

CODATU XII  
DECENTRALIZED COOPERATION FOR MOBILITY AND ENVIRONMENT:  
BOGOTA, MEXICO, SANTIAGO AND SAO PAULO

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Decentralized cooperation is a natural and very beneficial activity in urban transportation. The fact is that cities tend to suffer similar problems: air pollution, congestion, declining public transit share, urban sprawl and inadequate institutional resources to confront need for increased efforts and changed strategies.

Further, there is a limited number of different ways of dealing with these problems. As a result different cities take similar actions, but the level of achievement from them is likely to be different because of the details of the solution and its implementation. As in so many things, the “devil is in the details” of transport solutions.

Responding to these challenges, there were three meetings of professionals from Bogotá, México, Santiago de Chile and Sao Paulo to discuss achievements and common problems. The areas of discussion were:

- Transit administration and regulation
- Land use planning and modeling
- Urban transportation modeling
- Demand management/ Congestion pricing
- Transport infrastructure planning
- Social evaluation of projects
- Auto inspection programs
- Air pollution modeling.

This paper will relate some of the discussion on a few of the topics of greatest attention by the assembled professionals.

## Public Transit Administration and Regulation

Note on the table 1 the last 35 years of experience in the management of public transport.

**Table 1** : Transit Administration and Regulation : A contrasting experience with bus regulation

	Mexico	Santiago	Sao Paulo	Bogotá
70s and before	Private Operators, some regulation	Public operation, some regulated private operators	CMTC, Municipal Bus Company operated main lines, and subcontract other services	Private Operators subject to control from the Ministry of Transportation
80s	Governments takes over all routes, Ruta-100 is created	Total privatization and liberalization	Increase in the proportion of lines operated by CMTC. Initial BRT corridors and trolleybuses were built.	In 1987, regulation of urban buses is transferred to municipalities
90s	Ruta-100 goes bankrupt, explosive growth of informal transit	Strong move towards government's regulation of private operators, route bidding process	Privatization of Municipal Public Bus Company. SPTRans, an agency in charge of transit planning and management, is created	Municipality allowed three fare levels according to level of service to encourage fleet renewal. Restrictions to the import of new buses were lifted.
2000s	Government trying to control informal transit	Route associations becoming formal firms, international operators moving in, integration with subway	Working toward fare integration. New BRT lines being built.	Transmilenio is launched. Fare integration with other private operators.

Observe that the basic options are private operation (in blue) and public operation (in red)—including degrees of each. There is a tendency for management to swing like a pendulum between private and public orientation. Each extreme generates the dissatisfaction that prompts reversal back to the opposite orientation. But when that orientation is reached the antibodies once again mobilize to send the management back in the other direction. The thoughtful observer concludes that neither orientation is the answer, but there is basic deficiency in the management of both that is a different kind of problem.

Accordingly, Santiago once had a substantially publicly managed transit system. With the arrival of an ideologically conservative phase of national government leadership, a period of private management with very little regulation took place (the late 70s and 80s). Since then, government has gradually moved toward judicious guidance of the practices of private operators, the requirement of formation of route associations (syndicates) and integration of the bus system with the metropolitan area's subway lines.

México, on the contrary, merged from the 70s with a primarily private system under limited public regulation. Government decided to publicize the system with the creation of a metropolitan

public authority. The public authority, however, went bankrupt, making way for the explosive growth of small-unit informal transit. It has been very difficult to introduce regulation that would make these private services more efficient. The city continues to struggle with that task.

In the last two columns of the Area 1 table notice that Sao Paulo has managed to gradually privatize its transit system. Bogotá has maintained a private transit system with significant public regulation, culminating in the creation of the bus rapid transit system, the Transmilenio

A reasonable goal for these cities would be to simply stabilize system management, taking the examples of Sao Paulo and Bogotá as models for study, noting that municipal systems are possibly not viable any more, but that in any case improvement of basic management, rather than concern for the public-private choice, is the basic need.

## Urban Transportation Modeling

Fundamental to the planning of transport infrastructure is the mathematical model used to simulate traffic flows and forecast the demand for those flows in the future. Three of the four cities have made use of the same model, EMME/2, developed in Montreal and used by now for many cities across the world. This facilitates the sharing of data to examine comparative futures among the cities. Santiago has used a model developed in Chile, ESTRASUS, with special capability for examining the public transit sector compared with other models. The other cities have shown interest.

**Table 2** : Urban transportation modeling

	Mexico City	Santiago	Bogota	Sao Paulo
Models being used	EMME/2	ESTRAUS (developed in Chile), EMME2	EMME/2, Transcad, Tranus	MVA's START
Who maintains the data?	Secretary of the Environment, DF	SECTRA, Ministry of Public Works	Secretary of Transportation of Bogota, Transmilenio.	Secretary for Metropolitan Transportation
O/D surveys	Last one in 1994, which has some errors	Last one in 2002		Last one in 1997
Comments	- Not enough resources to maintain the model - Not very useful at present state	ESTRAUS is integrated being integrated to land-use model (MUSSA) and emissions model (MODEM)		START was adapted to SP for the formulation of a transportation plan for 2020 (PITU 2020)

## Demand Management

It is probable that as the problems of congestion, local pollutants and global warming effluents increase, cities will give more attention to trip restraint actions. They are more effective than any other action.

Note that, indeed, all four of these cities have launched weekly driving bans. (Table 3) There is a day each week when cars with licenses ending in a specific digit cannot be used on the streets. Foreign observers may be surprised that such an apparently draconian policy could be undertaken in all four of these cities. This is the measure of commitment in these cities for solving this problem: a very crucial indicator with regard to further action. Note that very few northern cities have managed to enact policies of this kind. Note also that they have been stably enforced by now for a number of years in all four of these cases—in some of the cities limiting trip making more and more over time.

**Table 3** : Demand management / congestion pricing : A comparison of traffic ban programs

	Mexico City	Santiago	Bogota	Sao Paulo
Name of the program	Hoy no Circula	Restricción Vehicular	Pico y Placa	Rodizio
Hours of operation	5:00 – 22:00	7:00 – 19:00	7:00 – 9:00 17:00 – 19:00	7:00 – 10:00 17:00 – 20:00
Vehicles that are subject	Only vehicles built before 1993	Only vehicles built before 1992	All vehicles	All vehicles
% of these vehicles baned each day	20%	20%	40%	20%
Comments	<ul style="list-style-type: none"> <li>- From 1989</li> <li>- Relative high cost of new vehicles has incentived the purchase of old cars</li> <li>- Fixed schedule</li> </ul>	<ul style="list-style-type: none"> <li>- From late 80s</li> <li>- Low tariffs and a rotatory schedule (changes once a month) have reduced the incentivs to buy secondary cars</li> </ul>	<ul style="list-style-type: none"> <li>- From 1998.</li> <li>- Fixed schedule (changed once a year)</li> </ul>	<ul style="list-style-type: none"> <li>- From 1996.</li> <li>- Only within central area</li> <li>- Fixed schedule</li> </ul>

At the same time there are interesting differences among the driving ban programs that, again in this case, make comparisons of program structure and enforcement experience interesting among the cities. Santiago and México enforcement is all day, while Bogotá and Sao Paulo enforce the ban only at rush hours. The brief contrast is that Bogotá and Sao Paulo have reduced congestion by forcing considerable demand to the shoulders of the enforcement hours, but have not reduced the total number of trips very much. Santiago and México, in contrast, have more significantly reduced total trip making because of all-day enforcement. This may partly explain the impression that the traffic ban is more tolerated and popular in Bogotá, a bit more resented in México. But the difference fits the situation: in México and Santiago there is severe smog, so the problem has a basic component in air quality, and therefore reduction of total trips is important. In Sao Paulo and Bogotá the main concern is congestion, so forcing traffic to the shoulders of peak hours is effective.

Details of the programs show many differences concerning the numbers of vehicles affected, the age of vehicles included in the ban, whether or not taxis are included, and whether the ban day is

always the same for a given license number or changes periodically. All these and other features are of interest in comparing the effectiveness of the different applications among the four cities.

Perhaps the most important feature of decentralized cooperation propelled by this program area is the way appreciation of the experience so far informs future strategies. There is a sense in the transport community that congestion pricing is in the future (requirement to pay a toll for using the streets, the level of the toll depending on current level of congestion). There has been a good deal of hesitation about this option because people are likely to react negatively against the proposal of “a new tax.” But with a joint appreciation of reasonable success in the use of the driving bans (which 15 years ago would have seemed very doubtful) there is now the possibility of addressing congestion pricing more hopefully. After all, rather than having a day when you can’t drive your car, would it not be better to be able to drive it any time for the payment of a modest fee?




In the course of a meeting discussing these matter among professionals of the four cities, I (with considerable hesitation) introduced the subject. I found, frankly to my surprise, that everyone was interested in the idea—not necessarily prepared to pursue it as a policy immediately, but interested in its possibilities. Interestingly, their greatest concern—occupying discussion for over an hour—was “what shall we call it.” It needs to have a name that sustains discussion and doesn’t get us shot out of the saddle before we can even define the policy. “How about ‘congestion pricing.’?” No, sounds too economic. “How about ‘value pricing’, the US term?” No, too commercial sounding. “How about ‘street rationing,’?” Well, I’m not sure.... This dialog, which lasted among the four cities’ representatives for nearly two hours, may be leading the way to the only really viable transport solution to the problem of congestion and environmental quality.

The point here is that decentralized cooperation has strength for discussion even of the most important problems because it can take place among actors who know their constituencies and can anticipate response to initiative. Further, the discussion among sympathetic foreign colleagues avoids the possible press and political upheaval if the discussion were to take place in a local public venue. At the same time they can also form a joint enterprise in efforts to refine new policy and gain confidence as a group, rather than each feeling he/she is alone in contemplating dangerous new ideas.

## **High Speed--High Volume Transit**

Mass transit has a different profile in each of the four cities. México has 11 lines of metro (see table Metros Comparison) with by far the largest passenger volume and percentage of trips. The Santiago and Sao Paulo volumes are nonetheless significant. Bogotá canceled a planned metro and turned instead to bus rapid transit.

## Metros comparison

	<b>Mexico City</b> 	<b>Santiago</b> 	<b>Sao Paulo</b> 
Number of lines	11	3	4
Total extension (km)	202	40	58
Passengers per year (million)	1,430	200	520
Passengers per km of alignment (million)	7.1	4.9	10.1
Average fare per passenger (US cents)	16.1	38.0	33.6
Mode Share (over motorized trips)	12% (1999)	7% (2001)	8% (1997)

One conclusion observable across the three cities, however, is that no matter how much metro is built it will always carry a relatively small portion of travel demand. It can nonetheless have an important role in corridors where demand rises above 40-50 passengers per direction-hour, and appears to have an important role in the retention of economic strength in central business districts, rather than permitting them to decline economically as a result of congestion

A curious comparative observation is that some observers noted that the México metro had acquired the reputation of being a mode for people of modest income, whereas the Santiago lines include some used by quite high-income users. The importance, of course, is that the latter are leaving cars at home, or at least at outlying stations. No explanation; these things arise without evident reason. But realization of the problem prompts strategies for solution.

## Conclusion

These are just examples of decentralized exchange of evidence and views that were valued by participants in this four-city experience. The meetings served to alert professionals of the opportunities that might be suggested by the experiences of cities with similar programs. It was an experience in “what works” one place or another. It was an occasion for making associations with professionals from other cities in a manner so that future consultation, contacts with further questions from specialists in the respective public agencies could be channeled to the right person. Perhaps most of all it was a means by which individuals could appreciate the commonness of the intents, the strategies, the modest achievements and the continuing frustrations of efforts in this field.