Driving South: The Globalization of Auto Consumption and Its Social Organization of Space

By Peter Freund and George Martin

1. Introduction

Since its introduction over a century ago, the automobile has become an icon of freedom, progress and modernity throughout the world. Auto ownership is used as an indicator of economic development; it is the leading mass-produced durable good in the world.[1] In developed countries, it has become the dominant transport modality; in parts of the U.S. it is the *only* viable means of everyday mobility. Most significantly, the attainment of individualized auto consumption for the great majority of populations in places like the U.S. has structured general perceptions of what is the most desirable and the most practical means of mobility.[2] This attainment is made material by the now-embedded public infrastructures necessary for private auto use, from roads to regulating bureaucracies.

[1]Unless otherwise indicated, data sources were: American Automobile Manufacturers Association, *Motor Vehicles Facts & Figures,* 1997 (Detroit); United Nations, *Human Development Report,* 1996 (New York); United Nations, *Statistics of Road Traffic Accidents*, 1994 (New York); U.S. Department of Commerce, *Statistical Abstract of the United States*, 1998 (Washington); Ward's Communications, *Motor Vehicles Facts & Figures,* 1999 (Southfield, MI); World Health Organization, *The Global Burden of Disease,* 1996 (Geneva).

[2]Peter Freund and George Martin, "The Commodity that is Eating the World: The Automobile, the Environment, and Capitalism," *CNS*, 4, 1996.

Countries of the South[3] are rapidly adopting Western modes of consumption such as mass auto ownership as a path to economic development. Between 1993 and 1997, vehicle registrations rose by 40 percent in the North, compared to 61 percent in the South. But what kind of development is it?

> But what, then, should we mean by development? And how do we measure higher living standards? Are the living standards of a family in Bangkok raised, for example, when their cash income rises enough so that they can purchase an automobile — when the pleasure of car ownership is offset by the loss of free time caused by the need to work more hours, or even take a second job, to pay for the car and all its attendant costs, by the longer commuting time caused by other motorists exercising their freedom, by lung cancer, by the generalized urban blight of jammed roads, car parks, petrol stations, used-car lots, drive-in fast-food franchises, brown skies and howling car alarms? Is this a higher standard of living?[4]

It is the replication of auto transport, etched in concrete and asphalt, that is the embodiment of a dream to which many in the world aspire. However, the auto represents more than transport. Its mass consumption has transformed the physical structure of landscapes, contributed to atmospheric, soil and water degradation, and shaped, often in negative ways, the social organization of communities.

It is important, when considering these changes, not to see them as a product of "the automobile" but rather as a consequence of the way its use is promoted and organized, as part of an auto-centered transport

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[3]We would agree with Wolfgang Sachs, *et al.* (*Greening the North,* London: Zed Books, 1998) that with the dissolution of the Second World, the Third World is no longer (if it ever was) a homogenous category, with its countries dividing into underdeveloped and "emerging market economies." Following Sachs and others, we will use "North" and "South," accepting all of their imprecision. We also separate the South into two parts, based on levels of auto-centeredness.

[4]Richard Smith, "Creative Destruction: Capitalist Development and China's Environment," *New Left Review,* 222, 1997, p. 28. The debate over measuring standards of living in quantitative verus qualitative terms first began between those looking at growth statistics during the English Industrial Revolution versus those whose focus was the loss of community, the decline of social cohesion, environmental destruction, and the like.

system.[5] This system includes a vast material infrastructure of roadways, repair facilities, auto supply shops, gas stations and service facilities, motels and tourist destinations, storage spaces, and an extensive social infrastructure of bureaucracies for the control of traffic, the education of drivers, and the regulation of drivers, vehicles, and fuels (among other things).

In addition to their dependence on elaborate infrastructures and to their increasing scale of use, autos have qualitative features that maximize their use of space; they require multiple, dedicated spaces. Spaces have to be allocated not only in driveways, but also on roads, in parking lots, and at work sites. All of these spaces are difficult to use for any purpose other than temporary car storage; at other times they are vacant. Fundamentally, in auto-centered transport systems (ACTS) the auto is not only the dominant mode of transport; its use commands the disposition of much public space, which it wastes much more than it employs.

The emergence of auto-centered systems and their hegemony over public space in many parts of the world is not only a testament to the success of a particular technological form and a system for organizing its use, including the social life around it, but also to the extreme way in which capitalism has come to structure consumption. As a *mode of consumption*, auto-centered transport is a highly individualized, privately-owned form which is heavily subsidized by the state. The relationships among the auto, the environment, and capitalist economy revolve around the use of a technology which is the central durable commodity in the mature capitalist economy. This mode of consumption — not just the auto itself — is being diffused to countries in the South, a diffusion that has accelerated in the global, neoliberal 1990s.

2. The Globalization of Auto Hegemony

While auto production and consumption became worldwide phenomena at the end of the 20th Century, great variation in the concentration of ownership remains. The data in Table 1 show that just

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[5]While we speak of autos, our data refer to motor vehicles, which includes passenger cars, light trucks, commercial trucks, and buses. However, passenger cars are numerically dominant. In the world in 1997, they represented 71 percent of all motor vehicles. It is also valid to include trucks as autos because in the U.S. about one-half of current passenger car sales are classified as light trucks, a category which includes SUVs, vans, and pick-up trucks. The SUV is of course a new phenomenon that deserves special treatment.

Table 1. Percentage Distribution of Population and Motor Vehicle Production and Consumption, World, 1997

Area	Percent of Population	Percent of Vehicle Production (1998)	Percent of Vehicle Consumption (fleet)	Population per Vehicle
World	100.0	100.0	100.0	8.7
Africa	12.2	0.7	1.6	67.7
Americas, except	8.7	6.7	5.5	13.9
Canada	0.5	4.2	2.5	1.8
U.S.	4.6	23.0	30.3	1.3
Asia, except	58.4	9.3	9.5	53.4
Japan	2.1	19.3	11.9	1.6
E. Europe	6.6	3.9	6.7	8.6
W. Europe, except	5.2	21.2	22.9	2.0
Germany	1.4	11.0	7.2	1.7
Oceania*	0.5	0.8	2.0	2.1

*About 80 percent of population in just two nations: Australia, New Zealand.

Source: Adapted from *Motor Vehicle Facts & Figures 1999* (Southfield, MI: Ward's Communications).

three nations in the world — the U.S., Germany and Japan — account for 53 percent of world vehicle production and 49 percent of consumption, while they have only eight percent of world population. Their domination of auto production and consumption is a major factor in their supremacy over the world economy.[6] Despite the on-going economic restructuring based on technological advances in computers, electronics, and telecommunications, the auto-oil industrial complex retains a leading position in the global economy; in 1997, it accounted for six of the world's 10 largest business firms.[7]

Auto densities in the world range from a high of 1.3 persons per vehicle in the U.S. to a low of 12,913 persons per vehicle in Afghanistan. For purposes of analysis, the nations of the world can be sorted into three groups by their degree of auto-centered transport systems (ACTS):[8]

1. The counties with the most developed ACTS feature three or less persons per vehicle, in a total of 38 places. The most populous among these places are the U.S., Japan, Germany, Italy, the UK, and France. Africa and Central and South America have no developed ACTS, but several oil-rich nations in Asia — Brunei, Kuwait, and the Unite Arab Emirates — do have developed ACTS. In places with the most developed ACTS, autos dominate the cities, auto-induced urban sprawl is considerable, and the countrysides have become auto-dependent.

In the nation with the most developed ACTS, the U.S., we can speak of the emergence of *hyperautomobility* — characterized by very high auto density (highlighted by the specialization of vehicles within households) and by very high auto use (indicated by increasing trips and distances, but with decreasing vehicle occupancy).[9] The hyperautomobile U.S. is different from the other nations with the most developed ACTS. While U.S. cities average 54 percent more autos per person than European cities, auto use is even more pronounced. Auto

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[6]See Peter Dicken, *Global Shift: Transforming the World Economy* (New York: Guildford Press, 1998), Chapter 10.

[7]*Forbes*, July 28, 1997, p. 180.

[8]The long-standing assumption of a close link between automobility and economic development (wealth) may be no longer valid. See Peter Newman and Jeffrey Kenworthy, *Sustainability and Cities: Overcoming Automobile Dependence* (Washington, DC: Island Press, 1999), pp. 111-114.

[9]George Martin,"Hyperautomobility and Its Sociomaterial Impacts," Working Paper, Centre for Environmental Strategy, University of Surrey, Guildford, February, 1999.

kilometers per year per person average 143 percent more in U.S. cities than in European cities.[10]

2. The mid-range ACTS countries have 4-50 persons per vehicle, in a total of 70 places. The most populous mid-range ACTS nations are Russia, Brazil, Mexico, Turkey, and Thailand. Mid-range ACTS countries include all of the former centrally planned economies of Eastern Europe and most of South America, as well as Israel, South Korea, and Taiwan. In these places with mid-range ACTS, the cities are also auto-dominated, but auto-induced urban sprawl is not yet pronounced and cities maintain a moderate level of transport diversification. The countrysides retain a mix of motorized and non-motorized transport.

3. Finally, the least developed ACTS countries have more than 50 persons per vehicle, in a total of 50 places. All these are in Africa or Asia, with the exception of the following nations in the Americas: Bolivia, Cuba, El Salvador, Guatemala, Haiti, and Honduras. The most populous nations are China, India, Indonesia, Pakistan, Bangladesh, and Nigeria. In these countries with the least developed ACTS, cities have been penetrated by autos but retain considerable diversity of transport modalities, while the countrysides are virtually auto-free. There is little or no auto-induced urban sprawl.

Complementing these differences in the current level of auto-centeredness among nations are inverse variations in the growth rates of auto densities: *Growth rates in auto densities rise as the level of auto-centeredness declines*. In the nations with the most developed ACTS, fleet growths are just keeping up with population growths; the markets in these nations are largely saturated. For example, in the U.S. there was very little change in auto density (as measured by population per vehicle) between 1990 and 1997. (Of course, what did grow, and grow substantially, were vehicle trips and vehicle miles.) In these nations, the auto business has become largely a replacement market, and profits increasingly depend upon the ability of auto producers to sell larger, more expensive vehicles. Sports Utility Vehicles are the prime indicator of the direction of these markets.

In the nations with mid-range ACTS, there is moderate or low growth in auto densities. Thus in Brazil, fleet density grew by seven percent between 1990 and 1997. In the nations with the least developed ACTS, there was very fast growth. For example, in China, auto density increased by 44 percent; in Indonesia, by 26 percent. It is in these two categories of nations that the auto industry looks to for market growth.

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[10]Newman and Kenworthy, *op. cit.*, p. 80.

In many respects, car troubles are an urban phenomenon, and this is starkly illustrated in the growing transport problems of the megacities of the South. Autos have been increasing at relatively high rates in many Asian, African, and Latin American cities, so that these cities at first glance resemble those of the North — featuring super highways and super traffic congestion. However, there are several significant differences in the current status of auto transport in cities of the North and the South:

1. In the South, auto transport has not become a mass phenomenon; it is largely restricted to the relatively small elite and middle class sectors, which constitute a small minority of the population.

2. Because auto transport is the privilege of a minority in Southern cities, these cities retain a more diversified transport modal split relative to the North. The working and poor classes of Southern cities depend on public transport (where available) and upon non-motorized transport, especially cycling, walking, and animal power.

3. Because many of the nations of the South are relatively poor and debt-laden, the public costs of auto transport come at a greater social price than they do in Northern cities. Principal among these costs is the provision of an adequate sociomaterial infrastructure, including roadways and regulating bureaucracies. The development of infrastructure lags behind the introduction of the car in Southern cities. Infrastructures for walking and other non-motorized forms of transport are even less developed than auto infrastructures. For instance, over 70 percent of Jakarta's roads have no sidewalks.[11] Mass transit is similarly neglected as scarce resources are diverted to subsidize ACTS. One of the more dramatic illustrations of this uneven development is the relatively high toll in roadway-related human carnage in Southern nations.

4. Related to this infrastructure issue is a special problem for many Southern nations: They have to import oil to operate autos. Since autos can run without an adequate material and social infrastructure but not without oil, the oil-poor nations of the South are further disadvantaged, as their meager resources can be sapped by oil import costs.

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[11]ITDP, "Jakarta's Non-motorized Modes, 'Living Dangerously'," *Sustainable Transport*, 6, 1996, p. 8.

To repeat, since auto markets in the developed nations have matured, the great potential for new markets exists in the South. The greatest increases in new car sales from 1997 to 2005 are forecast to be in China, India, and the Philippines.[12] For auto makers such a trend is hopeful, yet the globalization of auto-centered transport represents an immeasurable ecological threat and badly aggravates already existing social inequities in access to transport. In short, ACTS are neither sustainable nor equitable.

The growth of auto-centered transport in the South thus brings into sharp relief issues of social inequality, the inappropriate use of transport technology, and the limits of globalizing such an energy-and-resource intensive and environmentally unfriendly system. The ideal of a motorized world built in the image of Southern California is simply not physically and economically feasible on a global scale.

The continuing diffusion of ACTS into the South is a major contributor to the South's growing ecological problems. The environmental problems of autocentric transport in the South, especially air, soil, and water pollution, have been well-documented.[13] Here, our focus is on the social organization of space promoted by auto-centered transport.

3. Modes of Consumption and the Social Organization of Space

In considering the diffusion of auto-centered transport systems, it is important to emphasize the sociomaterial aspects of consumption, of which two are central. First, the resource (including especially land) and energy-intensive nature of auto-centered transport systems is at the core of the social and ecological problems that these systems cause. In the 1990s, the environmental problems caused by such systems have become global issues (e.g., global warming). Second, most central for

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[12]*The Economist,* June 13, 1998, p. 142.

[13]See Kenneth Button and Werner Rothengatter, "Global Environmental Degradation: The Role of Transport," in David Banister and Kenneth Button, eds., *Transport, the Environment and Sustainable Development* (London: E. & A.N. Spon, 1993); Asif Faiz, "Motor Vehicle Emissions in Developing Countries: Relative Implications for Urban Air Quality," in Alcira Kreimer and Mohan Munasinghe, eds., Discussion Papers, No. 168 (Washington, DC: World Bank, 1992); Asif Faiz, et al., *Automotive Air Pollution -- Issues and Options for Developing Countries* (Washington, DC: World Bank, 1990); World Bank, *Sustainable Transport: Priorities for Policy Reform* (Washington, DC: World Bank, 1996).

our analysis is the impact of auto-centered transport as a mode of consumption on the *social organization of space.*

While the negative aspects of the diffusion of the auto are obvious enough in countries of the North, in the poorer and less developed South they are gravely aggravated. Surface transport (in this case the auto) has been described by some as an "engineering industry" that is not carried out inside a factory but outside in public space.[14] In the South, just as the economic and technological development of the means of production is uneven, so is the development of the modes of consumption. Uneven development here means that the spatial and other contradictions of auto-centered transport are accentuated in countries of the South.

What are being exported to the South are not only technological forms that originated in the North, but consumerism, mainly modeled on that of the U.S. In this evolving model of consumerism, the auto is the transport commodity for local elites and is rapidly becoming the "privileged means of urban transportation."[15] These newly emerging auto consumption patterns have influenced urbanization and drained scarce public resources in the South.

One looming consequence of the diffusion of such a mode of consumption to the South revolves around issues of sustainability or what some have called the "China factor."[16] What happens to space in the form of arable land if, for instance, auto transport was to be adopted by all 1.2 billion Chinese? Total vehicle production increased by 152 percent between 1991 and 1998 in China and its mix changed as well. While the proportion of passenger cars was only six percent in 1991, it rose to 31 percent in 1998.[17]

While arable land is not in scarce supply in many Northern countries, in many nations of the South it is.

> China, which has almost exactly the same land in area as the U.S., has four times as many people living on it.

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[14]David Banister, *Transport Planning in the UK, USA, and Europe* (London: E & AN Spon, 1994), p. 20.

[15]Tom Angotti, "The Political Economy of Oil, Autos and the Urban Environment in Venezuela," *Review of Radical Political Economics,* 30, 1998, p. 101.

[16]John Whitelegg, *Critical Mass* (London: Pluto Press, 1997).

[17]Today, Volkswagen has three car factories in China; Suzuki has four factories; Daihatsu, Citreön, General Motors, Honda, Audi, and Daimler-Chrysler have one each (*New York Times*, August 3, 2000).

> Since such a large proportion of China is either desert or mountains, its population is crammed into dense concentrations around the great river valleys. As a result, the country must feed more than one-fifth of the world's population on less than one-fifteenth of its farmland.[18]

Does it make sense for China to pave over arable land or land usable for dwelling spaces? Other countries of the South face similar problems, especially Egypt, Bangladesh, and Indonesia.[19] For example, each year in Indonesia, 250 square kilometers of agricultural land, forest, and wetland become roads and urban spaces, displacing large numbers of people.[20]

The use of land by autos reflects the great social inequality that exists in the South.

> In developing countries in general — and in Brazil in particular — transport and traffic policies, coupled to economic and social policies, have crystallized remarkable differences between those with and without access to private transport. Most decisions have a common objective: to adapt space to the use of the automobile for selected social groups.[21]

In the North, the disenfranchisement of poor people, people displaced by freeways, people with disabilities and older people and children is one harsh feature of auto-centered systems. In the South, such disenfranchisement is amplified, particularly in African and Latin American cities in which alternative modalities are underdeveloped and human-powered vehicles are not as widespread as in many Asian cities.

In the less developed auto-centered systems of the South, spatial contradictions and their impact on safety are glaring, since the possibilities of technological fixes (e.g., resources for more benign organizations of traffic) are not available, and the technical potentials of mass automobility have not been realized. While road deaths in the developed countries are down to less than five per 10,000 vehicles per year, in the developing countries the picture is quite different: 40 deaths per year per 10,000 vehicles in India, 77 in Bangladesh, and 192 in

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[18]Smith, *op. cit.*, p. 33.
[19]Lester Brown, "The Future of Automobiles," *Society*, 21, 1984, p. 65.
[20]Walter Hook, "Jakarta: A City in Crisis," *Sustainable Transport,* 8, 1998, p. 14.
[21]Eduardo A. Vasconcellos, "Urban Transport and Equity: The Case of Sao Paulo," *World Transport Policy and Practice*, 4, 1998, p. 16.

Ethiopia.[22] Transport space is in poor condition and it disenfranchises and is unsafe for the great majority who are not auto users. Traffic control is poor, as are mass transit alternatives.

In Southern countries the spatial contradictions of auto-centered transport are amplified according to class, age, race, ethnicity, gender and disability status.

> Death on the highways is common at all ages — and not, as in the West, as the result of accidents between cars, which are items of extreme luxury in Rwanda. Of course, the overloaded taxi-buses routinely cut blind corners along the twisting Chinese-built north-south highway, and every few days one will end up in a tangle of metal with another car. Yet most accidents are with pedestrians; the peasants use the paved, single-lane highway as a footpath through their densely populated hills. They do so even at night when they become invisible, wrapped in dark clothes and leading brown cattle, and they do not seem to understand the power of several tons of hurtling steel.[23]

In South Africa, extremes of wealth and poverty contribute to one of the world's worst safety records. Luxury cars mix with overcrowded trucks (used as buses), donkey carts, cows, and pedestrians to produce a deadly combination.[24] Black townships do not have sidewalks, adequate lighting, or pedestrian overpasses on the roads through which affluent-owned high-powered vehicles race. For most blacks, transport (even now, in post-apartheid society) in cities is confined to public transport. Whites travel mostly by auto: one out of two white South Africans owns a car; only one of 100 blacks do.[25] South Africa, unlike many other countries of the South, has a developed transport infrastructure — but one which excludes modalities other than the automobile.

The growing space demands of auto owners are also degrading public places, the urban commons, in cities of the South; for example, the principal plaza in Mexico City. What used to be a popular and

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[22]Oliver Tickell, "Death Duties," *The Guardian,* June 24, 1998, pp. 4-5.
[23]Bruce E. Fleming, "Another Way of Dying," *The Nation,* 250, 1990, p. 448.
[24]Donald G. McNeil, "South Africa's Well-Kept Roads, a Grim Harvest of Traffic Deaths," *The New York Times*, December 25, 1997, p. 5.
[25]John Griffin, "South Africa: Mobility in the Post Apartheid City," *Sustainable Transport,* 3, 1994, p.8.

pleasant place to walk and socialize is now "filled with deafening traffic and the air is blue with car exhaust — trying to walk is more dangerous than driving."[26] Another example is Bangkok. Once called the "Venice of Asia," the city has paved over its canals; still, gridlock and pollution grow.[27]

Many countries in the South are experiencing dramatic increases in death and injury on roads crowded with pedestrians, animals, cyclists, and motorized vehicles. Pedestrians represent a greater proportion of traffic fatalities in the South than in the North. In the latter, road safety campaigns, better roads and infrastructures for pedestrians, the better conditions of vehicles, together with sophisticated traffic management, have been reducing fatalities. The opposite is happening in the South, as auto-centered transport systems impose their social organization of space on countries in which the majority of people do not have access to private autos but must suffer, in underdeveloped traffic spaces, their increasing use.

The high road accident rates in the South have been attributed to poor vehicle maintenance and roads, and a lack of education and social order in traffic space.[28] Some see this lack of order as reflecting differences in level of informal, uniform, and moderate self-regulation by vehicle drivers and pedestrians. From this perspective, Elias suggests that in less developed, less "civilized" societies, the self-regulation of traffic participants is less stable and permanent than in highly developed ones:

> When people in the less developed countries drive in such a way that they cause deaths and injuries, then it is the fault of the people and, in particular, of their own defective steering, not of the roads as such; nor of the vehicles that are being steered by them. People in the less developed countries apparently just careen along without any consideration for bad driving conditions.[29]

While recognizing the role of poverty, Elias eschews sociomaterial contexts such as the social organization of space in his analysis. Differing with Elias, we share (with qualification) Vasconcellos' position that

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[26]Wayne Ellwood, "Car Chaos," *New Internationalist,* 195, 1989, p. 6.
[27]Smith, 1997, *op. cit.,* pp. 29-30.
[28]Vasconcellos, *op. cit.*, p. 11.
[29]Norbert Elias, "Technization and Civilization," *Theory, Culture and Society*, 12, 1995, p. 28.

> In developing countries, contrary to widespread beliefs accidents do not result from lack of education, generalized disorder or bad vehicle maintenance. They result from the inherently dangerous environment which was generated by the appropriation of space to the needs of automobile users. The paving or creation of grid-pattern wide streets and roads crossing densely used pedestrian spaces coupled with deep political differences among groups and classes (which translates into different ways of using space) and to the absence of effective enforcement and justice, rendered space in developing countries a very efficient accident-production environment.[30]

The sociomaterial organization of public movement space plays a substantial part in the traffic problems of the South. Focusing on the diffusion of a culture of self-regulation, or on a lack of education, over-individualizes the issue and diverts attention from the collective politics of space.

In less developed modes of consumption, the sociocultural inequalities of class, race, and gender make a greater difference in traffic fatalities. The population of carless poor people is much larger than that of the middle and upper classes who are the actual and potential consumers of automobiles. Class and gender inequities are also expressed in the social organization of space, which structures access and mobility, as well as influencing the degree of safety and security of movement through space.

Autocentric transport demands massive public investment of land and resources for its infrastructures. The public purses of most nations of the South are not big enough to make these investments. In many cities of the South, the result is traffic congestion on an unprecedented level, congestion that carries great inefficiency costs in the transport of goods as well as workers. For example, in Sao Paulo, the lack of an adequate subway system and of well-developed auto infrastructures has produced perhaps more traffic noise, air pollution, and congestion than in any other city in the world. However, consistent with their positions of power and their orientations to technologies of the North, wealthy Paulistanos are buying themselves out of this morass — by purchasing helicopters. At over 400, the fleet of private helicopters is the biggest of any city in the developing world, trailing only the fleets of New York City and Tokyo. The social class contradictions of such uneven

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[30]Vasconcellos, *op. cit.,* p. 17.

development is highlighted by the fact that "it is easier for a wealthy person to buy a helicopter than it is for a working class person to buy a car."[31]

Another example of the uneven development of transport fostered by the adoption of ACTS comes from Africa. Women in rural Tanzania spend about 1,800 hours a year collecting water and wood, and in making trips to the fields and to market — men spend about 500 hours a year on similar activities. Transport planners and traffic engineers have little to offer rural women.

> These conditions of hard physical effort and women carrying out a disproportionately large proportion of transport-related tasks are very common and can be found throughout the Indian subcontinent as well as in Africa. The existence of such circumstances and the irrelevance of most contemporary transport planning to those circumstances is an important factor in arriving at a global perspective. Much of what currently goes on in India, Bangladesh, Africa and South America under the label transport planning and transport investment will not help the vast majority of the population who are poor and concerned with tasks related to daily living and survival. For 95 percent of the population the prospect of car ownership is pure fantasy, and yet water and firewood have to be collected and produce taken to market.[32]

Poor people, particularly poor rural women, have an unequal transport burden. In effect, they are invisible to transport planners mainly concerned with large scale economic activity and with motorized traffic.[33]

In many countries of the South where other modalities are in pervasive and intensive use (e.g., bicycles in Chinese cities), these modalities are being pushed to the side and increasingly marginalized. Human-powered vehicles such as rickshaws and bicycles are seen by the middle classes and elites as archaic and as impeding the smooth flow of motorized traffic. In Bombay and Jakarta, such vehicles have been

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[31]Simon Romero, "Rich Brazilians Rise Above Rush-Hour Jams," *The New York Times,* February 15, 2000, p. A4.
[32]Whitelegg, *op. cit.,* p. 45.
[33]Priyanthi Fernando, "Gender and Transport," in Saskia Everts, ed., *Gender and Technology* (London: Zed Books, 1998).

banned and in Manila they have been removed from the main roads.[34] Transport planners dislike large amounts of mixed traffic and their bias is to eliminate any obstacles to motorized traffic. Calcutta, despite a shortage of revenues, is investing in a huge new road infrastructure complete with flyovers, motor ways, and the rest. These structures will exclude the cycle rickshaws which are a source of jobs for many of Calcutta's poor.[35] In Bangladesh approximately 1.25 million people are directly involved with driving and maintaining rickshaws, while five million people depend on them for subsistence. Rickshaws are not part of government planning and in a government report, they were described as "slow moving" vehicles that should eventually be eliminated and replaced by automobiles and trucks.[36]

As indicated earlier, there are enormous discrepancies in auto consumption between North and South. For most citizens of the South the auto is not an economically feasible means of transport. The historic pattern of the thoughtless direct transfer of technology such as the auto (and its consumption patterns) from North to South has been a highly problematic undertaking, in which the major gain to the South may be learning what mistakes to avoid. What is being transplanted is not just a technology but a mode of consumption and a way of life, all with far-reaching implications.

4. Transport Policy and Change

Governments in Southern countries are eagerly adopting the auto as the primary means of transport. Automobility is viewed as a sign and a means of economic development. Malaysia's experience with its government's "National Car Project" in the 1980s is an example of the huge costs involved in developing an auto industry. The auto is an up-market product that costs more than the average Malaysian house. In addition to sinking funds into production of the car, the government built new auto infrastructures, while cutting expenditure for rail and bus transport. Despite this public investment, the Malaysian car faces immense challenges.[37] Local critics argue that the experience demonstrates the folly of such industrial mega-projects for developing nations.

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[34]Whitelegg, *op. cit.*, p. 47.
[35]Paul Brown, "Road Accidents Set to be the World's Biggest Killer," *The Guardian,* June 24, 1998, p. 14.
[36]Whitelegg, *op. cit.*, p. 47.
[37]Halinah Todd, "The Proton Saga Saga," *New Internationalist,* 195, 1989, pp. 14-15.

While most cities in the South have allowed free rein to the auto, some have restricted its use. One successful example of diversifying transport in the South is Curitiba, Brazil, a city of 1.6 million. Beginning in the 1970s, the city adopted a series of transport-related measures, including improved bus transit, cycle ways and pedestrian ways, and integration of transport and zoning policies, in which higher densities were encouraged along major arterials and a mix of jobs, homes, and services were included in local areas. Additional policies have included traffic calming schemes and in-fill, in which new development is sited in abandoned land in the existing city rather than sprawling outward. Several improvements have been attributed to these policies, including the facts that Curitiba's rate of accidents per vehicle is now the lowest of Brazilian cities and its fuel consumption per vehicle is 30 percent less than in other Brazilian cities of its size. Finally, residents of Curitiba spend about 10 percent of their incomes on transport, one of the lowest such rates in Brazil. This is despite the fact that the city's auto ownership rate is high by Brazilian standards, second only to Brasilia's.[38]

Various grass-roots projects, such as those sponsored by the Institute for Transportation and Development Policy, are trying to develop and sustain transport diversity, especially those modalities that are less energy-and-resource intensive and are useful to poor people, women, and people with disabilities. "Afri Bike," for instance, promotes bicycles as development tools, sponsoring an urban-based center where vendors can lease load-carrying bikes.[39] In Haiti, "Mobility Haiti" is training poor Haitians to maintain and to repair bikes and is making non-motorized transport out of locally available materials. These bikes are sold below market rates.[40] In Afghanistan, BAAR (Bicycles for Afghan Amputees' Rehabilitation) provides bikes and training to people with disabilities.[41] Such efforts, while small in scope, can be models for the diversification and democratization of transport development in other countries.

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[38]Marcia D. Lowe, "Shaping Cities," in Lester Brown, ed., *State of the World* (New York: W.W. Norton, 1992); Jonas Rabinovitch and Josef Leitman, "Urban Planning in Curitiba," *Scientific American*, March, 1996.
[39]Karen Overton, "Women Take Back the Streets," *Sustainable Transport,* 3, 1994, p. 6.
[40]Hugh Lewis, "Mobilizing Democracy in Haiti," *Sustainable Transport,* 5, 1995, p. 6.
[41]World Bank, *Sustainable Transport: Priorities for Policy Reform* (Washington, DC: World Bank, 1996), p. 16.

Mobility is a growing problem for poorer people in the South. There, the increasing cutbacks in the public sector because of debt repayment, coupled with population growth in urban areas that outdistances the availability of public transport, deprives many people of any form of mobility except walking. As noted, the burden of developing an auto-centred transport system falls on the poor and benefits the more affluent. In the South the elitist nature of automobility is becoming more and more apparent. According to the UN, the use of petroleum and other resources and the need to import a great deal of material contribute to the foreign debts of the South:

> For non oil-producing, non-industrializing developing countries which represent the vast majority of developing countries, petrol consumption by automobiles represents well over 50 percent of the total petroleum consumption. Energy consumption by these countries contributes largely to their foreign currency disbursements and to their balance of payment deficits.[42]

Most Southern countries require hard currency to fuel their auto fleets. An extreme example is Haiti, where one in 200 people owns a car, yet one-third or more of the country's imports are fuel and transport equipment.[43]

Not only do many Southern governments subsidize auto transport and the auto industry at the expense of alternatives, so, too, do banks. Non-motorized forms of travel such as improved bicycles (e.g., using light metal) and carts have received virtually no subsidies. Alternative transport, which local elites view as "backward," is sacrificed to the auto. Yet, in the South, bicycles are a source of jobs and foreign exchange, and generate small-scale entrepreneurial activities such as vending, scrap collecting, and delivery services. Moreover, their manufacture and maintenance are labor-intensive enterprises.

Because of government support for the wholesale introduction of auto technology many Southern cities have become caricatures of the most auto-centered cities in the U.S. Cities such as Caracas have almost unimaginable journeys to and from work (up to seven hours per day), elaborate freeways without adequate feeder arterials that result in

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[42]United Nations, *Urban Transportation with Particular Reference to Developing Countries* (New York: Department of International Economic and Social Affairs, 1989), p. 27.

[43]Michael Renner, *Rethinking the Role of the Automobile* (Washington, DC: Worldwatch Institute, Paper No. 84, 1988), p. 52.

massive congestion, and highways that stop abruptly at the edges of old city centers because of lack of space. These cities could hugely benefit from improved bus service, bicycle and jitney use, and other less energy-and-resource intensive modes of transport.

5. Conclusion

The automobile and its socioenvironmental consequences revolve around its dual aspects as a transport *system* and a *mode of consumption*. When speaking of development, one is not simply talking about technological diffusion, but also the diffusion of consumption patterns. In countries of the South, the automobile has spread to local elites and is beginning to dominate (especially urban) space and to drive other modalities out. Just as with the diffusion and globalization of a mature capitalist mode of production, so too the diffusion of a mature capitalist mode of consumption takes place in an uneven fashion.

A consumption mode of transport characterized not only by auto hegemony but by auto dependence is increasingly proving itself to be a form of unsustainable development and a socially destructive mode of consumption. Its diffusion to countries of the South aggravates its problematic social and environmental consequences in the short term. Even in the long term, if countries of the South could fully develop an auto-centered transport system such as that which exists in North America, the results would be disastrous in terms of the impact on the ambient environment and, above all, on social space. Deconstructing the taken-for-granted notion that autocentric transport is "progress" can lead us to reconsider such general questions as what is the "good life" and what constitutes material prosperity, and what kind of transport investments and planning need to be made — in the *North*, not only the South.

What distinguishes the auto from other consumer goods (including other durable goods) is that while the latter may also be energy-and-resource intensive, the car's pervasive and intensive use requires a great deal of *space*. The bulk of this space, furthermore, is the most desirable *public* space (e.g., in urban centers). The auto appropriates valuable public space and, particularly in countries of the South, makes this space virtually unusable for other non-motorized modalities (including walking). In this way, the adoption of autocentric transport can spearhead a more general development of capitalist consumption, i.e., the car provides a material inlay for Western consumerism. For example, in Venezuelan cities, auto-centered consumption patterns have

been the catalyst in privatizing public space and in individualizing consumption.[44]

The auto is a private consumer good that is (in the North as well as South) heavily subsidized by the state. Scarce public resources go into highways and the infrastructures that automobiles need in order to be intensively and pervasively used by a minority of citizens in the South. Yet little is invested in ameliorating the impact of emerging automobility on social and physical environments. Technical fixes (e.g., systems of traffic control) and educational campaigns for safety are not nearly as developed as in countries of the North. There, the systemic limits to emission control and accident prevention are being reached, with further significant reductions only possible through social changes — changes in travel patterns and modal splits, both of which lead to a consideration of the re-organization of space.[45]

As a means of empowering the mass of the population and contributing to a more sustainable form of transport, a *diversity* of modalities should be developed and subsidized. Non-motorized vehicles can be appropriate technologies, not only for countries of the South, but also in the North (e.g., countries like Denmark and the Netherlands). Mass transit and non-motorized transport need to be valorized and taken seriously in technological development (e.g., new metal alloys, solar power). Developing such modalities can represent a move "back to the future." Asian cities, particularly those of China, could benefit a great deal from such a shift in development policy.

Contemporary auto technologies do not co-exist well with other uses of their spaces. Highways built for autos are not hospitable for walkers and cyclists. Even motorized public transit like buses find it difficult to use auto-centered space. For example, effective bus transit requires frequent stopping for on- and off-loading passengers. For this reason, local buses are unable to make full use of auto highways. In the North, where auto-centered transport has matured, other modalities have been pushed aside, especially in the U.S. It will be difficult to re-engineer social space in the U.S., so that other modalities can be

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[44]Angotti, *op. cit.*

[45]Deaths from roadway accidents (relative to the number of motor vehicles or vehicle miles driven) in the U.S., for example, have been falling. However, the absolute number of deaths remains stubbornly high. Deaths slowly declined from a high of 51,093 in 1979 to a low of 39,250 in 1992. Since 1992, they have inched up again, to 41,480 in 1998, despite the introduction of improved safety technology (such as airbags) and the tightening of social controls (over drunk drivers, for instance).

effectively used — even if the political will was present. In cities of the South, diversification in transport still remains, but it is gradually being pushed aside as auto consumption rises. While the South could profit from the negative lesson of the North and preserve (and modernize) their transport diversification, it is not happening. So far the neoliberal global development model has been too powerful.

Local elites and the emerging middle classes in countries of the South are eager to emulate consumption patterns of the North. The automobile is perceived to be both a source of "cultural capital" and the best way, technically, to travel; thus, it offers mobility *and* status. Levels of auto consumption qualify unequivocally as emblems of development and progress. Transnational corporations based in Western Europe, North America, and Japan view the South — especially the so-called emerging market countries — as fast-growing, potentially vast markets for their commodities, as their own markets become saturated with goods and tend to stagnate. These corporations and the nation-states of the North are trying to globalize the way of life that evolves from automobility in general and to help develop the material infrastructure for the use of automobiles in the South in particular. The auto industry, petrochemicals, and other sectors dependent in part or whole on mass automobility are clamouring for a greater play in the South. Mass motorization in the South, it is thought, is the answer to excess productive capacity and profit shortfalls in the North.

While it is easy for countries of the North to tout sustainable development (having reaped the dubious benefits of unsustainable development), the countries of the South suffer the most. It is thus the North that needs to take the initiative in "greening" both production and consumption. This is because the North has done the most damage to the environment (especially as imperialists and neo-imperialists in exploiting resources in the South); has the material resources to make needed changes (some have termed the countries of the North post-scarcity societies); and as a model for development (particularly the U.S.) has the moral obligation to provide an example of a greener and socially less destructive way of life.[46]

Whether or not there can be a greening of consumption in the North *or* the South depends on planning the global market place, shifting production to less energy-and-resource intensive consumer goods, encouraging more sustainable and socially democratic modes of consumption — in all countries of the world. Given the need of capitalism to expand, to devour resources, to increase the intensity and

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[46]Sachs, et al., *op. cit.*

pervasiveness of destructive forms of consumption, so as to pursue profit throughout the globe, such changes will be difficult and will probably have to wait for mass red-green movements in the North *and* the South.