

## 7 THE POLITICAL ISSUE: AGENTS IN URBAN TRANSPORT POLICY

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Although globalization and other profound social and cultural changes are transforming the way the state functions, and redefining its relationship with the private domain (Castells, 1999), current urban transport conditions in developing countries have to be analysed in the light of the way the state has been operating in those countries in recent decades. Globalization is still in its initial phase, and despite changes in the way investment and development are conducted, many of the former conditions still hold true in a highly conflicting political environment. Whatever changes globalization brings I believe the state will continue to play a key role in defining and monitoring public policies.

Political issues in urban transport policy will be analysed in light of the conditions found in developing countries, particularly the structure of the state, the profile of the decision-making process and the main agents involved.

The analysis of the state will place emphasis on its role in recent decades and the characteristics of the political process, including the level of political representation and the state of democratic institutions. Throughout, one must remain aware of the particular social and historical characteristics of each country.

Two main analyses will be made. First, the role of the elite, the middle classes, the bureaucracy and the technocracy; second, social movements related to urban transport.

### THE STATE AND THE DECISION-MAKING PROCESS

The fundamental characteristic of society and state relations in developing countries in recent decades is the relative political autonomy of the state with respect to economic and social spheres, creating conditions for broader state action and the self-expansion of its apparatus (Martins, 1985). Furthermore, the characteristics of peripheral capitalist development give the state a structural function as well as a role in guiding the development process and participating directly in the production effort. The state organizes the accumulation of capital, conducts the relationships with the core, mediates external influences, and legitimizes the actions of the bureaucracy. Although public policies are considered to be 'collective' actions, the state is the focal point for most of the key decisions; transport infrastructure is provided mostly by the

state, and public transport services and users receive legal or financial support during critical phases, when adequate provision or affordable access is threatened. This central role of the state continues despite recent neoliberal policies that deregulate or privatize public services and infrastructure provision.

Second, the state is neither impenetrable nor homogeneous – it does not act in exclusive accordance with the interests of dominant groups. Despite its function in supporting the reproduction of dominant economic relations, it acts through a set of agencies with different resources and levels of autonomy, loosely attached by institutions and representing the ‘crystallisation of interests’ of several social groups and the bureaucracy (Martins, 1985). Its action is full of contradictions and is based on a conflicting set of loyalties to different interest groups.

Finally, economic development does not presuppose the search for equity; that is, it can be pursued by simply creating a small, but reliable, market. The tension between accumulation and legitimization (O’Connor, 1973) is resolved in a politically astute way. This sort of development ‘leads to the creation of islands of wealth inside a context of poverty’. These islands are sustained, on one hand, by the importation of technology and equipment, and on the other hand, by the formation of a consumer class (Cardoso, 1977). Such unbalanced growth has been occurring in all developing countries in recent decades to varying degrees and is directly related to the emergence of middle-class families who see motorization as a necessity.

## **New political systems and democracies in developing countries**

Political representation and its position in the decision-making process is a major issue. Recent democracies that have developed in developing countries are named ‘democracies’ in the sense that they admit the coexistence of multiple levels of decision and influence. Nevertheless, they are not ‘representative’ in the European style, but are rather ‘delegative’ (O’Donnell, 1988). This sort of democracy is largely personality-based, as one person governs without the need for manifestos or adherence to a political party. Consequently,

*Legislative and judicial powers are intrusions ... the mere idea of accountability with respect to public or private agencies and organisations appears like unnecessary impediments to the unambiguous authority he has received. (O’Donnell, 1988, p31)*

For instance, Daniere (1995) points out that political scientists see Thai people as literate and increasingly urbanized, but generally indifferent to national policies, believing in a system of status according to religious belief, and the patron–client relationships that characterize economic activities.

This comparison between delegative and representative democracies rests on the notion that the latter are founded on a set of democratic institutions, which constitute the focal points of the decision-making process. They are based on the acceptance of a superior interest, leaving individual or group strategies and needs to one side (although not denying them). They operate

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on the basis of a 'competitive cooperation', which facilitates political bargaining and ensures the sequential accomplishment of the political agenda, strengthening mutual acceptance and increasing the value attributed to the institutions (O'Donnell, 1988). Therefore, the political institutions are indeed a decisive means of mediating and aggregating structural factors on the one hand, and social needs and interests on the other (the latter being represented by social organizations).

Delegative democracies are seen as having a restricted scope, weak and low-density institutional relationships, and strong non-formalized institutions, including patronage and corruption. They are characterized by exclusive and personal access to policy decisions. This personal access denotes what Da Matta called the 'relational citizenship', in which personal relations are much more important to policy formation than formal Western-style citizen's rights (Da Matta, 1987).

From a practical point of view, unlike representative (or 'institutionalized') democracies in which decisions are made after a long process of discussion, in delegative democracies policy decisions are formulated rapidly, thereby carrying the possibility of substantive errors and implementation problems.

Brazil is an example of a country in which local governments usually experience high levels of autonomy (Pahl, 1977a). Mayors in Brazil are considered to have a 'discretionary and irresponsible' power, in the sense they are free to choose the path of policies and are not accountable except in the most formal and bureaucratic ways (Nunes, 1991). The mayor is the central focus of all issues pertaining to the public sphere, and chooses the actors who will participate in the policy-making process. New social movements sometimes impinge on policy decisions but the mayor still has a large discretionary power. Legislative power is limited by restrictions on its power to deal with budgetary issues, as well as by the fact that some legislative politicians will have a personal interest in issues being handled by the mayor. There is a coalition of patronage between the executive and the legislative, which has profound effects on social demands, actors, and conflicts. Demands are fragmented into specific issues, and patronage conveniently disguises private interests.

In most developing countries, the public sector is formally in charge of planning, a task which performs inadequately because of the fragmentation of agencies and institutional overlap. One can imagine the conflicts that emerge concerning the role and jurisdictional limits of the public agencies that cope with transport policies. In most cases transport issues are dealt with by two or three levels of government: local, regional or federal. The features of the transport system that are formally attached to each of these levels overlap. Therefore several conflicts arise, both between the political interests behind each transport system, and within the agencies themselves. Most major cities in the developing world experience these problems.

Two other aspects must be emphasised. First, most democracies are fragile and are subject to external and internal destabilization pressures, which leads to constant disruption of the political system. Second, the understanding of political citizenship is weakly developed, a situation made worse by deep social and political differences between social groups and classes.

## AGENTS IN THE DECISION-MAKING PROCESS

Despite the state's overwhelming power, especially at the local level, other actors also play an important role. All these actors have different and often conflicting interests. Not all of them participate in all the discussions, and when they do, they seldom have equal leverage. In institutionalized democracies policy discussions incorporate several powerful actors (Lupo et al, 1971; Whitt, 1982); in developing countries there are fewer actors since the process is highly exclusive.

### Bureaucracy, technocracy and the middle classes

The bureaucracy and the technocracy have to be analysed both in respect to their internal ethos and to their relationship with social and pressure groups.

Prevailing pluralist approaches to the analysis of these agents are inadequate, since pluralism believes private action to be a free force compatible with the public wellbeing, leaving politicians and the bureaucracy to select important public issues. In addition, pluralism sees no contradiction between social classes and private action, and minimizes the influence of market failures and of capital concentration (Alford and Friedland, 1985). The best way to analyse state structure is to combine elite (managerial) and classist approaches. The managerial approach is based mainly on Max Weber's analytical tradition which has become increasingly relevant in the face of the growing importance of state intervention and the bureaucratic control of society. Weberian criticism of the classist approach is rooted in the notion that although economic conditions are important for class formation, other non-economic elements are essential in determining people's interests. The way rewards are acquired and distributed in the market is crucial (Fainstein, 1997) and 'stratification by prestige, based on occupation, consumption and style of life [is] particularly important in capitalist societies' (Abercrombie and Urry, 1983, p7).

The state must be able to deal with the inherent conflicts between dominant sectors, which requires a minimum level of internal independence. The bureaucracy – and more recently the technocracy – may be capable of performing this role. Therefore, in any specific situation, one has to enquire into the relative freedom of the bureaucracy with respect to dominant sectors (Offe, 1981).

In this respect, Carnoy and Levin (1985) argue that bureaucrats are members of the dominant class; in the case of developing countries, the 'elitist' origin of the bureaucracy is even more pronounced. Daniere (1995) points out that in Thailand the elite is educated and conservative. As educational access is limited by income and class, there is a 'gate' to the access to bureaucratic positions.

Cardoso (1977) also points out that capitalist modernization in developing countries is supported by some portions of the bureaucracy, especially the technocracy, which directs its actions according to the most important interests of capital.

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However, despite their strong relationship to the dominant sectors, most bureaucracies and technocracies seem to be closely associated with specific social sectors, especially the middle class. They have common roots in the economic development of the 20th century, especially the monopolistic phase of capitalism after the 1930s (Carchedi, 1975). A differentiation in functions and the development of complex hierarchies occurred at the same time (Wright, 1976). A new stratum of managers and professionals who were qualitatively different from the traditional working class was formed (Howe, 1992).

An understanding of the function, interests and political behaviour of the middle classes is essential to understanding economic development and motorization in developing countries. Their function in the production system could be broadly defined as controlling work tasks, reproducing the system, and developing the conceptualization of the work process; they can be also seen as a new class of 'knowledge producers' (Howe, 1992). These are essential, not accessory, functions of the system, which places the middle class in a privileged position. The notion of an independent middle class can be related to the previously-discussed relative independence of the bureaucracy. Welfare bureaucracies are run by as well as for the salaried middle class (Gould, 1981), which is 'politically equipped to defend the benefits if and when they are threatened' (Ginsburg, 1992, p4). As stated by Cardoso (1977, p33),

*It is a fact that state bureaucracy and the technocracy will turn themselves into strategic points to be used by the middle classes in their struggle to have access to decisions regarding the development process.*

The political behaviour of the middle class is therefore variable; it is reformist, in the sense of pursuing changes without challenging the system, and individualist, in the sense of emphasizing personal mobility (Gould, 1981; Poulantzas, 1975). The middle class has a commitment to a new style of life, a new and diversified consumption pattern, and a new way of using city space. Despite the necessary relationship between this new lifestyle and new sources of income, the middle class will identify more closely with other agents who have the historical, educational, cultural or economic background that enables them to benefit from modernization, to engage themselves in the new urban life and experience social mobility. In Brazil, the new pattern of social reproduction of the middle classes is related to four main commodification processes, each with profound implications for travel patterns: education, health, personal services and leisure. The replacement of public by private schools, the inclusion of special educational activities for children (foreign languages, arts), the replacement of public by private healthcare, the use of new personal and leisure services (physical fitness, sports) all characterize the new middle class. Private transport is an inseparable part of this new lifestyle, especially in face of poor public transport.

### **Social movements**

Transport and traffic conditions affect people's daily life, often resulting in complaints and discontent. Here we will analyse political participation in

transport and traffic problems. This participation does not necessarily challenge the prevailing process and may lead to manipulation.

In any particular situation people will try to use the circulation structure in such a way as to address their needs as conveniently as possible. This attempt to reach a balance between needs and supply requires three particular conditions which can contribute to the emergence of any sort of political pressure.

First, as previously discussed, the difference between possible and actual trips is defined by personal and external limits. A suppressed demand might form the basis of a particular political movement.

Second, the conditions of the circulation structure may lead to discomfort and discontent, as in the case of poor public transport services and poor traffic conditions. Third, the continuous innovation in production inherent in a capitalist economy is accompanied by innovations in consumption, which entail changes in physical infrastructure and spatial forms. Hence, reproductive activities and related lifestyles are constantly changing, leading to changing trip patterns in need of different transport supply patterns. As stressed by Harvey, '... the ferment of urban politics and the diverse social movements contained therein is an important part of such an innovative process' (1985, p126).

Five main practical problems lie behind people's unhappiness with transport conditions: access to desired destinations, trip comfort and safety, and time and monetary costs. The balance of these variables in any particular situation will depend on objective as well subjective appreciation. Although clear objective conditions may lead to a negative evaluation and hence to a complaint or conflict, the formation of consciousness about the actual conditions in the light of subjective social and political evaluations is the most important factor for long-term political effects (Kowarick, 1991). Therefore, everyday experience is essential in forming individual or collective judgments, and has profound effects on people's perception of their living conditions.

### *Types of participation*

Political participation can be analysed in several ways. My analysis focuses on three main aspects: political nature, individual or collective expression and practical development.

In terms of political nature, participation can be initially classified as reformist or structural (Castells, 1977). The former intends to change conditions without changing the political decision-making process, while the latter intends to change both. In terms of individual or collective expression, these movements may be classified as user-level or collective-action level (May and Ribeill, 1976), as well as state-level. The user-level movement denotes an individual complaint. Collective action is characterized by formal organizations or social groups. The collective nature of this action leads to a broader emphasis on the provision and management aspects of the problem. State-level participation is directly related to the nature and interests of the bureaucratic and technocratic sectors and the corresponding conflicts.

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These movements should be understood as either open or hidden, and as demanding or reactive. Open movements are those that operate through explicit forms of pressure, with success depending heavily on their political visibility. An example would be the attempts of poor neighbourhoods to improve public transport services. Political conditions will lead these movements to use either peaceful or violent means. Hidden movements are those that operate through indirect forms of pressure from within the state. Demanding movements press for improvements in actual conditions, such as new public transport lines, higher bus frequencies or road infrastructure. Reactive movements protest against changes in actual conditions, for example an increase in bus fares, the opening of residential streets to local traffic, or motorway construction.

Open political movements can be either demanding or reactive, peaceful or violent. Hidden movements are mostly peaceful and demanding. This is related to the balance between needs and available means in organizing political pressure. Especially in developing countries, individuals and neighbourhood organizations do not have much access to the decision-making process. Conversely, formal organizations linked to dominant and middle-class sectors have direct access to the state, and can exercise pressure either directly or indirectly. The main characteristics of such movements are summarized in Table 7.1.

**Table 7.1** *Social movements and urban transport*

<i>Type of movement</i>	<i>Main characteristics</i>	<i>Example</i>
<i>Level of organization</i>		
Individual	Individual complaints	Change in bus stop
Group	Social complaints	Fare decrease
State	Interests inside state	Public transport regulation
<i>By nature</i>		
Demanding	Demand changes	Public transport improvement
Reactive	Resist changes	Road construction revolt
<i>By logistics</i>		
Open	Direct (public) pressure	Community demonstration
Hidden	Indirect (hidden) pressure	Elite and middle-class influence on state decisions
<i>By tactics</i>		
Peaceful	Peaceful means	Community reunions
Violent	Violent means	Destruction of buses

*Analysis of political movements*

We may now summarise the most important questions regarding political movements:

- What is the relationship between people's conditions and transport and traffic political movements?

- What influence do such movements have?
- How do they conflict with or reinforce each other?

One must remember that individuals face different conditions and may have different views of a problem, a constraint pertinent to any social issue. This particular feature is further enhanced by the singularity of road use; there are conflicting needs attached to each role, placing different pressures on the transport and traffic authorities. There is no single actor, because people play many roles in circulation. In addition, there is no single need or interest and hence no single political conflict. Political movements around traffic problems tend to be limited to emergency situations where dramatic conditions generate violent protest. In this respect they are transitory, making it very difficult to sustain mobility and participation after the achievement of the initial objectives (Boschi, 1987). These characteristics of circulation consumption, as opposed to other consumption needs like water and housing, suggest that circulation is not an issue that divides clearly along class lines. Circulation implies many physical conflicts that affect everybody, regardless of class. However, circulation also implies *political* conflicts.

First, conflict is present when open movements demand better public transport. The supply of transport services is often left to the market and transport costs (fares) come out of the worker's wages (in the absence of subsidies). As long as the actual transport conditions are accepted, capital has no reason to improve them. However when conditions are inadequate, open movements may arise. Although normally aimed at the state as the provider, these movements reflect the conflict between capital and labour. In practice, the solution may be provided either by capital (in the form of a salary increase) or by the state, using public resources to provide or improve transport conditions, and so freeing private capital from another expense.

The second way in which conflicts present themselves is through the use of the circulation structure and the transport means. The simplistic approach which views the conflict as the choice between a car and a bus is inadequate. The conflict is a product of the conflict between the middle classes with access to private transport, and the remaining social groups. It concerns the appropriation of circulation space, and hence the efficiency of social reproduction. In contemporary capitalist cities, the larger the road system and the easier the purchase and use of cars, the better the reproduction of the middle class. Conversely, the larger the spatial and time coverage of public transport networks, and the cheaper the fares, the better the reproduction of other social groups. As a general rule, the circulation structure of contemporary cities in developing countries is much more easily appropriated by the middle class with access to private transport means.

Open movements for better public transport have not led to any significant change in prevailing supply conditions in most developing countries (Dimitriou, 1990).

Open movements to protest against high fares or residential neighbourhood intrusion by traffic have been far more effective. One special case is the neighbourhood movement against speeding thru-traffic (Vasconcellos, 1995). In these cases, residents blocked street traffic with bricks or holes. These

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movements have important characteristics. First, they happen as a violent protest against fatal accidents, generally involving children hit by passing cars, and therefore have a powerful emotional content which contributes to swift collective organization. Second, they are highly effective in impeding traffic and aiming protest at local traffic authorities with an actual problem-solving capacity. Third, they are short-lived movements which disband after the successful rearrangement of local circulation. Finally, they disguise the conflicts between residents: for instance, limiting traffic benefits some interests (safety and environmental quality) and harms others (fluidity and accessibility).

The most successful movement is indisputably the hidden movement to adapt the cities for private transport. It is a long-term movement embedded in capitalist modernization. It is performed by the bureaucracy and technocracy, along with technical sectors outside the state (consultants) and dominant political and economic groups. Because it addresses dominant interests, feeds the middle-class ideology of modernization, and is rooted in actual and permanent access to the decision-making process, it is by far the most powerful movement. It has already occurred in many Latin American cities and is now under way in developing countries all over the world, especially in Asia. It results in a travelling environment that severely harms the objectives of public transport and non-motorized users, further limiting the efficiency of their supporting movements.

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## URBAN POLICIES AND DEVELOPMENT

'The institutional issue' refers to how the state, society and private agencies define and implement transport-related public policies. As stressed in Chapter 4, several public policies influence socio-spatial organization, including urban development, land use, housing, labour relations, investment, taxation, transport and traffic. For our purposes, three main areas are relevant: urban planning, transport planning and traffic management. These are associated with three objectives: land, circulation structure and means, and circulation patterns. The identification of these three areas differs from the traditional literature, where urban planning and transport planning are considered to be the most important public actions. Traffic management is often considered to be of secondary importance, related to more technical, simple objectives that should be dealt with by engineers. However, the assumption proposed in the book of the use of space as a central issue for policy analysis renders such activity as essential as the other two.

While urban planning is mainly concerned with land use and the physical provision of public services (water, sewage collection, schools, medical services), transport planning involves the definition of the circulation infrastructure and means, and traffic management works with the division of road space. Despite a hierarchical relationship between the three – with power decreasing as one passes from urban planning to traffic management – there are clear interrelations between them, as well as overlapping areas. The attempt to depict them as separate areas is of analytical use only.

## URBAN PLANNING

Urban planning involves the definition of land occupation patterns according to different purposes (residential, commercial, industrial). It also defines how public services will be distributed in space. In defining limits to land use, it constitutes a conflict-ridden political arena, and in defining the physical distribution of public services it directly interferes with accessibility, equity and efficiency.

Urban planning begins during periods of intense urban growth which throw up related conflicts surrounding land use, the provision of public services, the environment, energy consumption and quality of life. The complexity

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of the production system and the interrelationships between production, exchange and consumption make planning inevitable as an attempt to manage conflicts. It is a means by which the state tries to overcome contradictions, compensate for increasing imbalance and risks, and minimize conflicts (Castells, 1975). However, it can be a precarious way of rationalizing the relations of power (Jamarillo, 1993). The result is a built environment that ensures minimum conditions for the reproduction of the system, but is subject to disruptive tensions.

Urban planning is the tool of a technical rationality that is expected to conciliate divergent social interests, guided by the economic efficiency criteria and directed at social transformation; it is grounded on the belief that scientific rationality (Winner, 1977) is in itself indisputable and criticism free (Dupuy, 1978). These characteristics occur in traditional transport planning, which has been intensively used in developing countries.

Some questions can be posed in the light of these structural constraints.

### **Is urban planning possible in developing countries?**

The unbalanced and often disruptive growth experienced by developing countries poses severe limits to urban planning. High levels of migration from rural areas or small towns, persistent poverty, low educational levels, and the lack of adequate infrastructure contribute to an uncontrolled and highly conflict-ing organization of urban areas. It is unrealistic to attempt to organize urban planning in a permanent, comprehensive basis under these conditions. However, some countries and cities have done, or are doing it, despite immense obstacles.

### **Is urban planning desired by the prevailing political forces?**

Urban planning implies defining limits and constraints, and therefore affecting established interests. Often, dominant sectors do not want such controls to be exerted, and they create obstacles to them. This should be taken into account with several large cities in the developing world. However, specific conditions may persuade dominant private interests to lobby for controlling urban growth in particular areas if economic benefits may be acquired, such as in urban renewal projects.

### **How can the planner work autonomously?**

Planners face many conflicts of interest between social groups, investors, the construction sector and landowners. Several authors have proposed that, as the state ultimately expresses the interest of the dominant class, urban planning cannot be an instrument for social change, but remains a tool of domination, integration and the regulation of contradictions (Lefevbre, 1979; Harvey, 1985). Many criticisms can be made of this position. The importance of dominant interests in driving public policies should not be neglected, but

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their power is not overwhelming. In many instances dominant interests have to compete with the influence of other social groups, and in others they can be avoided or bypassed.

Dominant sectors may have to deal with the relative independence of planners. Many planners, as state employees, are strongly attached to the middle-class ideology and lifestyle. They are, in fact, the middle class within the state. Despite internal conflicts, both the bureaucracy and technocracy are intimately identified with the middle-class project, sympathetic to capitalist modernization and social mobility. The formulation of public policy is therefore influenced by these sectors. The planners mediate between external forces, delaying the implementation of actions and utilizing state resources to countervail pressures or to redirect previous decisions. In some cases this power will be used to extract class benefits and privileges, but it can also be used to join other interests in a common pursuit.

In the case of developing countries, the built environment is produced by a combination of dominant interest and a myriad of 'micro-powers' (Ball, 1986), which escape state control. These micro-powers are related first to poor people who occupy the peripheral or depressed areas of the city; this pattern of occupation has dramatic effects on the environment as well as on demand for infrastructure. Second, irregular or illegal land use in support of business activities by the elite imposes heavy burdens on transport demand and related externalities. Contemporary cities in developing countries can therefore be said to have two built environments: one organized by urban planning interventions and the other independent of them. Often the latter is larger than the former. In Latin America, it is estimated that 30–50 per cent of the urban population lives in illegal settlements or slums (Schteingart, 1996). In these cases the power of urban planning is limited, to say the least.

In the case of public transport supply, the planner's power can be ignored or bypassed by the autonomous production of transport (Tarrius, 1989). This may or may not be complementary to existing systems. It can be illegal, and is not always coupled with professional transport suppliers. This is the case with informal transport systems in Asia, Africa and Latin America (see Chapter 11).

### **How do social classes and private interests interfere in the planning process?**

How do middle-class sectors manage to influence transport policies when they are not exerting explicit pressures, or organizing social movements? The answer is given by Gramsci's concept of 'organic intellectuals'; people belonging to social groups that operate at the highest state level elaborate the ideology of the dominant class and transform it into a conception of the world that penetrates the entire social body (Portelli, 1977).

In the case of transport planning, professionals linked to transport studies may give support to the development project of the dominant class, which is directly attached to the capitalist modernization. As stressed in Chapters 6 and 9, the use of traditional transport and traffic planning techniques has been one of the most important ways in which this task has been accomplished

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in developing countries. This development project finds a powerful ally in the middle class, which sees in the modernization the way to social and economic mobility. In most developing countries, modernization implies a new development style: the concentration of income; repression of social movements; a diversification of activities in time and in space; an increase in economic production and consumption. All of these impose new pressures on transport structures and space utilization. Middle-class cities have recently developed in Latin America, as a physical expression of the new lifestyle enjoyed by selected social groups with access to cars. The same sort of built environment is now being organized in several developing countries (see Chapter 12). Therefore, one may conclude that public policy decisions within authoritarian or weakly democratized developing countries are made by the elite, within and outside the government, supported by groups of intellectuals and planners who translate and diffuse the dominant ideology.

Other major interests interact with the planners' activities. Business interests become involved when the division of the space is under consideration; that is, when major studies are expected to generate proposals that will affect local business interests. An example is the traffic study, specifically a study which concerns the pedestrianization of central streets, or major parking restrictions. In these cases business interests are represented by local organizations, which can interfere with policy decisions either directly – using government agencies – or indirectly, using the media. Business interests tend to be well organized, and hence are much more influential. Business may also mobilize in the event of new major transport infrastructures which have a potential effect on rent or land values; both the real estate and the construction sectors can exert an important influence on such decisions. Private investment in real estate along railway lines in Japan is one of many examples (Cervero, 1998a).

Industrial sectors participate in different ways. In addition to the government, the transport industry plays an important role in reproduction capitalist relations in contemporary peripheral states. In several developing countries, governments are attracting and giving fiscal support to new automobile and motorcycle factories (Pucher and Lefèvre, 1996; Cohen, 1996). The mass transport industry has also been receiving continuous support, because rail technologies from developed countries are constantly being marketed.

Finally, it is essential to consider the role of private consultants. The relationship between the state and private consultants became intimate during the most recent phase of capitalist modernization. Many former public agencies were transformed into so-called 'mixed economy' agencies, with much more freedom to hire labour and technical services. These agencies proliferated, followed by an expansion of the consultant sector. Due to the lack of independent forms of control over public affairs, state agencies and the private consulting sector work together to define the state agenda and budgetary commitments. In fact, in many countries consultants behave like para-statal agencies, using public money with little or no controls. Contract tendering is a closed arena, with negotiations taking place between the executive (either federal, regional or local) and the private sector. Despite the existence of bidding rules, especially for public works, transport planning is considered to

be a 'technical' issue, requiring high levels of expertise and therefore generating a highly limited selection of entitled bidders. This means that important economic and technical decisions are taken behind closed doors, cloaked by an aura of 'advanced technology'. This image has been propagated since the 1970s, when foreign expertise from developed nations was hired to employ 'modern' forecasting and modelling tools. These conditions have been essential to the propagation of 'closed' and high-energy technologies (Illich, 1974). There is no guarantee that this use of public money has led to a more efficient allocation of resources.

## TRANSPORT PLANNING

Transport planning deals with the definition of the circulation infrastructure – pavements, roads, railways and terminals. It also covers the physical and operational characteristics of public transport.

Road provision is often a state responsibility. In urban areas, local government is responsible for planning and building roads; in rural areas, regional authorities perform this task. Recently, road privatization in both urban and rural areas has been pursued all over the world, and more intensively in developing countries, but in most cases roads are not attractive to private investors; the World Bank classifies local roads as having 'low potential' for private financiers (World Bank, 1996). Rural highways face similar problems, since they need high AADT (annual average daily traffic) to be attractive to the private sector. In the case of public transport, road-based services benefit from existing roads, while railway services need special infrastructure. Again, the cost of such structures and the time taken to make a return on investment makes their provision a public responsibility. In both cases, infrastructure planning is performed by technical and bureaucratic agencies that develop short- and long-range investment plans, using forecasting techniques. Major forces that act in parallel are the construction sector, the real estate sector, automobile users, and the public transport industries.

The planning of public transport supply is often a public task. It can be organized within a lightly regulated market, in an unregulated one as in most Asian, Latin American and African countries, or in a highly regulated market as in Brazil or China. In lightly regulated markets the transport sector is either managed by individuals or organized by several types of association; for example, the driver's cooperative. The nature of this collective supply creates permanent 'cycles of irregular investment and supply patterns' (Figueroa, 1991). Private operators may exert a powerful influence on governmental agencies, either by threatening street blockages, as in Jakarta (Hook, 1998), or resisting the reorganization of services as in Seoul (Kim and Gallent, 1998). They may also promote the monopolization of services against the public interest (Mandon-Adelehoume, 1994).

In regulated markets like that of Brazil, suppliers are medium to large enterprises that have a form of geographical exclusivity, and are legally protected from competition. Public authorities define supply characteristics and fares. Inflation and competition from illegal operators constitute the two most important threats to these enterprises (see Chapter 11 for a detailed analysis).

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Differential political representation by users is important. Public transport users in developing countries, in contrast to those in some developed countries, are not as influential as bureaucrats and private operators. Unlike the middle class, who are represented through the state technocracy, captive public transport users (the majority of the population) face several barriers to representation. The first is their lack of representations in the upper bureaucracy and technocracy, because most of them lack formal education. Second, popular movements have been repressed by dictatorial and authoritarian governments, making it extremely difficult to organize permanent and solid movements (Kowarick, 1979). Third, transport is only one of a number of major problems faced by the public. Therefore, the state must mediate between independent political conflicts. A further element has to be considered: in many developing countries, public transport is provided by loosely regulated private operators, and captive users have to negotiate directly with them, with little success (unless a competitive alternative appears). In Yaoundé, people from the Eba neighbourhood, confronted by the denial of a regular taxi service, turned against the illegal vehicles that were providing alternative services when they decided to raise fares (Ngabmen, 1997).

### TRAFFIC MANAGEMENT

Traffic management defines how the available circulation space will be distributed between users. Traffic management has traditionally combined three areas of expertise: engineering, education and enforcement, known as '3E'. It has also been based on another rigid triad: man, vehicle and road.

Engineering, is performed by technically trained people, who have little (if any) concern for social and political issues. The traffic engineer has many instruments to deal with technical concerns, and may become immersed in a technical world that avoids social concerns. Education is performed, in order of importance, by policemen, socially concerned engineers and social scientists. Policemen are frequently involved since they are often in charge of traffic control. Engineers (or planners) may become involved when a wider structure is available. Social scientists become involved only when the social approach to traffic is already highly developed. Enforcement is always performed by policemen. This may mean the civil or military police, in coordinated or uncoordinated efforts with engineers. When joint work is performed, traffic operation and control are improved; when separate work is done, severe conflicts may arise.

The sociological approach to road usage unveils the conflicts that lie behind people's movements. Differences in access to motorized transport dramatically influences space consumption, introducing immense inequality. Urban circulation occurs in a physical space that must be distributed between those who want to use it. Traffic management organizes the circulation space and mediates conflicts through physical and symbolic communication tools (signs), relying on user respect of traffic rules. The impossibility of solving all demands is clear.

## HOW THE THREE INTERVENTION TECHNIQUES COEXIST<sup>1</sup>

Having considered the characteristics of each form of intervention, it is important to analyse their similarities and differences, in trying to establish whether they can coexist in coordinated public policies. As stressed by Dimitriou (1990), the coexistence is made difficult by different perceptions of the problem by engineers, planners, social scientists and politicians. In addition, there are several conflicts that place professionals and particular interests in conflict with each other.

Urban planning requires that decisions concerning transport infrastructure should be addressed jointly. The definition of land use greatly affects the generation of trips and therefore transport and traffic needs. Similarly, public transport supply and traffic management interventions can, in the medium term, lead to changes in land use.

Some of the ways in which actions in one field can interfere with others are briefly explained below.

- *Land use and urban density.* The way land is used and occupied directly influences transport demand, both quantitatively (traffic volume) and qualitatively (traffic composition).
- *Roadway characteristics.* Roadway design, the width of streets, and the type of pavement all influence traffic modes and related operational characteristics, such as average speed and level of service.
- *Transport means.* The level of public transport provisions, coupled to its level of service, influences its share of transport modes. In developing countries, low income makes most people captive to these modes. Similarly, the level of access to private transport, coupled to the ease with which it can be used on a daily basis (parking policies, petrol prices), influences choices.
- *Circulation patterns.* The preferential status of a particular road in respect to others, coupled with its circulation pattern (one-way, two-way) greatly influences the pattern of traffic conflicts and the quality of movement of people and goods.
- *Traffic laws.* The rigour of traffic codes and regulations, along with the quality of enforcement, influences human behaviour in traffic.
- *Education for traffic.* The level of formal education of traffic users, coupled to the characteristics of enforcement, influences behaviour in traffic as well as traffic quality.

In practice, the three areas of expertise can work jointly or separately. Nevertheless, especially in developing countries, there are particular limitations to joint work. First, the 'emergency' nature of daily transport and traffic operation makes it difficult. Second, the political conflicts around land use make it difficult and often impossible to have an active urban planning agency. Finally, the lack of resources results in an informal, inadequate organization of services in adapted agencies, especially in smaller towns. The possibilities of coexistence will now be analysed in the light of several political and technical issues (see also Table 8.1).

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## Action time spans

While urban planning operates in the long term, transport planning works in the middle term and traffic management in the short term (Gakenheimer, 1993). This leads to different perspectives. Time spans may be as long as 20 years for planning land use, and as short as one week for a traffic-management signal timing proposal.

## Approaches

The urban planning field uses a broader social and political approach, in the face of a much more complex political environment. The other two fields are more keen to use only technical approaches. Traffic management is deeply tied to strict technical approaches.

## Political environments and forces

The political environment surrounding urban planning is complex, since it involves land property rights and economic and financial interests. It also involves dealing with social and cultural differences between social groups and classes. It is more responsive to coordinated – although often hidden – political pressures from particular groups, but the long time span and the variety of interests divides pressures into myriad focal points. Transport planning is subject to complex political environments, although more limited than those surrounding urban planning, in face of shorter time spans and less influence on property rights. It deals with specific economic interests, either road-building enterprises or the transport industry. Conversely, traffic management faces more individualized pressures related to the roles played in traffic, although coordinated pressures may also occur, as in the case of shopkeepers and parking policies.

## Different technical problems

Each field faces different technical problems and challenges, requiring different means of solving them. Urban planning deals with complex analyses of land use and economic development, entailing permanent forecasting difficulties (which do not prevent the irresponsible use of forecasting tools). Transport planning deals with technological decisions and with consumer choice modelling, which is also a difficult task in the face of uncertainties about people's behaviour. It also involves forecasting and so possibly unreliable results. Traffic management works with mathematics and physics techniques to divide space and organize traffic. It appears to have much more control over its domain although, as previously stressed, it often ignores the social and political aspects of dividing space.

## Social pressure

The only field in which there is frequent pressure for action is traffic management. Most pressures come from inadequate circulation conditions, as in the case of congestion, the most visible traffic problem. These pressures are voiced loudly by most of the media. The agencies in charge of the problem have to be prepared for prompt action and often get the feeling that short-term action is their priority, enhanced further by the mobility interests of automobile users and their efficient pressure tools. Transport planning may be subject to pressures for emergency action or for middle-term action, such as designing a new transport corridor. Conversely, urban planning reacts to problems in a much more long-term way, as in urban renewal projects to rehabilitate depressed areas.

## The time taken to get results

While people involved in urban planning rarely have the chance to verify the results of interventions, transport planning sees impacts in a few years and traffic management in a few months (even days). This contributes to a sense of despair among urban planning people, and excitement among transport and traffic management people.

**Table 8.1** *Different characteristics in the three fields of urban policy*

<i>Characteristic</i>	<i>Urban planning</i>	<i>Transport</i>	<i>Traffic</i>
Traditional approach	Economic/social	Economic	Technical
Typical political environment	Large diversity of sectors and interests	More limited sectors and interests	Individual conflicts in face of conflicting roles
Nature of human resources	Urban issues, social sciences	Engineering, architecture, economy	Engineering
Typical actions and proposals	Land use and supply of public services	Transport infrastructure and services	Division of road space
Technical tools	Forecasting and urban and economic modelling techniques	Forecasting and transport modelling techniques	Capacity, efficiency and safety analysis of road use
Time span	Long range (up to 20 years)	Middle range (up to 10 years)	Short range (up to 3 years)
Technical issues	Highly complex and unpredictable	Complex but partially predictable	Simple and partially predictable
Feedback time	5–10 years	2–3 years	weeks/months

## CONFLICTS IN POLICY COORDINATION: EXAMPLES

The complexity of power relations precludes joint work if it is considered undesirable by dominant sectors.

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Few cities in the developing world have planning agencies. When resources are available, they are directed to more practical actions related to the daily management of traffic and public transport. Many important examples of conflicts in the planning process illustrate the issue.

Bangkok has been examined by several authors because of its dramatic transport conditions, and institutional interpretations have dominated some conclusions. Du Pont and Egan (1997) start by pointing out that many studies have recently been made by Western and Japanese consulting firms, but most have forgotten the crucial institutional issue. Daniere (1995) says that in 1991 there were 11 agencies involved in implementing transport planning under the authority of either the Ministry of Transport and Communications or the Minister of Transport. There were four agencies dealing with road construction, five involved in public transport and three in traffic management. The first comprehensive long-term transport study was made in 1975, resulting only in the building of major motorways. It appears that other transport measures were not accomplished because they were not included in the national plan. In 1984 the Sixth National Plan (1987–1991) proposed several roads and public transport investments. In 1989 a major study added proposals concerning institutional coordination, demand control and road user taxation. In 1991 another was developed to support the Seventh National Plan (1992–1996), which added several light-rail lines and land-use control. It also included a suggestion for a single metropolitan authority for land use and transport, which received little attention because of the need to transfer power among agencies. According to Daniere, Bangkok faces two main problems: first, the lack of technical capacity in most agencies; and second, that agencies have different cultures and missions and want to pursue their own objectives. They have no mandatory commitment to implement the national plans. The structure of the Thai state, the behaviour of its elite and the interests of foreign investors must be considered when examining policy outcomes. Daniere (p40) points out that the Thai elite

*tends to act in ways which will preserve its power and prestige at the same time as it adopts Western concepts and knowledge ... the end purpose of modernization ... has not been to transform the traditional system but to preserve it and strengthen it.*

For Du Pont and Egan (1997, p25) the 'basic barrier ... is how to build a political consensus that will permit the implementation of a coordinated set of policies...'

Mexico City has also been much analysed, both for its physical size and the magnitude of its urban transport problems. There are many conflicts between transport policies. There are four levels of government dealing with the issue, from local authorities to federal ones, and agencies have overlapping and sometimes conflicting responsibilities (Molinero, 1991). Transport policies are an important issue for the federal government, in the light of the political and economic interests attached to it. With the rapid growth of the city in the 1960s and the transport crisis that followed, attentions were focused on organizing a comprehensive mass transport system (Benitez and

Roldán, 1999), which originated the construction of the first three subway lines between 1967 and 1970, with French technical support (Henry, 1997). Shortly afterwards, the economic problems brought about by such huge investments led to the suspension of the new underground lines, following deep political struggles in the federal government (Davis, 1994). The metro lines had to provide services in an environment dominated by thousands of private operators with little or no control from governmental authorities and with a strong political position. Increasing conflicts between government and the private operators came to a head in 1981, when all bus services were taken over by one bus company that eventually evolved into a large organization backed by a strong union (Connolly, 1999). There were several attempts to organize a metropolitan transport coordination agency, subject to strong conflicts and to the specific political and economic interests attached to the federal government. In 1995 the bus company was dismantled after charges of corruption and inefficiency and the public transport system was again operated by about 60,000 individual drivers with minibuses. At the beginning of 2000, a new public bus company was formed and the cycles of regulation-deregulation-regulation have started again.

São Paulo is also a clear example of critical, extremely complex institutional conflict. The history of the São Paulo metropolitan area, which includes 39 cities including São Paulo itself, is of a remarkable collection of policies that propelled the region towards unsustainability. Until the end of the 1990s, a large portion of the suburban railway system was controlled by the federal railway company, which also controlled similar systems in other major Brazilian towns. Differences in objectives and goals have prevented the coordination of federal and regional railway systems. Very low levels of service brought permanent chaos, undermining public confidence and ultimately contributing to the current rejection of suburban trains. At the regional level there has been a historic disconnection between metropolitan-level transport problems and local transport policies. Despite the formal existence of a metropolitan authority, a political conflict remains over the issue of who has the power to pronounce on regional matters. The State Department of Metropolitan Transport ran with the subway system, the suburban railway and all intercity bus services within the metropolitan area, but mayors are jealous of their legal power to control local issues. The problem is especially serious in the case of São Paulo. The city accounts for 60 per cent of the regional population and 70 per cent of the regional automobile fleet. Urban, transport and road-building planning are conducted by three different departments. Major urban plans do not consider properly the knowledge and the opinions of transport expertise. Inside the transport agency, public transport and traffic are two different departments. While one deals solely with the legal and administrative issues concerning private bus operators, the other deals with all traffic issues (planning and operation). The split led to uncoordinated policies. This narrow approach is aggravated by conflicting political interests; as car owners are usually politically powerful, the priority is to pursue traffic fluidity. Needless to say, bus priority schemes have been scarce. At the road side, planning and construction have historically been separated from urban planning and traffic agencies. This has led to absurd situations in which major roads

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are projected and build without consideration for the objectives and suggestions of the traffic department. The final results of such a history are a permanent decrease in public transport use, rapid increase in automobile use, record traffic fatality rates, severe congestion and severe environmental problems.

Other large cities in the developing world also present severe institutional conflicts. In Seoul, responsibility for coordination transport is spread across several agencies, federal and local (Kim and Gallent, 1998). The Ministry of Construction and Transport is in charge of long-range planning, the National Police Agency is in charge of signs and traffic safety devices, and local construction and maintenance is performed by local agencies with financial support from the Ministry of Home Affairs. Within the Seoul municipal government, several agencies deal with planning, management, financing and controlling. Therefore, metropolitan coordination is defective and mismatches between urban development and transport are common. The creation of a multifunctional agency is controversial and remain unrealized due to the required transferring of power, in the very same way that happened in Bangkok and São Paulo.

Even in former socialist countries, despite centralized control over most public issues, several problems were detected. According to Pucher and Lefèvre (1996) land use and transport policies seem to had been surprisingly uncoordinated. This appears to have happened as a result of conflicts in the government apparatus over two key policy decisions. First, the attempts to solve the serious housing problem by building large complexes on the periphery led to long commuting distances and hence expensive and inefficient public transport services. Second, by failing to coordinate suburban industry and local public transport services massive cross-commuting was encouraged.

Such experiences reveal the extent of the challenge to achieve coordinated urban, transport and traffic policies. Next, we must consider how to deal with the problem at two institutional levels, local and metropolitan.

# 9 THE TECHNICAL ISSUE: TRADITIONAL TRANSPORT PLANNING

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## INTRODUCTION

The systematic analysis of transport demand in developing countries has been performed using procedures that originated in the developed world. These were grouped under the heading 'urban transportation planning system' (UTPS), which was organized to forecast future transport demand and to define the best ways of coping with such demand. The process has been used in most major transport studies since the 1970s, with few or no adaptations to local conditions. The UTPS was directly related to crucial decisions in these countries concerning investments in transport infrastructure, resulting in controversial economic, social and technical outcomes.

Here, our objective is to analyse the political use and the actual consequences of these techniques in a developing country context. This effort should enable us to better understand the shortcomings of the process and hence options for its continuing use.

## THE TRADITIONAL TRANSPORT PLANNING PROCESS

UTPS was first developed in the US in the 1950s (Gakenheimer, 1993). It may be dated more precisely to the 1962 Highway Act which was concerned with the construction of a large interstate highway system (Reichman, 1983). UTPS was widely exported to developing countries during the 1970s, with support from international agencies, private consulting firms and universities (Dimitriou, 1992). From the 1960s onwards there had been concern about the 'disruptive social and environmental impacts' of traffic capacity increases, and about the need to balance financial, environmental and social costs (Gakenheimer, 1993). Professionals started to openly confess their own reduced confidence in the long-range forecasting capability of UTPS and began advocating a more operational approach, oriented towards a day-to-day support for decision making. In addition, there was an increasing criticism of its use of aggregated data and its indiscriminate transferral to developing countries.

The reassessment of UTPS occurred in several stages (Jones, 1983). In the 1960s, a fourth step was added to the prevailing three-step modelling process (generation, distribution and assignment). Modal choice considered the

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trade-offs between private and public transport means. Correspondingly, the basic unit of analysis changed from vehicle trips to person trips. The single-sided travel time analysis was replaced by a broader concept, the 'generalized costs of travel', which included all time and money resources allocated to travel. In a subsequent phase, the changes were more political, including the analysis of the needs of specific social groups and the consideration of non-conventional transport modes. More emphasis was placed on local short-term planning, as well as on direct community participation. From the scientific point of view, a major change in basic assumptions occurred in the 1970s, when the analysis of family and external constraints on trip-making first replaced the isolated analysis of individual trips. This change characterizes what Pas (1990) calls the 'human activity analysis era'; human interactions and constraints, rather than the trips themselves, were placed at the centre of the analysis.<sup>1</sup> However such change has not yet yielded systematic, practical procedures that could be incorporated into the modelling process (Kitamura et al, 1997).

### General assumptions and objectives

UTPS may be seen as a 'scientific' way of planning urban transport demand in certain stages: observing current travel behaviour, advancing hypotheses concerning the relationship between urban land use and movement, testing the hypotheses, forecasting demand and ultimately recommending additional transport capacity (Dimitriou, 1992). Several general assumptions underlie this reasoning: that decisive relationships exist between all modes of transport, that transport systems both influence and serve the development of an area, and that the transport process is ongoing and requires continual readjustment. It is also assumed that it is possible to predict and evaluate, comprehensively, a balanced distribution of urban space at some future time (Hutchinson, 1974).

The process entails a systems approach that can be split into seven phases:

- 1 *The definition of the system itself, its boundaries and environment, which is a difficult task considering interactive effects.*
- 2 *The definition of the problem, entailing subjective valuations about what the problem is and which corresponding objectives should be defined; in most cases the single objective is to reduce total travel time; however, qualitative objectives such as increased accessibility, safety and environmental quality have been introduced.*
- 3 *The generation of alternatives, limited to private motorized transport or rail mass transit. Bus and non-motorized transport (such as bicycles and pedestrians) are seldom included due to the lack of modelling tools.*
- 4 *Modelling and analysis of the alternatives, which is the 'core' of the whole process. The set of models is constructed into four steps: trip generation, which studies present trips and their relation to social and economic characteristics; trip distribution, which considers the destination of these trips; modal choice, which forecasts the transport modes that will be used, considering the 'generalized cost of travel' for each trip and deriving mode*

choice functions; and *trip assignment*, which assigns trips along existing alternative routes. Sometimes modal choice is performed prior to trip distribution.<sup>2</sup>

- 5 *Evaluation and selection of alternatives*, by estimating future charges on the transport infrastructure and defining the supply of facilities and transport to cope with them. This decision yields one or several proposals that are selected according to a cost-benefit rationale, which may be straightforward but may include a complex multi-criteria analysis.
- 6 *Project*: in a subsequent phase, the selected alternative is detailed with respect to its technical and physical features.
- 7 *Implementation*, at which point the resources needed and the actions to be taken are defined.

Many actors play an important and direct role in the planning process (see Figure 4.1 in Chapter 4). First, the government, including all the institutional levels and expertise responsible for the urban and transport systems being analysed. Second, the politicians with interests in either the geographical area or the issue itself. Third, the private consulting enterprises contracted to perform the studies. Fourth, some indirect actors, such as the private businesses that would be influenced by the outcomes of the planning process, the private sector interested in the businesses related to these outcomes (transport industry, real state) and neighbourhood or social organisations that would be impacted by the decisions. These actors can have diverse effects, depending on the specific conditions and the social and political environment.

## CRITICAL APPROACHES TO CONVENTIONAL TRANSPORT PLANNING

The technical shortcomings of the UTPS process are important, but other problems arise from the use of UTPS in developing countries. A crucial distinction must be made between the models and the planning process. Modelling deals with micro-economics (consumer behaviour) and social information (population, income); it requires statistical tools to manage the data. Models are vulnerable to uncertainties and human errors. The planning process is political, in that interest groups are negotiating solutions in a conflicting arena. In some cases both modelling and planning are performed by a single group of people, and in others there is a clear separation of duties. Hence, criticism may initially be split into 'technical' (the models themselves) and 'political' (the planning process) and then re-examined by analysing the impact of the interaction of the two areas.

### *Technical criticism*

Technical criticism of the process is common. UTPS is criticized for its narrow view of the urban process as a whole, as well as its project-oriented approach. Traditional urban transport planning 'took for granted that transport planning should be guided for, and thus facilitate, existing trends as projected into the future' (Hoover and Altschuler, 1977, p21), rather than

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seeing it as a policy question to be addressed by the planning process. Other problems are the lack of an interdisciplinary approach, and the reservation of system planning to 'masterplans'.

The problem of forecasting variables should also be stressed. Models are a simplified representation of selected aspects of reality, not a completely faithful representation of it. There are several possible sources of errors in the process, and each sort of error has different effects. Some increase with the complexity of the model: a 'more realistic model is not necessarily a more accurate one' (Willumsen, 1990, p293). In addition, the sequential nature of the four-step modelling procedures may propagate errors whose effects may not be calculated. Errors in specification introduce further inaccuracies in the behaviour of variables such as population, employment and GNP growth (May, 1991). Further problems arise when travel data comes from too narrow a time span, meaning that changes in travel patterns and behaviour are not incorporated.

The micro-economic assumptions of modelling can also be criticized (Kanafani, 1983). The rationale of the modal-choice phase has been based on consumer demand theory since the 1970s; several assumptions are controversial when applied to transport demand. Examples are the hypothesis of perfect market conditions, the stability and consistency of consumers' preferences and the 'insatiable' nature of consumption. Stopher and Meyburg point out that 'perfect competition rarely occurs and the prevailing market situation is one of imperfect competition' (1975, p49). Kanafani (1983) adds that suppliers are often not well defined, making it difficult to analyse their behaviour; there are non-monetary aspects of supply that are even more important than price (comfort, time, accessibility and reliability). The evolution of supply depends on many factors, including available technology, operational strategy, institutional requirements and constraints, and user behaviour. The travelling passenger is subject to many more uncertainties than he or she would experience from other consumption activities, including route and mode choices.

In addition to these general problems, there are also some specific problems with the four-step procedure and with each of the steps themselves:

- The four-step procedure follows a rigid sequence, and does not use interactive procedures or feedback (Domencich and McFadden, 1975). The actual decisions made by the user can also occur in a different sequence. Further, it 'is not based on any single unifying rationale that would explain or legitimise all aspects of demand jointly ... it lacks a behavioural interpretation' (Oppenheim, 1995, p18).
- Trip generation does not admit that the existing transport system affects travel demand. It may be used to impose mobility increases assuming that needs will have to be satisfied in the future. This results in models that provide more transport for the higher-income groups and less for the lower-income groups. New traffic that will be generated by a link is seldom considered in the computation; this undermines the expected increase in travel speed and hence time savings. Furthermore, the estimated deterioration in travel speed if roads are not expanded is exaggerated, since people will find alternatives (Hook, 1994b).

- Trip distribution assumes that demands (and hence different destinations) are independent, which is a clear simplification. Also, residential and ethnic segregation in urban space, as well as the coexistence of formal and informal labour markets, may hamper the reliability of trip distribution models (Merlin, 1985).
- Modal choice faces difficulties in dealing with the random influences and inconsistencies in the user's behaviour and assumes a supposed stability over time of some trip-making aspects (Kanafani, 1983). The costs of travel, which ultimately determine the outputs of the model, may rise or fall as a result of unforeseen changes in legislation or in resource costs (May, 1991). In addition, trip distribution and modal split are usually not integrated (Oppenheim, 1995).
- Trip assignment assumes that people select a route based on minimal total travel time, thereby ignoring other factors that might affect the complex nature of the trip-decision process.

Therefore, models 'replicate the results of conditions existing at the time of the survey' (Domencich and McFadden, 1975, p21). There is no interaction between transport system performance and the proposal of competing alternatives.

### *Strategic criticism*

A first critical point is that the process is forward-seeking, attempting to satisfy a specific demand level defined by the model estimations, with no space for a goal-seeking strategy. Second, infrastructure transport proposals often do not allow for adequate funding during the lifetime of the project (Hutchinson, 1974). The goal and policy formulation stages of the UTPS are the least formalized parts of the process. If there is no implementation strategy, for example, or no definition of the staged implementation programme, the proposals often become unrealistic. Furthermore, the process is simply intended to generate additional transport capacity, without analysing what would happen if nothing was done, and without asking what would be the result of using existing transport means more efficiently (Dimitriou, 1992).

### *Political Criticism*

The political criticism draws attention to the relationship between policy outcomes and the decision-making process. It can be separated into two sorts of claims: those related to societal participation and those related to the relationship between politicians and planners within the process. This entails a discussion of the role of the technocracy. Models are built and managed inside a field of economic rationality, where the computations comparing demand and supply are unambiguous. This sort of procedure frees the process from political arguments over value concerns and ideological manifestations. Therefore, the rational computations appear to be neutral and rigorous, devaluing political participation. Furthermore, often the decision-making logic is that plans are proposed by politicians first, and then validated by the work of experts; 'planning is an adjunct of the political process'

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(Dimitriou, 1992, p17). Dimitriou emphasizes that the history of UTPS shows that its generalized assumptions are:

*more reflective of normative (sometimes wishful) thinking and the use of conveniently untested hypothesis, rather than based on well understood empirical evidence and practice.*

For Ralph Gakenheimer, 'the transport sector has been artificially carved out as a separate area of study' avoiding political constraints (Dimitriou, 1990, p101). This isolation gives planners the exclusive use of sophisticated modelling techniques.

### *Ideological criticism*

This type of criticism challenges the very nature of the UTPS process and its practical use. The process, rather than being applied to urban transport problems, is directed to the circulation of automobiles, oriented towards the enlarged reproduction of the highway-oriented economic system. The UTPS modelling process grew out of an

*optimistic and prosperous period characterised by booming car ownership ... thus ... land use/transport studies tended to be strongly associated with planning for roads and cars rather than a balance of transport modes ... once such land use is in place the only transit that can serve it is an inefficient bus service. (Newman and Kenworthy, 1999, p139)*

Therefore, the models have been used in a conservative way to reproduce the present situation, which happens to be based upon the assumption that mobility and car ownership will increase in the time-horizon of the planning process. Whitelegg (1997, p15) recalls that

*thirty years of traffic forecasting and statistical modelling have failed to incorporate the feedback mechanism that links new road construction to the generation of yet more new traffic.*

As Cervero (1998a) points out, in California between 1973 and 1990, every 10 per cent increase in lane-kilometres led to a 9 per cent increase in vehicle-kilometres. The use of such forecasting tools has a crucial economic and social impact. As stressed by Hillman (1983, p107),

*to some extent, an optimistic forecast can be seen as a self-fulfilling prophecy, for it is clear that more traffic is generated by a network of roads designed to accommodate high levels of car ownership.*

## THE TRANSPORT PLANNING PROCESS IN DEVELOPING COUNTRIES

### Searching for the most relevant criticism

It could be considered that all of these criticisms are equally important to developing countries. Nevertheless, we have to ask about the specific consequences of the different shortcomings of the UTPS process in the developing world. Technical criticism is by far the most common. However, despite the problems derived from technical shortcomings, the most important criticism concerns the use of models inside the planning process, and their actual impacts. This does not mean, however, that technical drawbacks are not important.

#### *Technical issues*

The most important technical shortcoming worth mentioning is the difficulty, or even impossibility, of making sound and reliable forecasts, either due to the lack of appropriate data or to the unstable socioeconomic environment in developing countries. The most important data – population, employment, school enrolments, average individual and household income, and auto ownership – either do not exist, are highly inaccurate, or may not be reliably disaggregated.

Unstable socioeconomic environments are quite common in developing countries, related to rural–urban migration, intra-urban migration, inflation, unlawful land occupation, and changes in job market structure and size. The population of Bangkok increased from 7.8 million in 1985 to 10.5 million in 1992 (Daniere, 1995). African cities have been experiencing intense urban growth due to rural migration, leading to severe urban infrastructural deficiencies (Halfani, 1996), which have direct impacts on people's ability to travel. In Cameroon, the government decided to make drastic changes in social programmes, infrastructure investment and tax bases, and lowered salaries twice in 1993. Thus, 93 per cent of households experienced a decrease in income, and 74 per cent a decrease in savings (Ngabmen, 1997). These new conditions led to a change in the travel habits of the poor, especially the suppression of trips, mostly for social purposes; the re-chaining of trips; the relocation of children to nearby schools, frequently at the expense of educational quality; and submission to a condition of 'localized mobility', compatible with walking distances. Problems are also caused by continuing inflation and sudden changes in people's income. Between 1970 and 1995 Brazil experienced monthly inflation rates ranging from 10 to 20 per cent, with short periods of hyper-inflation at 60 per cent. It is important to emphasize that such changes may affect low-income people who walk or use public transport, and middle-class people using private transport.

Changes in vehicle fleets also impact on mobility in unpredictable ways. In Seoul, the number of cars and taxis increased from 207,000 in 1980 to more than 2 million in 1995, while passenger trips increased 108 per cent between

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1980 and 1993 (Kim and Gallent, 1998). In Bangkok, the vehicle fleet grew from 275,000 in 1970 to 2 million in 1990 (Du Pont and Egan, 1997). In Kolkata, the number of vehicles increased from 92,043 in 1970 to 560,000 in 1995 (Halder, 1997). In Shanghai, the number of bicycles increased from 0.8 million to 6 million, and the number of automobiles increased from 10,000 in 1984 to 200,000 in 1995 (Lu and Ye, 1998). In Manila, estimated daily trips increased from 10.97 million in 1980 to 13.08 million in 1985 and to 17.65 million in 1990 (Villoria et al, 1997).

In São Paulo, economic changes and spatial-related factors increased the average mobility rate from 1.1 trips per person per day in 1967 to 1.5 in 1977 (the period of the so-called 'Brazilian economic miracle'), and later decreased this rate to 1.3 trips per person per day in 1987 (CMSP, 1987). The 1997 OD survey revealed a further decrease in motorized mobility, to 1.2 trips per person per day, while the number of automobiles increased by 50 per cent (CMSP, 1998). During the Brazilian 'Cruzado economic plan' in 1986 (when inflation dropped to zero over four months), the state highway system in São Paulo experienced an average increase of 15 per cent in overall traffic – a figure seldom found in transport textbooks. São Paulo also experienced the greatest congestion in 15 years, when the average time spent by cars in the main arterial system (during peak periods) increased by 30 per cent compared with 1985. Both of these effects disappeared some weeks after the collapse of the economic plan and the return of the inflationary process. To consider a longer period, the main roadway system in the state, linking the metropolitan area to the port of Santos (the largest in Brazil), has been experiencing a highly fluctuating flow pattern since its opening in 1974; first, a steady annual increase of nearly 6 per cent in the 1974–1979 period, then an annual decrease of 2 per cent from 1980 to 1983, an annual increase of 3 per cent from 1984 to 1985, a sharp 15 per cent increase in 1986 during the 'Cruzado' economic plan, a return to previous levels in 1987, and a final 1–2 per cent increase during the 1988–1990 period (DERSA, 1992). Recently, the system has been alternating between small and zero annual growths. The final shape of the annual volume curve defies any forecasting technique. As described by Atkins (1986) and Mackie and Preston (1998), similar forecast problems have been experienced even in developed countries, where the economy is stable and social and demographic changes are rather modest. Tolley and Turton (1995, p294) acknowledge that

*an examination of 41 recent road projects in the UK revealed that about half had traffic forecasts within 20 per cent of the flows that materialised, but that the rest had forecasts ranging from 50 per cent above to 105 per cent below.*

A comparison between predicted and actual demand figures in developed countries demonstrates that long-term studies are not faithful in these conditions, let alone in developing countries. Therefore, long-term forecasts in developing countries represent an irresponsible practice that should not be treated as a decisive input to modelling. From a practical point of view, the figures are useless unless applied to devise theoretical 'ceiling' limits, along

with prospective scenarios. But the most problematic acknowledgement is that they have been used to support important investment decisions. Many of these investments represent a waste of scarce public resources. Contrary to the view of Lewis et al (1990) that the 'limited view of planning failures' is translated into the provision of less than optimal facilities,<sup>3</sup> the main planning failure in developing countries is the use of traditional techniques to support underutilized or unnecessary transport infrastructure. Therefore, one has to ask why such infrastructure was proposed and built.

The second major drawback is the lack of procedures to model non-motorized and public transport demand, which reflects the environment in which the models were generated. Both these transport modes are essential to developing countries, and such a lack gives rise to questions over the very utility of the modelling package. This has a related drawback, concerning the inadequacy of traditional capacity-analysis procedures to deal with a typical traffic mix in cities of the developing world.

The third major technical drawback is the reliance on market-based supply assumptions for public bus transport, in the few cases when it is considered. Actual market conditions in the transport sector are far from competitive, constrained by a complex relationship between the government, the bus owners, the bus operators, and the users. Furthermore, sudden behaviour changes in response to economic changes or inflation are quite common, which impacts on supply. Therefore, the forecasting of public transport trips reveals little about how the supply will really be organized and maintained.

The fourth major technical shortcoming occurs when planners disregard non-conventional factors that lie behind travelling decisions. Information from OD surveys is not used to analyse the complex trip decision-making process, and the suppressed demand generated by social and economic constraints. The way in which low-income people evaluate time and money in developing countries is far from being well understood, and is not properly addressed by traditional procedures. The increase in the number of non-nuclear families further compounds the problem. The increasing participation of the informal labour market in the urban economy has reinforced this. Mobility cannot be reduced to single measures of the number, cost and time of trips, because its determinants fall well beyond the exclusive consideration of income. The segregated spatial development of cities also directly affects the provision of infrastructure and facilities, therefore changing mobility constraints. This allows for the coexistence of different sorts of transport, from the highly privatized middle-class circulation pattern to formal and informal bus services, and high pedestrian and bicycle flows in some areas. This criticism can be summarized in a 'household mobility economy' model: the difference between developed and developing countries could then be identified by the existence, in the latter, of a family strategy to optimize space, time, production and consumption for survival, which leads to different patterns of mobility and use of available transport means (Henry and Figueroa, 1985).

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### *Strategic issues*

From the strategic point of view, the use of modelling in the planning process has been generating unsustainable and unrealistic proposals in the face of unstable social and political environments that bring permanent changes to the groups with access to the power and their approaches to transport policies. Economic instability has to be considered, as it often precludes or radically changes projects. One additional problem is the lack of adequately trained expertise to conduct the implementation and re-evaluation phases.

Long-term complex proposals do not include any definition of the financial and administrative supports that would ultimately help to ensure proper implementation, or to minimize risks. Besides, little or no attention is paid to the intermediate evaluation of the process, which would help it to adapt to unpredicted social and economic changes. Indeed, several major transport proposals that have taken place recently in developing countries were just not feasible. They were either postponed, partially implemented or implemented in full with money borrowed from abroad or from other, postponed, infrastructure proposals. The problem occurred with both automobile-based and public mass transport-based projects. The reasons for this discontinuity are either economic or political. Even when a formal budgetary commitment to a particular project is made, the ultimate decision is taken at the highest political level. The related conflicts are also embedded in the ongoing struggle between the long-term perspective of the planners and the short-term perspective of the politicians.

### *Political issues*

The UTPS process, from the very beginning, has neglected the political reality in developing countries, preferring the straightforward transference of assumptions adopted in developed countries. This was possible because local political and technical forces imported and supported the process with little discussion. The state is the focal point for most major policy decisions, and the strength of the state is related to the strength of its technocratic and bureaucratic sectors, which are often free from any accountability. 'The transport planning process is one of the most inaccessible public sector planning mechanisms ... whose expertise seems beyond the grasp of the average person...' (Williams, 1998, p4). One important tool for the success of such a closed decision-making circuit is the use of many cost-benefit studies after decisions have been made and political commitments to proceed with the project already exist (Wright, 1992), leaving little – if any – space for alternative proposals.

### *Ideological issues*

The process is inherently conservative, resulting in a static projection of the present situation. When an increase in average income is forecast, it is assumed that it has to translate into an increase in auto use, neglecting the impact of transport alternatives for those having a higher income. This means that the process is based on the ideology of unlimited auto mobility for all who

can afford it. Furthermore, it is also committed to the ideology of more transport and more motorized transport, instead of less transport and less motorized transport.

Second, the use of modal choice models is controversial. They were constructed in developed countries where people may choose between private and public transport, and where they have been used constantly to evaluate policy proposals that are intended to encourage people to switch from private to public transport. However, in developing countries most people do not have the choice of motorized public transport, let alone a choice between public and private transport. Models that are able to analyse modal choice in different types of non-motorized transport, unconventional public transport means and private modes, have yet to be developed. Even when there is some degree of freedom to choose between transport modes, the rationale underlying the decision is complex, including several non-economic factors and poorly understood behaviour constraints that are not included in traditional procedures.

Third, the forecasting process is supposed to be neutral, but in fact it makes many political assumptions, and tends to benefit dominant political interests. Hence, one has to challenge the very nature of forecasting exercises, as pointed out by Blanchard (1976) and Atkins (1986). Why submit crucial decisions to unreliable forecasts? Who is paying for the costs incurred by forecasting errors, and who is benefiting?

A fourth important problem relates to the neglect of walking, cycling and public transport. Traditional transport planning has ignored some people, such as children, women, pedestrians, cyclists and rickshaw pullers. In Bangladesh, the livelihood of 4.5 per cent of the population depends on rickshaws, but during the second five-year plan (1980–1985) not one transport project in 300 was concerned with them (Whitelegg, 1997). Travel time impacts on non-motorized transport are often ignored: it is as though such people are not worth one minute of the attention of the expert to estimate how many minutes he or she loses or gains under the proposals. Further, even when UTPS is applied to places with high incidence of non-motorized vehicles, slow-moving vehicles are considered to cause 'friction' to faster vehicles, when in fact the opposite is often true (Hook, 1994b). Finally, bus transport – by far the most important public transport mode in developing countries – has been given a poor technical treatment, much less detailed than that devoted to cars. Considering their historical origin in the US, most models are not prepared to adequately consider bus travel demand, let alone to make sound proposals on bus transport supply.

### *Appraisal issue*

The way traditional planning deals with the appraisal of proposals is also highly controversial. The first major drawback relates to environmental evaluation. If actual environmental impacts were considered, conclusions would be completely different and 'road construction would not show the positive results that often now emerge from narrower balance sheets' (Tolley and Turton, 1995, p297). Road proposals do not properly account for the safety

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impacts of motorized traffic. They neglect urban and social disruption (the 'barrier effect') and do not properly consider the costs for non-motorized users. Furthermore, standard environmental impacts related to air pollution are not properly considered.

The second important drawback concerns economic evaluation, which is performed by analysing economic rates of return (ERR). The major problems relate to the computation of costs and benefits. Costs are initially computed for investments in infrastructure – roads, railways, terminals – and also vehicles, in the case of public transport proposals. They have to include vehicle operational costs or individual costs (fares) and land or building costs when de-appropriation is required. Costs must then be estimated for some key impacts such as accidents, air pollution, ecological damages, and urban disruption. The serious, often insurmountable problem is that placing a monetary value on such things is controversial. The cost of a human life is the prime example of a highly controversial issue (Wright, 1992; Mackie and Preston, 1998). Some methods compute their lost future production (gross or net earnings, after expenses) or take the 'willingness to pay' approach, in which an indirect measure such as life insurance or the willingness to pay to avoid or reduce the risk of an accident is taken to deduce the value that the person attributed to his or her life (the VSOL – the value of a statistical life). The former method may – in the case of young children, elderly people or jobless people – yield negative results (Wright, 1992; Verhoef, 1994). As stated by Maddison et al (1996) 'the fairly obvious objection to this approach is that the death of a disabled person or anyone past retirement age is apt to be counted as a benefit.' In the case of the latter method, apart from the problem that most people in developing countries do not have private insurance, for those who do have it its value depends on monthly contributions, which depends on income and other factors; the WTP approach is also highly dependent on the characteristics of people. We are actually facing a philosophical problem; the value of life cannot be translated into monetary figures, which makes transport project appraisals much more complex. In Europe, value placed on accidents in 1993 ranged from UK£13,100 in Portugal to UK£2.1 million in Sweden (Maddison et al, 1996). Costs of injuries are not so controversial but are very difficult to estimate in developing countries, in the face of unreliable data. Many injuries become permanent disabilities, making the cost even more difficult to estimate.

In the case of the environment, similar problems arise; how should we value people's health? The difficulty in pricing environmental goods is so great that it leads to weird conclusions; as Chichilnisky (1997, p203) puts it:

*... if all the water of the US was to dry up next year, using standard cost-benefit tools one may only register a 2 per cent drop in national income, and this would only be because we would account for the fact that plants need water.*

In developing countries, in addition to the philosophical problem of attaching a value to human life, we may add the practical problems of estimating environmental damages and costs. Few developing countries have consistent

data on transport-related environmental impacts such as air pollution, noise and natural resource depletion. Furthermore, there are few – and often unreliable – data on the health effects of such environmental impacts. Therefore, initial errors in estimating quantitative impacts are exacerbated by the difficulty of attributing monetary values to such impacts. Again, such a difficulty is both philosophical and practical; who knows how much it costs to treat respiratory disease in a patient in an hospital in developing countries, where actual access to services is highly constrained by geographic and social reasons, service quality differs between areas, and accounting procedures often simply do not exist or are adulterated by inherent biases? These difficulties lead to cost estimates that have high levels of uncertainty. In Cairo, mortality costs for particulate matter (PM) exposure were estimated as ranging from US\$186 to US\$992 million, while correspondent morbidity costs varied from US\$157 to US\$472 million; mortality benefits from a 20 per cent reduction in lead, PM, SO<sub>x</sub> and ozone in Bangkok were estimated in the range of US\$429 to US\$2,785 million (Pierce, 1997). The question is what sort of decision may be based on such appraisal computations.

Travelling benefits have then to be estimated. The standard benefit is a reduction in travel time, and most of the initial appraisals were limited to this. The first problem is to estimate the travel time changes brought by new proposals. Several problems arise. Initially, the computation itself is subject to considerable errors, especially regarding new traffic that may be attracted to the new facility or service (Bonsall, 1996). Second, traffic conditions in developing countries are very different from those in developed ones, with a complex mix of vehicles that make conventional speed–volume curves such as those

### Box 9.1 *The magic traffic signal*

The attempt to place monetary values on travel time occasionally leads to weird results and to unusual, misleading conclusions that are often used to justify a project. Imagine a signalized intersection of two six-lane arterial roads, with an hourly capacity of 700 equivalent cars per hour, per lane, and operating at full capacity at peak hours. Both arterial roads serve 120 buses per hour at peak times, on reserved curb-side lanes, with 50 passengers each. Automobile occupancy is 1.5. If the traffic signal cycle and green/red times are optimized, a four-second delay reduction per vehicle results. Applied to all people using the intersection (20,400 per hour), this yields savings of 22.7 hours per hour, which applied to six equivalent peak hours per day yields savings of 136 hours per day. Considering an average hourly wage rate of US\$5 abated to one-third according to the traditional approach, this yields savings of US\$227 per day and US\$56,700 thousand per year (assuming 250 equivalent days per year). Considering project implementation and maintenance costs (US\$4000), net savings are US\$52,700 a year (disregarding other minor details for simplicity). Thus, the improvement is 'worth' the same as four new, high-standard pieces of traffic signal equipment, or one new 45-seat diesel bus. Hence, should traffic engineers manage to get similar results at 500 signalized intersections in São Paulo then we would 'raise the money' to buy 2000 new traffic signals, or 500 new diesel buses per year, and the bus system would solve half of its fleet-renewing needs.

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developed by the *Highway Capacity Manual* (TRB, 1985) difficult – if not impossible – to use. Finally, the attempt to estimate travel time-savings leads to nonsensical results. Signal timing calculations often result in the weird conclusion that a few seconds gained per vehicle will yields annual enormous economic benefits.

The second problem is the attempt to place a value on time. This is an issue that goes far beyond the transport problem, being deeply embedded in the economic evaluation of almost all aspects of all societies since the 18th century (Thompson, 1967; Harvey, 1990). In transport calculations, time is valued directly – according to wages – or indirectly, using the values that people seemingly place on their time. The latter is calculated by two techniques: revealed preference, when people's actual travel choices are analysed, and stated preference, when people are asked to give their opinion on hypothetical transport options.

Important theoretical and practical problem arise. Some argue that only the time involved in 'productive' trips (such as travelling for business) should be considered (or should be given a higher value), devaluing other trips. Second, wages vary across social groups. Third, the way taxes and fringe benefits are included leads to a wide variation in the final figures.

The values attributed by people demonstrate interesting characteristics and variations. The value of travel time varies with several individual and trip characteristics, especially income and trip purpose (Gunn et al, 1996; Arruda, 1996). Values increase with individual income (Calfee and Winston, 1998) and are often higher for business and work trips. In developed countries, the value of time was found to vary from 20 per cent to 100 per cent of the gross wage rate (Small, 1992). When comparing data from revealed and stated preference techniques for the same group of people, different results emerge. The actual estimate of travel-time values often leads to wide confidence intervals, making the average value highly uncertain (Ortúzar, 1997). Finally, specific social, cultural, religious and economic conditions introduce factors that are not well understood.

These characteristics reveal how controversial is the attempt to value time, and how unrealistic or inequitable policy decisions may be. For instance, in poor and deprived environments people usually place a low value on time and a high value on direct transport costs, what does not mean that they could then be forced to accept unfavourable transport conditions in exchange for low fares. As explained in Chapter 5, people organize their daily travel activities considering several individual, family and external constraints, and the resulting trip pattern fulfils the individual and family's reproduction needs. All activities – and not just those formally 'productive' – interfere with each other and are an indivisible part of such reproduction, all having an inherent value. The attempt to restrict computations to formally productive time is debatable.

The use of different wage rates to evaluate transport proposals is also debatable, related to different approaches to the 'individual' (private) and 'collective' (social) values of time (Quinet et al, 1982). It is clear that actual wages interfere with purchasing decisions (including trips) and that marketing studies have to consider such income differences. The approach is adequate

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**Box 9.2** *Sorry, poor people must yield*

The use of strict, traditional economic approaches makes it difficult to support investments in the poorer sectors of society. Suppose we use traditional procedures to evaluate a traffic management scheme directed to improve bus speed on a congested arterial road, which decreases an individual bus user's travel time by the same amount as it increases that of an individual car user. If we suppose that the average hourly wage rate of the car driver is six times higher than that of the bus user, the number of bus users on the road would have to be six times that of car occupants on the same road, for the project to be warranted (not considering additional details, for the sake of simplicity). On arterial roads with three lanes in each direction and 700 cars per lane per hour, this would be the case only when bus hourly volume exceeds 210 vehicles (assuming 60 passengers per bus and 1.5 passengers per car), a situation that occurs only on a limited number of road links. The practical result is that few such projects would be ever warranted, which is another aspect of the conservative nature of traditional procedures that help to reproduce current inequitable conditions. Therefore, the 12,600 bus users will have to yield to the 2100 people using their cars until they manage to make more money or get a car.

to estimate how many people will shift to a new, improved bus service with a higher fare, or to estimate how many auto drivers will try to escape a new toll road using secondary roads. However, the same approach is not acceptable when one has to evaluate how public resources should be invested. Appraisal cannot be based on strict economic computations related to market opportunities and relations, but has to be based instead on how public resources are distributed within society. In addition to such an essential difference in approaching the issue, the relevance of this discussion arises from the fact that the use of different wage rates makes it difficult to justify investments in poor people and so perpetuates inequity. Most transport project appraisals that compare automobiles and buses 'prove' that it is economically sound to improve only automobile traffic.

The traditional approach to cost-benefit appraisal in developing countries has been summarized by Wright (1992, p6):

*Cost-benefit studies have as a rule focused on individual projects, neglecting the overall picture. They have often overestimated the benefits and underestimated the costs of bad projects and neglected to formulate better alternatives. Considerable mathematical skill has been employed to produce unrealistic predictions of the number of trips and the value of travel time that would supposedly be saved by some proposed boondoggle. The numbers and values give the impression of being sufficiently elastic to justify whatever is being proposed.*

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