TRANSPORTATION PLANNING - THE CASE OF BRAZIL AND JAPAN

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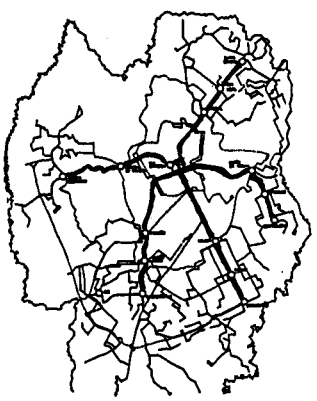
1.INTRODUCTION

The purpose of this study is to compare two different experiences in Transportation Planning and the procedures to improve Transportation System taken by two cities:
Curitiba - a city located in the South of Brazil and Nagoya - placed in the center of Japan.
A review of the existing system to determine both its deficiency and opportunities that can be developed for improvement are described, and also, the innovative ideas in transportation planning are presented, taking into consideration the different obstacles and difficulties faced by each city.

2.THE CASE OF CURITIBA

Curitiba is the capital of Parana with the population of 1.6 million inhabitants and the area of 431 km^2.
In 1965, the Preliminary Plan changed the previous radial configuration into a linear occupancy along pre - fixed corridors, integrating the land use, road system and the purposes were:
- Preservation and reduction of congestion in the central area.
- Restriction of the city population within its limits, and the implantation of an economical support according to the urban development model adopted by the city.



In 1974, an Integrated Transportation Network - ITN was introduced, constituted by 5 Express Lines running by 5 structural corridors in North, South, East and West directions integrated with Interdistrict and Feeder Lines.
In 1991, 540,000 passengers per day were transported by ITN in 54 km of Express Lines, 270 km of Feeder Lines and 185 km of Interdistrict Lines.
The whole system, including the Conventional, Circular-center and Selective Lines, transported 1.3 million passengers per day.
The bus fleet is constituted by 1,400 vehicles (1990), being 100 of them articulated buses, operating by 9 private companies, coordinating by URBS -the Municipal Transportation Management Company.
In 1990, all the five transportation corridors reached the maximum capacity and the efficiency of the system was reduced.
The hypothesis of increasing the number of buses in the structural corridors to solve the saturation problem can cause:
-Considering the operation - it is difficult to organize a terminal of more than 60 departures per hour.
-Considering the urban environment - increase of pollution and decrease of pedestrians security.
-Considering the quality of services - decrease with high load factors.
-Considering the efficiency and regularity - from 120 vehicles per hour the formation of trains of vehicles is inevitable which decrease the efficiency of buses.
Studies made by the technical staff of IPPUC - Institute of Research and Urban Planning of Curitiba responsible for the Urban and Transportation Planning of the city, pointed the LRT (Light Rail Transit) as the most convenient solution , but in 1991 the project was postponed due to the lack of financial resources.

2. THE CASE OF NAGOYA

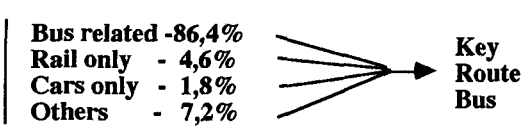
Nagoya is a city located in central Japan, with the population of 2,150,000 inhabitants and the area of 326 km².
After the Second World War, the city of Nagoya was considerably damaged and its function as a city was basically destroyed, which gave an opportunity to reconstruct and develop the city based on the War Rehabilitation Land Readjustment Project.
In 1957, the first subway line linking Sakae and Nagoya Station was introduced, and over the last 30 years subway construction was expanded all over the city. Today, the Subway System is constituted by 5 lines running over 69.6 km and 9.7 km are under construction, carrying 1,008,000 passengers per day.
Also, a city bus system has been operated, covering basically the entire city area with a network of 649 km carrying 590,000 passengers / day.
However, the traffic congestion caused by the increasing number of private cars prejudice the bus system made it slow and unpunctual.
In 1982, a new type of bus service was introduced, as a temporary alternative until planned subway lines start the operation and as a basic mean of transportation in areas not benefited by subway system.
Hoshizaki Route : Sakae-Hoshizaki (10.5 km): running in the curb- side lane.
Shindeki-machi Route : Sakae - Hikiyama (10,2 km): running only in the central lane.
Both of them are differentiate from the normal traffic by an yellow painted pavement.

3. CONCLUSIONS

In Nagoya, investments for road network constructions and improvements are quite higher than those for rails and subway, which can explain the 23:77 ratio between railway and private cars users (Tokyo presents a 56:44 ratio and Osaka 49:51), and the automobile-dependency of the city (60.6% car users), different from Curitiba where 70% of the population are Mass Transportation System users.

In Curitiba, great part of Mass Transportation users can be converted into private car users, if the quality of service and comfort of Bus System decrease caused by the saturation of the system. As the LRT project was postponed due to economical and financial problems, temporary solutions as the introduction of a 270 capacity bi-articulated buses will be undertaken.
A system called "Direct Lines" utilizing the lateral roads of structural corridors were also introduced providing a considerable improvement: the station are tubes made of glass, where the passenger can previously pay the fare and also the access to the vehicle is made in the same level by platform, reducing the boarding and unboarding time with frequencies of 1min. in peak hours.

The introduction of Key Route Buses in Nagoya increased the number of passengers from 9,500 pass/day to 10,100 pass/day and the percentage of conversion from other transportation means users were as follows:



	before	after KRB
Av.speed	13 km/h	17 km/h
Av.travel	48 min.	37 min.

which means that efficient and reliable Mass Transportation Systems can attract private cars users and the expansion of Subway and Bus System can relief the traffic congestion and high level of accidents caused by heavy use of private vehicles.