Bus Rapid Transit in Latin America

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Three Case Studies

- Rede Integrada de Transporte, Curitiba, Brazil
- TransMilenio, Bogotá, Colombia
- Transantiago, Santiago, Chile

Source: http://www.nationsonline.org/oneworld/map/south_america_map2.htm
Curitiba
List of Actors

- Instituto de Pequisa e Planejamento Urbano de Curitaba (IPPUC)
  - Transportation research institute

- Urbanizacao de Curitiba SA (URBS)
  - Company that manages bus line
  - Contracts out bus routes to 16 companies

- Bus Companies

- City Government

- Passengers
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1887-1955</td>
<td>Streetcars, trams, private buses</td>
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<tr>
<td>1955-1965</td>
<td>City bus contracts</td>
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<tr>
<td>1965</td>
<td>IPPUC established</td>
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<tr>
<td>1966</td>
<td>Curitiba Master Plan passed</td>
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<tr>
<td>1978</td>
<td>Fifth and final structural axis completed for Express buses</td>
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<tr>
<td>1979</td>
<td>Inter-District bus lines introduced</td>
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<tr>
<td>1991</td>
<td>Direct lines introduced with tube stations</td>
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<tr>
<td>1992</td>
<td>Bi-articulated buses introduced</td>
</tr>
<tr>
<td>1996</td>
<td>Metro routes added</td>
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Curitiba Master Plan

- Five structural axes
  - Rapid transportation routes
  - Promote development there

- Preserve and decongest the city center

- Improve transportation infrastructure
System Map

Source: “Curitiba”
Types of Bus Lines

- Express
  - Along the five axial roads
- Feeder
  - Branching out from Express route terminals
- Direct
  - One-way streets along Express
- Inter-district
- Metro
- Central business district
- Conventional
Curitiba
Linhas Expresso Biarticulado

Source:
(GNU Free Documentation License)
Segregated Bus Lanes

- On the central axes
- Trinary busways
- 85 ft wide

Source: "Curitiba"
Promoting the Axial System

- Incentives for dense commercial or residential uses within two blocks of axis
- Restrict or eliminate parking
- Bus-only access

Source: "Curitiba"
Discussion Questions

1. Is it appropriate to use land use planning to drive the use of a transit system? Or should transit simply serve land uses?
Other Features

- Tube Stations
- Bi-articulated buses
Policy Issues

- **Specialization**
  - Seven types of lines are used, from express to CBD circulators.

- **Think tanks**
  - The IPPUC has powerful ideas but is not part of government.

- **Privatization**
  - The bus system is privately managed and bus lines are contracted.

- **Gradual Implementation**
  - The system developed over several decades.
Discussion Questions

1. Curitiba’s transit system is generally considered very successful. How would you measure the success of a transit system?
Measuring Success

- 2 million trips per day
- 75% of commuters use it
- 89% approval rating
- 11.4% profit in 1996
List of Actors:

- Ministry of Transport – federal agency
- STT – municipal-level agency
- Transit companies – owned rights to routes
- TransMilenio SA – new BRT administration
- Bus owners – paid rent to operate buses
- Bus drivers
- Passengers
Timeline

- Pre-1990 – Traditional bus system operates
- 1990 – Caracas Avenue busway opens
- 1992 – Caracas Avenue busway extended
- 1994 – BRT proposed; finances fall through
- 1998 – Rail contract negotiated; recession
- 1999 – TransMilenio SA established
- 2000-2002 – 41km Phase I opens, in sections
- 2003-2006 – 41km Phase II opens, in sections
Traditional Model

- Ministry of Transport regulates, sets fares
- STT issues permits, sets schedules and frequencies
- Transit companies buy route rights from STT
- Small bus owners affiliate, rent operating rights
- Drivers employed by owners, paid per passenger
• What are the problems with this model?
• How and why did they develop?
Policy Issues

- Contract structure – negative incentives
  - Transit companies profit by allowing more buses
  - Owners don’t spend money to update fleet
  - Drivers race for passengers, cut stops short

- More buses on street = lower revenue/trip
  - Fares automatically increase as riders/bus decrease

- Safety hazards
  - Old, unsafe, polluting buses
  - Excessive speeds
Policy Issues

- Correspondence problem – STT vs. Ministry of Transport
  - STT has responsibility, MT has authority

- Bus industry strong enough to resist STT
  - Courts overturned STT attempts to reform
Single agency
- Sets routes, frequencies, schedules, fares
  - Free to change as needed
- Plays roles of regulator and route operator
  - Still under STT, but with sufficient authority to do job

Exclusive contracts to operate buses
- Fares based on total system costs
- Bus companies paid per kilometer, not per passenger
Remaining Issues

- Traditional model still functions, as a competing mode
- Old buses to be scrapped, but owners replace them
- Current fares may not be sustainable with expansion
  - Diminishing returns with each new route
  - Cannot rise much higher than traditional system
Discussion

Would the political system in U.S. metro areas be any more conducive to the success of BRT?

Source: NBRTI (Cain, et al.)
List of Actors:

• National government – initiated transit reform
• Transantiago – agency created to administer new system
• Metro agency – administration of existing rail line
• Private bus companies
• Passengers
Timeline

- Pre-1979 – Buses regulated by state agency
- 1980-83 – Complete privatization and deregulation
- 1991 – Reregulation of fleet size, age and emissions
- 1998 – Failed negotiations allow fares to rise
- 2000 – Ricardo Lagos becomes president, transit reform begins
- 2005 – New buses and operating companies introduced
- 2006 – Michelle Bachelet becomes president
- 2007 – Complete system switch on February 10
- 2007 – Bachelet announces changes March 10
Planning

- Existing service similar to Bogotá’s traditional model
  - Excessive amounts of routes and buses, poor condition of buses, high accident rates

- Private firms could profit by providing such low-quality service
  - Should firms be allowed to profit from public service?
  - Should they have to reinvest their earnings to improve the system?
Planning

- Transantiago included:
  - Bus system reorganization
  - Extension of existing Metro rail line
  - Integration of all city transit into one system

- Similar BRT system to Bogotá and Curitiba
  - Trunk/feeder route structure
  - Segregated bus lanes on trunk routes
  - Central, electronic fare collection system

- Interagency conflict
  - Metro was more popular, so funds were directed to rail

- Opposition from bus companies
Implementation

- New companies took over routes in 2005

- February 10, 2007 – “Big Bang” before completion
  - Bus lane, station construction not complete
  - Not enough buses were available
  - Fare collection system didn’t work
  - GPS/central fleet control system didn’t work

- Insufficient public information campaign; rider confusion
  - Severe overcrowding on Metro trains
  - Increased automobile use
Implementation

- Increased travel times
  - Elimination of many direct routes increased transfers
  - Overcrowded buses
  - Low speed due to inadequate infrastructure

- Poor route selection
  - Completely different from old routes
  - Too many routes end at Metro line
  - Routes parallel to Metro eliminated

- Contract issues
  - Weak enforcement of fleet size, frequency
  - Drivers paid hourly- no incentive for performance
Remaining Issues

- Bachelet’s popularity plummeted in Santiago

- Package of changes enacted
  - Routes added parallel to Metro line
  - Routes extended to areas poorly served
  - More bus lanes constructed
  - Contract compliance reemphasized

- System has improved gradually since the switch
Policy Issues

- Bus companies, riders not consulted during planning
- Conflicts of interest between bus and rail agencies
- Public vs. private sector financing and control
Discussion

- Had the infrastructure been ready, what would be some advantages to implementing it all at once?

- How could the agency have involved and communicated with the public better…
  - to get input during planning?
  - to spread information after the switch?
Summary

- Curitiba’s RIT was successful due to innovations from the IPPUC, like trinary busways and specialized routes.

- Bogotá’s TransMilenio had to overcome conflict with existing transit.

- Santiago’s Transantiago failed at changing the entire system on one day, but is now improving.
Metadiscussion

- What can we learn from Latin America?

Source: TransMilenio SA