

# THE URBAN AGE

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U R B A N T R A N S P O R T A T I O N I S S U E

## Bangkok's Urban Transport Crisis

by Rod Stickland

BANGKOK. The horrendous traffic in the Bangkok Metropolitan Region is widely known: anyone who has travelled to Thailand has his or her own favorite horror story of being stuck in gridlock for hours. Traffic conditions in Bangkok are generally recognized as being among the worst in the world.

Unplanned and uncoordinated development in this metropolis of 9 million (14 percent of the country's population) is characterized by massive urban sprawl radiating up to 50 kilometers in all directions. Traffic congestion and air pollution from vehicles are causing substantial economic losses and serious health effects, which mean lost work days and lower productivity (see box on page 4).

Sprawling development along major road corridors and inefficient patterns of urbanization have "frozen" substantial areas of land from development since access to the surrounding road networks is lacking. As land prices escalate, the government has had more difficulty acquiring land for local distributor roads and major highways. High land values have

also contributed to high-rise, high-density developments that put additional pressures on existing local infrastructure, especially roads.

In recent years, traffic volumes on the main roads have been growing at between 15 and 20 percent per year, representing a doubling in volume every five to six years. More than 500 new vehicles are added to the streets of Bangkok daily, and average travel speeds of less than 10 kilometers per hour drop to a mere 5-6 kilometers per hour in peak traffic periods. This should not be surprising, since roads only occupy 11 percent of Bangkok's total land area, compared with 20-25 percent in such cities as London, Paris, and New York.

While the city's roads are clogged with vehicles, its river, canals, and railway carry relatively few passengers. Although mass rail transit systems have been proposed for many years, as yet no system has been implemented. The road system consists of a limited number of major arterials, a network of wide main roads, and many small local access roads, or *soi*. Many of the main roads, particularly in the inner areas, are operated one-way, with six or more lanes of traffic. This makes them exceedingly difficult for pedestrians to cross. Outside the Middle Ring Road surrounding the inner city, the network is sparsely developed. Several proposed major roads and expressways are in various stages of negotiation, and many smaller roads are under construction.

### Barriers to Progress

Proposed solutions to the transport problem abound and public support for such efforts has been genuine, but disorganized. Delays and difficulties in carrying out such solutions have plagued the development of

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Traffic congestion in Bangkok has widespread economic and social costs.

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# A Tribute to Jorge Hardoy

by Michael A. Cohen

Michael A. Cohen is division chief of the Urban Development Division, the World Bank.

It is with great sadness that we learned of the death of Jorge Hardoy on September 19, 1993. For many years, Jorge was one of the leading scholars—architect, historian, planner, and geographer—of urbanization in developing countries. His wide range of intellectual interests included the developing role of intermediate size urban centers, the urban environment, street children, historic preservation, and urban health. He served as a valued advisor to governments, foundations, and development agencies. He helped to train a whole generation of Latin American urban specialists, both by involving students in ongoing activities and by mobilizing the financial resources to support their work and learning. Many urban specialists around the world claim him as their mentor.

In addition to his international work, he was an activist on local issues in his home city of Buenos Aires, frequently with his wife, Ana, also a leading urban specialist focusing on community development. Jorge combined his strong professional interest in individuals with genuine personal warmth and caring. One of his legacies is the large number of people who counted him as their friend.

One of his most enduring contributions was his ability to establish and nurture institutions and networks. Some of these have included the Center for Urban and Regional Research in Buenos Aires and the International Institute for Environment and Development in Latin America, and a large number of networks of Latin American scholars and activists which have served as focal points for discussion and support for individuals, particularly during periods of political repression.

Perhaps his most important professional legacy was his strong belief that "we can do better," that urban specialists have the professional obligation to find solutions to problems, to provoke and nurture change, and to focus special attention on the needs of the poor. This belief coupled profound professional knowledge with a strong social commitment. He will be long remembered for the content of his professional work and his belief that this work should contribute to social justice.

I am sure that many contributors and readers of *The Urban Age* join me in conveying our deepest sympathy to his wife and family. We will miss a respected colleague and a dear friend.

## Editor's Note

"Urban transportation" means more than how people move from one part of the city to another, or the kinds of mechanical devices and systems they use. As Nigel Harris discusses in his guest editorial, transportation is central to the flow of knowledge, information, and commercial goods. The types of available transport, and how they are used, tell us a great deal about a society and its values. In several articles, the mix of transport modes reveal deep-seated distinctions among social classes: the rich, the poor, and the middle class; the elite and the disenfranchised.

A common theme, in articles from Thailand, the United States, Cuba, and Mozambique, is the notion of "the car as king." The desire to have one's own personal automobile persists despite the expense involved in owning and operating them, and knowledge of their environmental costs. Non-motorized transport, most notably bicycles, are seen by the majority of people in many countries as "backward" and unappealing, especially for the upwardly mobile. However, bicycles are gaining popularity in a number of countries, for diverse reasons, as described in articles from Cuba, Mozambique, and The Netherlands.

Any discussion of urban transportation would be incomplete without some mention of health and environmental issues. Large scale air pollution control programs are being carried out

in a number of major cities, including Tehran. The global epidemic of lead poisoning, especially of children, is a preventable tragedy throughout the world, including the USA. In most developing countries, lead's long-term and damaging effects can be linked most clearly and dramatically with the continued use of leaded gasoline, which disperses lead throughout the environment. The article from Buenos Aires, and the companion piece that adjoins it, raise critical issues on this topic.

There are vast resources and literature available on urban transportation, some of which are highlighted on the following pages. We hope that this edition of *The Urban Age* will help create a better understanding of some of the major concepts and controversies in the area of urban transportation worldwide.

This past September, Mary McNeil began a 10-month study leave at the Kennedy School of Government at Harvard University. I have been the acting editor for this issue, and will be the editor for the Winter 1994 and Spring 1994 issues. Mary will return in time for the Summer 1994 edition.

As always, we look forward to receiving your comments and feedback on this and all issues of *The Urban Age*.

—Bonnie Bradford

# Transportation and the Economic Survival of Cities

by Nigel Harris

Nigel Harris is professor of development planning, Development Planning Unit, at University College London, United Kingdom.



In a world economy characterized by the movement of a growing avalanche of goods, the capacity to transport efficiently is essential to economic growth, employment, and income.

Cities are no longer fixed locations for production; they are the switchgears in a global exchange system, logistical centers for managing flows between distant points.

Those who manage the giant projects of urban transport infrastructure—from docks, airports, railway and trucking terminals, to telecommunications—play a decisive role in the economy. It is important to keep in mind, however, that the mode of movement for the majority of the world is still by muscle power—walking, bicycling, lugging headloads, or pulling rickshaws. Swift global and slow local movement are equally crucial in creating and sustaining the output, employment, and incomes of people.

The pace of growth of transport is phenomenal, not least because trade grows faster than production. Given the significantly higher rates of growth of manufacturing in developing countries, exchanges between developed and developing countries are scheduled to grow disproportionately fast. Global networks of supply stretch processes that were formerly enclosed in one factory over many countries, so shipment between these diverse suppliers becomes crucial for the final output. Maintaining the world's output increasingly depends on rapid and absolutely reliable movement.

The city's agglomeration economies no longer seem effective in much of manufacturing. Dispersal is not just global,

but is also moving away from big cities toward green field sites on the edge or beyond the reach of metropolitan regions.

Agglomeration economies become far more effective for city concentrations of finance, transport terminals, markets, tourism, culture and education, health, research, and development—the great services now predominating in many cities and supplying wide geographical areas, even global markets. But the dispersed output still comes to the city's transport junctions for distribution.

Few areas of city transport are more starkly contrasted between developed and developing countries than seaports. Innovations in loading and shipping; in ship design, navigation and communications; and in land transport access, have made ports so expensive that major shipping lines often refuse to carry cargoes to developing countries because of the cost (port operations can cost between a fifth and a half of total transport costs). The difference is not simply in the quality of capital equipment, but even more in the management of city transport movement.

Airports are assuming the role in urban development previously played by seaports and railway terminals. They stimulate local manufacturing and agriculture and become major centers of economic activity.

The competition to build or upgrade airports is fierce—and expensive. In East Asia, the new Kansai airport, built on an artificial island near Osaka, competes with brand new airports in Seoul and Hong Kong, and upgraded facilities at Bangkok and Singapore. The People's Republic of China is expanding air traffic at an extraordinary pace (20 percent per year), and with it

comes a boom in city airport construction. The same competitive forces are at work in the competition between close European airports.

Sea and air transport are increasingly important for the economic survival of cities, but for most people, transport still means movement on land, whether on foot, by animal, by vehicle, or by train. These movements are no less vital. The growth of urban productivity depends on swift and cheap connections between homes and workplaces, between ports or airports and factories.

The heart of the modern metropolis is also the movement of information and finance. In the case of finance, the past 20 years have seen extraordinary growth, transforming central business districts. But participation depends on increasingly sophisticated telecommunication systems connecting cities as well as on a facilitating political and administrative framework. In many developing countries, private capital is being brought to bear to develop this capacity.

Compared to the investment lavished on international movement, city transport is a Cinderella—even though the economic advantages of the city and the productivity of the city worker depend on swift and cheap local movement.

The situation is getting painfully worse in most cities as a generation of investment reaches exhaustion, without being renewed, while the numbers requiring to travel grow spectacularly. There are said to be 1.7 million vehicles (including two-

wheelers) added to India's stock annually, most of them in cities. Vehicle domination of roads collides with the masses of people still dependent on muscle or animal power, with severe threats to life and limb.

Furthermore, the growing volume of motorized movement is inflicting yet further damage on the environment; poor traffic management and badly serviced vehicles combine in traffic jams to inflict the greatest damage on air quality, especially in hot sunlight. Aircraft yet further damage the atmosphere. The 420,000 annual ship movements in the North Sea pose major threats to the cities and habitat surrounding the waters.

Urban management can provide the leadership for the efforts to secure the economic future of the city by maintaining an efficient system to manage flows: people, goods, services, information, and finance. The paradox of development is present in each element—increasingly swift and cheap long distance movement for a minority, slow and extravagant city movement for the majority.

The present failures of management trap the poor in isolated islands between high-speed routes, crisscrossed by aircraft and rail and road viaducts. Transport, which should be a means to escape from poverty, becomes a means of locking people into ghettos. On all counts—the amelioration of poverty, the enhancement of productivity, and the improvement of the environment—effective urban management is a key to progress.

*The ideas expressed in "World View" are not representative of any agency or organization, but reflect the personal comments of each author. They are included to stimulate lively debate and interaction on various issues in the developed and developing worlds.*

# BANGKOK

continued from page 1

Bangkok's urban transport infrastructure. A key constraint is the lack of any one agency with clear responsibility for the coordination of the various transport projects. A central agency is needed to appraise and help define projects so that all efforts are effectively integrated before being presented to the cabinet.

Responsibility for the transport sector is divided among a number of ministries and agencies within each ministry, leaving no single body with the power or authority to tackle the complex issues involved. It is the failure of each of the agencies to implement individual projects, rather than the absence of central guidance and policy direction, that has led to the lack of progress. Examples of this abound, most noticeably with regard to responsibility for the development of rapid transit systems.

The current confusion, and controversial nature of Bangkok's traffic problems, has also led to a high degree of political interference in Bangkok's transport planning process. The country's present political structure (a coalition government with five constituent parties) has helped produce a series of conflicts and policy reversals, accompanied by highly public debates over government policy.

Local attitudes are another barrier to progress. Many drivers seem to have the attitude that the situation is out of control and little can be done about it. Add to this the status of the private car, as well as its comfort and convenience, and it is likely that most drivers will continue using their cars even after mass public transit is improved. Thailand's production of cars and commercial vehicles has risen from less than 80,000 units in 1986 to more than 300,000 in 1992. To improve the quality of locally produced vehicles and increase competition, the Thai government also reduced the duties on imported vehicles in 1991 from 300 percent to 20-60 percent, providing additional encouragement to potential car owners. In 1992, the number of new private car registrations rose 85 percent over 1991 levels.

## Economic, Environmental, and Health Effects of the Transport Crisis

Persistent transport problems are affecting the productivity and quality of life of Bangkok's residents. As illustrated in the figure "More Cars, More Pollution," the transport sector has a direct effect on the city's already serious pollution problems. The amounts of carbon monoxide, lead, and suspended particulates in Bangkok's air far exceed internationally accepted levels, and threaten the health of the population at large. Contributing factors include rapid growth in highway traffic, the high percentage of motorcycles on the road, traffic congestion, and the extensive use of diesel as a transportation fuel.

The numbers are powerful:

- The environmental costs of air and water pollution in Bangkok exceed \$2 billion a year.
- Each car in Bangkok is expected to spend an average equivalent of 44 days each year in traffic jams.
- The city currently loses about one-third of its potential gross city product due to congestion-induced travel delays. According to one estimate, this equates to a loss of \$4 million a day.
- If peak-hour car trips in Bangkok decreased by 10 percent, the economic value of time savings is estimated at about \$400 million annually.
- Excessive levels of lead (largely from vehicles) in Bangkok's air contribute to 200,000-400,000 cases of hypertension and some 400 deaths a year.
- Rough estimates suggest that excessive lead in Bangkok's air can cause children to lose an average of four or more IQ points by the age of seven, with long-term implications for their productivity as adults.

## Bangkok's Proposed Megaprojects

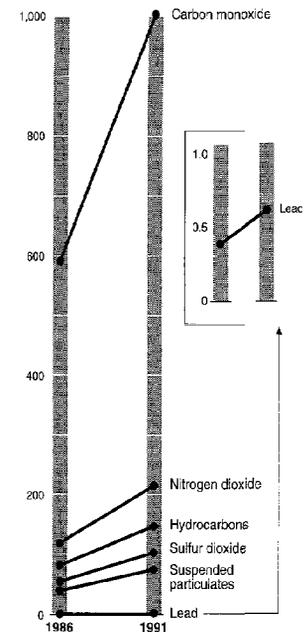
The proposed solutions to Bangkok's traffic problems include the construction of a series of transport "megaprojects" involving mass rapid transit and expressways. Most of these projects rely, at least initially, on a significant level of private finance. Some of these proposals have been around in one form or another for many years, if not decades.

The following major transport projects for Bangkok are generally referred to as megaprojects:

- The Bangkok Transit System, previously known as the Tanayong project, is currently the most advanced of the mass rapid transit schemes. It involves construction of 25 kilometers of elevated rail transit, entirely above streets of inner Bangkok. The project, under a concession from the Bangkok Metropolitan Administration, was originally scheduled to open in 1996 but had, until recently, been delayed pending the identification of a suitable depot site.
- A second proposed rapid transit scheme, being developed by the Metropolitan Rapid Transit Authority (MRTA), involves 20 kilometers of mostly elevated track. These tracks would generally follow the alignments of the "Skytrain" project that was canceled in 1992. The original schedule envisaged completion of the project by 1997, but this is now behind schedule.
- Hopewell Holdings Ltd. and the State Railway of Thailand have signed contracts for the first phase of the Bangkok Elevated Road and Transit System. It includes the provision of rapid transit and suburban commuter rail services on the two main railway alignments north to Rangsit (28 kilometers) and east to Hua Mak (13 kilometers). The contract specifies that these routes will be operational by 1996, but the project is behind schedule.
- The Hopewell project also includes provision of a six-lane Elevated Expressway and four-lane service roads within the city's northern and eastern rail corridors. These roads will duplicate other elements of Bangkok's expressway networks, however, and could lead to severe overloading of the local roads that connect with them.
- When completed, Bangkok's system of expressways will provide a comprehensive system network totalling 135 kilometers within the Outer Ring Road, providing the metropolitan area with an adequate network of high capacity routes to service and access the existing urban areas. The city's First Stage Expressway (27 kilometers long) has been in use for 10 years. The first 20 kilometers of Bangkok's Second Stage Expressway recently opened after protracted public debate between the government and the private concessionaire. Expressways in Bangkok are the general responsibility of the Expressway and Rapid Transit Authority.
- The Third Stage Expressway is currently the subject of financial feasibility studies and discussions with prospective investors. A

## More Cars, More Pollution

Emissions from the transport sector, Bangkok metropolitan region (thousands of tons a year)



Source: Thailand Development Research Institute.

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# BANGKOK

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further section of expressway (at Narong-Ram Intra Expressway) is proposed to serve the expanding north-eastern suburbs and may be funded by a Japanese loan.

- A 20 kilometer elevated tollway is being built to the Don Muang airport as a concession let by the Department of Highways, but progress on the Don Muang Tollway remains mired in detailed design issues.

## Megaproject Conflicts and Delays

The lack of a central planning agency has created numerous potential conflicts among these megaprojects. A recent study of the megaprojects revealed a total of 33 locations where the construction, as designed, would be impractical due to a physical conflict between the schemes. In some instances, a duplication of facilities was proposed along with initiatives that conflict with other government policies and objectives.

The development of the secondary and distributor road networks is of critical importance. Each proposed expressway megaproject, for instance, must be complemented by an expanding network of secondary roads to provide access to the development areas and to distribute expressway traffic efficiently and effectively. The plans to expand the existing highway to the Don Muang Airport illustrate the problem. The current highway has a total of ten lanes (five in each direction) with flyovers at each junction. Expansion plans would increase this to 26 lanes (13 in each direction) by the addition of a six-lane elevated tollway plus the adjacent Hopewell Project, which consists of a six-lane freeway and four local traffic lanes. Yet congestion on the current highway occurs at the junctions and exit ramps, not on the main carriageways. This is with traffic fed from the present five lanes; increasing this to 13 lanes in each direction will only increase the amount of traffic seeking access to the local street system.

A second example of megaproject problems is the recently built flyover in the downtown area, where two rapid transit schemes potentially cross. Any solution at this location would result in a three-level structure, with the upper rail system at 27 meters above ground level, or approximately at the level of the eighth floor of surrounding buildings. Both systems will need a station near the juncture, with platform levels 25 meters above street level. These stations may be over 100 meters long, with dimensions similar to a 30-story building laid in the street.

Thus, the existing flyover (see photo on this page) would somehow have to accommodate two levels of elevated railway above it. This mega-junction would be located in the heart of the city, immediately outside one of the city's premier hotels. The challenges this poses are both technically and aesthetically daunting.

As a result of these and other issues, progress with the construction of expressways is behind schedule. And despite the fact that all transport studies of Bangkok over the last two decades identify a segregated mass transit system as an urgent prerequisite to improving the city's traffic conditions, each of the schemes currently under consideration is no nearer implementation than a year ago.

## Mass Transit Trade-offs

The addition of a rapid transit system to Bangkok will enable people to make their current trips with greater comfort, convenience, and reliability than at present, and to travel at chosen times to arrive (at the office, for example) at predictable times. It should reduce the need for people to leave home at 5:00 a.m. to guarantee arrival at the office by 8:00 a.m. and also ensure that it doesn't take until 10:00 p.m. to get home. A rapid transit system will also permit the city center to function more

efficiently and allow continued development and growth of the center.

However, while mass transit is frequently touted as the potential solution to Bangkok's traffic woes, the rapid transit projects now under consideration will not solve all the city's traffic problems. A new rapid transit system will also unleash a significant amount of suppressed demand. As the local press put it: "All the couch potatoes who stay at home watching television because going anywhere in Bangkok is such a nightmare will venture out when the train is operational."

A new mass transit system will also not do much to reduce the number of cars and motorcycles on Bangkok's roads, since a massive defection from private cars to public transit systems is not expected. Instead, the bulk of future transit patronage is expected to come from existing bus passengers. Typically, in the rapid transit systems of other cities, less than 5 percent of transit riders have been diverted to public transit from their cars.

Thus, while an alternative, non-road-based means of rapid transit is sure to be popular (as long as the fare is right), additional measures will be



needed to restrict the use of private vehicles. Regulations to limit the number of cars on the road may prove unrealistic in Bangkok. But some forms of restraint on car travel will be needed, such as parking controls and higher road tolls.

## The Role of the Government

The confusion over ultimate responsibility for Bangkok's transport projects can be clearly seen in the development of mass transit priorities and projects. The government was initially expected to take a central role in promoting (and funding) a mass rail transit project that would catalyze the creation of a more coordinated and integrated network of rapid transit systems in the city. Instead, after the collapse of negotiations over the Skytrain elevated rail proposal, the government created the MRTA to

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review new mass transit proposals and seek private sector financial participation.

Far from clarifying the situation, the collapse of the Skytrain project has been followed by a confusing array of mass transit proposals. These have included a series of underground "subway" projects, despite the fact that construction cost of an underground system is generally expected to be at least double that of a comparable elevated system.

The government's role in financing mass transit is also open to debate. No rapid transit system in the world has generated sufficient revenue to cover operating costs, maintenance, renewals, construction costs, and debt servicing. Many are lucky to cover their operating costs alone. Thus, it seems extremely unlikely that Bangkok would offer an opportunity for a financially self-supporting rapid transit system. The city's conditions are not particularly favorable: residential densities are relatively low, there is no single clearly defined urban center, and car ownership levels are high and rising. Yet potential private investors, who claim to be able to build a self-financing transit project, continue to be vocal, discouraging any serious government role in financing and effectively postponing the day when a transit scheme will exist in Bangkok.

The continued government goal of major private sector involvement in the city's mass transit projects may be unrealistic. Unless extremely attractive incentives can be offered to potential investors (such as the massive property development rights in the Hopewell rail and road project), it is unlikely that investors will ultimately proceed.

The government needs to provide an enabling environment that is attractive for private financing. In the recent case of the Second State Expressway, the government threatened to amend the toll rates and only complied with the contractually agreed amounts after protracted negotiations; the government can also be seen to be in default over other associated issues, including the provision of land. Potential investors need to see that a fair relationship can exist in which risks are shared between the government and investors, within an equitable legal and regulatory framework. Changing the rules, particularly those linked with the fixing of tariff rates and risk sharing, can only discourage potential investors.

The public sector will ultimately be obliged to pay, either directly or indirectly, for the provision of rapid transit. Given this situation, it may be preferable for the government to take a more active role in the development and evolution of these projects. This would not only allow the public sector more control, but would help determine the timing and extent of public financing requirements.

Although the government is aware of these arguments, it still appears determined to minimize its financial involvement in rapid transit. As long as this policy is maintained, progress toward completion of Bangkok's much-needed rapid transit systems may be slow.

### Questions for the Future

Bangkok needs to accelerate the expansion of existing transport networks to catch up with current demands, as well as to set the groundwork for the longer term development of the region. A major transport infrastructure investment program cannot be avoided if Bangkok and Thailand are to retain their preeminent position in southeast Asia.

Yet progress on the ambitious program of transport improvements laid out for the Seventh Plan period (1992-1996) is clearly slower than desired. The reasons for this include organizational confusion, resulting in the absence of clear direction or decisiveness on particular projects; the continued expectation of major private sector financing; escalating costs, especially for land; and political interference.

## Global Facts and Figures: Urban Transportation

- The private car consumes 60 percent of the world's natural rubber, 20 percent of steel production, 10 percent of aluminum products, and requires between 5 and 20 meters of road for every vehicle in the major cities.
- Public transport trips represent about 25 percent of all urban trips in Europe, but only 4 percent in the United States, and 8 percent in Australia. In Asian cities, more than 64 percent of urban trips are by public transport modes and 25 percent on foot or bicycle.
- In Delhi, India, 65 percent of squatters walk to work, compared with only 10 percent of low-income workers and 3 percent of middle income workers.
- In Africa, between 60 and 80 percent of urban dwellers use some form of public transport, walk, or cycle. A similar situation exists in Asia.
- In Mexico and Thailand, about half the vehicle fleet operates in the capital city. In Brazil, a quarter of the fleet operates in Sao Paulo.
- In Brazil, segregated busways have been used very effectively to achieve flows as high as 20,000 passengers per hour.
- Air quality in developing country cities is getting worse, while in OECD cities, it is improving. The improvements are mainly due to cleaner fuels and cleaner technologies.
- Two-stroke motorcycles emit approximately 22 times as much hydrocarbons and 10 times as much carbon monoxide as automobiles (controlled to U.S. 1978 levels).
- In Mexico City, lead poisoning is thought to result in 140,000 children requiring remedial education, and 46,000 adults suffer from hypertension, of whom 330 die yearly from heart attacks. Mexican authorities have urged parents with small children to move them out of the city.
- In Cairo, lead concentration in the air is five to six times greater than global norms. The lead content levels in the blood of children in Cairo is three to five times more than children in rural Egypt.
- Urban lead concentrations in North America have decreased, on average by 85 percent, and in large European cities by 50 percent, due largely to increasingly stringent regulations, changes in the design of engines, emissions control devices, and types of fuels used.
- Each year, more than 500,000 people die in road accidents. Seventy percent of these deaths are in developing countries. Two-thirds of deaths involve pedestrians, of which one-third are children. The costs of accidents represent between 1 and 3 percent of GNP.

see pg. 24 for sources

Significant improvement in Bangkok's traffic congestion is unlikely in the near future, as the expected rate of continued growth will rapidly erode any benefits that accrue from the construction of new infrastructure. In the long run, the city needs significant (and politically difficult) restrictions on the use of private cars, substantial investment in transport facilities, and clarification of organizational responsibilities. On the environmental front, consideration should be given to installing vehicular emission controls and to reformulating transport fuels to reduce emissions of key pollutants. Other changes could include reforms to fuel and road pricing, vehicle pricing and taxes, and other demand management measures such as staggering of work hours to reduce peak traffic.

Without at least some of these reforms, conditions will continue to deteriorate, and Bangkok will suffer at the expense of other cities in Asia.

*Rod Stickland, director of Traffic & Transport Consultants Ltd., lives in Bangkok. He has been advising the Thai government on transport planning and policy issues for the past two years.*

# Urban Transport in Lagos

by Tunji Bolade

Tunji Bolade is the deputy director of the Federal Urban Mass Transit Programme in Lagos, Nigeria.

LAGOS. Among the problems confronting the city of Lagos, urban mobility presents the greatest challenges. Urban transport and traffic management problems in Metropolitan Lagos are complex and multifaceted. They range from gross inadequacies of public transport, overcrowded buses, poor road infrastructure, environmental pollution, and absence of integrated traffic management measures to combat congestion.

The geographical region of Metropolitan Lagos traverses about 1,800 square kilometers and is inhabited by over 5 million people. It is the fastest growing urban center in Nigeria, and the largest commercial, financial, and industrial center in the country.

## Unconventional Transport Widespread

In the last decade or so, the mobility of the urban poor and working class have presented new challenges along with the rapid decline of new vehicle acquisition due to economic problems. Yet the city's dynamic transport system has been adaptive and innovative with the stream of used imported minibuses and old cars used for unconventional, unregulated, and unregistered public services called "kaba-kabu."

Unconventional and other adaptive bus and car services have been providing the stop gap between the escalating rate of demand for public transport and the level of services available in Lagos. Problems related to traffic congestion and management, transport coordination, expansion of transport services, and creation of an integrated urban transit system are yet to be resolved. But even more fundamental and pressing is the need for affordable services for the urban poor.

## Existing Transport Services

Road transport provides over 90 percent of the commuting services in Lagos, primarily through cars, buses, and taxis.

The fleet of state-owned and some of the 15 local government-owned transport companies includes over 500 buses. The total vehicular fleet in Lagos State increased from 53,270 in 1967 to 165,000 in 1984 before declining to about 100,000 in 1988 in line with the declining fortune of the economy. Newly registered vehicles increased from 17,000 in 1971 to 72,000 in 1982 and declined to 17,000 in 1986 and 10,000 in 1988, while new public transport vehicles went down from 16,500 in 1983 to 1,500 in 1988.

The advent of the mass transit program in 1988 and the increasing importation of used cars and buses from western Europe have significantly altered this deteriorating situation. For instance, over 80 percent of the estimated 35,000 used vehicles imported into Nigeria in 1991 were concentrated in Lagos. Many of these used vehicles are used to operate the public transport services known as "kaba-kabu." A survey of the "kaba-kabu" services in December 1991 recorded 3,961 of such minibuses on 24 of the over 300 public transport routes in Metropolitan Lagos.

Metropolitan Lagos has about 2,700 kilometers of road network, about 40 percent of which is tarred. Three main bridges link the island portion of the city with the mainland. Lagos Island, as the commercial nerve-center of Metropolitan Lagos, has less than 3 percent of the Lagos population, but handles about 50 percent of the state's traffic. It is estimated that over 250,000 vehicles and 2 million passengers enter

and leave Lagos Island and its adjoining Ikoyi and Victoria Islands for the mainland each day.

Urban rail transport in Lagos is not significant. A narrow section (about 20 kilometers) of the Nigerian Railway Corporation network used for urban commuter service in Lagos carries less than 50,000 passengers daily. Similarly, substantial use of water ferry service on about 14 possible routes in Lagos has yet to be explored.

## Urban Transport Demand

Estimates of urban transport demand in Metropolitan Lagos in 1990 ranged from 7-10 million passenger trips daily. The share of road transport in the modal split is

over 95 percent, while the public road transport's component would be up to 80-85 percent. Annual urban rail passenger traffic, even in 1988 and 1990 when the mass transit rail services were introduced, was under 4 million passengers per year, while the Lagos State Ferry Service transported less than 1 million passengers per year. Total annual passengers for the Lagos State Transport Corporation fluctuated from 90 million in 1978 to 53 million in 1983, 76 million in 1986, 87 million in 1989, and possibly less than 60 million in 1992.

Other Lagos local government-sponsored bus operations, which commenced in 1991, could

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Unregulated "kaba-kabu" services account for about 40 percent of public transport in Lagos.

not have yielded more than 50 percent of the Lagos State Transport Corporation's capacity. The 14,000 taxis in operation carried about 1.12 million passengers in 1989. In total, the minibus and midi-bus operators in Metropolitan Lagos must have been carrying about 4.5-5 million passengers daily or 1.2 to 1.5 billion passengers per annum. They are therefore the most significant means of public transport in Lagos.

### Transport Needs of the Urban Poor

With the changing structure and fortune of the economy, public transport vehicles drastically declined between 1986-88 as described previously. The shortfall also exacerbated the increases in public transport fares. However, the drastic effects of the decline in acquisition of new public transport vehicles following escalating prices are now being cushioned by two new forms of adaptive transport. These are old, often rickety used cars; mini-buses imported from western Europe; and motorcycles.

The old cars and buses are used to operate "kabu-kabu" services in a demand-responsive manner. This largely unregulated public transport accounts for about 40 percent of public transport service in Lagos. Indeed, they are the only means of public transport available on some routes. There has been no official sanction against their operation, and their services seem to have become acceptable to the state government. The second adaptive service is the use of motorcycles to carry passengers from the suburbs to the main transport interchanges or terminals. The motorcycles are called "Okada." This is the carrier name for the largest domestic private airline company in Nigeria.

These two adaptive services have provided substantial relief to the working class and urban poor unserved by conventional public transport.

## Transport and the "Taxi Mafia" in South Africa

by Meshack M. Khosa

*Meshack M. Khosa is a lecturer in the Department of Geographical and Environmental Sciences at the University of Natal, Durban, South Africa.*

South Africa is on the brink of a major political transition with elections scheduled for April 1994. One of the many challenges that will confront the government of national unity is the transport crisis, which affects some 2.5 million black workers who commute daily during peak hour periods. The transport crisis manifests itself in different forms: high and unaffordable fares for the black working class who are paid poverty wages, long travel distances, violence against commuters, and taxi wars (which have claimed some 200 victims this year).

### Public Transport in South Africa

The conditions of black workers commuting in South Africa are mainly derived from apartheid's spatial engineering, with its artificially wide separation between home and workplace. In South Africa, the application of repressive laws such as the Group Areas Act from 1950 and the forced removal of up to 3 million people led to the unique geography of the 'apartheid city.' Blacks who previously lived near city centers were uprooted to the urban periphery. The average commuting distance of blacks (21 kilometers) is twice as long as that of whites (12 kilometers).

Contrary to transport conditions in cities of developed countries where the poor settle in and around central business districts, the apartheid city defies this comparison. Today the urban commuting experience of the casual poor and the majority of blacks in South Africa is a nightmare. Until the negotiation process began in 1990, blacks did not have control over the provision of transport. The majority of whites in South Africa own cars; few blacks, however, can afford such personal and luxurious transport (see table).

There are three popular modes of urban public transport in South Africa: buses (provided by the state and private sector), minibus taxis (provided largely by blacks), and trains (state provided). Bus and train fares are subsidized by the state (to the tune of \$600 million); minibus taxis (which number some 80,000 vehicles countrywide) are not subsidized. Minibuses are usually operated by blacks and carry mainly black commuters. Newly established informal settlements, shacklands, and squatter areas, which have sprung up over the past decade, are not yet provided with adequate, efficient, and affordable transport. Although traveling by minibus taxis is relatively convenient, quick, and safe (in relation to buses and trains), few black working class commuters can afford their fares.

### The Minibus Taxi Revolution

Until very recently, public transport constantly reminded blacks of their lack of representation in the white state, their lack of share in the capitalist economy, and their exclusion from urban areas except when selling their labor power in the apartheid city. The dangerous, overcrowded, and uncomfortable character of the public transport network provided by the state played into the hands of the black taxi industry, which was able to provide a safe and efficient mode of transport.

Until 1986, white state officials used various apartheid laws including the notorious influx control measures to regulate the issuing of taxi licenses to blacks. For its part, the state sought ways to depoliticize the provision of transport through deregulation and privatization in the 1980s. It was at the height of resistance that the white state deregulated minibuses in 1987.

The taxi operation occupies an

important place in the new urban transport market. Taxis have the single largest share of the African commuter market, skyrocketing from virtually zero shares some 10 years ago (see table). The emergence of the taxi industry, however, also created new problems such as taxi violence.

### Ranks, Routes, and Rebels

More than 15,000 African people have been killed in political violence in South Africa between 1984 and June 1993. The vast majority of these (63 percent) were killed since the negotiation process began in February 1990. Political violence is partly rooted in poverty, squalor, and unemployment. There are also localized causes of violence, such as the battle for market share among African taxi owners.

In the first three months of 1993, some 200 people were killed in taxi-related conflicts in South Africa. The chairperson of the multi-racial National Transport Policy Forum, George Ncogota, mourned that "We have reached a stage where we bury victims of taxi violence every day, every hour in this country." Concern about the increasing levels of violence motivated the forum to convene a three-day conference in August 1993 to formulate strategies to bring peace to the taxi industry.

Over the past five years there have been sporadic taxi feuds in Johannesburg's surrounding black townships. Most drivers are armed with automatic AK47-rifles. To protect themselves, taxi operators wear bullet-proof vests during operation hours. Taxi 'wars' are often violent, and frequently lead to death and destruction of property. A taxi war in the western Cape, which lasted for two years, claimed 100 lives, and the value of property damaged in the taxi violence

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### Modes of Transport of Metropolitan Commuters

|       | Bus   | Car   | Taxi  | Train | Walk | Other |
|-------|-------|-------|-------|-------|------|-------|
| Black | 21.5% | 11.2% | 41.9% | 14.9% | 8.7% | 0.8%  |
| White | 3.4%  | 88.3% | 0.2%  | 4.0%  | 3.4% | 0.7%  |

(Source: Race Relations Survey, Annual Survey of South African Institute of Race Relations, Johannesburg, 1993.)

amounted to \$8 million.

Taxi feuds have become so widespread that even the South African Black Taxi Association—a national taxi organization with some 50,000 members—admitted that “taxi operators have turned the taxi industry into a battlefield rather than a business venture.” The national president of the South African Black Taxi Association, James Ngcoya, lamented, “We are shooting ourselves in the feet! We are destroying ourselves! By the time the fight is over there will be no grass from which to gain sustenance—we will find the economic house forlorn. We will crumble under our own weight.”

### Underlying Factors Behind the Taxi Wars

Taxi wars, as with political violence, have outraged the public to such an extent that a Commission of Inquiry (under Judge Goldstone) was charged with the responsibility of investigating the causes of taxi violence. The root of taxi-related violence lies in the legacy of apartheid and in competition over resources such as routes, ranks, and licenses. The drawing of boundaries plays a very important role in taxi feuds as it gives some taxi operators exclusive rights to operate in certain territories. Not only do rebels reject these boundaries, they also resort to machine gun conflict resolution rather than dispute negotiation. Although the roots of taxi feuds are many and varied, at least five broad strands can be identified.

*Unlicensed vs. legal operators.* Taxi wars are as old as the taxi industry itself. One of the first recorded taxi wars broke out in the 1960s in Johannesburg between registered taxi owners and unlicensed taxi drivers (“pirates”). The “pirate” operators vowed to wipe the registered owners off the street. This culminated in what became known as the “death from the back seat”

strategy to eliminate legal taxi operators. “Pirate” gangsters pretended to be passengers and boarded taxis in order to kill the registered taxi owners. Battlelines are often drawn between legal taxi operators and “pirates.” One taxi rank in Soweto has been a war zone for the past three years.

*Access to routes and ranks.* Territorial conflicts in the taxi industry are mainly associated with access to taxi ranks and routes. Fights usually break out when taxi drivers cross the boundaries into other territories. This has been a cause of several taxi wars in Johannesburg’s surrounding black townships.

*Deregulation of the market.* The introduction of deregulation in the taxi industry in 1987 resulted in many more permits being granted, intensifying the commercial competition. There is also evidence of corruption in the issuing of licenses. Taxi killings are linked to the glut of taxis operating on lucrative routes. Arguably, taxi operators and drivers seem more concerned about keeping each other out of business than giving commuters the best service.

*High interest rates.* The high rates charged by financial institutions on hire purchase contracts and ever-increasing running costs combine to contribute to the pressure for taxi operators to convey as many passengers as possible. This creates unbridled commercial rivalry and intolerance among rival taxi operators and

associations. It appears that the pattern of taxi feuds tends to be worse during periods of recession, possibly due to inter-capitalist competition.

*White ownership in the taxi industry.* Another cause of friction in the taxi industry is the increasing number of whites entering the market. The South African Black Taxi Association has made numerous claims about white ownership in the taxi industry, alleging that figures of white ownership vary from 30 percent to 60 percent. Black operators suspected of fronting for whites have been attacked by black taxi operators. Several taxi drivers have been killed in Pretoria and Johannesburg in taxi wars at the ranks between drivers of white-owned vehicles.

### Towards a New Transport Policy

The formation of the National Transport Policy Forum in 1992 brought together a range of interest groups that had been excluded from contributing to the formulation of transport policy in South Africa. The National Transport Policy Forum aims to rally all stakeholders behind the task of developing a transport policy for post-apartheid South Africa.

As delegates negotiate a new transport policy, they may do well

to learn from international experience. Worldwide evidence suggests that the twin process of privatization and deregulation of transport is disadvantaging poor working people. Studies carried out over the past decade in South Africa confirm this.

Deregulation and privatization policies as envisaged by the state fall short of offering practical ways of reducing commuter distance, created by apartheid policies, and providing cheaper fares to the majority of the black working class. Deregulation and privatization policies serve the interests of powerful elements among the capitalist class and offer very little in the advancement of the working and unemployed people.



A taxi driver soliciting passengers in Soweto.

# Latin American Mass Transit

by Etienne Henry

**E**tienne Henry is research director at INRETS-France, the French National Institute of Research on Transport and Safety, and visiting professor at FGV-EAESP in Sao Paulo, Brazil.

Latin America has four of the world's most heavily populated cities, and about 50 cities with over half a million inhabitants. The transport challenge is one of the most serious problems faced by these Latin American cities.

Technological advances, financial efforts, and other political measures cannot keep pace with the growth of these economic and regional capitals as they undergo massive urban development.

There has been a particularly serious impact in areas where the urban layout and infrastructures are not designed to handle large numbers of cars.

## Rail Transit Systems

The railroad accounts for barely 15 percent of all trips in 37 Latin American cities. Mexico City and Sao Paulo, with very differently configured rail systems,

and Porto Alegre, Brazil, to an experimental system in Campinas, Brazil. The Medellin, Colombia, and Lima, Peru, light rail systems (LRT), under construction for five years, are still far from becoming operational. While these new systems carry barely over 150 million passengers a year, the LRT seems destined to develop in the region, if only because more measures are being taken to facilitate its introduction.

## Minibuses

Minibuses are a direct expression of a transport supply that developed in parallel with the urban development process. This mode of transport was well suited to the organization of the private transport sector. Large numbers of small owners grouped together in a business structure to offer at least minimal satisfaction of riders' demands, ill met by public service.

The minibus is currently experiencing serious difficulties as it attempts to keep up with the numbers of people needing to be transported daily. Even deregulation has not improved its functional productivity, as shown by the experiences of Chile and Peru. The minibus, which can enter a city's most outlying areas, will probably continue to meet the urgent needs of those living on the outskirts, but will also contribute to congestion in downtown areas.

## Buses Dominant

Buses represent the dominant mode of transportation in Latin America today. More than 80,000 vehicles carry over 65 percent of mass transit riders in 37 Latin American cities.

Brazil, with the strongest bus system in Latin America, has adapted its regulations to factor in

the dynamics of private entrepreneurs. Innovative technical and institutional experiments (from bus-only lanes and bus caravans to the use of transport vouchers covering part of the workers' travel costs) are found in Brazilian cities. Curitiba\* has started to use articulated buses, an excellent example of a city adapting aspects of its mass transit system to cope with present-day urban realities. Brazil's public transport strength is its modern bus fleets—the average age of its 40,000 vehicles is 4.67 years (2.6 years in Rio de Janeiro).

## Privatization

In recent years, many bus and trolley companies have been privatized. The municipality of Sao Paulo is now ending 50 years of direct service by awarding to two enterprises the operation of half of the lines formerly handled by the CMTC (Municipal Transport Company). Mexico City is attempting to divest from Ruta 100, which, with a 6,500-strong fleet, has for 10 years held the city's bus service monopoly (although it has not succeeded in preventing the city from being invaded by 70,000 minibuses).

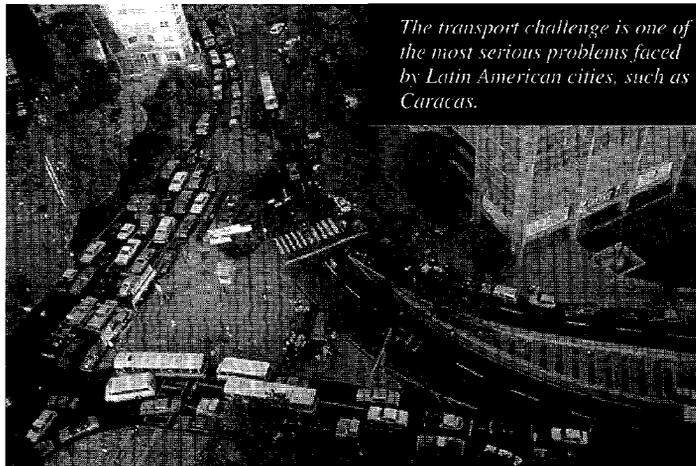
Meanwhile, other public enterprises continue operating, and some new ones are being created. They are taking up the challenges of productivity and innovation. But they are not winning a large share of the market from the private sector, or even achieving successful integration with the rail systems.

## Old and New Trends

Other modes of mass transit, such as ferries or trollies, could be developed more profitably, but account for a very small share of modal trip distribution.

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*The transport challenge is one of the most serious problems faced by Latin American cities, such as Caracas.*



The development of rail transport in Latin American cities has been sporadic, and privately owned buses have become the major mode of transportation. While the number of privately owned cars has increased sharply, so too has the number of citizens with no access to mass transit.

## Surge in Car Travel

Statistics do not give a clear picture of the increasing share of private car travel in Latin American cities. In Caracas, Venezuela, there are over 150 cars for every 10,000 inhabitants, while in Sao Paulo, Brazil, cars account for over 55 percent of motorized travel.

The increased freedom of automobile travel has had familiar consequences on urban life as well as on traffic, safety, and ecology.

beat world records for peak-hour travel per line, but Buenos Aires and Rio de Janeiro saw their ridership decline in absolute terms.

In Sao Paulo, Buenos Aires, and Rio de Janeiro, suburban trains were partially able to meet the needs of the poor, with 1.2 billion trips in 1991. Between the extremes of saturation and underutilization of Latin America rail transit systems, there are the subways of Caracas and Santiago de Chile, which serve as major development poles.

In the last decade, investments in traditional subway operations have concentrated on existing systems, most of which were built in the 1970s. Eight recent development projects, however, have concerned smaller scale alternatives, from three single-line trains in Belo Horizonte, Recife,

Modal trip distribution in Latin American cities is relatively simple. Out of 10 daily trips, eight are taken by bus or minibus, more than one by subway, and less than one by rail, sea, or river.

Throughout the region, less than one-third of trips are handled by public sector enterprises. This proportion will drop to below one-fifth following privatization of the Buenos Aires railroad and the Latin American bus companies. As long as the central or local authorities do not develop new mass transit systems, this will remain a clear sign of their intention to divest.

### Fares Increase

The trend toward privatization is corroborated by the quasi-disappearance of direct subsidies to private operators in most Latin American cities, which impacts on fares, and hence on mobility. In the 1970s, the cost of a public transit ticket was around \$US 0.10. Today it is estimated at over \$US 0.30 cents (\$US 0.27 on average for 53 Brazilian cities), and may go up to as much as \$US 0.50 in several cities. In large urban areas, many trips involve the use of two or three vehicles, and it is rare to find fare combinations between one operator and another.

Fare costs have also risen due to increased inputs, longer distances traveled, and other factors resulting from urban sprawl. Such fare increases have resulted in a tangible decrease in the mobility of the most impoverished groups, which cannot afford to spend over 25 percent of their income on even the most essential transport needs.

Without efficient and affordable mass transit systems, Latin American cities will find that problems already hampering productivity will become insoluble. The challenge faced is clearly one of productivity at both the modal and the urban levels.

*\*[Editor's Note: For more information on Curitiba, see *The Urban Age*, Spring 1993.]*



# Transportation and the Environment in Santiago de Chile

by Oscar Figueroa

*Oscar Figueroa is a senior researcher and professor at the Institute of Urban Studies at the Catholic University of Chile.*

SANTIAGO DE CHILE. While deregulating urban transportation in Santiago, the new municipal government is striving to blend free market principles with the need for a system to regulate services and traffic patterns.

### A Growing Vehicle Fleet

The rapid growth of Santiago's vehicle fleet appears to be linked with the growth of household income. Between 1982 and 1991, GDP growth was close to 70 percent; the number of automobiles increased by practically the same percentage.

According to a 1991 survey carried out in Santiago, the city had 405,000 vehicles, almost twice the number recorded in a 1977 survey. Over the past few years, however, this growth rate has tended to stabilize at 6–7 percent a year, but has reached up to 10 percent in very high growth years such as 1992. Assuming an annual growth rate of 7 percent, Santiago will have around 940,000 vehicles in the year 2000. This is an enormous number in relation to the capacity of its roads.

This problem will be compounded by the uneven distribution of income and vehicles in the urban environment. The 1991 survey showed that almost half the cars in the city were found in the highest income areas: 48.5 percent of the city's cars belonged to a population group representing only 16.7 percent of the city's inhabitants.

Private automobile use has grown at an even more alarming rate. Between 1977 and 1991, trips by car rose from just over

400,000 to over 1.4 million, a 350 percent increase in absolute terms. In relative terms, the share of car travel in overall motorized travel practically doubled between 1977 and 1991. Thus, while total travel in Santiago increased by 6.2 percent per annum, the annual growth rate of automobile travel was 9.1 percent.

### A Disorganized Mass Transit System

Deregulation in mass transit led to a doubling of the city's bus fleet from 5,200 to 10,500 between 1979 and 1989. The present fleet is over 12,000 buses. During the 1979–1989 period, the bus fleet aged considerably. The result was a marked oversupply of buses and aggressive competition on the street for passengers.

This behavior had harmful consequences. Competition among buses and the absence of any order regulating stops, routes, or trip frequency aggravated the congestion problem. With the surplus of buses on the roads and the difficulties of operating them, their drivers became reckless and irrational. In addition, particulate emissions increased considerably, since in their anxiety to make a profit, the bus companies tended to neglect their vehicles' condition.

### Government Remedies

The present government has been promoting a number of corrective measures designed to restore proper service. One of the first such steps was to weed out the number of old vehicles in the fleet. This resulted in the

withdrawal of 2,600 buses.

The government is also acting to prohibit access to the used vehicle fleet and is attempting to ban imports of used spare parts for buses.

There is also a program for the gradual reduction of bus emission levels, and for improved emission controls, both at inspection stations and on the street. Lastly, operators are being invited to bid on certain routes. This should reduce the number of buses operating downtown by about 30 percent. This will also reduce the average age of the buses traveling in the downtown area to four years, compared with around 10 years for the city's overall fleet.

The government is continuing to keep 20 percent of private cars off the streets during weekdays. It has also started to enforce the use of cars with catalytic converters, made mandatory for all new vehicles in September 1992, and intends to require toll payment for access to the most congested streets.

### Future Directions

The outcomes of all these measures have been mixed, both in terms both of traffic organization and on pollution.

Deregulation has meant constant expansion of the vehicle fleet, which, finding its operations restricted in the city center, has started to clog up adjacent areas. There have been no substantive changes in the operating and organizational procedures of the transportation companies, except those that have successfully bid on a particular route. As a result,

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# Amsterdam's Bold Approach to Reduce Car Traffic

by Ed van Thijn



**E** Ed van Thijn is the mayor of Amsterdam.

AMSTERDAM. Millions of tourists flock to Amsterdam every year to enjoy the city's restaurants, museums, historic streets, and canals. To keep Amsterdam attractive for visitors and inhabitants, the city government has been active for decades in regulating traffic. Of course, there is more to be done. Recently, to reduce auto traffic, the city of Amsterdam has embarked on an ambitious effort to drastically cut the number of cars in the downtown area by 2005.

Like most older cities of Europe, Amsterdam was not built for cars. Until the early 20th century, people and goods moved quickly about the city using an extensive canal system created in the 17th century. Car traffic wasn't a significant problem until the early 1970s when autos became more affordable, urban sprawl increased, and improvements to public transportation slowed.

Amsterdam has made many improvements since then. It has encouraged bicycle use by constructing bike lanes, and bike parking lots, and has built a motorway ring around the city to funnel traffic. However, it hasn't tackled the thorniest issue: reducing auto traffic significantly.

To bolster debate and get residents more involved in decision-making, the city held a referendum in March 1992. The city developed two scenarios: continue the existing traffic policy, or aim at cutting traffic "drastically," by about 50 percent. Fifty-three percent of voters chose the drastic course, with residents farther out understandably less in favor than those closer in. Though the margin in favor of a drastic cut was small and though only 28 percent of voters turned out, the city council decided to implement the result and came up with a final plan in December. Awareness of

the narrow margins between opponents and supporters led to a step-by-step approach, so each step can be reviewed and fine-tuned while going along.

Under the plan, simple mea-

asures will be put into effect in 1993 and 1994, while more difficult steps will be carried out over 10 years, between 1995 and 2005. Some of the simple measures include the following:

- Upgrading park-and-ride facilities near one of the existing metro stations;
- Making private garages available for residents, while moving towards prohibiting on-street parking;
- Reducing the speed limit to 30 km/hr in one of the city center's residential neighborhoods; and
- Giving the right of way to bicyclists on one of the main streets that has a bicycle route.

Amsterdam is studying how to reduce auto traffic by restricting parking. Currently there are about 20,000 on-street and 9,000 off-street spaces. Amsterdam will differentiate between residents and visitors through parking fees, licenses, and route guidance. It will then cut the number of parking spaces by 20 percent by 2005 and replace 7,000 on-street places with an equal number in garages. Residents will be encouraged to use on-street parking, while visitors will be encouraged to use garages. Planners project that traffic will be reduced by 35 percent as a result. For now, the city is content to accept this target rather than a larger one because businesses are already worried about losing customers to their suburban counterparts.

Amsterdam plans to improve traffic flows with one-way streets on major thoroughfares. With only one direction of traffic, the city can improve tramlines that also take space on the same street, encouraging more riders. Urban planners also hope to redesign blocks where there will be no cars.

It is expected that these and other measures will maintain a livable and accessible city center over the next decade.

## An Interview with Ed van Thijn, Mayor of Amsterdam, The Netherlands

**UA:** *How have you been able to build political support for the car reduction program? How will you sustain this support?*

**EVT:** We advocate the aims of the plan as being attainable, and that the plan will help the inner part of Amsterdam to become more "liveable." Open communication with the people living and working in the city was very important. We intend to sustain this by seeking a balance between the environment and the economy.

**UA:** *Why were Amsterdam voters so split over whether to reduce the number of cars (53 percent to 46 percent to cut traffic in half over the next 10 years)?*

**EVT:** In general, Amsterdam voters were split. However, in the center, more than 60 percent of the voters voted for reduction of cars. In districts further from the center, more voters voted against car reduction.



**UA:** *Will the city suffer in terms of business lost to surrounding towns?*

**EVT:** This is difficult to foresee at the moment. The outcome of a survey on this matter is that with a 35 percent reduction of cars there will not be any economic consequences for the city.

**UA:** *What has been the most important factor why citizens of Amsterdam have voted for such a radical change?*

**EVT:** Reduction of car traffic makes the city more liveable. There will be less air pollution and less danger caused by traffic. There will be less congestion due to traffic.

**UA:** *Do you think your city's plan to cut traffic can and should be applied elsewhere?*

**EVT:** Every city is unique and needs its own plan, but basically the answer is yes.



# Tehran's Air Pollution Control Program

by Paimaneh Hasteh

*Paimaneh Hasteh is a consultant to the mayor of Tehran on environmental affairs. She is also the managing director of the Air Quality Control Company in Tehran, Iran.*

**UA: How serious is Tehran's air pollution problem? What are the primary causes of air pollution in Tehran?**

PH: Tehran's air pollution problem is very serious. A recent report by the World Health Organization indicates that Tehran is the most polluted city in the world in terms of smoke, and the second most polluted in SO<sub>2</sub> concentration.

Urban transport is generally believed to be responsible for between 70 to 80 percent of the emissions causing air pollution in the greater Tehran area. It is interesting to note that while about 13 percent of the country's population (7.5 million) live in Tehran, up to 45 percent of the country's transportation fleet operates in the city.

**UA: What are the principal means of transport used in Tehran?**

PH: It is estimated that there are about 750,000 cars and light duty trucks in the greater Tehran area. On any given day, there are about 500,000 passenger cars, about 10,000 taxis, 2,500 buses, 3,500 minibuses, and up to 600,000 motorcycles in operation. Presently, passenger cars, light trucks, and taxis account for about 55 percent of all passenger trips in the city.

Urban transport accounts for a daily gasoline consumption of 7 million liters and diesel fuel consumption of 1 million liters, which directly contributes to the air pollution problem. A metro system is under construction, and there are also a limited number of trolley buses operating in the city.

**UA: When was the Air Quality Control Company first established to improve the quality of**

**Tehran's air? Could you discuss its principal goals?**

PH: In June 1992, the Air Pollution Division was established in the Tehran Traffic Control Center, which is a division of the municipality of Tehran. In less than one year, the continuing growth in the technical activities and various projects conducted by the division necessitated a reorganization of the division to the Air Quality Control Company in May 1993.

Our major goal is to study, adopt, propose, and implement air quality control measures with emphasis on urban transport emissions in order to improve the capital's air quality. These measures span a wide spectrum of technical, educational, and legal activities.

**UA: What specific steps have you taken to reduce air pollution in Tehran?**

PH: We have established a major data base for the city's air pollution status during the past 10 years. This project has been carried out in cooperation with the Ministry of Health. We now have a quantitative assessment of the air pollution for this period and can evaluate various control measures to improve the air quality based on this data.

The Passenger Car Tune-Up Project was a research study to evaluate the effect of engine tune-up on the improvement in the air quality. We have concluded that by launching a comprehensive engine tune-up campaign in Tehran, we could drastically reduce CO and HC concentrations as well as a 13 percent reduction in gasoline consumption. Based on this study, Tehran Municipality has purchased 150 automated tune-up systems in order to initiate a comprehensive tune-up program.

We are extending the above study to the buses and motorcycles as well.

In addition to these, we have a major air quality monitoring program under way. This includes installation of permanent and mobile monitoring stations to measure the concentration of major pollutants.

**UA: To what extent have you used mass media campaigns or other programs to disseminate information and encourage public participation in your efforts to improve air quality?**

PH: I think that public awareness about Tehran's air quality is basically high: the problem is too obvious to be ignored by the general public. Our problem seems to be the lack of a general and comprehensive national policy to deal with the issue. I think our major task is to help crystalize such a policy and to see it implemented by our legal and executive bodies.

We have also been instrumental in producing radio and television programs addressing this issue. Another program to raise public awareness is the PULSE project, which is going to be implemented in cooperation with UNDP and the Ministry of Education. This is an educational program for elementary school children to teach the importance of clean air and the need for air quality regulation. The program includes films, slides, and posters and will be carried out in several elementary schools in selected areas of Tehran in conjunction with their formal education.

**UA: With which ministries does the Air Quality Control Com-**

**pany work most closely?**

PH: Clearly, air quality control is a multi-faceted problem. As such, we have a close working relationship with various institutions and organizations. Among them are the Ministry of Health, the Oil Ministry, the Ministry of Heavy Industries, and certain other institutions (private and public). Also, we have a relatively good relationship with some of the local universities in the form of joint projects and technical consulting.

**UA: Environmental issues are a global concern. Do you consult environmental experts and/or practitioners from other nations?**

PH: We welcome expert opinion from international environmental consultants and seriously consider various environmental programs which have proven successful in other parts of the world. Although I believe any air quality control measure for Tehran has to take our specific environmental as well as social, economical, and political structure into account.

Almost since our company's inception, we have been in frequent contact with the World Bank and the Bank's environmental experts. In particular, we are working on a World Bank GEF (Global Environment Fund) project to study and improve Tehran's air quality through a comprehensive traffic management program.

We have also recently been in contact with the Japan International Cooperation Institute by Tehran Municipality to establish a major air pollution research center in Tehran. Through this center, we will be able to receive expert consulting as well as technical assistance from our Japanese counterparts.

# The Effects of Warsaw's Rising Car Travel

by Wojciech Suchorzewski

4 Wojciech Suchorzewski is a professor at the Warsaw University of Technology and a consultant.

**WARSAW.** During the Second World War, 90 percent of industrial plants and 72 percent of residential buildings in Warsaw were destroyed. At present, the city has 1.65 million inhabitants, about 2.5 million if the entire metropolitan region is considered.

## Central Planning Dominant

During the post-war period, Warsaw followed a controlled development path. Ambitious urban and transport planning provided for a transport-efficient urban system in which single function zones (i.e., residential and industrial) were to be linked with rail transport. Main development axes were to be served by the improved suburban railways and a planned metro system.

decades, capital investment, including purchasing vehicles, was financed from the central budget. Fares were kept low, and high subsidies were accepted. This policy, combined with a low car ownership ratio, meant that, for a long time, a very high proportion of mechanized trips (85–95 percent) were made by public transport.

The road network, although not complete, is often considered by foreign experts as quite well developed, with wide arterial streets even in the central part of the city. The tramway system, which has great potential, has been neglected because of the prevailing view that the city should be served by metro system.

Metro construction, planned

automobiles. Although disposable income of the majority of the population is very low, passenger cars appear to be the main preference.

## Traffic Congestion Grows

Growing traffic congestion affects public transport operation. In many sections, the average speed of buses is 8 kilometers per hour. The situation is made worse because of outdated traffic management/control and lack of priority for public transport. With the growth of motorization and fares, the share of public transport decreased from 93 percent of non-walking trips in 1970, to 80 percent in 1980, 79 percent in 1987, and 61 percent in 1992.

There is an acute shortage of

more traffic, and worsening public transport. It cannot be expected that the metro (which in the last 10 years absorbed most financial resources) will, in the foreseeable future, be expanded enough to meet a substantial part of travel needs in the city.

## What Can and Should Be Done?

The existing road and public transport system have great potential that can be used to alleviate the undesirable consequences of rapidly growing motorization and radically improve public transport operation. Limited resources will not allow investment in new, expensive systems. Therefore, options such as making better use of already existing means of public transport through modernization (first of all, of the tramway system) and better operation should be considered. This would have results in a short time period. However, political will is needed to do the following:

- give priority to conventional public transport using well-known traffic management measures and, in the longer term, to upgrade the existing tramway system;
- introduce a parking policy and automobile traffic constraints in the highest density areas;
- establish and enforce more stringent environmental standards for motor vehicles; and
- use financial instruments supporting new transport policy, by first introducing the "polluter and user pays" principle.

*The author prepared this article based on a presentation he made at the OECD Conference, "Travel in the City: Making it Sustainable," 7–9 June 1993, Düsseldorf.*

## Growth of Motorization in Poland and Warsaw

|                             |        | 1960    | 1980      | 1985      | 1990      | 1992      |
|-----------------------------|--------|---------|-----------|-----------|-----------|-----------|
| Population (thousands)      | Poland | 29,800  | 35,700    | 37,300    | 38,183    | 38,400    |
|                             | Warsaw | 1,139   | 1,585     | 1,610     | 1,651     | 1,656     |
| Passenger cars              | Poland | 117,400 | 2,270,000 | 3,671,000 | 5,261,000 | 6,505,000 |
|                             | Warsaw | 11,390  | 248,900   | 309,900   | 466,042   | 533,067   |
| Passenger cars per thousand | Poland | 3.9     | 63.6      | 112.4     | 137.8     | 169.4     |
|                             | Warsaw | 10.0    | 157.0     | 192.5     | 282.2     | 321.9     |

Unfortunately, because of lack of resources, plans have only been implemented in small part. The development of large residential areas separated from employment centers created an excessive travel demand. Development corridors, which were to be served by rail rapid transit (metro), tend to be served by buses.

Nevertheless, Warsaw is served by an extensive, multi-modal mass transport system consisting of suburban railways serving seven corridors, 119 kilometers of tramway lines, and an extensive bus system. For

since 1927, was not started until 1983. The pace of work has been very slow, and the first leg of the first line (12 km) will start operation in 1994 or 1995. It will serve 2.5 to 3 percent of public transport trips made in Warsaw.

Initially, governmental policy towards private automobiles was not favorable. In the 1970s, this policy was changed and motorization started growing faster than GDP. Unfortunately, the most rapid growth took place in the largest urban centers. Recent political and economic changes have brought about accelerated increases in the number of

parking places, especially in the city center, but lack of any parking policy (time limits and/or charges are not used) encourages the use of private cars for commuting. Attempts to introduce charges for parking have so far been unsuccessful.

Traffic hazards to public health and safety are dramatic. In a growing number of locations, the concentration of pollutants exceeds norms that are not very stringent. About 36 percent of the Warsaw population is subject to unacceptably high noise levels.

Warsaw is entering the vicious cycle of more cars, more roads,

# Auto Dependency in the United States

by C. Kenneth Orski

C. Kenneth Orski is president of the Urban Mobility Corporation, a Washington D.C.-based transportation consulting firm. He was formerly a senior official at the U.S. Department of Transportation.



WASHINGTON, D.C. Despite considerable investment in public transit over the last 20 years, and despite concerted public efforts to change commuters' travel habits, Americans are driving today more than ever before. Between 1983 and 1990, vehicle trips grew by 25 percent and vehicle miles of travel increased by 40 percent. Overall, private automobiles account for 87 percent of all trips, having risen by 5 percentage points since 1983. Conversely, transit ridership has declined, from 6.4 percent of total commuting in 1980 to 5.3 percent in 1990. Transit's share of total travel has continued its downward trend, declining from 2.4 percent of all person trips in 1977 to 2.2 percent in 1983 and 2 percent in 1990.

What accounts for this persistent attachment of Americans to their automobiles? The low price of fuel is certainly a factor. Despite recent increases, the price of gasoline in America is comparatively low, as illustrated in the table. Even though European and Japanese automobiles are generally more fuel efficient and thus cheaper to operate (average fuel consumption of automobiles driven in Europe and the Far East is 15–25 percent lower than autos in the United States), American drivers pay 30–40 percent less per vehicle-kilometer of travel than drivers in the rest of the world.

Low fuel prices, however, do not fully explain Americans' dependence on the automobile. Studies have shown that automobile use throughout the motorized world is fairly price inelastic—people drive roughly as much whether the cost of fuel is high or low. Thus, for a full explanation, we must look to factors beyond economics.

A key reason for the continuing auto dependency in the United States has been the low density development pattern of American metropolitan areas. Over the last half century, American cities have followed a different path of evolution than those of Europe and other parts of the world. From the 1930s on, Americans have voted massively “with their feet” in favor of low-density suburban living. A number of factors facilitated this mass suburban exodus: the availability of cheap and plentiful land on the outskirts of the cities, rising

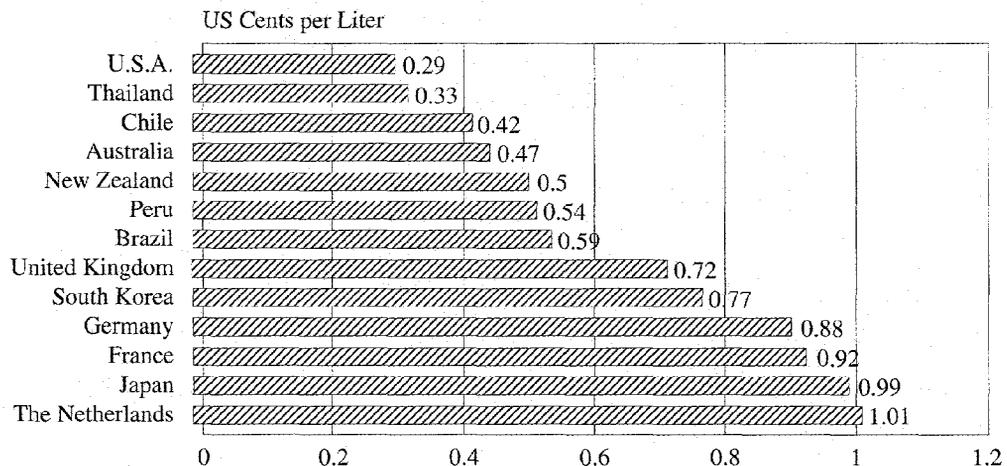
contained more jobs than central cities, a trend that continues today.

The migration of employment to the suburbs complicated enormously the job of public transportation. As long as the bulk of jobs was in the central city, public transportation could function relatively effectively; buses and trains collected commuters at suburban stations and transported them directly to their places of employment in the city core. Today, with a vast proportion of commutes ending as well as beginning in dispersed

schedules are becoming more flexible, so that many people can no longer use commuter-oriented transit services that operate only in the peak period.

Finally, surveys conducted at suburban employment sites show that many people use their cars for the trip to work *even if they have other travel options*. Some do so because they value the comfort and privacy of their automobiles, but many others drive because they have to. They need their cars to drop off and pick up children at day care centers, to run errands and keep

Fuel Prices in Selected Countries, January 1993



incomes enabling more and more people to afford personal automobiles, favorable federal tax policies, low mortgage rates, and mass production of inexpensive housing.

This residential out-migration was followed in the 1980s by a migration of employment. Companies found it more efficient and economical to be located near their employees' residences, and modern telecommunications reduced the importance of locational factors. By 1988, metropolitan suburbs

suburban locations, there simply is not enough “mass” to make mass transit work effectively. Travel to work in the city center has ceased to be the dominant commuter pattern. Instead, about two-thirds to three-quarters of daily commutes in America's metropolitan areas are from one suburb to another. Virtually all of these trips are made by personal auto.

Another cause for the growing auto dependency in America has to do with the changing nature of the country's workplace. Work

medical appointments during the day, or to attend evening classes. For employees with young children or elderly parents, having a car at work provides ensures that they can get away in case of a family emergency.

While conventional wisdom would have us believe that people will gladly leave their cars at home if they are offered other commuter alternatives, the reality is that to a growing number of Americans, driving is not a luxury but a necessity.

# Bicycles Overtake Bus Travel in Havana

by Manuel Alepuz

**A** Manuel Alepuz is the director of the Transportation Research Institute in Havana, Cuba.

HAVANA. Until 1990, bus travel was the most common mode of transportation in Havana, Cuba's capital city of 2 million people. An extensive system of electric trains was in operation until the 1930s, and a network of trolleys served the city until the 1950s. Both these modes have since disappeared. By 1960, there were 100,000 passenger cars in the city, and over 1,000 large-capacity urban buses. By 1980, there were 80,000 cars and 2,000 buses.

A transportation study conducted between 1981 and 1985 by the Transportation Research Institute (IIT) showed that public buses accounted for 86 percent of trips by motorized transport and automobiles only 6 percent of trips. Buses restricted to use by certain companies (6 percent) and launches across the bay accounted for the remainder of trips. Transportation by bicycle during this time period was insignificant.

In 1990, in the wake of breaking-off economic relations with the Socialist bloc, and the fall of sugar and nickel prices (the country's main exports), Cuba's imports plummeted from US\$ 8 billion in 1989 to only US\$ 2 billion in 1992.

The most dramatic effect of the decrease in purchasing power was a plunge of more than 50 percent in oil imports and the virtual disappearance of imported vehicles and spare parts.

In response to this situation, the Government of Cuba decided to subsidize the sale of bicycles to workers and students. More than a million bicycles were purchased from China and sold on installment plans at prices of \$60 for students and \$120 for workers (the average wage in Cuba in 1990 was \$200 and the minimum \$100).

Havana's 70,000 bicycles, used solely for recreation and sport in

1990, climbed to 770,000 by 1993. Bus traffic fell by 50 percent and cars by 35 percent.

To accommodate this growth, a comprehensive program was developed, with emphasis on road education, transit priority for bicycles, bicycle maintenance and repair services, and parking areas for bicycles. By October 1993, the program had reaped the following benefits:

- One out of every three trips in

becoming obstacles. These include the introduction of cycle buses in the tunnel that runs under the channel of the bay, and launches that carry bicycles. Bridges have been constructed, for example, to facilitate access by cyclists to the largest technical university, the José Antonio Echeverría Superior Polytechnic Institute.

- Most gas stations have air pumps for use by cyclists, and the number of places where flat tires

ICIODI (Cuban Institute for Research and Channeling of Domestic Demand):

*Safety:* Many potential cyclists do not use bicycles regularly, since they fear the hostile environment created by motorized vehicles, primarily trucks and large buses. The fewer motorized vehicles on the roads, the faster they tend to go.

*Distance:* Havana is a very extensive city, sprawling over more than 50 kilometers along the coast and 20 kilometers inland.

People travel an average of 7 kilometers to study and work, which means that most trips are longer than 5 kilometers—the distance usually accepted as the maximum journey for an average cyclist.

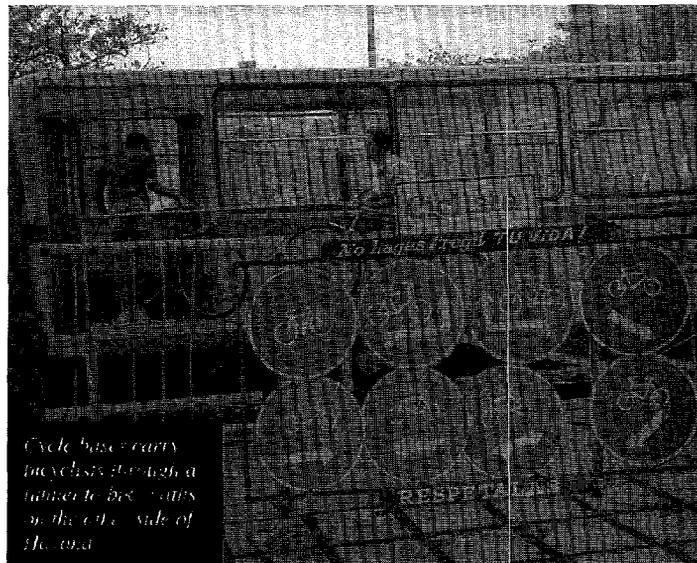
*Slopes:* Although Havana does not have slopes that are steep for motorized transit, many extended slopes are challenging for cyclists. This, together with the fact that the existing bicycles, for economic reasons, are single speed, makes the effort required even harder.

*Climate:* The humid tropical climate is not ideal for bicycle travel, since unexpected downpours not only drench people, but make the streets unsafe.

*Practices of drivers:* Drivers firmly believe (and Havana is no exception) that they have eminent domain over the streets and that pedestrians and cyclists are intruders. Also, cyclists have the mind set of pedestrians, but travel faster. For example, cyclists think that stop signs at corners and traffic lights are only for cars.

*Parking:* Parking facilities in public, commercial, and recreational buildings or multi-family dwellings are inadequate. In some cases, the necessary security is not provided in existing parking areas.

*Means of protection:* Bicycles



Cycle buses carry bicyclists through a tunnel to bus stops on the other side of the bay.

the city is made by bicycle.

- Bicycle travel today competes with buses in terms of number of trips, although these trips are for shorter distances.

- A network of bike lanes and bike paths, more than 100 kilometers, now covers the entire city. Some of these bike paths are not yet in use, however, because of a paint shortage for pavement markings.

- More than 8 kilometers of bike lanes have been constructed to provide access to the beaches in the eastern area.

- Special solutions have been implemented to prevent crossings at bridges and tunnels from

can be repaired has increased.

- A broad information and publicity campaign on road safety was carried out, stemming from the growing trend in the early months of 1991 of accidents with victims that involved cyclists.

- The maximum speed authorized on a number of the most heavily traveled roads was reduced, and a program for the widespread introduction of speed limits, and other measures to slow down traffic in residential areas have been launched.

The following were the main obstacles to the intensive use of bicycles, according to research conducted by the IIT and the

continued on page 17 ►

are not sufficiently equipped with lights, or other ways of enhancing the cyclist's visual perception at night.

#### *Spare parts and servicing:*

Although spare parts are sold at very reasonable prices, the necessary parts are not always available and the network of repair shops is inadequate.

#### Lessons Learned

The following are some of the many lessons the city has learned in these three years of intense work to facilitate the intensive and widespread use of bicycles. These lessons can be applied in other cities as well:

- The bicycle can be used in the overall transportation system if it is considered another mode and the appropriate conditions are established. In addition, financing arrangements must be broadened so the entire population can afford bicycles.

- The main problem is road safety. In this area, awareness-raising and education on the part of drivers, cyclists, and pedestrians is essential.

- The cost of creating the physical safety conditions for bicycles is minimal, consisting simply of painting the pavement and putting signals on many roads, erecting simple physical barriers, and constructing bike lanes 5 meters wide with lightweight-bearing pavements and low-cost bridges.

- The bicycle cannot be seen as a low-class mode of transportation. It is a sustainable transportation policy and a way of providing transportation at minimal cost. In addition, it benefits human health and the environment and decreases energy consumption.

## Bicycles in Mozambique: Competing with the Myth of Cars

by Carlos Cardoso

*Carlos Cardoso is a Mozambican journalist. After independence he worked for 15 years with the government newspaper Noticias. Three years ago he co-founded the independent daily newsletter Mediafax, where he currently works.*

Mozambique's one bicycle factory, the Fabrica de Bicicletas de Moçambique (FBM), is owned by some 200 shareholders. The bicycles are partly produced in the factory and partly assembled.

FBM's 120 employees can produce up to 70,000 bicycles per year. In 1979, the factory produced 65,000 bicycles. Since then, there has been a steady decline to the all-time low figure of 3,000 in 1990.

Mozambique has had a year of peace after more than a decade of war, which reduced average annual GNP per capita to \$US 64 per year, the lowest in the world. FBM's director general, Capucho Paulo, is optimistic about the future. Paulo expects to produce up to 15,000 bicycles in 1994, some of which will be exported to Malawi and South Africa.

Adult bicycles sell for as much as 450,000 meticals (\$US 82) in a

country where the minimum monthly salary is \$US 12. There is some competition from bicycles imported from India at about \$US 55.

In northern provinces such as Nampula that did not experience the tragic drought between 1990 and 1992, there has been some economic recovery and orders for bicycles are increasing.

The main buyers of bicycles are peasants. Bicycles are looked down on by the new urban elites, who have their dreams set on cars, preferably Mercedes and BMWs.

Raul Honwana, a social analyst in Maputo, maintains that the historical point of reference for today's urban black elite was the privileged class of Portuguese settlers who, by the early 1960s, had already replaced bicycles with cars. "Only some white farmers and a few urban whites rode

bicycles," he recalls. The idea of riding a bicycle today, he adds, is repugnant to any "nouveau riche."

Honwana's mother, 73-year-old Nely Nyaka, remembers the 1920s and 1930s when there were very few cars. "Then, everyone rode bicycles. In those days, the main objective of a young man was to build his house and then get married." Today, she says with a sigh, "young people want cars above all else."

The Mozambican poet José Craveirinha agrees: "Bicycles are not symbols of power today. They're for lesser human beings. It will take a generation to change such a deep-seated preconception." It would help, Craveirinha suggests, if schools began "to undo the myth of cars," which are used "not as means of locomotion but as means for the transport of ostentation."

### The World's Most Popular Personal Transport Mode

by Paul Gutink, secretary of the World Bank's Non-motorized Transport Task Force.

Most people in the world rely on human- and animal-powered transport to meet their mobility needs. Bicycles in Asia alone transport more people than all of the world's automobiles. China's annual production of 41 million bicycles outpaces world automobile manufacturing.

After two decades of motorization-oriented transport policies, traffic planners in many industrialized countries are becoming more concerned with pedestrian zones and freeing cities from cars.

In most regions of the world, major constraints on greater bicycle use include unsafe operating conditions, a view that bicycles are a symbol of "backwardness," and high prices relative to incomes of the poor.

In most urban areas of sub-Saharan Africa, there is an almost

total lack of infrastructural provisions for pedestrians, cyclists, and handcarts. Cultural constraints for bicycle usage by women have been aggravated by the absence of models designed for women and simple provisions to carry small children.

In Asia, increased motorization has led to a reduction in available street space; non-motorized vehicles have not been adequately considered in urban transport planning and investment programs; and non-motorized transport is believed to be the main cause for congestion.

A Latin American dream is "a car for everybody." But only a small minority actually use motorized transportation: in Haiti, only five of every thousand inhabitants own cars, seven in Bolivia, 60 in Brazil, and 90 in Venezuela. Without access to credit, even owning a bicycle is an elusive

dream for many.

In Eastern Europe, a shortage of bicycles and services to maintain them are factors resulting in low usage of bicycles for daily transport. However, in many regions (as in the Baltics, Russia, Ukraine, and Byelorussia) cycle-tourism and cycle-sport are very popular.

Pilot projects in Lima, Peru, and Accra, Ghana, as well as ongoing studies in Africa and Asia, will provide new information on mobility needs and the bicycle's role in urban transport systems.

The future of personal and goods transportation in urban areas should not be a "winner takes all" contest between motorized and human-powered modes. Well-balanced and integrated transportation systems are likely to be the best way out of the urban transport jungle.



The purpose of the "Roundtable" is to create a forum for interchange and debate among people with different points of view. Our hope is that readers will find it a starting point for generating their own discussions, both within their cities and in response to *The Urban Age*.

## 8 "Bus Driver's Syndrome" in Buenos Aires

by Sergio Federovisky

Sergio Federovisky is a journalist with CLARIN in Buenos Aires, Argentina, where he specializes in environmental issues.

[Editor's Note: In reviewing this article, the symptoms of "bus driver's syndrome" seemed too much like lead poisoning to be coincidental. We asked the Alliance To End Childhood Lead Poisoning, one of the leading authorities on lead poisoning worldwide, to give us their reactions to the article (please see the box on this page). Our hope is that the combination of these two articles will open up a dialogue on these important issues.]

BUENOS AIRES. When the Argentines enumerate the things they have invented throughout their history, two things head the list: *dulce de leche* (a sweet dessert) and the *colectivo*. *Colectivos* are the small buses that are the country's main means of urban public transport. But the job of the minibus driver, or *colectivero*, has become an unhealthy occupation, with its own pathology.

*"In the beginning, you work with all five senses alert and prepared to do your level best. You've been a passenger too and*

*had to put up with the arrogance of the usual driver, so when you begin the job you promise yourself you'll be different. But the years go by and you are never able to keep that promise. The worst is that you develop into a nasty person. The job changes you. You just automatically become callous; if you didn't, you'd end up crazy."*

[Juan Bustos, age 37, *colectivero*.]

The *colectivo* is the only means of public transport in Argentina where the driver has the double job of driving the vehicle and collecting fares. The drivers are regarded as veritable human robots. A psychological study carried out by doctors from the union that represents bus drivers (UTA) revealed that when working at full tilt, a bus driver in Buenos Aires has to perform 15 almost simultaneous tasks. The worst of it, and the most stressful factor as far as the driver is concerned, is that they are all just about indispensable. If

any is overlooked, then the driver is in danger of failing at one of his two main functions: to drive the vehicle safely and to be fully up on his fare-collecting responsibilities.

In addition to operating his vehicle like any other motorist, the minibus driver in Argentina has to be aware how many new passengers are getting on, issue each of them a ticket, collect fares, make change, open the rear door for those who want to get off, close it when they have alighted, keep his money tray in order, stay on the right route, fill in the route time sheet, listen for the rear-door bell, note whether people waiting at bus stops signal for him to stop, and come to a halt whenever anyone wishes to get on or off.

All this the driver must do on journeys that are an hour and a half long on average (although on some lines they can last up to three hours), so that in addition to everything else he has to be able to control his physiological needs.

This is the origin of one of the commonest "occupational diseases" of the *colectivero*, namely severe chronic kidney lesions.

Given their low salary scales, minibus drivers work an average of 11 or 12 hours a day. Overtime typically represents about half of take-home pay. In other words, a minimum of three and a half hours of overtime is added to the regular eight-hour work day.

The end result of this explosive mix is not surprising. According to Dr. Julio César Cupeta, chief of psychiatry at UTA, 45 percent of drivers on passenger transport lines in Buenos Aires suffer serious psychological disturbances. According to data from the minibus drivers' own health services group, 70 percent of them receive some kind of psychiatric attention.

Doctors regard emotional disturbance as the typical work-related ailment of the *colectivero*.

*continued on page 19* ►

## "Bus Driver's Syndrome"—Or Is It Lead Poisoning?

by the Alliance To End Childhood Lead Poisoning

Thank you for the opportunity to review this article. We look forward to being in contact with the author to discuss our reactions and to collaborate in constructive ways.

Clearly, the symptoms described in the article on Argentine bus drivers (including irritability, fatigue, kidney lesions, sleep disorders, psychological disturbances, and impotence) are classic symptoms of lead poisoning. The fact that their symptoms gradually increase over time is also typical of chronic lead poisoning. That certain symptoms abate when they no longer drive a bus would be consistent with what would

typically occur when exposure to lead is eliminated or greatly diminished. These factors, combined with the fact that they are exposed to airborne lead from gasoline on a daily basis, indicate that these bus drivers should be tested for lead poisoning. It may very well turn out to be that occupational lead poisoning, not occupational stress, is the culprit.

Lead is a toxin that causes a myriad of adverse health effects, ranging from subtle behavioral changes at low levels, to coma and even death at high levels. Even low-level lead poisoning in children causes decreased intellectual performance, impaired short-term memory, poor reading and

spelling skills, poor perceptual integration, poor classroom behavior, and impaired reaction time. Lead poisoning in adults can cause decreased intellectual performance, impaired short-term memory, poor integration, and impaired reaction time. Other physical effects of lead in adults include kidney disease, anemia, increased blood pressure, impaired fertility, and impotence.

We have known of lead's toxicity for centuries. Yet industrial societies and developing economies alike have continued to find varied uses for lead. Lead compounds have been added to gasoline since the 1920s to decrease engine knocking and is now used in

alarmingly large quantities in much of the world. Unfortunately, burning leaded gasoline is a very effective way of dispersing the toxin: the exhaust from cars emit tiny particles of lead into the air where they are inhaled and absorbed by the lungs with almost 100 percent efficiency.

These same lead particles make their way into the roadside dust and soil. Once in the soil, lead persists indefinitely, since as an element it does not degrade. Lead-contaminated dust and dirt is constantly kicked up, adding to the lead burden of everyone who comes in contact with it. Soil lead represents an essentially permanent reservoir that can poison

## BUS DRIVER'S SYNDROME

continued from page 18

It can manifest itself after as little as two years on the job, the symptoms being bad temper, brooding, and aggressiveness. A survey of the wives of minibus drivers, carried out by UTA's Health Division, revealed that almost without exception each of them felt her husband's character had begun to change for good after he had been on the job about a year. The usual picture painted was that the man gets home from work, talks to nobody, cannot bear to be spoken to, and wants to do nothing but sleep. Sexual difficulties also appear, including impotence, which are associated with psychological disorders.

In Dr. Cupeta's professional opinion, "..... the disturbances begin to reveal themselves after the man has been on the job two years; they are progressive, and by the third or fourth year the symptoms are full-blown." Cupeta regards this as the typical medical picture of the *colectivero*, and believes that it makes the man a danger to society, since he discharges many of his aggressive impulses when he is behind the wheel of his bus.

Twelve months ago, the Transportation Department mandated that all *colectiveros* undergo physical and psychological assessment by a private health services group. The result was that

10 percent of them were unable to meet their job aptitude requirements. The main causes of failure to do so were psychological (36 percent), ophthalmological (25.8 percent), cardiological (12 percent), and neurological (10 percent).

Dr. Héctor Seia, who for 13 years served as attending physician to the minibus drivers of the city of Cordoba, included this entire complex of symptoms in what he labeled "sub-acute anxiety reaction."

According to Seia, sub-acute anxiety reaction occurs when an individual is expected to perform multiple simultaneous tasks. It can affect any healthy person and does not require a predisposition to irritability. Instead, irritability is the chief symptom: small frustrations, previously tolerable, now provoke anger.

This irritability appears in tandem with another symptom, which may be mistaken for physical tiredness. The driver begins by feeling depressed during the final hours of his workday, but the feeling grows until it is present the entire day. The man ends up by turning into the robot mentioned earlier.

This state of affairs causes the *colectivero* great personal distress. It begins with insomnia. Then come nightmares, among them one any of us can have: we are driving along, when we suddenly discover we have

no brakes. Finally, the so-called obsessions of the *colectivero* emerge: fear of running over an old person or a child; impulses to crash into other vehicles; forgetting the bus route; giving the wrong change. By the time he gets to this stage, the *colectivero* can no longer regain control, and the typical physical ailments he might be suffering from (hemorrhoids, deviation of the spinal column, kidney problems) seem to him merely secondary.

In Seia's opinion, however, there is a cure for all this: the symptoms abate automatically when the external causative factors are removed. It doesn't take much to deduce from this that there can be no cure as long as the present working conditions of Argentina's *colectiveros* remain unchanged.

*"As the driver, you have to be doing so many things at the same time. It's enough to make anyone crazy. After 12 hours behind the wheel doing all that, I used to get home and not want them to so much as speak to me. Of course, it doesn't occur to anyone that everywhere else in the world buses have crews of two, the driver and the conductor.*

(Alberto Paez, 65 years, former *colectivero*)

Specialists who observe the work of minibus drivers point out that issuing tickets absorbs between 30 and 35 percent of the driver's attention capacity, diverting it from the business of actually driving the bus.

However, historically, bus owners have opposed the addition of conductors or drivers' assistants, a familiar sight on the streetcars in Buenos Aires in the 1960s. Their argument (although their revenues total US\$ 990 million per annum) is that the payroll cost of putting a second employee on each bus would be equivalent to 30 percent of present fares.

Not surprisingly, the drivers have demanded that every bus carry a conductor, but no one pays them much attention. There is always someone willing to replace the driver who chucks it in, and to take his turn as yet another victim of "bus driver's syndrome."



children and others for decades or centuries.

The United States began phasing lead out of gasoline in the 1970s. As fewer cars ran on leaded fuel, children's lead levels dropped a dramatic 40 percent in less than 15 years. The U.S. currently allows .026 g/l of lead in gasoline and will completely ban leaded gasoline by 1996. In contrast to the USA, many developing and Eastern European countries still widely use highly leaded gasoline. As of 1990, Argentina allowed .4 g/l of lead in gasoline. However, there was legislation pending at that time to reduce the amount of lead to .15 by 1993. We

will be very interested to learn whether this legislation was enacted and whether it has been implemented.

If it is determined on the basis of accurate testing that lead poisoning is indeed an occupational hazard to *colectivo* drivers, measures ought to be taken immediately to reduce the current and future exposure for this population. Included in such protective measures are reducing the permissible lead content in leaded gasoline and encouraging the increased use of unleaded gasoline.

The article on "bus driver's syndrome" illustrates at least two important points. One, lead poisoning is a problem worldwide and uses of lead must be more strictly regulated. Second,

the symptoms of lead poisoning (in both adults and children) are often difficult to recognize and often mimic other physical and emotional problems and diseases. Accurate blood testing of populations at risk for lead poisoning is necessary in order to recognize the disease.

\* \* \*

The Alliance To End Childhood Lead Poisoning is a U.S. non-profit organization dedicated to the elimination of childhood lead poisoning. The Alliance and the

Environmental Defense Fund are jointly releasing a report, "The Global Dimensions of Lead Poisoning" in December 1993. This report represents the first systematic effort to collect and analyze biological and environmental data from around the world. It offers policy recommendations at the international, national, and regional levels to prevent lead poisoning. For more information, and to obtain a copy of the report, contact the Alliance To End Childhood Lead Poisoning, 227 Massachusetts Avenue, N.E., Suite 200, Washington, D.C., 20002. Telephone: 202-543-1147; Fax: 202-543-4466.

congestion and pollution levels have remained comparable to those of previous years.

This has led the government to propose repeating the process of inviting mass transit operators to bid on specific routes, this time within a larger area of the city. This would result in about 30 percent of the city's total area being serviced by operators to whom specific routes have been awarded.

In terms of pollution, effective control of particulate emissions has been possible for new buses, but it has been very difficult to reduce the emission levels of old buses.

Nevertheless, the process of bidding on routes has resulted in more orderly and better quality service and even a relative reduction in fares. Expansion of the area for which bids are invited will improve the system.

## Controlling Cars Difficult

The daily restriction on vehicle numbers has become virtually ineffective. The number of automobiles owned and in circulation is rapidly increasing, as is the resultant congestion and

pollution. The introduction of automobiles with catalytic converters is a good way of avoiding increased exhaust emissions, but since such vehicles are exempt from the restriction system and therefore not required to stay off the street one day a week, they still add to congestion and pollution. Introducing tolls, which has not been approved by Parliament, may not represent an adequate solution to the problem, since automobile users are usually high-income individuals who will probably be quite willing to pay to drive in the city center.

There is clearly a need to continue to develop ways of regulating mass transit services, probably by introducing concession-operated bus lanes along Santiago's major arteries and not simply within certain areas. In the same way, for reasons of equity and freedom of the market, car drivers should pay the costs that the city incurs on their behalf. A fund could be set up, consisting of contributions from car drivers, to finance infrastructure works designed to facilitate the introduction of even more improvements in mass transit and in the quality of life within the city.

## Gender and Urban Transport Planning

The context of transport and poverty is important because the poor are less able to bear additional burdens of time, effort, and cost for transportation than people in higher income groups. However, within low-income urban communities, men and women have distinct transport needs, based on their different roles within the household and society. These distinct needs are not often identified.

Caren Levy, in *Gender and Development: A Practical Guide*, notes that the limited research carried out on women's travel patterns shows there are great differences between the travel patterns of men and women. Inadequate and poorly planned transport services ultimately limit women's access to services and better employment, and have negative impacts on the general welfare of households, especially low-income households.

One of the most critical problems women face in the transport sector, suggests Caroline Moser in *Gender Planning and Development: Theory, Practice & Training*, is that transportation services are often organized to meet the schedules of men in the work force, with buses typically running from the periphery to the urban

center during morning and evening peak periods. However, this type of scheduling often has adverse impacts on women.



For example, in a study of transport needs in Belo Horizonte, Brazil, the routing of buses from low-income areas to the industrial areas, and then into the city, meant that women paid twice as much for transportation as men, and women's daily average travel time was three times longer than men's travel time.

Low-income women tend to use public transportation more than men, and they use public transportation for multiple activities such as school, shopping and health-related trips, in addition to work trips. Women must make many of their non-work related trips in off-peak hours, typically experiencing long delays.

In many large cities, the fear of male harassment prevents low-income women from using public transport, especially late at night. While fears about safety and harassment are linked with wider social conditions and attitudes, physical design in transport provision can make a positive difference. For example, bus and subway stops can be designed to allow better informal and formal surveillance and better safety.

For more information on gender and urban transport planning, see:

"Chapter 6: Transport," by Caren Levy, in *Gender and Development: A Practical Guide*, edited by Lise Ostergaard, Routledge, New York and London, 1992; and

*Gender Planning and Development: Theory, Practice & Training*, by Caroline O.N. Moser, Routledge, New York and London, 1993.

## The Rickshaws of Bangladesh

*The Rickshaws of Bangladesh* is a comprehensive and often-times moving human story about the people, circumstances, and economies of the rickshaws of Bangladesh. About 4 million cycle-rickshaws are in use world-wide, and they are becoming increasingly widespread in South Asia, Latin America, and Africa.

Rickshaws account for more than 50 percent of Dhaka's vehicles, 70 percent of its passengers, and 43 percent of its total passenger mileage. Some 5 million people (4.5 percent of the population) depend directly on the rickshaws for their subsistence.

Rickshaw pulling is more important nationally than the handloom textile industry (850,000 workers) or the entire modern industry sector (500,000 workers). *The Rickshaws of Bangladesh* by Rob Gallagher, 1992, 683 pages, is available through The University Press Limited, Red Crescent Building, 114 Motijheel C/A, P.O. Box 2611, Dhaka 1000, Bangladesh.

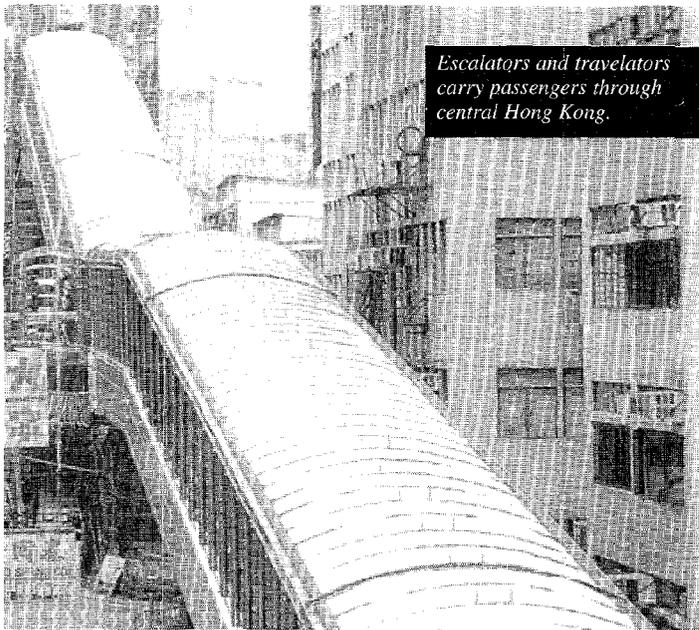


We actively seek our developing country readers' input for this section. Our intention is to broaden our network among developing country city managers and their urban representatives.

## HONG KONG USE ESCALATORS AS PUBLIC TRANSIT SYSTEM

Contact: Dr. Ernest Shu Wing Lee, Assistant Commissioner, Transport Department, Hong Kong Government. Tel: (852) 829-5206, Fax: (852) 824-0433.

Some 90 percent of the daily trips in Hong Kong are made on public transit. Modes include underground railway, electrified train, tram, light rail, double deck bus, minibus, taxi, and ferry. The latest innovation is an escalator-travelator system designed to transport residents, students, and office workers between the mid-levels residential areas and busy business districts on Hong Kong Island.



Escalators and travelators carry passengers through central Hong Kong.

Conceived in the mid-1980s, the system was designed to help relieve the overloaded bus and minibus services, and to meet the high demand for public transport in the mid-levels areas, where steep relief and dense development make road building and widening difficult. It was also hoped that the system would decrease private car usage, thereby reducing road congestion.

### System characteristics

Measuring 800 meters long and climbing 135 meters in height, the moving walkway consists of 20 escalators and three travelators (travelators are "flat" escalators used in many airport passenger corridors). Transparent polycarbonate roofing protects commuters against bad weather conditions. At a speed of 0.65 meters per second, the trip takes about 20 minutes and is free of charge. The construction cost is estimated at about US\$ 27 million, and the annual maintenance cost at about \$US 0.5 million.

Because of site constraints and the need to provide a 3.5 meter emergency vehicle access throughout, only a one-way tidal flow system can be provided; a 3-meter wide footpath is constructed alongside. The escalators go downhill from 6am to 10am, and uphill from 10am to 10pm. A group of four attendants patrol the system to help users, and a supervisor controls the operation through a closed circuit television and public announcement system in the control room.

### Initial feedback

The escalator system, which has been described as a huge dragon linking the central business districts and the residential areas, has received generally positive reviews; about 90 percent of users regard it as convenient and useful. During its first week of operation, the system attracted approximately 15,000 commuters per day, some of whom would otherwise have commuted by taxi, bus, minibus, or private car.



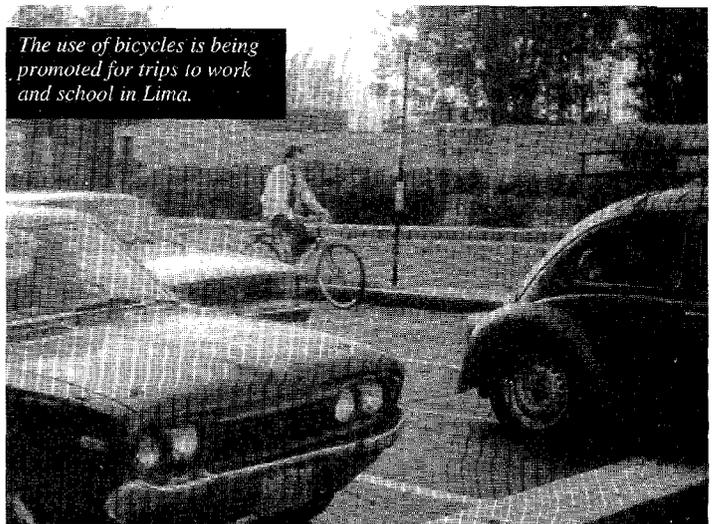
## NON-MOTORIZED TRANSPORT IN LIMA

Contact: Jenny Samanez de Testino, Executive Director, Non-Motorized Vehicle Transport Program, Municipality of Lima, Natalio Sanchez 220 Piso 9, Jesus Maria, Lima, Peru. Tel and fax: 51-14-33-7519.

In 1990, the city of Lima established a program to promote the use of bicycles as an alternative mode of transport, especially for work and study trips. Lima initiated the program to provide transport for people who walk long distances; reduce the cost for low-income public transport passengers, which would save them time and improve their health; and reduce air pollution.

In Greater Lima, with a population of 3 million, public transport to low-income areas is irregular. Cars, trucks, and buses contribute significantly to air pollution and congestion in Lima. The cost of public transport is expensive for half the residents of the city, who have low (US\$ 208) or very low (US\$ 80) average monthly incomes. People in these income groups typically spend about 12 percent of their income on transportation. Moreover, accident rates are high, with about 70 percent of fatal accidents resulting from vehicle-pedestrian incidents. Studies indicated that Lima would be a good place to start a bicycle program given its warm climate, level topography, and lack of rainfall.

Pilot studies have shown early promise. As a result, Lima will build three trunk bicycleways, primarily to help low- and middle-income workers commute to and from the Lima-Callao industrial area. A fund will be established to help people buy low-cost bicycles, and the city will also conduct promotional and educational campaigns. Lima plans to monitor the results of the project for a city-wide plan to use bicycles.



The use of bicycles is being promoted for trips to work and school in Lima.

## Fast Wheels, Slow Traffic: Urban Transport Choices

by Charles L. Wright, Temple University Press, Philadelphia, PA, USA, 19122, 1992, ISBN 0-87722-911-2.

Moving people and goods in cities is a global problem, and examples from around the world illustrate key points throughout this book. By tailoring different transportation methods to the specific needs of a given city, the author proposes that economically and environmentally sound solutions can be developed.

In the "characteristics approach" to urban transport planning, both planners and the public can see the big picture of transportation. Using this approach,

economists evaluate potential user reactions to various alternatives rather than simply calculating

costs and benefits at the end of a project. The public can be better informed from the start and political will can be generated.

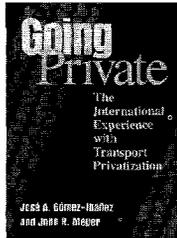
Wright tends to favor buses over cars or rail, but examines all modes of transportation, including walking and cycling. He argues that traditional mass transit strategies often do not work well in high-income cities. Wright also examines the failure of city planners to take into account the needs of commuters.

## Going Private: The International Experience with Transport Privatization

by Jose A. Gomez-Ibanez and John R. Meyer, The Brookings Institution, 1775 Massachusetts Avenue, N.W., Washington, D.C. 20036, USA, 1993, ISBN 0-8157-3178-7.

Many countries have sought to privatize rail, bus, and other

transportation companies over the last decade. Using case studies from Europe, Asia, the United States, and Latin America, the authors analyze varying degrees of success in privatizing highways and bus lines.



Privatizing a given system needs to make economic sense, but should also take into

account the political and social structure of a given country. For example, income transfers, environmental considerations, and the attitude toward government intervention are all key elements that governments should consider when contemplating the privatization of a specific transit system.

## Environmental Limits to Motorisation: Non-motorized Transport in Developed and Developing Countries

by Urs Heierli, Swiss Centre for Development Cooperation in Technology and Management, Vadianstrasse 42, CH-9000, St. Gallen, Switzerland, 1993. ISBN 3-908001-41-2.

The author predicts worldwide urbanization trends will lead to "unbearable congestion" and intense pollution. However, city



residents rarely travel more than 10 kilometers, and often far less, for most of their trips. Such short distances are perfect for biking, walking, and using a rickshaw or an oxcart, which also allows people to exercise. But these methods of transportation are considered "backward" to those who aspire to the lifestyle of people in western Europe and the United States.

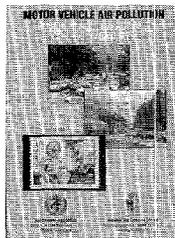
The author advocates restrictive policies toward private cars,

trucks, and motorbikes in cities, with drastic increases in enforcement of such policies. He also argues for promotional policies favoring non-polluting forms of transportation over polluting methods by allocating separate lanes to buses and giving preference to electric tramways and trolley buses.

## Motor Vehicle Air Pollution: Public Health Impact and Control Measures

by David T. Mage and Oliver Zali (eds.), World Health Organization, Division of Environmental Health, Geneva, Switzerland, and the Republic and Canton of Geneva, Department of Public Health-ECOTOX, Geneva Switzerland, 1992.

Cities throughout the world have, or will soon have, traffic congestion and serious air pollution caused by automobiles. This



means excessive levels of ozone, lead, carbon monoxide, and nitrogen dioxide.

People who live in cities in developing countries are particularly vulnerable due to the lack of emission controls and the fact that many people work close to roadways.

The authors maintain that effective ways to cut down on congestion and pollution include encouraging car pools, increasing fuel and vehicle prices, limiting urban parking, and providing low-fare mass transit. While emission controls can impede economic growth in the short run, the authors conclude that emission controls help in the long run by improving public health.

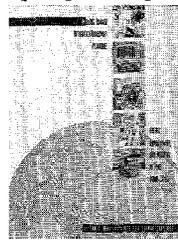
The book includes illustrative case studies from Geneva, Los Angeles, Manila, Mexico City, Bangkok, Taipei, and Surabaya. Well-organized charts and tables

graphically outline motor vehicle use since the 1930s, the effects of ozone on the human body, and other information that powerfully supports the authors' recommendations.

## Moving Toward Integrated Transport Planning: Energy, Environment, and Mobility in Four Asian Cities

by Mia Layne Birk and P. Christopher Zegras, International Institute for Energy Conservation, 750 First Street, NE, Suite 940, Washington, DC 20002, USA, 1993.

Developing countries ought to think creatively, and in an integrated way, when they design their transportation systems. If not, they are likely to repeat the same mistakes other countries have made. Many developing countries allot most of their transportation budget to expanding roads and highways. This is a short-term view of a city's transportation needs and creates many hidden costs, such as high levels of pollution and congestion and the need for high expenditures on upkeep and expansion.



The authors advise urban planners in developing countries to adopt "Integrated Transport

Planning," which compares transportation options not only on up-front costs but also with regard to environmental costs of congestion, costs to security by increasing dependence on imported oil, and long-term maintenance costs. The authors base their views on four case studies: Surabaya, Indonesia; Bangkok, Thailand; Varanasi, India; and Islamabad, Pakistan.

Below is a list of urban events and training courses culled from The Urban Age's current files. We regret that more events from developing countries are not listed. If you would like your event to be included, please send announcements to the Editor, The Urban Age Rm. S4-031, The World Bank, 1818 H Street NW, Washington D.C. 20433. Facsimile: 202-522-3224.



## Conferences

**Liverpool, UK**—March 20-24, 1994. **Health in Cities: A Global Conference.** For more details contact: Health in Cities Conference, Dept. of Public Health, P.O. Box 147, Liverpool L69 3BX UK, Fax: 051-794 5588.

**Birmingham, UK**—April 12-24, 1994. **Housing for the Urban Poor: Housing, Poverty and Developing Countries.** For more details contact: Rick Groves, Centre for Urban and Regional Studies, The University of Birmingham, Edgbaston, Birmingham B15 2TT, UK. Tel.: 44-214-145-027, Fax: 44-214-143-279.

**Washington, D.C., USA**—May 19-20, 1994. **Global Dimensions of Lead Poisoning: The First International Prevention Conference.** For more details contact: Alliance To End Childhood Lead Poisoning, 227 Massachusetts Ave. N.E., Suite 200, Washington, D.C., 20002, Tel: 202-543-1147, Fax: 202-543-4466.

**Nairobi, Kenya**—June 13-16, 1994. **International Seminar on Gender, Urbanization and Environment.** For more details and a call for papers form, contact: Diana Lee-Smith, Mazingira Institute, P.O. Box 14565, Nairobi, Kenya, Tel. 254-2-443219, Fax: 254-2-444643.

**Manchester, UK**—June 24-July 3, 1994. **Global Forum '94: Cities and Sustainable Development.** For more details contact: Global Forum '94, Eastgate Castle Street, Castlefield, Manchester M3 4LZ, UK, Tel: 44-61 234-3741, Fax: 44-61-234-3743.

**Colombo, Sri Lanka**—August 21-26, 1994. **Twentieth WEDC Conference—Affordable Water Supply and Sanitation.** For more details and a call for papers form, contact: John Pickford, Water Engineering and Development Centre, Loughborough University of Technology, LE11 3TU, United Kingdom, Tel.: 44-509-211079, Fax: 44-509-222390/1.

**Hong Kong**—November 7-12, 1994. **World Congress on Urban Growth and the Environment.** For more details contact: Congress Secretariat, 10 Toasley Place, London SW 18 1BP, UK, Tel.: 081-871-1209, Fax: 081-875-0686.

## Education Programs and Courses

**Centre for Development Planning Studies, The University of Sheffield**—Courses to be offered in 1994 include: Planning for Sustainable Cities, and Participatory Planning and Environmental Responsible Development. Both will be held July 4-September 23, 1994. For more details contact: The Director, Center for Development Planning Studies, The University of Sheffield, Western Bank, Sheffield, S10 2TN, UK. Tel.: 0742-826180, Fax: 0742-722199.

**Institute for Housing and Urban Development Studies**—Master's and Diploma programs in Urban Management are offered in English. For more details contact: IHS Registrar, P.O. Box 1935, 3000 BX Rotterdam, The Netherlands, Tel.: 31-10-40-21-540, Fax: 31-10-40-45-671.

**The University of Buenos Aires Program in Urban and Regional Planning**—Postgraduate courses begin each year in April. For more details contact: David Kullock, Program in Urban and Regional Planning, Ciudad Universitaria, Pabellon II, 4to. Piso, 1428, Buenos Aires, Argentina, Fax: 541-782-8871.

## Newsletters

A selected list of newsletters and journals carrying information on urban development issues.

URBAN ENVIRONMENT  
NEWSLETTER  
GTZ-DOLA Urban Environment  
Management Guidelines Project  
Wagn Sunatha, Ratchasima Road  
Dusit, Bangkok 10300  
Thailand  
Tel.: 2-243-0540  
Fax: 2-243-1812

AFRICAN TECHNOLOGY  
FORUM  
MIT Branch  
P.O. Box 171  
Cambridge, MA 02139  
USA  
Tel.: 617-225-0339

POPULATION HEADLINERS  
Economic and Social Commission  
for Asia and the Pacific  
United Nations Building  
Bangkok 10200  
Thailand

HEALTHY CITIES  
Department of Public Health  
P.O. Box 147  
Liverpool L69 3BX  
UK  
Tel.: 51-794-5582  
Fax: 51-794-5588

UNDP UPDATE  
One UN Plaza  
New York, NY 10017  
Tel.: 212-906-5304  
Fax: 212-906-5364

THE CUCES NEWSLETTER  
The Centre for Environmental  
Studies  
The Chinese University of  
Hong Kong  
Shatin, N.T.  
Hong Kong  
Tel.: 609-6972  
Fax: 603-5174

CITIES INTERNATIONAL  
and  
ENVIRONMENTAL  
PARTNERSHIPS  
ICMA  
777 N. Capitol St. N.E. Suite 500  
Washington, DC 20002-2401  
Tel.: 202-289-4262  
Fax: 202-962-3500

NEWSLETTER  
European Network for Housing  
Research  
The National Swedish Institute  
for Building Research  
Box 785 S-801 29 Gavle  
Sweden  
Tel.: 46-26-14-77-00  
Fax: 46-26-14 78 02

RESEARCH BULLETIN  
School for Advanced  
Urban Studies  
University of Bristol  
Rodney Lodge, Grange Road  
Bristol BS8 4EA  
UK  
Tel: 0272 741117  
Fax: 0272 737308

We welcome your comments, thoughts, and criticisms on future issues of *The Urban Age*.

The following were among those received in response to the Summer 1993 issue on "Urban Violence":



Editor:

I read your Summer edition with utmost interest, especially the write-up on the city of Nairobi, where I currently reside. While the new mayor of the city, Steve Mwangi, and I belong to two different parties, I support his initiatives and considerable personal efforts towards bringing self-government back to city residents. Previously, the city government was run by government cronies, and corruption was the rule of the day.

Nairobi's situation is not unique. Most large towns and cities are the seats of the central authorities, while the local or municipal power structures are at best regarded as unnecessary, cumbersome, and redundant anomalies to the dictates of the central powers. The dichotomy is not complementary. The police force, traffic, criminal cases, and so on are left to the central government. Mayors are left with street sweepers, meter readers, and watchmen. The trickle-down effect both from the powers-that-be and the city

residents, heaps contempt on city authorities.

The root cause of the macabre violence depicted throughout your Summer 1993 issue could possibly be viewed in the above light in Nairobi, where violent criminals and glue-sniffing children exchange morning greetings with central authority policemen (the arresting agents) every morning as each go their way.

*Ngoima wa Mwaura  
HABITAT News  
Nairobi, Kenya*

Editor:

I must commend you on an excellent issue on urban violence.

Widespread violence arises when there are high levels of grievance in a society, and few opportunities to express and remedy these grievances except through violence. Too often, it seems, both of these conditions are present in our urban areas. Your articles show the causes of violence to be remarkably similar across cities as varied as Karachi, Dakar, Rio, and Los Angeles: miserable poverty, extreme economic inequalities and exploitation, rising expectations, the fragmentation of

family, and alienation from society. Young men under these stresses are particularly inclined to violence, and minorities, women, and children are disproportionately the victims. Racial and ethnic biases of police often aggravate the turmoil.

Urban areas in poor countries, especially, are rapidly growing because of a combination of unequal land distribution, resource degradation, and population growth in the countryside, which causes people to migrate to cities, and population growth within the cities themselves. Historical research shows, however, surprisingly little correlation between rapid urbanization and violence; and the exploding cities of the developing world have been remarkably quiet until recently.

Your issue on urban violence shows that this pattern may now be changing. But cities do not have to be violent; it is the social conditions within them that provoke violence.

*Thomas Homer-Dixon  
Peace and Conflict  
Studies Program  
Department of Political Science  
University of Toronto, Canada*

Editor:

Your Summer issue arrived the same week the mayor of Washington, D.C. requested the National Guard to help police neighborhoods the regular policemen are afraid to enter. So your focus on urban violence was right on the news. Especially apt was Pinheiro's comparison of Rio with Washington, D.C., and Coleman-Miller's focus on Washington, D.C. I have read the entire issue and it's first-rate in telling it like it is, rather than how it would be if economic growth and development, hyperindustrialization, and growing inequality were more benign.

Congratulations on a fine issue.

*Kent MacDougall  
Graduate School of Journalism  
University of California, Berkeley*

Photo credits: page 1: AP/Wide World Photos; page 5: Rod Stickland; page 7: Curt Carnemark; page 9: Meshack M. Khosa; page 10: Gerhard Menckhoff; page 12: Mayor's Office, Amsterdam; page 16: Lynn Adamson; page 21: Ricardo Murillo (Lima).

Sources for box on page 6: data on motorcycles: "Automotive Air Pollution: Issues and Options for Developing Countries" by Asif Faiz, et al., the World Bank, Washington, D.C., 1990; all other citations drawn from: "Environmentally Sustainable Urban Transport: Defining a Global Policy" by Ismail Serageldin and Richard Barrett, the World Bank, Washington, D.C., 1993.



*The Urban Age* is printed by **PRESSTAR** printers on recycled paper using soy-based inks.

## Future Issues

The Winter 1994 issue of *The Urban Age* will cover "Politics and the City." In the Spring 1994 issue, the focus will be on the phenomenon of massive movements of people across international boundaries into cities in search of a better way of life. We look forward to receiving your comments, thoughts, and suggestions on these topics. We also encourage you to send us your feedback on this and past issues of *The Urban Age*.

To receive *The Urban Age* please fill out the information below and return to The Editor, *The Urban Age* Rm S4-031, 1818 H Street NW, Washington, D.C. 20433

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