a capacity for 2,500 cars. Four of these stations connect with subways and a tram route loops the outer edge of the development zone to add additional support to the system. The tram route will share the road space with pedestrians, bicycles, buses and taxis.

Id. at 30.

⁸⁰ The detailed scale drawings and transportation planning documents necessary to draw such conclusions are quite difficult, or impossible, to get as a foreigner. Apparently, the international architectural firms had to really push for bicycles to be allowed in the area since the Chinese just wanted car parks. Various architects and planners do not believe that China will take an enlightened stance regarding public transportation until a mess has been made. E-mail interview with Kris Olds, Professor of Policy Studies at the Centre for Urban Studies of the University of Bristol (Mar. 6, 1997).

⁸¹ E-mail interview with Marilyn Beach, Senior Staff member of the Institute of Public Administration, in New York, N.Y. (Mar. 6, 1997).

processes of Chinese municipalities.⁸² In the instance of the LICP, foreign proposals took environmental concerns into account more than the Shanghainese.

But still, neighborhood input regarding the RRP plan or the LICP in general was remarkably absent or ineffective, as evidenced by the forced relocation of nearly 170,000 people from the Lujiazui District alone.⁸³ Millions of square meters of tenements razed in the heart of Lujiazui will arise miles from the CBD to make room for the techno-corporate elite.⁸⁴ Hopefully, starting from scratch will allow China to construct a transportation system that will accommodate the tens of thousands of previously displaced citizens as well as the new outcroppings.

2. *China and the World Bank ("Bank")*

The Chinese, faced with the watershed decision of how to craft their transit systems, are inspired to develop private car ownership as a result of foreign automaker investment and billions of dollars in international loans earmarked for highway development. Thus, the fact that China has not completely dismantled its public transportation system is encouraging (even though bicycles continue to face discrimination). The National Trunk Highway System and the Guangzhou City Center Transport Project are contradictory examples of international economic assistance—the former encourages the adoption of the Western private transportation model, while the latter seeks to optimize China's existing mass transit and nonmotorized vehicle system.

a. *National Trunk Highway System ("NTHS")*

According to the World Bank's Project Information Document ("PID") for the National Highway II Project (Guangdong/Hunan), "[China's] road network ranks among the sparsest in the world relative to geographic area or population and is quite unsafe."⁸⁵ To connect 95 major Chinese cities, the Ministry of Communication has prepared to lay 30,000

⁸² Olds, *supra* note 8.

⁸³ Kris Olds, *Globalization and the Production of New Urban Spaces: Pacific Rim Megaprojects in the Late 20th Century*, 27 ENV'T & PLAN. A 1713, 1737 (1995).

⁸⁴ See generally Olds, *supra* note 8.

⁸⁵ World Bank, *PID for China-National Highway II Project (Guangdong/Hunan)*, § 1 (visited 5 Mar. 1997) <<http://www.worldbank.org>>.

km. of interregional asphalt. Similar to the U.S.'s interstate highway system fashioned during the 1950s, the backbone of the NTHS would include two north-south and two east-west corridors, with the Beijing-Zhuhai (Jingzhu) Expressway receiving the highest priority.⁸⁶ This 2500-km., four-lane toll highway should be completed by 2000.⁸⁷ The Bank supports this "essential long-term solution to the serious transport problems facing China, removing infrastructure bottlenecks, facilitating interprovincial trade, and *promoting long-distance road traffic*" (emphasis added).⁸⁸ But the NTHS alone does not communicate the extent to which light and heavy rail is being supplanted by motor-vehicle-only expressways and arterials.⁸⁹ Among the risks considered by the Bank are "overly optimistic estimates of traffic growth and diversion to the project roads, key assumptions in estimating project benefits."⁹⁰ The link between motorization and highway development is transparent; international donors like the Bank and Japan are underwriting vast highway expansion with cheap loans in part to expand the market for American, European, and Japanese auto manufacturers.⁹¹

b. *Guangzhou City Transport Project ("GCTP")*

Whereas World Bank-sponsored NTHS *intercity* transportation development caters to private motor vehicle industries, the GCTP, geared to begin in earnest before summer 1997, supports *intracity* public transportation development. The PID for this project shares little similarity with the NTHS PID. The GCTP PID criticizes expensive building solutions like "new highways and urban rail systems" which favor large-scale, grandiose improvements over, or to the exclusion of, "better [traffic] management" and "the right legal and regulatory environment" for

⁸⁶ *Id.* § 2.

⁸⁷ *Id.* The Jingzhu Expressway construction has been broken down into four projects. The Second National Highway Project ("NH2") would lay the ground for sections in Guangdong and Hunan. *Id.* at § 2. Of the \$1.152 billion price tag, the World Bank is contributing 37 percent, or \$400 million to the NH2. As a result of this 278 km. stage, including interconnecting roads, nearly 40,000 people will be displaced, over 397,000 m². of private housing will be demolished, and 14 enterprises will be removed at the land acquisition and resettlement cost of roughly 6 million RMBY (renminbi, unit of Chinese currency). *Id.* §§ 14-19.

⁸⁸ *Id.* § 8.

⁸⁹ *Id.* §§ 2-3.

⁹⁰ *Id.* § 23.

⁹¹ Son, *supra* note 10.

privatizing bus operations.⁹² After being approached by Guangzhou Municipality ("Guangzhou") in 1992 for supplementary funding of the Expressway Ring Road then under construction, the Bank did something laudable. Before committing to highway expansion loans, the Bank initiated the Guangzhou Urban Transport Study ("GUTS") in order to assess comprehensive strategies for dealing with the complex transport issues at hand.⁹³

Based on the June 1994 GUTS Final Report, the Bank and Guangzhou have identified five project components.⁹⁴ It is hard to tell whether these components sufficiently meet the first recommendation of the GUTS: to create "a *public transport-oriented city center with improved management of roads and pedestrian facilities, and both physical and economic disincentives to the use of private transport*" (emphasis added).⁹⁵ One must wonder whether separated bicycle routes will adequately penetrate the CBD or if they mean leaving bicyclists alienated, such as when Guangzhou Mayor Li Ziliu banned bicycles from the inner ring road, the CBD, and other major thoroughfares last year.⁹⁶

III. DRAWBACKS TO AUTO DEPENDENCE: "MOVING PEOPLE, NOT CARS"⁹⁷

A. *Private Motoring Disadvantages*

The United States and other bike-indifferent OECD countries would learn much by looking to China to catch a glimpse of how population

⁹² World Bank, *PID for China-Guangzhou City Center Transport Project*, § 1 (visited Mar. 5, 1997) <<http://www.worldbank.org>>.

⁹³ *Id.* § 5.

⁹⁴ The five components are 1) City Center Traffic Management and Safety (giving priority to public transport, separated routes for bicycles, improved facilities for pedestrians, improved parking facilities), 2) Highway Infrastructure (Inner Ring Road improvements and two new bridges), 3) Bus Transport Improvements (injecting competition into bus services through corporatizing of existing bus companies, relegating the government to a regulatory role), 4) Motor Vehicle Pollution Control (vehicle inspection and maintenance regimes, alternative fuels, modification of existing fuels, remote sensing of highly polluting vehicles), and 5) Technical Assistance. *Id.* § 7.

⁹⁵ *Id.* § 5(a).

⁹⁶ Walter Hook, *Environmental Implications and Likely Evolution of Transport and Telecommunications Modernization in the People's Republic of China* (background paper presented for THE RENE DUBOS FORUM ON IMPLICATIONS OF SUSTAINABLE DEVELOPMENT OF THE TRANSPORTATION/TELECOMMUNICATIONS REVOLUTIONS), N.Y. ACAD. MED., June 20-21, 1996. See *Clampdown on Bicycles*, IRISH TIMES, Mar. 10, 1994, at 9, available in LEXIS, News Library, TXTNWS File. See also Susan V. Lawrence, *Imagine L.A. Banning the Automobile*, U.S. NEWS & WORLD REP., Sept. 27, 1993, at 14, available in LEXIS, News Library, TXTNWS File.

⁹⁷ The motto of SUSTRAN. Son, *supra* note 10.

increases may exert irremediable congestion pressures on already burdened megacities. Drawbacks to continued use of motorized vehicles are legion. Perhaps the most conspicuous indication of the "tragedy of the commons"⁹⁸ is the traffic jam. Building more roads is not the answer to congestion.⁹⁹ Travel speeds in the CBD rarely exceed a crawl, and because of this, economic development remains in an infantile state.¹⁰⁰ Another side-effect of congestion is that it frustrates access to injured people during the "golden hour," the time window for medical intervention after which the chance of death rises dramatically.¹⁰¹ Motor vehicle congestion also contributes to tropospheric ozone, which develops when sunlight interacts with nitrogen oxides and hydrocarbons and which causes photochemical smog and economic losses.¹⁰²

Community severance, aesthetic degradation, increased vulnerability to natural disasters and human error are all adverse side-effects of private motorist-focused transportation development. When tailgaters and abrupt lanechangers merge with mixed speed and poorly-protected commuters, injury and death is certain. In 1995, more people died in Chinese traffic than in the entire European Union,¹⁰³ and the collision death rate for

⁹⁸ Garrett Hardin, *The Tragedy of the Commons*, 162 *SCI.* 1243 (1968). This classic article illustrated how human freedom is always contingent on scarcity. Private motoring resembles Hardin's example of the grazing commons, where the equilibrium of grassland to cows was disrupted when each farmer kept increasing his herd of cows, which thereby stripped the land of its nutrients so that the land ultimately supported no cows. One person in her one car on a clear road can get from place A to place B in no time. But when five million people get the same idea at roughly the same time, people get nowhere fast. Hence, the tragedy of the "car culture" commons.

⁹⁹ While the knee-jerk solution would appear to call for heavy outlays for new road networks and maintenance of old ones, in cities like Shanghai and Bangkok, this would require razing long-standing buildings, displacing citizens, and, ironically, attracting the nuisance of more congestion as riders quickly take up the road capacity's freshly-expanded slack. WRI, *supra* note 33, at 85.

¹⁰⁰ For example, because of the 5.6 mph average of Bangkok traffic, investors have reconsidered opening offices in the city center. MIDGELY, *supra* note 17, at 16. In the OECD countries, studies have shown that the central business districts in Manchester, Milan, Ursonomiya, and Trondheim had morning peak period speeds of less than 12.4 mph in 1990. *Id.* Congestion, said the Confederation of British Industry in 1989, costs "\$24 billion a year—including employee time lost through tardiness, and inflated goods prices resulting from higher distribution costs." See LOWE, *supra* note 15, at 17. In 1984, the U.S. Federal Highway Administration attributed only a \$9 billion annual loss from traffic jams, but expected a fivefold increase by 2005. *Id.*

¹⁰¹ Roberts, *supra* note 57.

¹⁰² LOWE, *supra* note 15, at 15. Ozone has been shown to reduce soybean, cotton, and other crop yields by as much as 5 to 10 percent, costing the United States over \$5 billion. *Id.* The U.S. National Crop Loss Assessment Program found that ozone results in annual yield losses of \$1.9 billion to \$4.5 billion for corn, wheat, soybeans, and peanuts. RENNER, *supra* note 3, at 36.

¹⁰³ A 1995 report stated that in the European Union, 55,000 people died, 1.7 million were injured, and 150,000 were permanently disabled from traffic snarls. WRI, *supra* note 33, at 87. Between 1986 and 1995, traffic accidents in China rose from 48,000 to 270,000, economic losses increased from 500 million

children was 18.7 per 100,000, more than five times that in Britain.¹⁰⁴ Besides direct injury from collisions, motor vehicles indirectly harm people through second-hand airborne pollutants.¹⁰⁵ Medical costs from car and truck emissions are staggering.¹⁰⁶ Emissions also create ambient noise pollution¹⁰⁷ and acid rain.¹⁰⁸ Finally, a decision in favor of middle-class private motoring traditionally handicaps poor people who must either pay proportionately higher transportation costs on public transit as fares increase to compensate for reduced ridership (assuming it has not been abandoned), or forgo access altogether.¹⁰⁹

B. Motor Vehicles and Global Warming

Virtually all scientists agree that the mean global temperature will rise will rise by 1.5-4.5°C in the next century.¹¹⁰ "We are returning hundreds of millions of years worth of accumulated CO₂ to the atmosphere within the space of a half-dozen generations."¹¹¹ Seventeen percent of worldwide carbon dioxide comes from motor vehicle emissions (1988 est.).¹¹² China is currently the second highest carbon dioxide polluter in the world.¹¹³ As China reaches "developed" status on par with the United

yuan to 1.5 billion yuan, casualties jumped from 30,000 to 160,000, and fatalities leapt from 5,500 to 70,000. *China Plans to Popularize Traffic Regulations*, XINHUA NEWS AGENCY, Apr. 1, 1996, available in LEXIS, News Library, TXTNWS File; *Traffic Accidents Claim 5,500 Lives*, XINHUA NEWS AGENCY, Aug. 9, 1996, available in LEXIS, News Library, TXTNWS File. The European Union consists of roughly 371 million people (14.8 fatalities per 100,000), less than one-third that of China (5.8 fatalities per 100,000). Global roadway fatalities were 885,000 in 1993 (15.5 per 100,000). WORLD POPULATION PROJECTIONS 1994-95 at 21 (Eduard Bos et al., eds. 1994). WRI, *supra* note 33, at 87.

¹⁰⁴ Roberts, *supra* note 57.

¹⁰⁵ See WRI, *supra* note 33, at 86; MIDGELY, *supra* note 17, at 18-19. For the proposition that China's cities are among the worst polluted, overpopulated, and rapidly-growing in the world, see World Resources Institute, *Urban Life in China* (visited Nov. 7, 1996) <<http://www.wri.org/wri/enved/giants/ch-urb.htm>>.

¹⁰⁶ Though statistics do not exist for Asia, the American Lung Association's findings may prove illustrative insofar as Americans pay health costs worth "between \$4.43 billion and \$93.49 billion per year due to automotive and truck exhaust pollution . . ." MIDGELY, *supra* note 17, at 19.

¹⁰⁷ WRI, *supra* note 33, at 87.

¹⁰⁸ RENNERT, *supra* note 3, at 36.

¹⁰⁹ WRI, *supra* note 33, at 87.

¹¹⁰ *Information Unit on Climate Change, Climate Change Fact Sheet 1: An Introduction to the Science of Man-Made Climate Change* (visited Nov. 7, 1996) <<http://www.unep.ch/iucc/fs001.html>>. *Information Unit on Climate Change, Understanding Climate Change: A Beginner's Guide to the UN Framework Convention* (visited Nov. 7, 1996) <<http://www.unep.ch/iucc/begincon.html>>.

¹¹¹ *Information Unit on Climate Change, Climate Change Fact Sheet 26: Fuel and the Carbon Cycle* (visited Nov. 7, 1996) <<http://www.unep.ch/iucc/fs026.html>>.

¹¹² LOWE, *supra* note 15, at 16.

¹¹³ WRI, *supra* note 33, at 316.

States, its motor vehicles will single-handedly contribute 6.3 billion metric tons, or over 19 percent of the global annual carbon dioxide emissions.¹¹⁴

The predicted rise in temperature may produce grim side effects, which would strike the Third World with particular tenacity. The Intergovernmental Panel on Climate Change ("IPCC") in 1995 predicted that a worldwide average temperature increase of 1.5° to 4° Celsius will melt the polar regions sufficiently to raise the average sea levels by 20 centimeters by 2030.¹¹⁵ The projected rise of 50-to-65 centimeters before 2100 could "Atlantis-ize" Pacific islands and coastal cities.¹¹⁶ Tropical regions fare poorly from changing precipitation patterns and higher surface temperatures, including reduced crop yield,¹¹⁷ desertification,¹¹⁸ heat waves,¹¹⁹ floods,¹²⁰ and pandemic malaria.¹²¹ Governments might have the foresight to subsidize inland development for the relocation of "floods of environmental refugees seeking to avoid famines,"¹²² but few will have the wherewithal to assuage the murderous scavenging for resources and rise in intra- and international militancy.¹²³

C. *Ode to the Bicycle*

Charles Komanoff, New York cycling activist quips, "Bicycling remains one of New York City's few robust ecological expressions, . . . a living, breathing alternative to the city's domination by motor vehicles. There is magic in blending with traffic, feeling the wind in one's face, the sheer fact of traversing the city under one's own power."¹²⁴ Surprisingly, it is the industrialized nation which has the highest number of bicycles per capita, the Netherlands having one bike for every 1.27 people (the highest in the world) (1985 est.).¹²⁵ Despite the fact that bike ownership in First

¹¹⁴ *Id.*

¹¹⁵ *Information Unit on Climate Change, Climate Change Fact Sheet 121: How Climate Change Could Impact Southeast Asia* (visited Nov. 7, 1996) <<http://www.unep.ch/iucc/fs121.html>>.

¹¹⁶ *Id.* See also Panos, *Global Warming* (visited Nov. 7, 1996) <http://www.oneworld.org/panos/glbl_wrm.html>.

¹¹⁷ *Climate Change Fact Sheet 121, supra note 115.*

¹¹⁸ Panos, *supra note 116.*

¹¹⁹ *Id.*

¹²⁰ *Climate Change Fact Sheet 121, supra note 115.*

¹²¹ Panos, *supra note 116.*

¹²² *Id.*

¹²³ *Climate Change Fact Sheet 121, supra note 115.*

¹²⁴ LOWE, *supra note 15*, at 22.

¹²⁵ Other OECD countries topping the list include (1988 est. unless otherwise specified): West Germany (1:1.35, 1985 est.), Japan (1:2.0), the United States and Australia (1:2.38). *Id.* at 11.

World countries rivals or surpasses car registration, in the United States, at least, one rarely sees a cyclist unless she is snaking through traffic or until it is too late. Bicycles in developing nations, however, are far more conspicuous, even though the ratios of bikes to people are one-half to one-thirteenth the ratio of OECD countries. China, for example, has one bike for every 3.7 people.¹²⁶ Though a concern for the environment shares some credit for this phenomenon, the truth is that economic desperation and twenty years of haphazard overindustrialization play the largest role.¹²⁷ From the First Five Year Plan (1953-1957) to the Cultural Revolution (1966-1976), China experienced a “generation gap”¹²⁸ of skilled urban planners, forcing it to seek industrial and military greatness rudderlessly. Trained individuals, had they not been dismissed by Mao, might have been able to incorporate the zealous wishes of Communist Party leaders into manageable, rational city plans.¹²⁹ As a result, urban centers underwent an industrialization metamorphosis where production came before all else, including aesthetics, efficient transportation systems, and zoning.¹³⁰

Bikes are easier on Third World budgets than cars.¹³¹ In India and Africa, bicycles can provide a safe and humane alternative to “headloading” and “backloading” (where people carry water, food, or other supplies on their heads, backs, or shoulders).¹³² Bicycles can also be used as “a paddy thresher, a peanut sheller, or a water pump.”¹³³ The Washington, D.C.-based Institute for Transportation and Development Policy has begun exporting mountain bikes to the Third World as an all-terrain, rugged update to the delicate, flat-prone English roadster of yesteryear.¹³⁴

Though bicycles offer a modicum of privacy not always available on a bus or subway train, Americans use them for only 0.7 percent of all trips,

¹²⁶ Mexico and South Korea (1:6.25, 1985 est.), India (1:16.7, 1985 est.). *Id.*

¹²⁷ See Yichun Xie & Frank J. Costa, *Urban Design Practice in Socialist China*, 13 *THIRD WORLD PLANNING REV.* 277, at 278-79 (1991). See also interview with Kam Wing Chan, professor of geography at the University of Washington (Feb. 18, 1997).

¹²⁸ David Wilmoth & Dean Forbes, *Opportunities for Urban Planning in Tianjin, China*, 26 *AUSTRALIAN PLANNER* 19, at 31 (1988).

¹²⁹ See generally *supra* note 127.

¹³⁰ *Id.*

¹³¹ See LOWE, *supra* note 15, at 23, 30. See also *International Bicycle Fund, Infrastructure Policy, Planning, and Design* (visited Mar. 2, 1997) <<http://www.halcyon.com/fkroger/bike/design.htm>> for an excellent global directory of ways to implement pro-bicycle infrastructure.

¹³² *Id.*

¹³³ *Id.* at 27.

¹³⁴ *Id.* at 30.

according to the Federal Highway Administration.¹³⁵ From the standpoint of energy efficiency, the bicycle beats all motorized and non-motorized alternatives, even walking, since it acts as a mechanical exoskeleton, a gearbox for human legs.¹³⁶ Of course, when considering the most efficient movement of people per hour, mass transit takes advantage of economies of scale not available to bicycles, and provides mobility at a more modest financial and environmental cost than solo driving.¹³⁷ Intermodal solutions, which take advantage of benefits from both bicycles and buses, include bike-and-ride programs, requiring little more than bus-mounted bike racks and cycle parks.¹³⁸

Bicycling is public-spirited,¹³⁹ farsighted, and healthy.¹⁴⁰ The Netherlands and Denmark have earned the civic trust of their citizens to become Western Europe's exemplary industrialized cycle societies.¹⁴¹ The 1970s saw the expansion of *woonerven*, or "living yards," residential streets closed to cars except when invited in as "guests"; otherwise, cyclists and pedestrians had priority.¹⁴² Before he became U.N. Secretary General of the Centre on Human Settlements in 1994, Jorge Wilhelm applied what he called "pedestrianization"¹⁴³ to the streets of Curitiba, Brazil, to the overwhelming support of its inhabitants.¹⁴⁴ And in Kasukabe City, Japan has optimized limited parking space by developing a computerized twelve-story tower with a capacity of over 1500 bicycles.¹⁴⁵

¹³⁵ 1993 estimate. About the same level as in 1983. Andrew Stern, *Bicycling May be Pushed into U.S. Cultural Mainstream*, BC CYCLE, May 13, 1993, available in LEXIS, News Library, ARCNEWS File. This is so even though over half of American trips and more than three-fourths of British trips are less than five miles. Lowe, *supra* note 15, at 18-19.

¹³⁶ Stern, *supra* note 135, at 21. See also WRI, *supra* note 33, at 93.

¹³⁷ WRI, *supra* note 33, at 93.

¹³⁸ Lowe, *supra* note 15, at 19.

¹³⁹ In Bogotá, Colombia in 1983, for example, Mayor Augusto Ramirez Ocampo gave back "the city for the citizens" by shutting down 33 miles of arterial roads every Sunday morning for the exclusive use of bicycles, roller skates, and pedestrians. Lowe, *supra* note 15, at 21.

¹⁴⁰ *Id.*

¹⁴¹ *Id.* at 35. See also WRI, *supra* note 33, at 96.

¹⁴² Lowe, *supra* note 15, at 36.

¹⁴³ Jane Richards, *Jorge Wilhelm: Desiring Global Change*, 67 ARCH. DESIGN 14, 15 (Jan-Feb 1997).

¹⁴⁴ Jorge Wilhelm's life story is tremendously inspiring. *Id.* Even non-architects should think about picking up his 1996 fiction book, where he introduces his vision of the "New Renaissance," an urban planning period consciously preferring ecology and substance to wasteful glitz, not sacrificing functionality to fashion. JORGE WILHEIM, FAX: MESSAGES FROM A NEAR FUTURE (1996).

¹⁴⁵ In 1982, it was "the most sophisticated bicycle system in the world." MICHAEL REPLOGLÉ, BICYCLES AND PUBLIC TRANSPORTATION: NEW LINKS TO SUBURBAN TRANSIT MARKETS 56 (2nd ed. 1983).

While industrialized countries are slowly realizing the need for bicycle transportation, developing nations have taken positions adverse to bicycles. Indonesia and Bangladesh have discouraged cycle rickshaws by taxing them out of existence, banning them entirely, or dumping them into the sea.¹⁴⁶ Governments discriminate against human-powered vehicles because they are "backward," "inhumane," and embarrassing obstacles to modernization.¹⁴⁷ Non-governmental lending organizations have done more to bolster this view than moderate it.¹⁴⁸

D. Disincentives to Private Motoring

Vehicle and gas costs, though substantial, rarely reflect the full cost of driving a car. Externalities such as highway construction, medical treatment for diseases and organ injury caused by air pollution and trauma, and productivity loss from traffic delays cost the United States \$300 billion annually.¹⁴⁹ The only real way to convey this message to car commuters is by hitting them in the wallet with strict internalization of all external costs, and shunting those monies to further subsidize non-motorized and mass transport.¹⁵⁰ In 1996, the U.N. Department for Policy Coordination and Sustainable Development ("DPCSD") called for policies to force the pace of

¹⁴⁶ Lowe, *supra* note 15, at 28.

¹⁴⁷ *Id.* at 29.

¹⁴⁸ Michael Replogle, former president of the Institute for Transportation and Development Policy, noted that "the World Bank—a principal source of urban transport funds in the developing world—published a 400-page 1988 study of China's transport sector that fail[ed] to even mention the word bicycle." *Id.* *But cf.* THE WORLD BANK, DEVELOPMENT IN PRACTICE, SUSTAINABLE TRANSPORT: PRIORITIES FOR POLICY REFORM (1996). *See also* MICHAEL REPLOGLE, NON-MOTORIZED VEHICLES IN ASIAN CITIES, WORLD BANK TECHNICAL PAPER NO. 162, ASIA TECHNICAL DEPARTMENT SERIES (1992); THE WORLD BANK, NONMOTORIZED VEHICLES IN TEN ASIAN CITIES: TRENDS, ISSUES, AND POLICIES; THE WORLD BANK, WORLD BANK TRANSPORTATION, WATER & URBAN DEVELOPMENT DEPARTMENT TRANSPORT DIVISION REPORT NO. TWU 20 (March 1995).

¹⁴⁹ WRI, *supra* note 33, at 88.

¹⁵⁰ *Id.* Some might question whether the redistribution of income from car commuters to mass transit and nonmotorized vehicle services is equitable. But this way of characterizing full-cost road pricing begs the question since it does not recognize that car commuters already enjoy considerable subsidies. Asking private motorists to absorb their share of the societal costs produced by driving alone corrects a preexisting inequity between private motorists and those who bear the brunt of the externalities. Furthermore, because full-cost road pricing would probably force many drivers to carpool or give up driving entirely, it is crucial that effective mass transit or nonmotorized vehicle alternatives exist. Such alternatives could require significant up-front investment. In the case of China, the alternative is available, and merely requires optimization.

change in the transportation and energy sectors.¹⁵¹ The two major conclusions called for “strict internalization of all external costs and benefits” as far as feasible, and greater international cooperation in the form of “more effective and stringent regulatory frameworks, . . . [and] fiscal and pricing mechanisms for restraining transport demand, especially fuel or energy taxes”¹⁵² Concrete recommendations included the following.¹⁵³

- “concentrating high-density residential development areas, together with trip-attracting destinations in areas well served by public transport;”¹⁵⁴
- “using revenues from tolls, parking charges, vehicle registration fees and taxes to finance public transport;”¹⁵⁵
- “restricting access to town centres by parking charges, tolls, or outright bans;”¹⁵⁶
- “extension of public transport network coverage, capacity and frequency;”¹⁵⁷
- “enhancement of speed and accessibility, e.g., by designated lanes for public transport and car pooling;”¹⁵⁸
- “improved comfort and security;”¹⁵⁹

¹⁵¹ United Nations Department for Policy Coordination and Sustainable Development [hereinafter DPCSD], *Energy and Transportation Issues* (visited on Nov. 7, 1996) <gopher://gopher.un.org/00/esc/cn17/1995-96/finance/transpor.txt>.

¹⁵² *Id.*

¹⁵³ Of course, nowhere did the report mention bicycles, notwithstanding mention of “park-and-ride” facilities which probably just refer to cars. *Id.*

¹⁵⁴ *Id.*

¹⁵⁵ *Id.* See also WRI, *supra* note 33, at 89, 92; LOWE, *supra* note 15, at 36. Consider the fiscal fortitude of Denmark which, in 1987, applied a 355 percent sales tax on gasoline and, in 1982, a 186 percent sales tax on automobiles. *Id.* at 40. The Danish Ministry of Transport described the car tax as one car for the price of three. *Id.* at 37.

¹⁵⁶ DPCSD, *supra* note 151. See also WRI, *supra* note 33, at 89; LOWE, *supra* note 15, at 19; Margo Pfeiff, *Destination: Brazil; Brazil's Clean Little Secret; South of Smoggy. Crime-ridden Rio Lies Flower-bedecked Curitiba—a City Made for Walking*, L.A. TIMES, Feb. 18, 1996, at Travel, Part-L, Travel Desk (for a intimate history of Curitiba's remarkable transformation), available in LEXIS, News Library, LAT File.

¹⁵⁷ DPCSD, *supra* note 151.

¹⁵⁸ *Id.* Harvard professor John Kain suggested switching to dedicated bus corridors and priority busways instead of paying more for less in the form of light and heavy rail. Wendell Cox, *Mass Transit Needs to Reverse Direction*, DETROIT NEWS, June 4, 1993, at 11A, available in LEXIS, News Library, DETNWS File. One such theme-park-style proposal, Taxi 2000, came from the Raytheon Company. World Resources Institute Environmental Education Project, *Taxi 2000: Personal Rapid Transit* (visited Nov. 7, 1996) <<http://www.wri.org/enved/car/tgc-taxi.html>>.

¹⁵⁹ DPCSD, *supra* note 151.

- “expanded parking at main transit terminals and ‘park-and-ride’ facilities in suburban areas ‘[T]eleworking’ and ‘teleshopping’ might [also] be encouraged or reinforced by public policy to reduce the demand for low-occupancy commuter travel.”¹⁶⁰

E. Implications of California’s Transit Village Development Planning Act for Guangzhou

From a macro view, land use frames the transportation discussion. After all, if cities decentralized enough to form scores of self-sustaining neighborhoods, trip distances and motorized transportation demand would fall.¹⁶¹ Suburban flight, de facto segregation, per capita income increases and a corresponding demand for more living space, dispersed employment patterns, lax controls on the conversion of rural/agricultural land to urban space,¹⁶² and population pressures have forced cities to grow centrifugally.¹⁶³ On the other hand, total decentralization risks institutional redundancy where one central location may suffice. A moderate solution to this tension between centrifugal growth and decentralization is to create “transit village” magnets which cluster communities around mass transit hubs giving them rapid, cheap, and secure access to long-range sites.

California passed the Transit Village Development Planning Act of 1994 (“TVDPA”) with the hope that “clustering housing and commercial development around rail transit stations, called transit villages,” would gain momentum and revive transit ridership.¹⁶⁴ The TVDPA gives financial incentives for new development close to transit stations,¹⁶⁵ and grants qualifying districts the ability to adopt a “transit village plan” which acts as a covenant binding on all local public works projects, tentative or parcel maps, and zoning ordinances.¹⁶⁶ Such an act may succeed in reversing the

¹⁶⁰ *Id.*

¹⁶¹ Walking is a traffic decongestant. Given that people live within walking distance of their primary destinations (e.g., shopping, transit, education, work), private-motorized miles traveled would necessarily decrease and parking lots would be available for more productive uses.

¹⁶² Cf. John F. Kain & Liu Zhi, *Avoiding Common Errors in Transport and Urban Development Policy* 11-12 (background paper presented for INTERNATIONAL SYMPOSIUM: “GUANGZHOU TO STRIVE FOR A MODERN INDUSTRIALIZED METROPOLIS IN THE 21ST CENTURY, 1994”) (arguing that serious restrictions on the conversion of agricultural land reduce living standards and productivity, and unnecessarily increase overcrowding).

¹⁶³ *Id.*

¹⁶⁴ Transit Village Development Planning Act, CAL. GOV. CODE § 65460.1 (West 1996).

¹⁶⁵ *Id.* § 65460.3.

¹⁶⁶ *Id.* § 65460.9.

transportation gridlock afflicting Los Angeles, a “20th Century city”¹⁶⁷ whose physical development took place primarily after the invention of the internal combustion engine, and whose land use arrangements were shaped by private motoring technologies rather than rail or nonmotorized thoroughfares.¹⁶⁸ Guangzhou, though definitely not a “20th Century city,” could resemble—if it hurriedly shifts its transportation technologies from mass transit and bicycles to automobiles—Bangkok, Mexico City, or even Los Angeles in the not-so-far future.¹⁶⁹ Hong Kong and Singapore, although Chinese metropolises experiencing economic vitality, are not likely models for Guangzhou’s urban spatial and transportation development.¹⁷⁰ Chinese planners should therefore keep Guangzhou’s transportation advantage in mind, and consider the motivation for California’s passing the TVDPA, when balancing the equities of mass motorization.

F. *More Recommendations*¹⁷¹

- Reserve private transit highway use for freight and high-occupancy carpools.¹⁷² Economies of scale are best taken advantage of when one vehicle satisfies the needs of many people.
- Give downtown employers economic incentives for showers, lockers, and bike rooms instead of employer-paid parking.

¹⁶⁷ Kain & Liu, *supra* note 162, at 5. Los Angeles, Bangkok, Jakarta, Mexico City, Dallas, and Houston, are “20th Century cities” with heavily dispersed employment patterns. *Id.* “Increases in metropolitan population and per capita income, and declines in marginal cost of intra-city passenger transportation flatten density functions” (e.g., by not passing on full-cost road pricing). *Id.* at 6. Density functions flatten when city inhabitants gravitate away from the CBD and ripple outward to the edges of the city.

¹⁶⁸ *Id.*

¹⁶⁹ *Id.* at 5.

¹⁷⁰ *Id.* at 4-5. “Hong Kong and Singapore . . . are more the exceptions that prove the rule than examples of the path Guangzhou’s urban development is likely to take.” *Id.* at 5.

¹⁷¹ For recommendations geared toward Guangzhou, see John P. Keith, *The New York Urban Experience: Lessons for Guangzhou*, in GUANGZHOU TO STRIVE FOR A MODERN INDUSTRIALIZED METROPOLIS IN THE 21ST CENTURY 111 (Mai Zhi ed., 1994).

¹⁷² A provisional solution for car-dependent cities is *three-occupant* carpooling. Three-occupant carpooling would transport 1500-2400 persons per hour per lane (or more, since the other two passengers would presumably have driven their own cars, thereby taking up more lane space), at a cost of US\$.04-.08 and 6.322 grams emission (including carbon monoxide, hydrocarbons, nitrogen oxides, sulfur oxides, aldehydes, and suspended particulates) per passenger kilometer; anything less would still not compete with the efficiency of bus or rail transit. See WRI, *supra* note 33, at 93.

- Encourage a lower fashion threshold.¹⁷³
- Invest in developing human-powered transportation. This may include roller blades.¹⁷⁴ Encourage the use of lightweight steel alloys, such as chrome-molybdenum, to strengthen bicycle and trishaw frames. Utilize complex gearing, good ball bearings, and electric battery and biogas motors to maximize energy distribution while allowing for momentary assistance when transporting large loads.¹⁷⁵

IV. SUSTAINABLE TRANSPORTATION DEVELOPMENT IN CHINA: "PRESSURE POINTS" FOR REFORM

Perhaps the most immediate, far-reaching, technologically-feasible way to dramatically reduce greenhouse gas ("GHG") emissions, air pollution, and global nonrenewable energy consumption, while simultaneously facilitating sustainable development, is through comprehensive surface transportation reform. Nonmotorized vehicles, namely the bicycle, must receive the respect and accommodation they deserve as part of an international strategy fully recognizing the "common but differentiated responsibilities" and "special concerns" of developing countries.¹⁷⁶ Clearly, heavily subsidizing highways and fostering an automotive spirit to become the pillar of the national economy are two actions at odds with rational decision-making. The "promise of Pudong" (and future financial centers) lies not on a motor vehicle assembly line or in thousands of kilometers of road networks, but in tertiary industry and other non-motorized industrial ventures. Millions of Chinese can neither afford cars nor appreciate the disfiguration of the urban environment left in their wake.¹⁷⁷ Moreover, Earth's entire population is subject to global warming repercussions.

Bottom-up strategies, through citizen participation at every feasible stage of planning, will remain unsuccessful as long as democratic reforms stagnate and the recent City Planning Act of 1989 fails to get the

¹⁷³ See WRI, *supra* note 33, at 93. See also Lowe, *supra* note 15, at 19.

¹⁷⁴ They are "cheaper than a motorcycle, require no fuel, less maintenance, have the slick patina of high status, and take up minimal parking space." Hook, *supra* note 20, at 42.

¹⁷⁵ See Hook, *supra* note 96, at 8.

¹⁷⁶ Information Unit on Climate Change, *Climate Change Fact Sheet 204: Climate Change and the Special Concerns of Developing Countries* (visited Nov. 7, 1996) <<http://www.unep.ch/iucc/fs204.html>>.

¹⁷⁷ Though the per capita GNP is rising, few can afford the cost of a new car when making only \$490 per year. Edwards, *supra* note 1, at 33.

administrative amendments it needs to reduce corruption and enhance public input. Citizens resisting mass motorization may attempt to use the Chinese civil law system to bring private actions against government agencies, state-owned enterprises, and foreign corporations for violating the Environmental Protection Law of 1995, as amended. Class actions, or mass tort claims, will almost surely perish.¹⁷⁸ But the masses may yet be vindicated by working with top-down “vehicles” for global reform, such as the United Nations Framework Convention on Climate Change (“UN/FCCC”), with the Third Conference of Parties (“COP-3”) slated for December 1997 in Kyoto, Japan.

A. *The CPA of 1989*¹⁷⁹

After the 1949 revolution, urban planners implemented senior government officials’ “over-ambitious and unrealistic ideas.”¹⁸⁰ They were forced to translate awkward, sectoral proposals into city planning blueprints, overlaying them on municipalities without regard for the local needs and limitations.¹⁸¹ During this destined-to-fail period of 1953-60 through the Great Leap Forward, serious economic worry led to the complete abandonment of city planning.¹⁸² In 1978, the Third Plenary Session of the Eleventh National Congress of the Chinese Communist Party initiated economic reforms opening the door to global commerce; at this session local governments reestablished urban planning institutions.¹⁸³ Since the 1980 Urban Planning Conference and the State Council’s announcement of the Regulations for Urban Planning in 1984, career planning rose in popularity and virtually all cities and most county towns prepared comprehensive city plans.¹⁸⁴

¹⁷⁸ See *infra part IV.B.*

¹⁷⁹ For a straightforward description of China’s changing laws regarding urban land use and management, see INSTITUTE OF FINANCE AND TRADE ECONOMICS & INSTITUTE OF PUBLIC ADMINISTRATION ET AL., *URBAN LAND USE AND MANAGEMENT IN CHINA (FINAL REPORT) (1989)* (in Chinese and English). For more on China’s developing civil law system and property law in particular, see JIANFU CHEN, *FROM ADMINISTRATIVE AUTHORISATION TO PRIVATE LAW: A COMPARATIVE PERSPECTIVE OF THE DEVELOPING CIVIL LAW IN THE PEOPLE’S REPUBLIC OF CHINA (1995)*.

¹⁸⁰ Mee-kam Ng & Fulong Wu, *A Critique of the City Planning Act of the People’s Republic of China of 1989*, 17 *THIRD WORLD PLAN. REV.* 279, 282 n.2 (1995).

¹⁸¹ *Id.*

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ *Id.* at 283.

The 1989 CPA consolidates earlier regulations and formulates plans systematically from the local, provincial, prefectural, and national level.¹⁸⁵ Confining population growth in large cities and promoting controlled growth in medium-sized and small cities is central to the CPA.¹⁸⁶ All city plans are subject to a two-step hierarchical approval process beginning with first-level acceptance by the relevant municipal people's government.¹⁸⁷ City plans are nevertheless tethered to the State Economic Planning Commission, the State Land Administration Bureau, and the Ministry of Construction.¹⁸⁸ Planners must coordinate "with territorial planning, regional planning, water space planning, and comprehensive planning for the use of land."¹⁸⁹ "Partial readjustments" in the city's comprehensive plan may be submitted for reconsideration by the first-level examining and approving authority for the sake of a city's economic and social development.¹⁹⁰ A far cry from the Maoist days of city planning from a distant, imperial perspective, the CPA affords cities a modicum of decentralization. "It should be noted," however, "that there is no provision for the participation of citizens in the City Planning Act."¹⁹¹ The master plan shall only be unveiled to the public after the people's government's approval; in other words, there are no public hearings prior to that decision.¹⁹²

Mee-Kam Ng and Fulong Wu criticize the CPA from both a Western planning and a democratic perspective. While the former point of view illuminates theoretical infirmities underlying the CPA which risk replicating the errors of the Great Leap Forward, it is the latter point of view which best illustrates the political inefficacy of citizen participation, which proves that decentralization has not gone far enough.¹⁹³ First, Ng and Fulong describe

¹⁸⁵ *Id.*

¹⁸⁶ The City Planning Act of the People's Republic of China of 1989 (Article 4), in LEGISLATIVE AFFAIRS COMMITTEE OF THE STANDING COMMITTEE OF THE NATIONAL PEOPLE'S CONGRESS OF THE PEOPLE'S REPUBLIC OF CHINA, THE LAWS OF THE PEOPLE'S REPUBLIC OF CHINA (1987-89) 350 (1990) [hereinafter CPA].

¹⁸⁷ CPA (Article 21). *Id.* at 352-53. For a detailed explanation of the current hierarchical system of government, see KAM WING CHAN, CITIES WITH INVISIBLE WALLS 22 (1994); Ng & Fulong, *supra* note 180, at 287.

¹⁸⁸ Ng & Fulong, *supra* note 180, at 284 n.3-n.6. This is unlike anything to which the U.S.'s land use planning system is accustomed. See ROBERT R. WRIGHT, LAND USE IN A NUTSHELL 65 (3rd ed., 1994).

¹⁸⁹ CPA (Article 7), *supra* note 186, at 350.

¹⁹⁰ *Id.* at 353 (Article 22).

¹⁹¹ Ng & Fulong, *supra* note 180, at 288.

¹⁹² CPA, *see supra* note 186, at 355.

¹⁹³ See Ng & Fulong, *supra* note 180, at 288-92.

the current planning regime as a closed-system “‘black-box’ operation.”¹⁹⁴ Without democratic processes permitting input from the outside, or the power of planners to implement plans, many fundamental decisions determining the direction of a city’s development are left to “personal contacts” and other “legal or illegal means.”¹⁹⁵ Second, the introduction of partial market mechanisms draw “back-door” moneyed appeals, which threaten to unravel an already poorly-regulated planning process.¹⁹⁶ Hence the dilemma of municipalities selling land to raise money to implement the plan even though said sales undermine the goals set forth in the plan.¹⁹⁷

“Under-the-table deals” neglect city planning objectives in order to keep cash-strapped people’s governments afloat.¹⁹⁸ “Booming localism” and a “de-planning environment” conspire to negate any meager controls implemented to prevent corruption.¹⁹⁹ For example, from 1990 to 1994, Beijing was cited with over 21,000 cases of illegal construction, testimony to the fact that many city officials have not complied with the CPA.²⁰⁰ In response to localities conjuring up several thousand development zones despite having just 122 nationally-recognized zones, the Ministry of Construction announced a 1 July 1995 regulation requiring all development zones to be included in comprehensive city plans.²⁰¹ As a result, development zones will be subject to second-level “unified planning and management.”²⁰²

Such uncoordinated spot-zoning, no doubt influenced by the dilemma described above, caused “unnecessary losses” and resulted in the cancellation of some 1000 development zones.²⁰³ Construction Minister Hou Jie, riled by rampant arbitrary intervention of scofflaws in authority and by illegal construction, determined that “self-enclosed city planning,” even to the exclusion of competent planning authorities, must end.²⁰⁴

¹⁹⁴ *Id.* at 290.

¹⁹⁵ *Id.* at 291.

¹⁹⁶ *Id.*

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ *China/Illegal Buildings—3: City Planning Law Not Heeded*, DOW JONES INT’L NEWS, May 30, 1995, available in Westlaw at WL 5/30/95 DJINS 04:16:00.

²⁰¹ *Rule on Development Zone Control Promulgated*, XINHUA NEWS AGENCY, June 8, 1995, available in LEXIS, World Library, TXTLNE File.

²⁰² *Id.*

²⁰³ *Id.*

²⁰⁴ *Urban Environment: Construction Minister on “Grim Challenges” of City Planning*, BBC SUMMARY OF WORLD BROADCASTS, Oct. 27, 1995, available in LEXIS, Aust Library, BBCSWB File.

Regarding the Ninth Five-Year Plan, Hou Jie called for “strictly enforc[ing] examination and approval procedures, intensify[ing] law enforcement, establish[ing] a contingent of cadres for supervising enforcement of city planning laws, carry[ing] out law enforcement supervision and implement[ing] city planning work in an even more effective manner.”²⁰⁵ Such reeling in of local authorities might be exactly what China needs to coordinate unified sustainable development. But the threat of increased centralization and focus on sub-national/national rivalries could further obscure the need to solicit communication on an even more decentralized level, i.e., between individual citizens and the planning process. Ng and Fulong argue that the “top-down mode of planning” will exacerbate the corrupt practice of “personal contacts” in decision-making, leaving the commoner hopelessly lost in the muddle.²⁰⁶

B. *Whither the Courthouse?*

For historical reasons, the rule of law has not yet fully prevailed upon Chinese legislators.²⁰⁷ Residues of Confucianism’s “rule of man,” Stalin’s “socialist legality,” and a robust administrative apparatus have all hindered the transformation of China into a country which vests in its judiciary a power worthy of adjudicating a legal system.²⁰⁸ The ability, therefore, of a disgruntled citizen to use the courts to interpret environmental laws in such a way as to grant relief as it sees fit—independent of the Communist party, blind deference to agency decision, or orchestration by local influences—is illusory. This should come as little surprise since, “[L]aw which strengthens the legal power of the individual against the state, as much of western environmental law does, is destabilizing to authoritarian regimes.”²⁰⁹ With the continued vitality of a one-party system, enforcement of the law at a local level may only come about as a result of extrajudicial Party influence, not from the rule of law.²¹⁰

Judges in China are ill-trained and ill-regarded, and resemble mere puppets of the National People’s Congress since even the Supreme Judicial

²⁰⁵ *Id.*

²⁰⁶ See Ng & Fulong, *supra* note 180, at 292.

²⁰⁷ John Copeland Nagle, *The Missing Chinese Environmental Law Statutory Interpretation Cases*, 5 N.Y.U. ENVTL. L.J. 517, 522-23 (1996).

²⁰⁸ *Id.*

²⁰⁹ *Id.* at 531 (quoting Dan Tarlock, *Book Review*, 30 HARV. INT’L L.J. 557, 560 (1989)).

²¹⁰ *Id.* at 530.

Court justices can be removed at any time without cause.²¹¹ “[Though] the Supreme People’s Court in Beijing is the only PRC court authorized to issue official interpretations of the law,”²¹² judicial deference to agencies is so ingrained that agencies have a virtual monopoly on statutory interpretation.²¹³ All courts must answer in some degree to the people’s congress at their corresponding level of government, to state organs, and to the Communist Party.²¹⁴ Evidence of judicial contamination by legislative and executive influence includes the following: each court is funded by local district authorities with great discretion over judge salaries; “people’s assessors” (two local citizens joining in deliberation on a case of first impression), an adjudication committee, and a party committee (including prominent local party officials) inform a judge’s decision and likelihood of promotion; and enforcing a court order often means resorting to extralegal measures in order to overcome the influence of local elites.²¹⁵

Disputes seldom make it to court. The dearth of judicial statutory interpretation is due to the lack of cases demanding interpretation.²¹⁶ Underenforcement of environmental policies by China’s National Environmental Protection Agency (“NEPA”) leave many potential defendants unscathed. Even when subject to enforcement, defendants often pay the nominal fine, and factor it in as a cost of doing business.²¹⁷

Private citizens can sue government entities or private businesses but China does not have the tort of nuisance or other common law actions on which to base a claim against the adverse effects of pollution.²¹⁸ In addition, the EPL of 1995 does not grant a private right of action,²¹⁹ nor does it allow intergovernmental litigation where the NEPA could sue the Ministry of Construction of the National People’s Congress or some other

²¹¹ *Id.* at 531-32. In any case, they are forbidden from serving more than two consecutive terms.
Id.

²¹² William P. Alford & Yuanyuan Shen, *Limits of the Law in Addressing China’s Environmental Dilemma*, 16 STAN. ENVTL. L.J. 125, 141 (1997).

²¹³ See Nagle, *supra* note 207, at 535.

²¹⁴ See Alford & Yuanyuan, *supra* note 212, at 141.

²¹⁵ *Id.* at 141-42.

²¹⁶ See Nagle, *supra* note 207, at 538.

²¹⁷ *Id.* at 540-41.

²¹⁸ *Id.* at 539.

²¹⁹ See Alford & Yuanyuan, *supra* note 212, at 146. Rather, citizens have “the right to report on or file charges against units or individuals of the environmental protection work throughout the country.” The Environmental Protection Law of the People’s Republic of China of 1989, Article Six, in LEGISLATIVE AFFAIRS COMMITTEE OF THE STANDING COMMITTEE OF THE NATIONAL PEOPLE’S CONGRESS OF THE PEOPLE’S REPUBLIC OF CHINA, THE LAWS OF THE PEOPLE’S REPUBLIC OF CHINA (1987-89) 337, 338 (1990).

counterpart.²²⁰ Chinese law further frustrates citizen involvement by construing standing very narrowly so as to bar indirectly-affected plaintiffs, and by not developing a civil procedural system capable of handling class actions and mass tort cases.²²¹ Regardless of the structural limitations, the Communist Party discourages citizens from voicing discontent through individual or collective non-governmental litigation.²²² While the government intends to overhaul national environmental protection with fourteen new or revised laws covering nearly every major area by the end of the century,²²³ even this flurry of corpus-building will still likely “[neglect] the environment of legality that is indispensable to [the laws’] effective operation.”²²⁴

C. *The UN/FCCC*

Ever since the UN/FCCC was ratified on 21 March 1994, parties to the convention have met annually to debate and establish international guidelines for reducing GHG emissions. China was named to the UN/FCCC on 11 June 1992 at the 1992 Earth Summit in Rio de Janeiro and signed on 5 January 1993.²²⁵ Indeed, global climate change was highlighted as an international threat requiring technology transfer and new infusions of funds from developed countries to developing countries on a “no strings attached” basis as early as 1991 during Beijing’s ministerial conference²²⁶ of developing countries on environment and development.²²⁷

Four main principles of the UN/FCCC acknowledge the special concerns afflicting developing countries: (1) “International cooperation on climate change is essential, but industrialized countries should accept the main responsibility” for reducing GHG emissions,²²⁸ (2) unconditional technology and fund transfer from rich to poor regions must begin,²²⁹ (3)

²²⁰ See Nagle, *supra* note 207, at 546. In the latter respect, the United States and its separation of powers resembles China.

²²¹ Alford & Yuanyuan, *supra* note 212, at 147.

²²² *Id.* at 147.

²²³ *Id.* at 135.

²²⁴ *Id.* at 148.

²²⁵ *United Nations Framework Convention on Climate Change Secretariat, State of Ratification* (visited Nov. 7, 1996) <http://www.unfccc.de/fccc/conv/fc1_004.htm>.

²²⁶ *Climate Change Fact Sheet 1*, *supra* note 110. The Beijing conference drew ministers from 41 nations. *Id.*

²²⁷ *Id.*

²²⁸ *Climate Change Fact Sheet 204*, *supra* note 176, at 1.

²²⁹ *Id.*

because “short-term economic development remains a more pressing concern for poor countries than long-term environmental protection, . . . [i]nternational action must not interfere with the sovereign right of states to exploit their own natural resources,”²³⁰ and (4) universal participation is integral to the convention’s overall success.²³¹ Traditionally, treaties imposed restrictions on national activities where causation was proven with regard to environmental damage.²³² What made this climate treaty unique was that it “[embodied] a precautionary approach, since states [had] agreed to take action despite the remaining scientific uncertainties about climate change.”²³³

D. *The Conference of Parties (“COP”)*

Parties to the convention regularly report on the state of their nation’s emissions and climate-benefiting policies and laws at the annual COP.²³⁴ “Institutional supervision” by the IPCC and the Information Unit on Climate Change (“IUCC”) provide analysis and commentary on the COP data and keep the parties aware of their contribution to the exacerbation or amelioration of climate change.²³⁵

Because each country discloses its emissions to all parties, the question of enforcement and liability naturally arises. Parties that breach their duty may be taken to task for noncompliance, though developing countries have continually made appeals not to be saddled with the same quantitative fixed limits of the OECD countries. The IUCC suggested a multilateral “non-compliance procedure,” but it is hard to fathom how this procedure would produce more than an annual airing of compliments and complaints at the COP.²³⁶

Other more forceful strategies include arbitration or adjudication before the International Court of Justice or another agreed forum. If all parties waive jurisdictional objections to the forum, then a decision would be legally binding and penalties could range from mild condemnation and a

²³⁰ *Id.*

²³¹ *Id.*

²³² *Information Unit on Climate Change, Climate Change Fact Sheet 202: International Law and Climate Change* (visited Nov. 7, 1996) <<http://www.unep.ch/iucc.fs202.html>>.

²³³ *Id.*

²³⁴ *Information Unit on Climate Change, Climate Change Fact Sheet 251: Key Legal Aspect of the Climate Change Convention* (visited Nov. 7, 1996) <<http://www.unep.ch/iucc.fs251.html>>.

²³⁵ *Id.*

²³⁶ *Id.*

request for an apology, to obligations to comply in the future, to decrees requiring the violator to repair environmental damage or pay compensation.²³⁷

E. The Berlin Mandate of COP-1 (1995)

The first chance for the parties to the convention to strengthen their consensus at Rio was in March 1995 at the COP-1 in Berlin.²³⁸ Though no binding agreement was issued, the parties agreed to (1) an “activities implemented jointly” trial period during which nations were free to experiment together in order to reduce emissions, (2) a “Berlin Mandate” where an extra-tough protocol would be scheduled for the 1997 COP-3 and negotiations in earnest would “set quantified limitation and reduction objectives within specified time-frames,” (3) having developed nations try to reduce emissions to 1990 levels by the year 2000, and (4) not binding developing nations to the “Berlin Mandate” except that they would be required to take inventory of their GHG emissions and report on any climate-protecting measures taken.²³⁹ China followed India’s lead in arguing vociferously against additional commitments to curb emissions, and produced a “Green Paper,” which served to exempt Third World nations from the severity of the Berlin Mandate.²⁴⁰

F. Berlin Mandate-Green Paper Compromise for COP-3 (1997)

For the most part, these “Green Paper” concerns have been reasserted perennially, including at the recent 22 October 1996 Economic and Financial Committee of the UN General Assembly.²⁴¹ Since developed nations are to be bound by the Berlin Mandate, and since developing nations may plead the Green Paper exemption, it follows that developing nations will be forced to comply with the Mandate only when they have reached First World status. Because development has been overdependent on motorization, and because development takes time, much fossil fuel

²³⁷ *Id.*

²³⁸ *World Resources Institute, World Resources 1996-97: 14: Atmosphere and Climate (Box 14.3 The Berlin Climate Summit)* (visited Nov. 7, 1996) <http://www.wri.org/wri/wr-96-97/ac_b3.html>.

²³⁹ *Id.*

²⁴⁰ *Id.*

²⁴¹ *See, e.g., United Nations General Assembly, Press Release GA/EF/2729* (visited Nov. 7, 1996) <<http://www.un.org/plweb/cgi/idoc.pl?2495...r+pr+global%26adj%26warming%26AND&Tokyo>>.

waste, pollution, and global warming will occur during the Third-to-First World metamorphosis. The likelihood that the Berlin Mandate could effectively retard or reverse global warming is significantly lessened since whatever reductions are achieved by First World countries will be nullified by increased emissions of Third World countries on the path to modernization.

The Green Paper not only liberates Third World nations to pollute with a clear conscience, but it also excuses First World nations from taking proactive steps to discourage private motorization. Third World guilt-free emissions combined with First World procrastination may result in the ineffective global reduction of GHG emissions. Furthermore, because so many resources will have been lost laying asphalt and building cars, all countries (especially the poorer and newer First World nations) will be impotent to avert the resulting energy, health, and congestion crises. Preventing these crises is what unified, rational, urban planning and the Grasshopper and the Ant fable are all about.²⁴²

For this reason, the global environment requires a compromise to bridge the development-motorization gap between the First and Third Worlds. Third World nations cannot be allowed to depend solely or even primarily on the path of motorization as a way to development. First World nations must begin downsizing their low-occupancy passenger vehicle fleets, by cutting registrations and shifting production resources toward mass transit and nonmotorized transport. For lack of a better term, all countries must aim for "Second World" status, a milepost between complete pedestrian and nonmotorized transport on the one hand (Third World), and waves of traffic jams on the other (First World). This milepost should be strongly shifted toward the Third World model. Mass transit and nonmotorized transport must be the universal vision. To make this bipolar transition to a compromise model work, however, First World countries must take a leading role in redefining development without overreliance on motorization. This would indicate to the Third World that they hold the privileged position as far as the motorization question is concerned. Bolstered by international research into mass and nonmotorized transport technologies, Third World nations would have a head start over the First World, which must face decades of psychological reliance on privatized

²⁴² In this well-known Aesop's Fable, opening during the Summer, the Grasshopper frolics and shilly-shallies while the Ant stockpiles food and other supplies. When the Winter comes, it is the Ant who survives and relaxes, not the Grasshopper who dies of instant gratification. See, e.g., <<http://attila.stevens-tech.edu/soh1/aesopStory36.html>>.

motorization and the overhaul of streets and highways to conform to a mass/nonmotorized model.

V. CONCLUSION

China symbolizes the up-and-coming motor-hungry Third World with the United States representing its ideal. China's urge to assimilate to the Western way of transportation might seem egalitarian (i.e., the right to rapid, affordable, and high-quality personal mobility is inalienable and should not be restricted to the decadent First Worlders). Transportation efficiency could certainly increase trade and GNP, allowing for modernization and a higher standard of living. However, by the time this happens fossil fuels will have probably disappeared or the environment will have reached a crisis level that no one can ignore. International governing bodies will be given the authority to impose harsh eleventh hour restrictions on vehicle use. In either case, the poor countries will lose, for the chances of them getting to a First World level before fossil fuels expire or world government takes the reins is slim. It is the First World that will have the technological acumen to forecast the inevitable and mobilize surplus resources to avoid or mitigate it; the Third World, meanwhile, will be putting around on two-stroke motorcycles and sports cars, petrol Panglossians with driver's side gas masks.

In the last decade, China has undergone a political, economic, and urban planning revolution. Reports vary, but by any estimate, the GDP growth rate of China has caught the world's attention. Speculative capital sought its way into China, at first cautiously, but then less timidly with the enterprising Deng Xiopeng's 1980s reforms, including the "open door" to investment in Special Economic Zones, commercial and residential leases of land use rights, and fiscal reforms. Major planning undertakings have already begun the forced displacement of hundreds of thousands of Chinese to make room for the next millennium's financial and hi-tech global centers.²⁴³ Some might liken Deng's vision to Gorbachev's "perestroika," which would be accurate in that the shift from communism to state capitalism is indeed occurring. Yet on a political level, the public's ability to inject critique into the party apparatus and, when necessary, take a collective stand against national development projects at variance with the popular will, is precatory at best, Tian'anmen-esque at worst.

²⁴³ See Stan Ross, *China: The Next Frontier*, 54 URB. LAND 29, 31 (1995).

Presently the national government wants to continue its economic growth spurt by fostering preferential policies for foreign investors, whose monies and products will carve the skylines of future urban development megaprojects like the Lujiazui District in Shanghai's New Pudong Area. Cities undergoing profound change include Guangzhou and other pitstops along the National Trunk Highway System. Alongside the capitalist focus on tertiary and hi-tech, light industrial outfits is the desire to create a national passenger automobile enterprise, the driving force behind China's progress-oriented, long-term economic and urban planning policies. The possibility of harnessing the GDP boom to develop the wherewithal to spawn an Asian motor vehicle dynasty is considered by many in the Ministry of Industrial Production and the State Council too enticing to ignore.

But China's rush to pave over its "backward," pretechnological, pedal-powered image with massive interregional highways and a car for every Chinese family will, unfortunately, require comprehensive land use plans dedicated to low-capacity motor vehicles and substantial expenditures on parking and roads to support them.²⁴⁴ Non-motorized vehicles and mass transit, and those majorities of Chinese citizens who support research and development of these transportation modes, will be and apparently have been slowly retired from CBDs and the political discourse that animates these landmark considerations.²⁴⁵ Citizen participation through the city planning regime and civil environmental litigation is rare and futile. While bottom-up political reforms are a must, perhaps top-down international pressure is the only immediate hope for retarding or smoothing the mass motorization chain reaction.

Instead of tempting China with only fantastic economic promises and visions of cultural liberation of motor vehicle use, the OECD nations, led by an outspoken United Nations, should also come clean about increased

²⁴⁴ One of China's leading physicists, Professor He Zuoxi, concluded that China "just simply cannot sustain the development of a car economy. He fears, however, that government policy is being driven by a desire to keep two million auto workers employed." Institute for Transportation & Development Policy ("ITDP"), *Motorizing China?*, SUSTAINABLE TRANSPORT, Winter 1997, at 13.

²⁴⁵ *But cf. China Capital Car Curb Plan Sparks Panic*, BC CYCLE, Mar. 20, 1997, available in LEXIS, News Library, TXTNWS FILE. City leaders have put up resistance to the State Council's August 1996 demand to suspend all rules discriminating against economy cars. In March 1997, Beijing snubbed the national government by disregarding the August mandate and not rescinding a regulation banning most economy cars from its streets on alternate days. The Ministry of Public Security, which would approve a car curb, has sided with the State Council holding that the congestion problems of the capital city were "caused by management problems, not by an excess of vehicles." The handling of this stalemate could be decisive. *Id.*

congestion, higher road traffic casualties, health risks, and the negative impact on the economy. The world should entreat China to upgrade its already well-established bicycle industry and mass transit infrastructure with financial as well as fraternal incentives.²⁴⁶ In order to encourage China and to avoid accusations of hypocrisy and unfair competition, the United States must begin developing its transportation system in line with a Chinese model. Americans should ask for help from the Chinese and show good faith efforts to wean themselves off the petroleum-thick gruel that has fueled the expansion of motor-vehicle-only roadways and car production since the 1950s.²⁴⁷ The 1997 COP-3 should mark the dawning global awareness of this fact, and provide Chinese citizens the democratic voice they seek.

²⁴⁶ Kudos to President Bill Clinton for his promising exchange with China's President Jiang Zemin in 1996, as told to Thomas L. Friedman, in which President Clinton said:

It might surprise you to know [that] I think the greatest threat to our security you present . . . is that all of your people will want to get rich in exactly the same way we got rich. And unless we try to triple the automobile mileage and to reduce greenhouse gas emissions, if you all get rich in that way we won't be breathing very well.

There are just so many more of you than there are of us, and if you behave exactly the same way we do, you will do irrevocable damage to the global environment. And it will be partly our fault, because we got there first and we should be able to figure out how to help you solve this problem It's one thing, Mr. President [Zemin], I hope we will be cooperating on in the years ahead, because I think that the other countries will support your development more if they don't feel threatened by the environment.

President Clinton noted that "I could tell he hadn't thought about it just like that before." Thomas L. Friedman, *Clinton Should Plant a Garden in China*, HOUS. CHRON., Apr. 17, 1996, at 28, reprinted in 11 BIKE CULTURE 9 (1996) (also on the World-Wide Web at <http://bikeculture.com/home>).

²⁴⁷ Recent law review and journal comments address the pollution, energy, and transportation crises of developing nations, but few take due notice of the prevalent use and universal suitability of non-motorized vehicles and bicycles in particular. Take, for example, Pamela Cohn's insightful article about the dialectical role of Japanese and American auto manufacturers in reducing pollution. Regardless of whether competition or cooperation best achieves international and national emissions standards, Cohn fails to mention non-motorized vehicles as viable alternatives. Pamela Cohn, Comment, *Automobile Pollution: Japan and the United States—Cooperation or Competition?*, 9 EMORY INT'L L. REV. 179, 183-86 (1995). Her research focuses on alternative fuels and alternative fuel vehicles, which might explain why non-motorized vehicles escaped mention. Cohn cites to the California Energy Commission to back up her assertion that, "[Electric vehicles] are the only vehicles that have zero emissions." *Id.*, at 183.

But where does the electricity come from? "Zero emission" vehicles, as such, include otherwise pollution-free vehicles except that they derive their fuel from a coal-burning, nuclear, or natural gas power plant. Only EVs wired into a hydroelectric or solar power grid may truly boast zero emissions, and even then, thermal pollution of waterways and ecological decimation from dams must be acknowledged. Only walking, roller-blading, and any form of pedal-pushing are truly "zero-emission." Despite a decade of scientific dead-ends, China will continue investing in researching and producing electric vehicles and non-petrol fuel vehicles. Scientists will conduct experiments in coastal areas with the hope that China will emerge as a domestic and international forerunner in alternative motorized auto production. *Nation Plots New Fuels for Sake of Environment*, CHINA DAILY, June 10, 1996.

For decades, to advance his own purposes, he systematically defeated every attempt to create the master plan that might have enabled the city to develop on a rational, logical, unified pattern—defeated it until, when it was finally adopted, it was too late for it to do much good.

In the evening of Robert Moses' forty-four years of power, New York, so bright with promise forty-four years before, was a city in chaos and despair. His highways and bridges and tunnels were awesome . . . but no aspect of those highways and bridges and tunnels was as awesome as the congestion on them.²⁴⁸

²⁴⁸ CARO, *supra* note 7, at 20.

