(Im)Mobility in the city of São Paulo

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In 2009, the all time traffic jam record in São Paulo - 294 km of congested roads - was broken twice in the same day.[1] Over the last decade, 118 km of jammed roads has been the city daily average during rush hours.[2] Between 2000 and 2008, the average speed of traffic during the morning and afternoon rush hours in the city of São Paulo was 19.30 km/h.[3] The average time spent daily by São Paulo residents in traffic is 2h42min. Each month, São Paulo residents spend two days and six hours in a car or on public transport to get around. They waste an average of 27 days each year trapped in traffic.[4]

This has been the narrative repeated over and over by the media to express the mobility crisis in the city of São Paulo. In addition to making the news on radio, television and newspapers, traffic jams and the strategies used to address them are the subject of everyday conversations among city dwellers in such a way such that among those who believe in less alarming predictions of an imminent total collapse and those who believe it is possible to overcome this crisis, traffic and its impact on the life of the city is undeniably one of the major topics in the city agenda. Influenced by public opinion, the topic is also a concern within the state apparatus, which addresses it in the form of two types of policy interventions: investments in transportation infrastructure and rehiring between public and private actors in legal and administrative systems of managing transport and traffic in the capital.

If we analyze how the question is formulated in the area of the public agenda – as expressed in the first two paragraphs of this essay -, traffic jam becomes a far stronger issue and topic on the policy agenda than the issue of the city's general mobility system, which includes public transportation and the so-called non-motorized modes such as pedestrians and bicycle riders. There is no doubt that the fact that the bus system - which shares with private cars, motorcycles, taxis and trucks the same road infrastructure - is still the predominant mode of public transport today contributes to the idea that the issue of traffic jam seems to "include" also the question of public transportation. In fact, except for the small percentage of city buses - only 29.5 percent of the lines (SPTrans - www.sptrans.com.br/indicadores/) - that run on exclusive corridors or preferential lanes, most of the public transport vehicles jostle with cars and motorcycles for space on city streets..

In turn, the public perception of the mobility crisis as a "traffic problem"

hides significant differences in the political dimensions and meanings of the crisis. As for traveling time, for example, although the average time spent by São Paulo residents to and from their main daily activities is more than two hours, the average traveling time differs substantially between car drivers and public transportation passengers. According to the Origin and Destination survey conducted every ten years by the Metro (2008), the average traveling time of public transport users is 2.13 times greater than of private car riders. The same can be said about the speed: according to CET (2008), the average speed of cars in the morning was 27 km / h; in the afternoon, 22 km / h. In turn, a survey carried out by the Union of Urban Public Transport Companies in São Paulo (2008) during the morning and afternoon rush hours indicates that buses travel at an average speed of 12 km / h.

Considering that 74 percent of motorized trips among the population with income up to four minimum wages are made by public transport and that in the income range above 15 minimum wages this percentage drops to only 21 percent, the conclusion is that the mobility crisis is much more severe for public transportation passangers - the lowest-income population, made up of captive and historical users of buses.. However, although the mobility crisis affects public transport users much more than car drivers in the city of São Paulo, up to now there has been no strong enough shift in the mobility policy capable of establishing a new standard of comfort and time for these passengers, despite increased investments made in the subway network and in the modernization of the train and bus systems in the past decade.

It is no coincidence that the theme of immobility presents itself as "traffic congestion", which expresses the capture of the mobility policy by interventions in the physical expansion and modernization of the road system, directed to cars, to the detriment of the expansion and modernization of public transportation systems. This phenomenon is not new, has historical roots in the city and was addressed with clarity in the analysis of Eduardo Vasconcellos (1999) for the period 1960-1980, which we present bellow.

The automobile city – the mobility project for the middle classes of São Paulo

Until the 1920s, the predominant mode of transportations was collective and on rails – trams and trains. According to Mário Lopes Leão (1945), in 1933 the city had a 258 km long tram network, three times larger than the current length of the subway system. The tram system at the time was responsible for 84 percent of public transport trips, with approximately 1.2 million trips / day, in a city with a population, of 888,000 by than.(Vasconcellos, 1999, p.158).

The first significant interventions on widening and expanding road emerge in the city of São Paulo in the 1910s, proposed by city engineers. Although only partially implemented, it was the first significant change in the city structure, with the widening of Líbero Badaró street and São João avenue, which inau-

gurated the first beltway formed by Libero Badaró, Boa Vista, Praça da Sé and Largo São Francisco roads (ibid. p.151). Since the 1920s, a road remodeling project to support and increase the moving speed of cars and trucks was gradually implemented in the city, led by engineers and carried out by successive municipal and sate administrations. The beltway model outlined in beginning of the century will impact, as we shall see, the mobility structure of the city, which since the 1930s has become increasinglydependent on provate cars, buses and trucks.This movement was fueled by the emergence of a new pattern of industrial mass production, which had its genesis and greatest exponent in the automobile industry. (Rolnik, 1997, p.160; Noble, 2010).

In the 1930s, the threat of losing the monopoly, coupled with profitability problems in the tram system, led Light&Power Co, who had the monopoly for trams and electricity systems in São Paulo, to propose a new agreement to the municipal government, presenting a plan to build a rapid transit network with rails for tram lines (some of them underground), to increase the number of trams , build an additional 65 km of trails and establish of a unified tram and bus system with the acquisition of 50 additional buses. In order to implement this plan, the company required the monopoly not only of the trams but also of the bus system concession (Rolnik, 1997, p.160).

At the same time, the then municipal engineer Prestes Maia proposed the Avenues Plan, which consisted of a system of avenues forming a "beltway" grid that ended up by structuring the city's growth over the next several decades. The urban design proposed by Prestes Maia opposed any physical obstacle to urban growth or any a priori definition of a limit to the city'sexpansion.[5] The flexibility of the bus service, unlike trams and trains, whose area of influence was limited by the distance between stations, combined with the possibility of a infinite horizontal expansion model, brought the solution to the housing crisis through the self-construction in unserviced settlements located on the outskirts of the city (ibid, p.164).

This plan contained a proposal for an "irradiation perimeter" with a beltway around the downtown area of the city. It proposed eliminating traffic congestion and expanding the downtown area of the city by providing it with a system of avenues and viaducts as a way to overcome physical obstacles such as rivers and hillsides. A second beltway was built over the bed of the railway lines, and the third, called parkways system was formed by roads along the Tietê and Pinheiros rivers. From the "irradiation perimeter" (first beltway), the plan proposed a road system toward all quadrants of the city, establishing connections between the three beltways (Leme, 1999, p.393).

Although interventions to enlarge and improve roads had already been the focus of policies since the the beginning of the XX century, after 1930, following the Avenues Plan, a number of major road works enabled opening up the urban fabric to private cars, through radial avenues (São João, Rio Branco,

Nove de Julho) and the Irradiation Perimeter (currently the downtown roundabout -). In parallel, the new building legislation encouraged vertical expansion on roads and spaces benefited by road works (building codes of 1920, 1929, 1934 and subsequent legislation until 1957). With these measures, a new centrality was developed, occupied predominantly by higher income groups in the city, which until 1940 were concentrated mostly in the older parts of downtown - the southwest quadrant.

In On other hand, with the termination of the contract that gave to the anglo-canadian Light&Power Co. the monopoly of public transport in the city, the buses gained absolute predominance in the city. In 1942, tram lines had shrunk 41 km, the number of tram cars had increased only by 20 units since 1920 and their share had fallen to 63 percent of trips in the collective mode, while the share of buses the in public transport system had increased from 16 percent to 37 percent. The tram system went into decline, and disappeared completely in 1968 (Nobre, 2010). The shift in the public transport system occurred in the 1930s, but only gained momentum from 1948, when a public transport company - CMTC – was established in São Paulo, which took on both the old assets of Light as well as part of the operations of the bus system, which although already introduced in the city since 1925 had not been regulated by than.. In the 1950s the public transport in the city began to be operated by CMTC and 66 private bus companies, through thirty-year concession contracts. This model had changed only in the late 1970s, as explained below (Vasconcellos, 1999, p.158-9).

Back in 1940, the city had a population of 1,326,261 inhabitants , the traffic issue still appeared in a partial, fragmented way, in the small everyday conflicts reported in the media (ibid, p.224).

In parallel, road restructuring processes provided the physical support for the opening of fronts for real estate expansion and increased mobility possibilities for the consumption and leisure of the middle classes made posible by the increased speed and flexibility of provate cars (ibid, p.240). in this meanwhile the predominant public transport model – the nflexible bus made posible the establishment of low income settlements in the fringe areas of the metropolis, providing a transport mode suitable for an scattered and low density expansion (Rolnik, 1997, p.162).

In 1949, the city government hired a team led by Robert Moses to develop a "Plan of Public Improvements for São Paulo." In this plan, Moses reproduced the set of propositions he had developed for New York, introducing "urban highways" accompanied by other interventions, such as a parks systems and the modernization of public transport through the expansion of the bus fleet. While maintaining the beltway structure of the Avenues Plan, Moses identified the impact of the network of state highways that had São Paulo as a regional center and proposed that the avenues along the Tietê and Pinheiros rivers - which

had already been schematically defined in Prestes Maia's plan – should receive the traffic of the highways, thus conceiving the role they still play today. In his proposal, the "urban superhighways" were planned in a way to better meet traffic volumes,; without level crossings and interference of vehicles entering and exiting buildings. To Moses, highways configured a city different from the boulevards proposed by Prestes Maia, and to ensure their full efficiency the mesh of expressways should be independent of the urban fabric that it crossed, regardless of whether or not it destroyed the urban fabric (Anelli, 2007). Although not immediately implemented, Moses' proposals influenced a set of road works implemented from 1960/1970, such as the Minhocão viaduct.

In 1956, at the invitation of the municipality Prestes Maia prepared the "Draft of a Metropolitan Rapid Transit System" where, despite a proposed subway network for the city, he argued that priority should be given to the continuity of his Avenues Plan, with the construction of the second beltway. The peripheral expansion of factories and popular housing towards the east had an impact on the downtown area of the city, and the first beltway he had implemented for this area was no longer capable of supporting the the east-west expansion . For this reason, his new plan gave great emphasis to the east-west connection and to Anhangabaú Avenue (currently 23 de Maio Avenue). Although the project was not implemented exactly as proposed, the proposed crossing of open public spaces such as Dom Pedro II Park and Roosevelt Square by a road system at various levels ended up being implemented in the next decade, having since then become the recurring pattern for other open public spaces in the city (ibid. 2007).

In the 1960s, the city already had four million inhabitants and about 500,000 vehicles; the horizontal expansion had reached the metropolitan scale. Under this context the traffic issue took a new shape with a significant increase in the public visibility of the problem, growing pressures and stronger action by the State, shifting progressively from a picturesque everyday topic to a "public-collective" issue. And it is precisely from 1960 that the main road system began to be significantly expanded, gaining a structure with an increasing level of integration and covering the entire urban sprawl of the city's consolidated area. The number of express lanes increased 778 percent in the decade with the construction of 536 km of such lanes, and continued at a faster pace in the following decade, when 81.8 km of express lanes were built. In 1980 the city had 690 km of expressways and 890 km of arterial roads - ten times what was available in 1960. These data demonstrate the hegemony of investments in the expansion of the main road system that became effective in the city from these years: between 1965 and 1970, investment in the road system accounted, on average, for 27 percent of the total budget of the municipality (Vasconcellos, 1999, p.151-5, 181).

From 1973, with the oil crisis, the big expressway plan was interrupted and discourses in favor of public transport and urban growth control prolifer-

ated; . A large metropolitan plan for public transport, known as SISTRAN , was developed between 1974 and 1976. Spending on the road system decreased, and in the period between 1973 and 1980 accounted for 11 percent of the overall municipal spending. In the same period, spending on public transport increased, accounting for 19 percent of total spending, represented primarily by subsidies and capital increases of the CMTC and Metro companies (ibid, p.230-1).

Between 1960 and 1973, before the subwaystarted to operate , the bus was an almost exclusive mode of public transport, since the share of trains in urban transport was minimal. According to the 1967 Origin and Destination (OD) Survey, the bus was responsible for 59 percent of city trips and 93 percent of trips by public transport. With the implementation of the subway, the share of public transport on rails began to increase without, however, affecting significantly the position of the bus, which continued to prevail, accounting for 81 percent of trips by public transport in the city in 1980. Thus, it can be said that between 1960 and 1980, public transport in São Paulo was based on transport on tires. (ibid, p.158-9).

The public transport system during that period was primarily operated by private companies, which in the 1960s represented about 75 percent, while CMTC accounted only for the remaining 25 percent. A major operational change in the late 1970s ushered a model of operation that virtually "divided" the city among 23 areas of operation, each of which was given to a company or a consortium of companies, ensuring them monopolistic areas of operation and all of them linked to downtown.(ibid.).

Between 1968 and 1977, while the population grew by 45 percent in the Metropolitan Region of São Paulo, according to the OD survey, the number of local travelers increased 120 percent. The modal division, however, did not experience significant changes. The bus share, which experienced a slight decrease after the introduction of the subway, captured 3.4 percent of the trips and remained as the main mode of transport, accounting for 54.1 percent of all trips in the city. The biggest change, however, occurred in the use of private vehicles, which increased from 25.9 percent to 34.8 percent of the trips. This increase was made possible by the process of income gains experienced by the middle class, which began to have easy access to private vehicles (ibid, p.186-8).

The reorganization of mobility - started slowly in the early twentieth century and intensified in the 1960s-1970s – resulted from the confluence of economic, political and urban processes that enabled a large-scale modal shift, flooding the streets with hundreds of thousands of new private vehicles. At first, the modal shift represented a major speed increase for bus users, which, however, was followed by a setback in fluidity gains. The increase in the private car fleet reduced the speed of buses, despite improvements in road capacity.

In turn, the system, by enabling people to own a car, not only met an economic-ideological aspect, but also led to an increase in the traveling speed

of the middle classes, since the car moves at a much higher speed than the bus. While the distances and speed of the trips increased among the middle class, which began to have access to a faster transport technology, public transport users remained stuck to the same technological alternative, because not only of their lack of means to switch to another mode of transport, but also of the relative technological stagnation of public transportation system. As a result, dependence on the same technology, operated at low levels of efficiency, led users to travel greater distances at the same speed in the 1930s and 1940s, increasing considerably the traveling time. Not even the subway was able to significantly change this scenario, since it is insufficient to meet the traveling needs of the population at large and needs to be complemented by the bus. In turn, much of public resources in the sector began to be invested in the subway, leading to a "technology gap" between the most modern transport - the subway - and the most archaic transport - the São Paulo bus system, whose operation and control precludes its much needed modernization (ibid, p.233-6, 252-3).

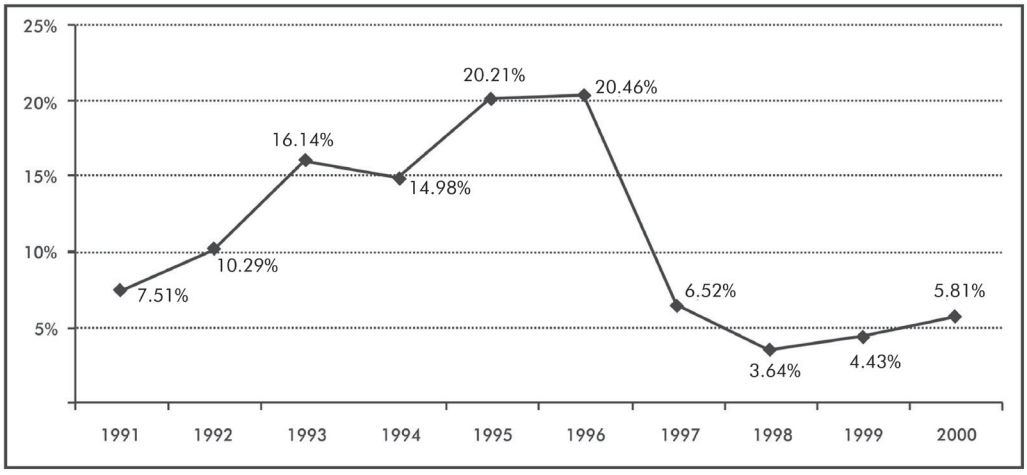
In the 1990s there was again a steady increase in investment in the road system, as seen in Graph 1, showing the percentage of the budget of the Public Roads Secretariat (SVP) – which is responsible for investments in the municipal road system - in relation to the total municipal budget.

While in the early years of the decade - the last two years of the Luiza Erundina administration – investments were still lower than the average of the 1980s (11 percent), the share of investment in the road system at the beginning of the second half of the decade was once again close to the percentages recorded in the period between 1965 and 1970 (27 percent), before the oil crisis. Marques & Bichir (2001) and Ferreira (2007) advocate the thesis that this increase in the city's budget share invested in the road system is closely correlated with the political profiles of the municipal administrations. While the Mário Covas (1983-1985) and Luiza Erundina (1989-1992) – left parties administrations invested 9 percent of the municipal budget on average in the road system, in the Jânio Quadros (1986-1988) and Paulo Maluf (1993-1996) right parties governments this percentage stood at 18 percent (Marques & Bichir, 2001b). The reduced investment in the system from 1997, after mayor Paulo Maluf's term of office, is explained by the R$7.67 billion debt (higher than the municipal budget for 1996, of R$7.5 billion) he left behind as a result of heavy investments in the road system, (Ferreira, 2007, p.207).

Marques & Bichir (2001a, p.18) also claim that 50 percent of funds invested in the road system during the Paulo Maluf administration went to high-income areas, while the investments in this area in the Mário Covas and Luiza Erundina administrations showed "highly distributive profiles, with investments earmarked for low income areas."

During the Paulo Maluf administration, large construction projects were completed in the region of the so-called "tertiary centrality" of the Pinheiros

Expressway, such as tunnels under the Pinheiros River and the Ibirapuera Park and channeling of the Água Espraiada Stream for the construction of the avenue of the same name. These two tunnels were the most significant construction projects of Maluf's administration, and the ones that required the highest financial investment, as they involved not only the construction of the tunnels, but also the re-urbanization of Jucelino Kubitschek Avenue, under a project called "Juscelino Boulevard". It is important to note also that huge amounts involved in the construction of this complex (about R$1.74 billion at 2002 values) were invested exclusively for the benefit of private vehicles, since buses have no access to the area. Investments in the channeling and construction of Água Espraiada Avenue alone totaled R$985.5 million, out of R$2.7 billion in overall investments in these projects, which represented a little over 60 percent of the budget for overall road works in the city (R$3.95 billion). This amount was invested in only three construction projects "located precisely in the area destined to be the 'global centrality of the capital'" (Ferreira, 2007, p.207-8).



Source: Ferreira (2007), from data provided by the office of Councilman José Eduardo Cardoso

Graph 1 – Budget share of total municipal budget (1991-2000) committed to SVP

Adding to investments implemented by the municipality in this region, the state governmentalso had prioritized the same are to improve the infrastructure of public transportation on rails: the improvement of CPTM line C along the Pinheiros River, precisely close to the "tertiary centrality". This line received seven modern stations and ten new cars equipped with air-conditioning, with a completely different standard in relation to the trains running on the outskirts of São Paulo. The new trains run only in the "noble" stretch of the C line and are relatively empty compared to other stretches in the periphery. Approximately R$ 702 million were invested in these works, including investments in new stations and cars. Investments in the road system of this centrality total about R$2.9 billion, spent in about 100 km² (ibid, p.209-10).

In the previous administration - Luiza Erundina, in 1991 - an intervention in the municipal transport system – the so-called municipalization - was implemented with the aim to improve the quality, frequency and supply of public transport on the outskirts of the city. Under this new model, the service remuneration system was separated from fares, and was calculated by kilometers run and performance indicators. Management of the fare, which was set according to economic and political parameters, was transferred to the municipal government, thus becoming the main source of funds for payment to the services provided by the companies contracted by the operation, but also requiring government subsidies. As a result, CMTC began to play, at the same time, the double role of manager and operator of the public transport system, with a share of some 27 percent in the sector. However, in 1993, with the beginning of the Paulo Maluf administration, under the justification of streamlining the operation and reducing the deficit of CMTC as the operating company, the government canceled the operational activities of CMTC by privatizing the entire operation of the 2.700 buses and their respective depots, and reducing the staff from 27,000 to about 1,200. The form of remuneration for services rendered by the contractors was redefined. The previous payment criterion based on the cost of the kilometer run was replaced by that of a ceiling amount per passenger carried (SPTrans) (Cruz, 2010, p.86). The old CMTC was then transformed into São Paulo Transporte SA – SPTrans – an enterprose devoted only to the management and not as operator of the city's transportation system (ibid.).

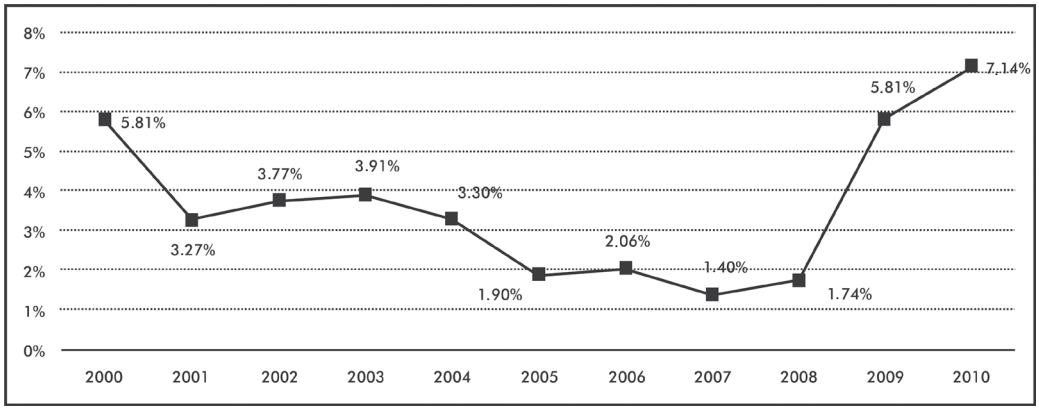
In 1995, when he took office as state government, Mário Covas launched the Integrated Urban Transport Plan (PITU 2020), which sought to integrate and modernize the transport system under the responsibility of the state governement. The set of projects contained in the Plan involved infrastructure works, primarily consisting of the completion of several unfinished works in subway lines, electric buses corridors and control centers; rehabilitation of railways and transformation thereof into new subway services, covering also the integration of railway lines and the expansion of the train fleet; increase in the medium and high capacity metropolitan transport system, with an emphasis on new subway lines and the concession and electrification of corridors and trunking (Frederico, 2001). This Plan began to be slowly implemented from the end of the 1990s and was revised in 2005, as we shall see.

Investments in mobility in the 2000s

The analysis of the path followed by the mobility project which began to be implemented in the city of São Paulo at the beginning of the twentieth century and led to the current mobility crisis described in the introduction of this text, shows a continuity in the pattern of interventions and investments, which although at times have favored, in percentage terms, public transport over private transport infrastructure, have not been able, to date, to cause a major shift and establish a new mobility paradigm in the city.

To verify if this assumption also applies to the last ten years, when certainly the crisis was slowly developing and being debated, we have sought in this essay to address investments made in São Paulo by the municipal and state governments in the last decade in public transport infrastructure and civil works to expand the road system, seeking to understand which mobility project was effectively implemented in the city during that period.

As seen in Graph 2, the share of the municipal budget committed by the municipal secretariats in charge of road projects[6] has never again reached the levels of the beginning of the second half of the 1990s, although in the last years of the 2000s a significant increase was observed in this percentage, which in 2010 exceeded the level of the beginning of the decade. In the first year of the Marta Suplicy administration, alss a coalition oriented towards the left, there was a reduction in this percentage, which remained constant until the end of her term of office. In the following administration (José Serra - 2005 to 2006 - and Gilberto Kassab – 2007 -), the percentages of investment in the road system showed a downward trend until 2009, when a new shift occurred and the percentages increased above those of the beginning of the decade.

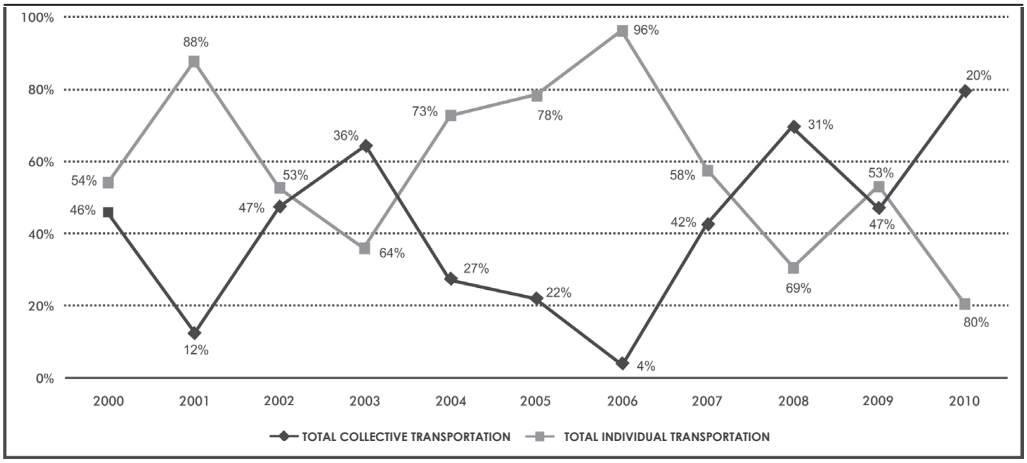


Source: Prepared by the authors from data provided by the Municipal Secretariat of Planning, Budget and Management.

Graph 2 - Budget percentage committed by municipal secretariats in charge of road works in relation to the total municipal budget (2000-2010).

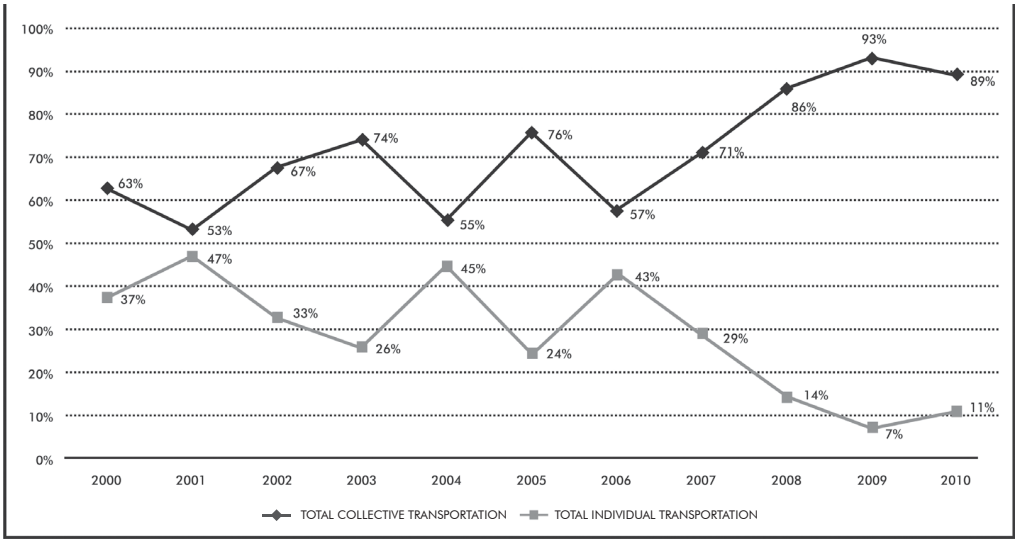
Aiming to further explore the issues related to investments in mobility in the city of São Paulo, we have developed, for the purpose of this study, an indicator of priority investments in urban mobility for the city of São Paulo. In this regard, we have sought to identify in state and municipal budgets[7] the items relating to investments in the transport sector in São Paulo and in the Metropolitan Region in which the municipality is located, from the year 2000. However, it was not possible to conduct the research from 2000, as the complete, itemized state government budgets available to the public starts only in 2003, which led the authors to decide to research municipal data starting also from 2003.

In order to establish comparative series of municipal and state investments in urban mobility, the authors have chosen to survey only those items pertaining to investments, including projects and excluding items related to costing and maintenance.[8] Once the data had been collected, the items were divided into two groups: public and private transport. This division shows state and municipal investments for these two groups.



Source: Prepared by the authors from data provided by the Municipal Secretariat of Planning, Budget and Management.

Graph 3 – Evolution of municipal investments in transport in the city of São Paulo, excluding subsidies (2003-2010).



Source: Prepared by the authors from data provided by the Municipal Secretariat of Planning, Budget and Management and the State Secretariat of Planning and Regional Development.

Graph 4 - Evolution of municipal investments in transport in the city of São Paulo, including subsidies (2000-2010).

Investments in transportation by the state government have, in general,

with the exception of the subway, coverage and impact on the metropolitan rather than the municipal scale. In turn, municipal investments in mobility cover especially the municipality. However, since urban mobility in the city of São Paulo is equally affected by both systems, the authors have chosen chose to, besides examining them separately, also analyze the combined investments (municipal and state), thus obtaining a single indicator of investments in mobility in the city.

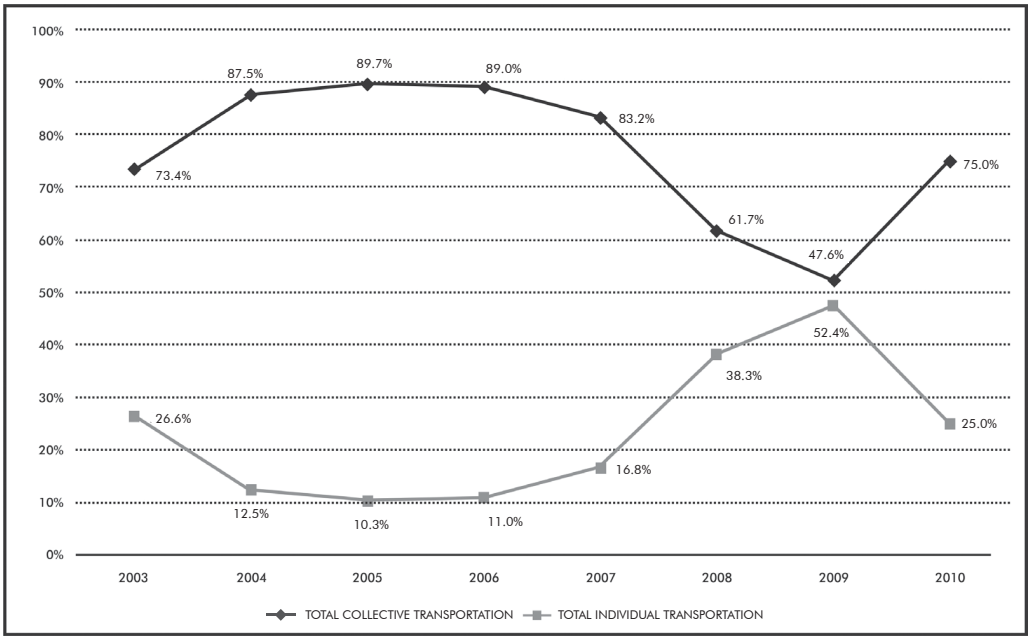
Municipal data were analyzed with two different aggregations: including and excluding public transportation subsidies.[9] As the operation of the public transportation system has relied since the early 1990s on municipal government subsidies, we consider that the evaluation of investment in municipal public transport should include these figures. The budget analysis without the inclusion of subsidized resources aims solely to demonstrate the comparative impact of these subsidies on the system.

It can be seen that in the first years of Martha Suplicy administration (2001-2004), investments in public transport experienced a progressive increase, but in the last year of her government this trend changed. In the first year of the Suplicy government (2001), a new model of public transport system for the city was adopted – the Interconnected System - which established a new technical and institutional arrangement for the operation of bus lines as well as for the construction of bus lanes on high-demand highways, with terminals and transfer stations that enabled expanding the integrated travel system. Under this new model, the integration between lines can be made by means of an electronic card - the "single fare" - that allows travelers to use more than one vehicle in the same trip, but paying a single fare. This system streamlining with greater integration between lines enabled reducing system costs and thus the pressure on the fare. Furthermore, "the operation with smaller vehicles in the periphery, where the demand is lower, enabled reducing intervals and waiting time between trips. In addition, the streamlined operation in the main corridors enabled reducing the number of idle vehicles, thus increasing the commercial speed and reducing the travel time for passengers" (Zarattini, 2003). Investments in this new system during the aforementioned administration included the implementation of new infrastructure such as five bus lanes, the reform of the three existing corridors and the construction of ten new terminals. The fleet was also renewed and increased to 4,008 new vehicles (SPTrans). Although the evolution of this system towards the adoption of the metropolitan integration system for the single fare began only in December 2005 – already in the José Serra administration - when municipal bus lines were integrated with subway lines and CPTM train lines - investments in the construction of new bus lanes provided for in the system were interrupted, together with a set of measures still necessary to fully implement the trunk system10 (Cruz, 2010, p.85).

Starting in 2005 the percentages of investment in public transport began to oscillate, as seen in Graph 4, until 2007, when in the Kassab administration

a new progressive increase trend arose, reaching 93 percent of the investment in 2009. The works of Expresso Tiradentes - which had been stalled since the Celso Pitta government (2000) and the works in the Mercado and Sacomã terminals, in addition to the extension to Vila Prudente were completed (ibid, p.86, 114). However, as seen in Graph 3, of these 93 percent invested in public transport, 46 percent are represented by subsidies and not by investment in the expansion and modernization of the system's capacity.

State expenditures, which at the beginning of the decade boasted high percentages of investment in public transport, in 2007 - when there was a significant increase in the amount of resources earmarked for the construction of the new mwtropolitan beltway - the percentages of investments began to fall gradually, while the percentages of spending on private transport progressively increased, virtually matching public transport investments in 2009.



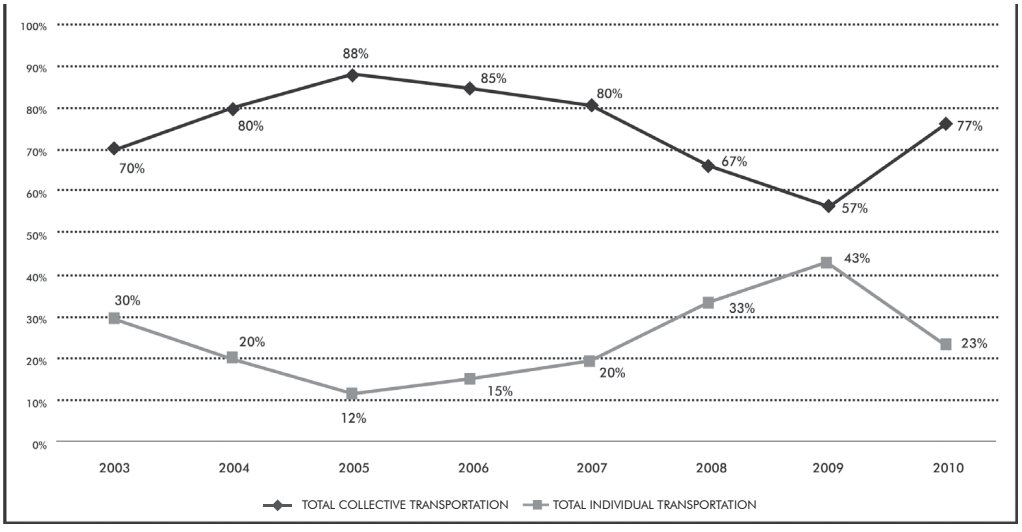
Source: Prepared by the authors from data provided by the State Secretariat of Planning and Regional Development.

Graph 5 – Evolution of state investment in transport in the city of São Paulo (2003-2010).

Graph 6, which shows the sum of state and municipal investments in the period between 2003 and 2004, has very similar characteristics to those shown in the Graph on state investments, since the amounts of funds invested by the state government are much more significant than those invested by the municipal government. It is important to note, however, that when adding up state and municipal investments, the declining trend in the percentage of investment in public transport began in 2005, before the period shown in Graph 5. In this

Graph, it is clear that the pattern observed since the mid-2000s was a strong resumption of investments in the expansion of the road system after several years of significant investments in public transport. This trend, which started in 2005, has a historic convergence in the city of São Paulo: the hegemony of automobiles and their drivers as subjects of public policy, with the topic of traffic congestion as both an issue and a priority.

The years of heavy investment in the expansion and modernization of the public transport system - bus lanes, single fare, increased supply of subways and modernization of trains - showed for the first time, since the OD survey was conducted in the city, a change in the historic trend towards the private transportion.

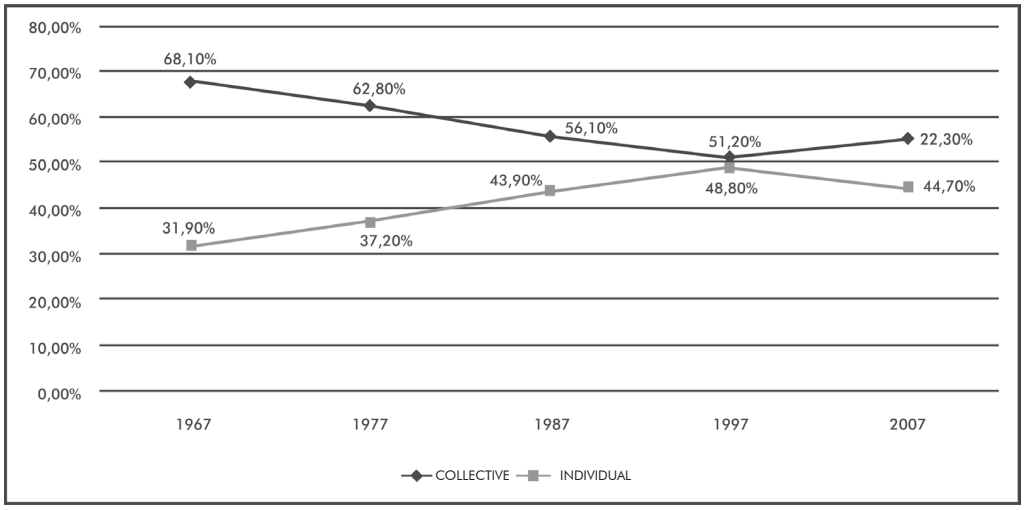


Source: Prepared by the authors from data provided by the Municipal Secretariat of Planning, Budget and Management and the State Secretariat of Planning and Regional Development.

Graph 6 - Evolution of the amount of state and municipal investments in transport in the city of São Paulo (2003-2010). Traduzir as palavras dentro da tabela

The last years of the decade, however, were marked by a resumption of investment in the road system and the reaffirmation of the historical model of beltways and "urban roads", with the implementation of projects such as the metropolitan beltway, the expansion of the Tietê River Expressway and a package of road works that favored the opening of fronts for the expansion of the high-end real estate industry.

According to a survey conducted by the newspaper Folha de S. Paulo in August 2010, R$13.5 billion were spent on the top ten road works carried out in the Greater São Paulo area over the last decade. In Table 1, when looking at the list of works and their respective costs it is possible to say that almost 50 percent of the investments were directed to regions where the population has the highest purchasing power in the city.



Source: Prepared by the authors based on data from the 1967, 1977, 1987, 1997, 2007 OD Surveys.

Graph 7 – Evolution of daily trips by the main mode of transport (motorized trips).

Table 1 - Main investments in road works in the Metropolitan Region of São Paulo (MRSP) in the 2000s

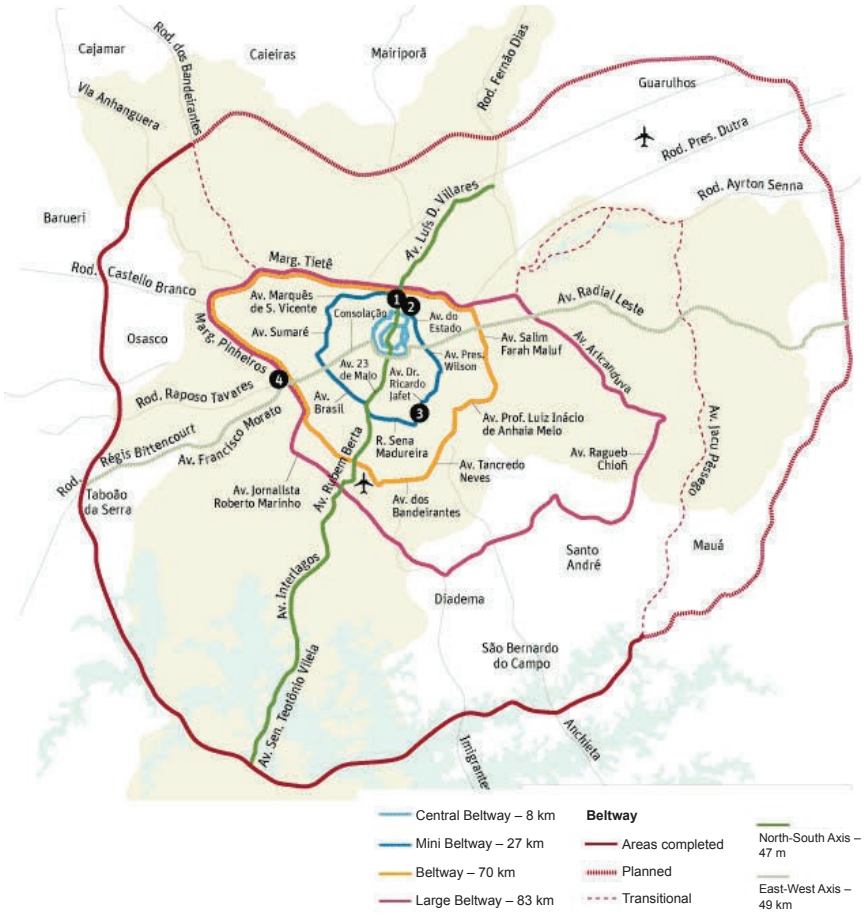
Road Works	**Amount Invested (in billion reals)**
Southern part of the metropolitan beltway	5.2
Extension of Jacu-Pêssego Avenue	2.4
Western Part of the metropolitan beltway	2.3
New Tietê Marginal	1.9
Anhanguera Complex	0.43
Castelo Branco Marginal Roads	0.34
Castelo Branco complex	0.25
Park Real Road Complex	0.32
Max Feffer Tunnel (Cidade Jardim Ave.) and Vieira de Mello Tunnel (Rebouças Ave.)	0.3
New East Radial Road	0.21

Source: Prepared by the authors based on data from the Folha de S.Paulo newspaper (2010).

Despite these investments and in the significant investments in the road system observed since the 1960s, this system shows signs of collapse with traffic congestion rates and gradual decrease in average speeds in the city, which today are between 14 and 17 km / h during the morning and afternoon rush hours.

On the day we finished writing this article, the newspaper Folha de São Paulo published a new plan submitted by the municipal government in early

2011, aimed to appease the mobility crisis in the city. This new plan proposes, also in line with the plans developed for the city in the 1930s, a series of beltways stretching towards neighboring cities in the Metropolitan Region. According to the municipal government, this new plan is an updated version of the Expressways Plan, executed by the mayor Figueiredo Ferraz in the 1970s, and consists of a system of five concentric beltways formed by existing or planned roads, in which bottlenecks and barriers would be eliminated, in addition to a pattern (pavement, signaling and inspection), as shown in Figure 1.



Source: Folha de S.Paulo, 31 Jan. 2011.

Figure 1 – Beltway system proposed by the municipal government for the city of São Paulo in January 2011.

The strength of this model, re-launched ad nauseam over the past decades, reveals the life and death pact between the municipal mobility policy with the automobile and, especially, with its drivers. This overlaps with the demands and interests of the majority of the population, imposing immobility on society at large.

Notes

1 Rate recorded in the city of São Paulo on July 10, 2009, representing traffic congestion in 34 percent of the roads monitored by the Traffic Engineering Company (CET). Half an hour before, the traffic recorded by the company had already broken the historical record, with 268 km of backed-up roads. Terra Portal, available at: <http:// noticias.terra.com. br/transito/interna/0, OI3817775-EI11777,00-Transit + hit + record + of + year + and m + SP + with + km.html>. Access on: 31 January In 2011.

2 Annual arithmetic mean of traffic congestions in km during rush hours. Note: Figures for 2009 and 2010 were calculated based on the average monthly traffic congestion indicator. Source: CET (Traffic Engineering Company) – Prepared by Rede Nossa São Paulo. Available at: <http://www.nossasaopaulo.org.br/observatorio/regioes.php?regiao=33&tema=13&indicador=114>.

3 Source: CET (Traffic Engineering Company).

4 Available at: <http://www.detran.sp.gov.br/frota/frota_jan.asp>.

5 In the chapter on transport systems contained in the Avenues Plan, Prestes Maia describes the experiences of other countries and provides arguments against the renewal of the road contract signed by the company Light&Power , which held the monopoly on the concession of public transport in São Paulo (Leme, 1999).

6 Until 2001, as we saw earlier, the SVP was responsible for all civil works in the municipal road system; however, on March 16, 2001, the Secretariat of Public Roads (SVP) was renamed Secretariat of Urban Infrastructure (Siurb), through Decree No. 40335, published in the official Gazette of the Municipality on 03.17.2001, and on January 1, 2005, Siurb was renamed Municipal Secretariat of Urban Infrastructure and Works. Available at: <http://portal.prefeitura.sp.gov.br/ secretarias/infraestruturaurbana/organizacao/0003>.

7 Data collected from the budgets available on the websites of the State Secretariat of Planning and Regional Development (<http://www.planejamento.sp.gov.br/modulos/orcamento/orcamentos.aspx#) and of the Municipal Secretariat of Planning Budget and Management (<http://sempla.prefeitura.sp.gov.br/orc_homenew.php>).

8 It is important to note that investments in management improvement and modernization, such as the single fare started in the Marta Suplicy administration, are included in these amounts, since they represent investments in the improvement of the public transport system.

9 In the 1990s, the bus transport system in São Paulo came under severe financial pressure with the emergence of a huge fleet of illegal micro buses- a result of the aggravation of the financial crisis in the country - operated by independent professionals who offered alternative and illegal services, but were sensitive to the needs of pent-up demand. This further aggravated the financial crisis of the management model that remunerated service providers for their operating costs, regardless of the number of passengers carried. The competition between legal companies and the illegal transport market increased operating costs, with the resulting increase in fare prices or the deterioration of services. The solution found - increased subsidies from the municipal treasury to legal companies - burdened the state coffers without, however, improving the system or generating benefits for users (Campos et al., 2004, p.232-3). Since then, subsidies have become a reality in municipal transport, strongly impacting its budget.

10 Because of trunking, not all buses originating in the periphery can follow to their final destination - the downtown area of the city. Full trunking of the system, however, has not been implemented.

References

ANELLI, R. Redes de mobilidade e urbanismo em São Paulo: das radiais/perimetrais do Plano de Avenidas à malha direcional PUB. *Arquitetextos*. 082.00, Year 7, Mar. 2007.

CAMPOS, C. M. et al. *São Paulo, metrópole em trânsito*: percursos urbanos e culturais. São Paulo: Senac, 2004.

CET (Traffic Engineering Company). Access through the website Observatório Cidadão Nossa São Paulo (<www.nossasaopaulo.org.br/observatorio/regioes.php?regiao=33&tema=13&indicador=119>). Access on: 24 Feb. 2011.

CRUZ, M. F. *Condicionantes metropolitanos para políticas públicas*: análise dos transportes coletivos na Região Metropolitana de São Paulo (1999-2009). São Paulo: FGV, 2010.

FERREIRA, J. S. W. *o mito da cidade global*: o papel da ideologia na produção do espaço urbano. Petrópolis: Vozes, 2007.

FOLHA DE S. PAULO. Expansão do metrô recebe menos verba que obra viária. 15 Aug. 2010.

_____. Plano de Kassab prevê via rápida para carros. 31 Jan. 2011.

FREDERICO, C. S. Do planejamento tradicional de transporte ao moderno plano integrado de transportes urbanos. *São Paulo Perspectiva*, São Paulo, v.15, n.1, Jan. 2001.

LEÃO, M. L. *o Metropolitano de São Paulo*. São Paulo: s. n., 1945.

LEME, M. C. (Coord.) *Urbanismo no Brasil – 1895-1956*. São Paulo: Studio Nobel, FAUUSP, Fupam, 1999.

MARQUES, E.; BICHIR, R. Padrões de investimentos públicos, infra-estrutura urbana e produção da periferia em São Paulo. *Espaço & Debates*, São Paulo, v.20, n.42, 2001a.

_____. Padrões de investimentos estatais em infra-estrutura viária. *São Paulo Perspectiva*, São Paulo, v.15, n.1, Jan. 2001b.

METRÔ. *Pesquisa Origem e Destino 2007: Região Metropolitana de São Paulo* – Síntese das Informações. São Paulo, 2008.

NOBRE, E. A. C. Ampliação da Marginal do Tietê: demanda real ou rodoviarismo requentado? *AU. Arquitetura e Urbanismo*, v.191, p.58-63, 2010.

RESENDE, P. T. V.; SOUSA, P. R. Mobilidade urbana nas grandes cidades brasileiras: um estudo sobre os impactos do congestionamento. In: SIMPOI – SIMPÓSIO DE ADMINISTRAÇÃO DA PRODUÇÃO, LOGÍSTICA E OPERAÇÕES INTERNACIONAIS, FGV, 2009, São Paulo.

ROLNIK, R. *A cidade e a lei*: legislação, política urbana e territórios na cidade de São Paulo. São Paulo: Studio Nobel, Fapesp, 1997.

ROLNIK, R. et al. Dinâmicas dos subespaços da área central de São Paulo. In: EMURB. *Caminhos para o centro*: estratégias de desenvolvimento para a região central de São Paulo. São Paulo: s. n., 2004.

UNION OF URBAN PUBLIC TRANSPORT COMPANIES OF SÃO PAULO (2008) Carros andam duas vezes mais rápido que ônibus. Naiana Oscar. Published on the website Rede Nossa São Paulo (<www.nossasaopaulo.org.br>). Access on: 21 Feb. 2011.

VASCONCELLOS, E. *Circular é preciso, viver não é preciso*: a história do trânsito na cidade de São Paulo. São Paulo: Annablume, 1999.

ZARATTINI, C. Circular (ou não) em São Paulo. *Estudos Avançados*, São Paulo, v.17, n.48, ago. 2003.

Websites visited

Detran – <www.detran.sp.gov.br>

Our São Paulo Citizen observatory. <http://www.nossasaopaulo.org.br/observa- torio/index.php?secao=apresenta>.

State Secretariat of Planning and Regional Development: <http://www.planejamento.sp.gov.br/modulos/orcamento/orcamentos.aspx#>.

Municipal Secretariat of Planning, Budget and Management: <http://sempla.prefeitura.sp.gov.br/orc_homenew.php>.

SPTrans – <www.sptrans.com.br>.

Abstract – This paper seeks to understand the mobility crisis experienced by São Paulo in the last decade. The study presents a historical and critical analysis of the mobility projects implemented in the city, with particular focus on the investments and projects implemented by the state and local governments in road infrastructure and public transport in the last decade.

Keywords: Mobility, Public investment, Road infrastructure, Public transport policies.

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