



SPINOFFS OF MOBILITY: Technology, Risk & Innovation

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ECONOMY BOOMING, CITY CONGESTING: CAN A CICLYING CULTURE EMERGE IN SÃO PAULO?

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ABSTRACT: this paper aims to analyze the practices, conditions, contradictions and perspectives in the use of bikes in São Paulo, taking into consideration the urban planning policies and transportation policies since 2001, when the current Strategic Master Plan has been designed and approved. (Geo)political and socioeconomic issues in developing countries are highly contrasting in comparison to developed world cities, where most compelling cycling policies originate. Then, similar contexts to Brazil are presented and São Paulo's official documents and reports are analyzed, in order to identify if and to which extent cycling is considered in transportation and urban planning policies. Additionally, it considers data collected by public authorities and local NGOs, whose information were summarized in order to understand meanings, experiences, and practices associated with cycling (ESRC, 2012) in São Paulo. It finds that, while leisure bike lanes during the weekends tend to inspire more cycling in São Paulo, though bicycles are taken into account in transportation and urban planning policies only very recently. Yet in the near future it could emerge as an alternative transportation mode, if accompanied by concerns such as intermodality with public transportation (mainly subways and trains), leading to a new paradigm of urban mobility in a "low-cycling context" (ESRC, 2012) as starting point.

KEYWORDS: cycling policies, urban mobility, São Paulo (Brazil).

INTRODUCTION

The Brazilian economy boomed over the last years (the GDP grew 45.3% for the period 2003-2012), rising millions of families from extreme poverty and, accordingly, stimulating new consumption behaviors – which includes more car ownership. In this context, São Paulo, as the Brazilian largest city, houses more than 6 million vehicles, plus a huge daily traffic crossing its territory to and from different regions of the country. As a result, in 2011, the total cost of traffic externalities surpassed R\$ 21 billion (approximately US\$ 9.1 billion), including atmospheric pollution and traffic accidents (ANTP, 2013). Only in São Paulo, in 2013,

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1.152 people lost their lives in traffic fatalities, with almost half (44.57%) hit by cars. Though a few cities started to endeavor public policies to stimulate cycling (bike lanes, public campaigns, integration with public transportation, etc), these efforts tend to be fragmented, since Brazilian main metropolises historically seem to have failed in organizing broad mobility solutions based on public transportation.

In São Paulo, after 2009, the local government started a program to stimulate the use of bicycles for leisure and sport activities, by implementing bike lanes only on the weekends and public holidays from 7am to 4pm (“*Ciclofaixas de Lazer*”). Though this could not be taken as a result of this initiative, the number of trips by bicycle on work days is remarkable (over 300,000), despite the fact that it represents only a small proportion of travel modes in São Paulo (0.8%). In that case, bikers who prefer/need to bicycle on a daily basis are provided with a few kilometers of bike lanes (ca. 63km), that are not connected each other.

1. Setting the stage: bicycle as means of transportation

Usually studies in favor of the use of bicycles – mainly as a means of transportation – highlight perspectives of good health and reduction of traffic problems, so that in general benefits have a positive balance compared with risks of accidents to which cyclists are exposed, much bigger than in the other means of transportation. In this context, countries that have better security conditions as well as the ingrained habit of pedaling, present broad infrastructure, along with policies and programs stimulating the use of the bicycle, whilst those countries with lower rates of bicycle usage and low levels of security have advanced much less on this issue (PUCHER et al, 2009, p. S107).

Pucher et al (2009) identified 139 studies on development of structures for bicycling, from which 14 have been deeply analyzed (Chart 1). Conclusions, despite the lack of general standards for these initiatives, “show that almost all cities adopting comprehensive packages of intervention, [both of infra-structure, and incentive campaigns and partnerships] experienced large increases in the number of bicycle trips and share of people bicycling” (p. S106).



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Chart. 1 – Outcomes after cycling policies in selected cities

City (population)	Outcomes
London (7,6 million)	Doubling in total number of bicycle trips from 2000 to 2008 (+99%) and 12% reduction in serious bicyclist injuries over same period. After implementation of congestion charging in 2003, average annual growth of 17% in bicycle trips between 2003 and 2006, and increase in bicycle share of all trips (all trip purposes) from 1.2% to 1.6%.
Bogotá (7,9 million)	Increase in bicycling share of trips from 0.8% in 1995 to 3.2% in 2003; participation in <i>ciclovia</i> grew from 5,000 in 1974 to over 400,000 in 2005.
Berlin (3,4 million)	Total number of bicycle trips almost quadrupled from 1975–2001 (275% increase); bicycle share increased from 5% of trips in 1990 to 10% in 2007; 38% decline in serious injuries 1992–2006.
Paris (2,2 million)	Increase in bicycle share of trips within City of Paris from 1% in 2001 to 2.5% in 2007; 46% increase in bicycle trips from June to October 2007 after introduction of Velib' bicycle sharing program.
Barcelona (1,6 million)	Bicycle share more than doubled in only two years: 0.75% of trips in 2005 to 1.76% in 2007.
Amsterdam (735.000)	Bicycle share increased from 25% of trips in 1970 to 37% in 2005; 40% decline in serious injuries, 1985–2005.
Portland (576.000)	Share of workers commuting by bicycle rose from 1.1% in 1990 to 1.8% in 2000 and 6.0% in 2008. Number of workers commuting by bicycle increased 608% from 1990 to 2008, while the number of workers increased only 36%. The number of bicycles crossing four bridges into downtown increased 369% from 1992 to 2008. Number of reported crashes increased only 14% over same period.
Copenhagen (500.000)	Bicycle share increased from 25% of trips in 1998 to 38% in 2005 for 40+ age group; 70% increase in total bicycle trips 1970–2006 (36% of work trips in 2006); 60% decline in serious injuries 1995–2006.
Muenster (278.000)	Bicycle share of trips increased from 29% in 1982 to 35% in 2001; one serious injury per 1.03 million bicycle trips in 2001.
Freiburg (200.000)	Bicycle share increased from 15% of trips in 1982 to 27% in 2007; 204% growth in bicycle trips 1976–2007; one serious injury per 896,000 bicycle trips in 2006.
Odense (185.000)	Bicycle share of trips increased from 23% in 1994 to 25% in 2002; 80% increase in bicycle trips 1984–2002; 29% decline in injuries 1999–2004.
Groeningen (181.000)	Stable 40% bicycle share of trips since 1990; 50% decline in serious injuries 1997–2005.
Boulder (CO) (92.000)	Share of workers commuting by bicycle more than doubled, from 3.8% in 1980 to 8.8% in 2006; bicycle share of all trips (all purposes) rose from 8% in 1990 to 14% in 2006.
Davis (CA) (63.000)	Drop in share of workers commuting by bicycle from 28% in 1980 to 14% in 2000; bicycle share of trips to campus by university students fell from 75% in 1970s to less than 50% in 2006.

Source: Adapted from Pucher et al (2009)

Among these cities, only five have a population larger than 1 million, and only one is in Latin America. This suggests limitations on the impact of pro-cycling policies in the contexts of developing countries, where the urbanization process has significant nuances and complicating factors with respect to urban mobility. Furthermore, from a superficial reading, one observes that these cities have well-developed public



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transportation systems, including facilities for cyclists, which to some extent may positively interfere on the successes observed. Even the case of Bogotá suggests that generally improvements in conditions of urban mobility, once this city has become a reference to developing countries in this subject, allow better results in the use of the bicycle.

In 2005, 10 countries had bicycle-rental system; in 2013, they were 52, totalizing 635 systems with nearly 630 thousand bicycles available. Latin America currently has five countries with the system, and the number of bicycles has jumped from 490 in 2010 to 9,034 in 2013 in these systems (Midgley 2011)

In a recent and unprecedented study, IADB has identified a set of information about bicycle policies in Latin American cities. Generally speaking, the study has concluded that, if on one side these cities have institutional, technical and financial difficulties to further stimulate the use of the bicycle, on the other hand many other initiatives have been observed through all regions.

Tab. 1 – Cycling infrastructure in large Latin American cities

City	Cycling path lane (km)	Leisure Cycle Path (km)
Buenos Aires	100	0
Santiago	192	26,8
Bogotá	376	120
Lima	120	6
Mexico City	96,6	24
São Paulo	68,3	119,7

Source: IADB, 2013

Two of these examples are a) the leisure of cycle lanes that if do not offer permanent room for daily commuting in bicycles may serve as incentive both to new cyclists and the experience of coexistence among cyclists, pedestrians and drivers and b) shared bicycle-rental systems, that has already existed since the 60's but only over the last years has started to emerge in Latin America – particularly in large cities' capitals (Table 2)



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Tab. 2 – Shared bike systems in large Latin American cities

City	System name	Number of Stations
Buenos Aires (Argentina)	EcoBici	32
Viña del Mar (Chile)	Movici	n/a
Quito (Ecuador)	BiciQ	25
Bogotá (Colombia)	Mejorenbici	n/a
Mexico City (Mexico)	EcoBici	275
São Paulo (Brazil)	BikeSampa CicloSampa	180

Source: systems websites

São Paulo is the only case in which temporary leisure cycle lanes are more extensive than permanent cycle tracks, a scenario that currently has started to be transformed through a plan of implementation of bicycle tracks. In fact, “not only explicitly pro-bicycle policies but also transportation policies in general, housing and land use policies and car pricing and restraint policies”, forming an “integrated package of many different, complementary interventions”, contribute to the increase of bicycle use in a city’s daily life (Pucher et al, 2009, S122).

Not always – as it often occurs in situations where there is resistance to bicycles – climatic extremes hinder the habit of pedaling, even for commuting. Amiri et al (2013, in press), according to study in the city of Calgary (Canada), have found out that 93% of cyclists who pedal at least 10 times a week during winter do not mind pedaling under temperatures below -10°C .

Gatersleben and Haddad (2010), according to a study in England, argue that stereotypes related to types of cyclists influence the actions in favor of bicycle diffusion, as much as cyclists identify themselves (or not) with associated profiles. Therefore, this shows how subtle factors (and not only objective ones – like weather or infrastructure availability) have their weight.

From this selection of 51 attributes, four categories have been considered in order to compound these stereotypes: a) “responsible” cyclists, who tend to be more gentle with other track users, submit to traffic rules, stop at the traffic light are more prone to ride a bike because they do not have a car; b) cyclists for “lifestyle”, someone who is willing to spend most of his time and money on bicycle, likes pedaling for health, for social causes or environmental reasons, enjoys many aspects of the act of pedaling (landscape,



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adrenaline, emotion) and is more prone to take part in a cyclists club; c) cyclists who use the bicycle for commuting (*commuter*), is typically a young professional (usually male), tends to be more assertive, good looking and goes to work by bike, despite of weather conditions; and d) cyclist “hippy-go lucky”, someone who uses the bicycle for daily activities (shopping, for instance), has no special equipment (wears usual clothes), is friendly and usually is a female. In the study, one observed greater empathy of the interviewed ones for the last two profiles, despite their previous behavior as far as the use of bicycles is concerned.

Therefore, as conclusion, the authors argue, “if bicycling is perceived as an activity exclusive to a few keen people, and not as something that can be incorporated into daily life, this can be a major barrier to the increase of numbers of bicyclists and bicycle trips”. On the other hand, “[t]he more people perceived the typical bicyclist as someone who uses their bicycle for normal day-to-day activities, the more likely they were to indicate they would take up bicycling in the future (independent of whether they used a bicycle at present)” (p. 47)

Even though in the arguments in favor of sustainability the bicycle is enthusiastically appointed as an important means of urban transportation, when it comes to discussions by the perspective of the “social-technical system” (VREUGDENHIL, WILLIAMS, 2013), one observes that there are dissonances and even opposition to cycle track policies. Vreugdenhil and Williams (2013) report controversies surrounding project of installation of a cycle track network in Tasmania, which has been called “white line fever” in reference to markings of segregated cycle tracks in the road system itself of the city of Launceston.

Many studies on cycle tracks or the use of bicycle are related to environmental, health, infrastructure aspects or public management challenges, but little attention is given to experiences and relationships on individual level. This implies in considering subtle factors in the success (or failure) of incentive policies to bicycle, once, in the end, it is likely that people incorporate the act of riding a bike (for any reason) more for personal issues and very particular than for a more ethereal concern with sustainable transportation strategies.

One of the aspects that combine social-technical discussions relates to the contrast between simplicity of cycle tracks implementation (white lines and other mechanisms of traffic engineering) and the complexity associated with its use – particularly because, as they “change radically” the spaces where they have been



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installed (Normanstone Road), these cycle tracks require a new behavior of several users of public space (cyclists, pedestrians and drivers) (VREUGDENHIL, WILLIAMS, 2013, 287)

Another aspect that the Australian experience exposes – that, further on, will also be seen in the Brazilian case of Curitiba – is the unwillingness of citizens due to the fact they have not been involved in the implementation of the system. Thus, “from one day to another”, residents of Penquite Road saw the birth of a cycle track as a technical artifact in front of their houses and resented the local authorities didn’t consult them, raising fear and doubt on daily transformations. Therefore, “once the power given to the technique to define, control and solve a series of issues is overdone, the social role has been diminished” (VREUGDENHIL, WILLIAMS, 2013, 288). On the other hand, the mere existence of painted lanes – with or without cyclists using them - can be considered a constant alert to their possible presence.

In summary, citing Cupples and Ridley (2008, p. 289), Vreugdenhil and Williams (2013, p. 259) highlight that “the obsession with exclusive lanes for bicycles can be seen as a desire to produce a rational spatial order and ends up neglecting the affective and inherent dimensions to the act of pedaling”

In this sense, Dondi et al (2011) propose mechanisms based on Context Sensitive Design for the implementation of cycle tracks that, in a synthetic manner, can be understood as “a process of merging the function of a transportation project with its setting” (p. 898). In addition to technical aspects of mobility related to traffic engineering techniques, the CSD should take into consideration “purpose and transportation need environment; public participation; transportation design element and safety and mobility” (p. 899).

Tilahun et al (2007) conducted a study to identify the willingness and disposition of cyclists to increase their traveling time, for having as counterpart specific facilities and structures. Generally speaking, they found out that the need of cycle tracks is still very evident although it may imply in longer time of commuting by bicycle. Furthermore, from the sample studied, they noticed that both frequent cyclists and non-cyclists generated similar standards of response with respect to preferences, relativizing critiques on the so-called limitation of the collective benefit that cycle tracks and other facilities bring to society.



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Although recurrent in developed countries, non-motorized solutions to transportation issues in developing countries have yet to be examined. In Latin America, sustainable rates of economic growth and a continuous urbanization process generate changes of cultural and consumption standards, resulting in higher pressures on infrastructures and services in countries (mainly the most populated ones, such as Brazil, Mexico and Argentina). Therefore, in a recent past, “the countries and cities have not been able to keep up with the increased travel demand resulting from a larger and more affluent urban population”.

As a result and also as a cause associated to this, the increase of car possession in the region has been constant, so that in Brazil the rate reaches its maximum: 16.7%, between 2000 and 2010, a value explained by the strong increase in the number of motorcycles in the period (+38%) (HIDALGO, HUIZENGA, 2013).

Nonetheless, in Latin America, “while the length of metro and suburban rail systems has not grown substantially in the last decade, both BRT and bike lanes have grown explosively and there are signs that this growth will continue in the coming decade”, mainly from the expansion of pre-existing systems, in the prospect of an integration between modes of public transportation (HIDALGO, HUIZENGA, 2013, p. 69) – that, as it will be described below, is typically the case of São Paulo. There are 327 cities with cycle tracks implemented, of which 85% are in Brazil, causing the country (along with Chile) to have the best relation between kilometers of cycle tracks/million of inhabitants in the region (from 12 to 15 km/million inhabitants).

In this scenario, Hidalgo and Huizenga (2013) argue that, on average, the reality of Latin American cities may give rise to situations more directed to the European standard of mobility, such as intermediate levels of income with controlled motorization rate, although in case there are no pressing political decisions and involvement of communities, it may point to the North-American standard, with low efficiency, high individualization and detachment from the principles of sustainability in the urban scenario. Considering the approach “avoid-shift-improve”, registered in Declaration of Bogotá (2011)², the authors distribute the main countries in the region in three categories (Chart 2).

² This document has defined 23 objectives, distributed in four groups of strategies: “**Avoid** unnecessary motorized travel and reduce travel distances, **Shift** the trend of individual motorization to safer, efficient and environmentally-friendly modes, **Improve** technology and management of transport services and, finally, strategies cross-cutting, oriented to the Decade of Action for Road Safety.” (apud HIDALGO, HUIZENGA, 2013, p. 75).



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Chart. 2 – Cycling policies in selected Latin American cities by category

Category	Characteristics	Countries
Intermediate	Considerable progress in institutionalizing sustainable transport in policies and/or financing initiatives. Implementation of sustainable urban transport has gone well beyond the stage of pilot testing.	Brazil, Chile, Colombia and México
Initial	Some start has been made with the development of policies or action plans for activities under one or two components of Avoid-Shift-Improve approach. Implementation activities are less in number and often smaller in scale.	Argentina, Ecuador, Peru and Venezuela
Basic	The implementation of sustainable urban transport is still in its initial phase. Implementation activities are limited to specific areas and are often still only on pilot basis.	Bolivia, Paraguay and Uruguay

Source: Hidalgo and Huizenga (2013)

These subtleties associated with commuting by bike, in the Brazilian case, still appear in a wandering manner in concerns of public agents because in the current stage, one observes restriction to accumulated technical knowledge, unquestionable euphoria around the automobile and or even relatively disorganized demand on the part of users—in these cases, associated with overly particularized interests.

Yet, as will be discussed below, there will be spots of pressure and specific initiatives in favor of bicycle, including elements favorable to a bicycle path culture. However, this explicitly positive scenario contrasts with a model of mobility focused on the automobile and miserable structures of public transportation, heritages of urbanization processes quite intense and fast throughout the twentieth century.

2. Urban mobility in Brazil

2.1. From an automotive primacy to a new paradigm?

In Brazil, in the middle of the twentieth century, the government of Juscelino Kubistesck (1956-1960) was a landmark in the modernization of the country: besides an audacious project of building the new capital (Brasília, replacing Rio de Janeiro – and finished in 1960), his “Target Plan” aimed at accelerating the economic development of a country essentially rural and with huge social-economic discrepancies, which



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was established in the slogan “50 years in 5”. Thus, Brazil started a process of industrialization by replacing imports, having international capital as great financier: some US\$ 216.5 million from 1955 to 1963, with many tax and exchange benefits (CAPUTO, MELO, 2009, p. 523)

Indeed, large automotive conglomerates initiated (or strongly expanded) their businesses in the country during that period and São Paulo’s Metropolitan Region was the main destination of these plants: Ford Motors do Brasil S/A was the first automobile company to settle in Brazil (1919), on Ipiranga district, opened its second unit in 1953, and experienced a steady growth during the following years; General Motors installed its first plant in São Caetano do Sul in 1930, but the assembly of the first national truck occurred only in 1957 and the second industrial plant was inaugurated in 1959 in São José dos Campos (80km to the east of São Paulo); Volkswagen GMBH built its plant in 1953 on Ipiranga district (São Paulo) and, four years later expanded the production in a new unity in São Bernardo do Campo. In 1960, the installed production capacity nearly reached 200 thousand vehicles, surpassing in 17.2% the target established for the period 1956-1960 (CAPUTO, MELO, 2009, p. 529).

Since then, the industry and the automotive culture has gained much notoriety in Brazil, promoting, as a result, a fast growth in motorization rates, as well as the increase of urbanization rates, that nowadays are close to 85% –compared with approximately 36% in 1950 (IBGE, 2014). In 2012, the motorization rate in the 15 main metropolitan regions was of 338 vehicles/1000 inhabitants, much higher than the national average (259 vehicles/1000 inhabitants). These rates are distant from those of developed countries (USA and Europe), but show a growth trend, placing Brazil near some European countries and high above other developing countries (Tab. 2).

Tab. 3 – Motorization rates – selected countries and regions

COUNTRY NAME	2000	2008	2009	2010	2011	2011/2000
Brazil	166,12	196,00*	209,00*	230,00*	243,00*	46%
Russia	173,57	263,71	271,10	n/a	n/a	***
India	8,94	16,32	17,55	n/a	n/a	***
China	12,43	37,48	46,68	57,72	68,94	454%
South Africa	131,78	160,14	162,35	165,14	n/a	***
Mexico	153,24	254,98	265,03	268,75	278,35	82%
Indonesia	25,36	59,59	61,18	65,99	69,17	173%
Turkey	93,75	143,68	147,69	154,85	163,80	75%



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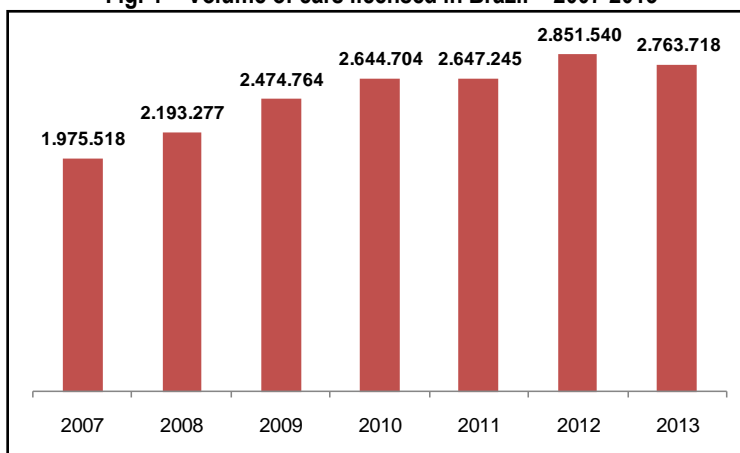
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Central Europe and the Baltics	278,17	406,00	414,51	423,67	438,68	58%
Europe & Central Asia (developing only)	131,41	180,81	189,59	196,68	207,38	58%
Europe & Central Asia (all income levels)	345,44	408,25	414,05	451,90	458,95	33%
High income	510,90	570,66	569,28	605,85	609,83	19%
Latin Am. & Caribbean (developing only)	132,93	174,27	n/a	n/a	n/a	***
Latin Am. & Caribbean (all income levels)	137,78	178,14	n/a	n/a	n/a	***
OECD members	508,48	562,00	560,46	557,88	562,26	11%

Source: World Bank, 2014; Observatório das Metr6poles, 2013(*)

Recently, justified by the need of facing the effects of 2008 global crisis, policies of tax reduction ended up stimulating even more the access to private vehicles: the Tax on Industrialized Products (IPI) was strongly reduced for certain types of new vehicles(Provisional Measure 451/2008 and, subsequently, Decree 6.809/09) – and to date they have not returned to previous levels, which, associated to a greater power of consumption of Brazilian families, have made the sales of motor vehicles increase sharply in Brazil. In 2012, 2.85 million of vehicles were licensed, against approximately 1.95 million in 2007 (before taxes reduction) (Fig. 1).

Fig. 1 – Volume of cars licensed in Brazil – 2007-2013



Source: ANFAVEA, 2014

In 2012, São Paulo Metropolitan Region³ registered 8.6 million vehicles, which corresponds to 17.3% of all national fleet. Between 2001 and 2012, there was an increase of 76% in the fleet (while

³São Paulo Metropolitan Region (RMSP) is a cluster of 39 cities that, in 2010, scored 19,683,975 inhabitants (with approximately 10 million in the city of São Paulo), encompassing 8,051 km². For details, access: www.sdmropolitano.sp.gov.br.



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population increased 0.96% between 2000 and 2010) that although lower than the national average growth (119%), represents a considerable leap for a city that has been facing congestion problems for some decades (OBSERVATÓRIO DAS METRÓPOLES, 2013). Furthermore, given the economic importance and the geographical location of Paulista Capital, as well as some features of São Paulo State road system, RMSP receives thousands of commuting vehicles from and to other regions daily, or people who work or study in the Capital.

While the euphoria of emergent social groups' consumption – enthusiastically framed within a Brazilian “new middle-class” – was taking more cars to the already congested Brazilian cities, in June 2013, the country watched to huge street demonstrations as one had not seen since the 90's. What has been called “June Movements” had its origin in the contestation against the raise in bus tickets, with some groups claiming the right to free tickets (“Movimento Passe Livre [Free Pass Movement]”).

Since then, the Federal Government, that has suffered declining popularity, has also considerably increased its focus on urban mobility, with respect to investments and loans to States and Cities. By the end of the same month, president Dilma Roussef summoned the 27 governors to a meeting and announced the “Pacto pela Mobilidade Urbana (Pact for Urban Mobility)”, mobilizing over R\$ 50 billion for “investments in urban mobility works” (reaching R\$ 143 billion in the total), which has been qualified as “a response to the wave of demonstrations that has swept the country over a week” (EBC, 2013).

In addition, improvements in services and infrastructure of public transportation have been observed in several capitals of the country, with the creation or expansion of subway and urban trains, light rail and BRT networks, partially financed by federal resources, because of preparations for the Soccer World Cup – which occurred in 12 Brazilian cities – and the Summer Olympic Games, to be held only in the city of Rio de Janeiro (2016). From the Matrix of Responsibilities established between the Federal Government and the host-cities of the Soccer World Cup, approximately 30% of the resources (R\$ 8 billion) have been directed to urban mobility works, from a total of nearly R\$ 25 billion (PORTAL DA COPA, 2014).

Within this context, as much as structural changes may take time, room for political discussion has increased, as well as higher pressure of organized civil society towards measures that aim at effective



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urban mobility improvements, particularly in large cities which, little by little makes room for users (current and potential) of non-motorized means of transportation such as the bicycle.

2.2. The use of bicycles in Brazil

In Brazil, the bicycle started to be used by the late twentieth century, with the arrival of European immigrants in the south of the country and during the following decades Caloi, founded by an Italian immigrant became a reference in production of bicycles. In general, throughout the twentieth century the use of the bicycle was focused on low-wage workers of urban zone, besides its function for leisure. Until the 80's, the industry had produced around two million bicycles per year; in 2012, it produced approximately four million (ABRACICLO, 2014). Nowadays, although the registration of bicycles is not mandatory, one estimates that there are over 80 million bicycles in Brazil, against approximately 47 million motorized vehicles (ABRADIBI, 2014; DENATRAN, 2014).

From the point of view of public policies, the former GEIPOT (Empresa Brasileira de Planejamento de Transportes) published in 1976 a set of suggestions and references to municipalities⁴, particularly because in this period the world was going through difficulties due to the increase of oil price and also beginning to have concerns about health. However, considering the strong expansion of automobile industry in the middle of the twentieth century, the bicycle lost space, both by the lack of security (in cities increasingly congested and polluted), and by the change of habits (increased private car use and other forms of public transportation, such as bus and subway) (BRASIL, 2001).

In 2001, a major study on the use of bicycle in Brazil, GEIPOT found out that, from 60 cities researched, the total network of cycle tracks was not more than 350 kilometers. Among these, seven cities had 30 km of implemented infrastructure exclusive to bicycles (cycle tracks, cycle lanes, special bridges, short-term parking lots, bicycle stands, etc.): Rio de Janeiro, São Paulo, Curitiba, Campo Bom, Governador Valadares, Ipatinga and Belém – especially the first one, that already had over 90 km of cycle tracks. On the other hand, over thirty cities already had some kind of initiative for cycle path planning (existing or in

⁴“Planejamento Cicloviário: Uma Política para as Bicicletas”, Brasília: GEIPOT, 1976.



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progress), most of them throughout the decade of 1990, which somehow pointed to trends of what was going to be observed in more recent decades.

With the creation of Ministério das Cidades (Ministry of Cities), in 2003, a set of specific measures is taken with respect to urban mobility. After the 1ª Conferência das Cidades (1st Conference of Cities) and the creation of Conselho das Cidades (ConCidades) [Council of Cities], the Ministry published “Programa Nacional de Mobilidade por Bicicleta (National Program of Mobility by Bicycle) – Bicicleta Brasil”, in 2004. In line with the principle of incentive to non-motorized mobility, the Program has as objectives:

- To insert and expand transportation by bicycle in the matrix of urban commuting;
- To promote its integration to mass transportation systems, aiming at reducing the cost of commuting, mainly of lesser income population;
- To stimulate municipal governments to implement cycle path systems and a set of actions that guarantee cyclists security in urban commuting;
- To disseminate the concept of sustainable urban mobility, stimulating non-motorized means of transportation, inserting them into urban design (BRASIL, 2007, 19)

Since then, one observes a slight tendency to the increase of bicycle use – from 3% to 3,4% in 2011, besides a small decrease in the use of automobile – from 28% to 27,4%. In this scenario, the challenge still is to increase the use of bicycle in large cities: in cities with population between 60 and 100 thousand inhabitants, bicycles represent 6% of total of journeys, while in cities with over one million inhabitants, only 1% - being that São Paulo, is of only 0.6% (MCidades, 2007, p. 26; ANTP, 2014).

It is understood that the increase of exclusive infrastructures may serve as stimulus to the expansion of bicycle in urban transportation modal division. However, as new initiatives come out, some “sociotechnical controversies” are exposed (DUARTE et al, 2014).

Even in Curitiba, a city that historically accumulates important experiences of urban mobility solutions, internationally known for its urban mobility solutions – measures related to bicycle as means of transportation have been in focus of discussion and critique. Only two out of the 22 bus terminals have



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bicycle tracks, and the bicycle network reaches only six terminals, showing like a city, famous as “benchmark in sustainable urban mobility”, gives little attention to non-motorized transportation.

In 2011, a “bicicletada” (“*big bicycle ride*”) including approximately 300 activists took place on the inauguration day of a 4 km leisure bicycle track, exposing this intervention as a “sociotechnical controversy”, once it would have been presented as a “neutral technical solution” (DUARTE et al, 2014). The critique, in this case, refers to a desperate response of the municipality (whose mayor would run for reelection), attempting to meet bicycle-activists’ demands for more policies in favor of the bicycle as a means of transportation. Furthermore, the number of users (that reached 3 thousand on the inauguration day) has dropped gradually, indicating restricted approval to the project by the citizens. In 2013, this same project – proposing temporary interventions only on weekends –was abandoned. Differently, in São Paulo, the movement seems to follow another direction, with constant expansion of leisure cycle lanes and number of users.

3. São Paulo in focus: an emerging cycling culture?

The average time of commuting per person per day in São Paulo presents intermediate values: 55 minutes, against around 87 minutes in Mexico City and 40 minutes in Curitiba and Porto Alegre. However, in the city, the number of deaths in the traffic is very high: over 14 deaths per 100,000 inhabitants per year, in comparison with approximately 5 in Santiago and 7 in Bogotá (HIDALGO, HUIZENGA, 2013, p. 71).

In this context, however many initiatives in favor of bicycle have been taken form over the last years, it is important to notice a very aggressive traffic, tending to be more and more motorized, mainly as a result of tax incentives to the automotive industry in the last ten years and the country’s economic stability, with very low unemployment rates and greater access to credit.

Moreover, unlike the European countries, the act of pedaling finds cultural resistance in Brazilian reality, usually associated with unfavorable social-economic conditions and, therefore, significant poverty. In a society with one of the highest rates of social gap (Gini=0.52, in 2012 basis), one observes attempts of



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differentiation among the poorest populations. More recently, this happens due to the euphoric emergency for consumption, in the perspective of approaching to richer classes' habits – that is, from the urban mobility point of view, it means more cars and less public transportation; the bicycle, when it is present, is kept for leisure activities on weekends.

More organized initiatives in favor of the bicycle in São Paulo appeared in the late 80's, as result of federal sphere orientations from GEIPOT, with some manuals giving guidelines for implementation of cycle track structures. The objective of these measures would be “stimulating a low cost and easy maintenance means of transportation [...], once in several Brazilian cities deterioration of public transportation had been registered, along with traffic congestion increase”. Furthermore, as the world faced the effects of oil crisis in the 70's, one glimpsed an economic alternative and, on that moment, still less important as far as the environmental plan was concerned (MALATESTA, 2012, p. 14).

Concretely, CET conceived a project of cycle track connection of 7.7 km between Ibirapuera Park and Cidade Universitária, aiming at attending to essentially leisure uses. However, the project has not been implemented. Besides this proposal, in 1981, the city was divided in 14 cycle track sectors, as a way of projecting a cycle track system focused on daily transportation, anticipating commuting of up to 8 km. With over 200 km of cycle tracks, the project has not got under way either, although in the following decade part of the proposals ended up taking place, with the advent of a new legislation.

With little practical expression, between 1992 and 1994, two projects were born: “Projeto Ciclista” (“*Cyclist Project*”) – aiming at stimulating and expanding the use of bicycle from leisure activities – and “Plano Cicloviás” (“*Cycle Tracks Plan*”), responsible for suggesting over 100 km of cycle tracks and cycle lanes in several regions of the city. In 1995, Decree 34.854, established that new projects of avenues including the building of bridges, viaducts and tunnels should be preceded by physical and social-economical feasibility studies for implementation of cycle tracks “in the form of exclusive lane, confined to the carriageway” (Art.1º, § single). Under this regulation, a cycle track was implemented in the axis of new Avenida Faria Lima, with 1.3km, although a network had not been completed during that period (RIBEIRO, 2010; MALATESTA, 2013).



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Over these two decades, despite the mobilization of some sectors from local public authorities (mainly transports and environment), the use of the bicycle has not been invigorated, nor has the bicycle become a significant means of transportation in the city of São Paulo. In research of 1996, CET verified that 0.2% of vehicles circulating in the morning rush hour corresponded to bicycles and that, from public transport users, approximately 40% informed they made use of the bicycle – 40% of them for leisure activities (MALATESTA, 2013, p. 37).

The advent of Plano Diretor Estratégico (Strategic Master Plan), of 2002, did not make advancements in cycle path policy, restricting itself to very superficial mentions to transportation by bike, namely:

- To confer to public authorities the responsibility of stimulating the creation of “parking lots of vehicles and bikes, in a radius up to 100 (one-hundred) meters from all subway and urban train stations, giving priority to those located at crossings with structural ways” (Art. 122, inc. II, § single).
- To provide the construction, “along linear parks, of transit routes for pedestrians and cycle tracks” (Art. 107, inc. IX), by promoting the actions included in Programa de Recuperação Ambiental de Cursos D’Água e Fundos de Vale (Program of Water Course and Valley Bottom Environmental Recovery)
- To qualify cycle tracks as non-structural routes, “those that collect and distribute the traffic internally in the districts” (Art. 110, § 2º).

In this sense, only in 2007 there will be a significant advancement from the point of view of a specific policy, with Law, that establishes a cycle path system in the city of São Paulo, to be formed by a network of cycle tracks, cycle lanes, shared lanes, operational routes (or cycle routes) and parking lots, besides prediction of integration with mass transportation. In 2009, the city had approximately 10 km of cycle tracks and other 20 km in progress, focusing areas with demand for bicycle use as means of transportation in suburbs – unlike the few kilometers implemented in the 90’s (Faria Lima and Sumaré Avenues, high net worth areas and near downtown) (RIBEIRO, 2010).

In the same year, an initial segment of Leisure Cycle Path started to operate, connecting two parks of city’s south zone, an initiative that would be implemented in 2012 with new routes, in a total of 120 km – operating on Sundays and Holydays, from 7 a.m. to 4 p.m. With this policy, since then there has been an increase in the habit of pedaling in the city, although it is centered on weekends, including 100 thousand



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cyclists per day (CICLOFAIXA, 2014). Most users (70%) use cycle lanes once a week, suggesting that, although it mainly serves leisure traffic on weekends, this initiative indicates an approximation of the citizen with the bicycle, which may contribute to a new cycle path culture in São Paulo (SPTURIS, 2012).

This project is a partnership of São Paulo Municipality with Banco Bradesco – called “Movimento Conviva” (“Coexist Movement”). Thus, CET is responsible for the organization and demarcation of routes, while the company offers support signaling at intersections, receiving as counterpart authorization for advertising in certain spaces.

Fig. 2 – “Ciclofaixa de Lazer” (Leisure Cycle Lane) on Sundays and Holidays



Source: www.ciclofaixa.com.br

Also in 2009, it was created within the frame of CET (Companhia de Engenharia de Tráfego [Company of Traffic Engineering]), linked to Secretaria Municipal de Transportes (Municipal Secretariat of Transportation), the Departamento de Planejamento Ciclovitário (DCL) [Department of Cycle Path Planning], indicating the subject gained relevance in São Paulo’s administrative planning – initially associated to Secretaria de Verde e Meio Ambiente (Secretariat of Green and Environment).

Recently, the city has been able to count two bicycle-rental systems supported by private companies: “Bike Sampa” (Itaú) and “CicloSampa” (Bradesco). In total, there are around 1,700 bicycles distributed across 180 stations – and some of them offer the possibility of the bicycle’s withdrawal with “Bilhete Único”



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(“Multiple Journeys Tickets”, valid for all transportation modes within RMSP), allowing a way of integration with the city’s mobility system. Because it is a new system, many situations are still under process of consolidation, so it has not been possible to evaluate its impacts.

In 2014, Law nº 16.050 was promulgated, approving “Política de Desenvolvimento Urbano” (“*Urban Development Policy*”) and the reviewed version of São Paulo’s Strategic Master Plan, in which, aligned with the present mayor’s plan of government, the bicycle has gained much more space. Besides some mentions to bicycle as a means of transportation to be encouraged, in the Plan there is the recognition of a “cycle path system” as part of the “Mobility System” (Art. 226). In a specific section, this cycle path system has been defined and characterized in order to establish parameters for its planning and management.

One of the strategic actions of the Road System, established by Article 241, is the “reduction of parking lot automobile spaces for implementation of cycle path structure and pavements expansion”. In its Article 253, the plan proposes “a priority action will implement the cycle path network integrated with Plano Municipal de Mobilidade Urbana (Municipal Plan of Urban Mobility)”. Indeed, in 2014, a plan for expansion of São Paulo’s cycle tracks was initiated, aiming at reaching 400 km until 2016 (starting from the current 63 km).

As for political aspects of this Law, according to notes of a cycle-activists organization, “the Legislative Power held public hearings, thematic meetings, received several documents and promoted a broad dialogue with society”, in which “cyclists were heard, contemplated and, more than that, were able to conduct the debate to a new urban regulatory framework of the city” (CICLOCIDADE, 2014). From this, it is supposed that, at least in part, actions prompted – for instance, in the constitution of the Cycle Path Planning – will be aligned with a group directly impacted (the cyclists).

More recent measures in favor of the bicycle in São Paulo relate to the expansion of cycle tracks systems - called “SP400km”. These actions are not yet of a complete cycle path plan, but have as objective “constitute the priority treatment for bicycles in 400 km of municipal routes, searching to accomplish the interventions with low cost, aiming at reducing of accidents in transit routes of bicycles in the City” (CETSP, 2014).

Since June 2014, portions of cycle tracks have been inaugurated weekly in several regions of the city, from a first pilot project in Central region. According to official data, currently, the city has approximately 92



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kilometers of cycle tracks – plus 67,5 km cycle routes (signaling support in alternative routes for the use of bicycle, inside the districts) (CETSP, 2014).

Fig. 3 – The mayor of São Paulo cycling during inauguration of a track of cycle lane path



Source: www.estado.com.br

These initiatives have generated important criticisms from several social sectors mainly car users who complain about the loss of parking lots in the street, with criticisms that some suppose “are creating a demand [for bicycle] that does not exist” (O ESTADO DE SÃO PAULO, 18 JUL 2014). A group of residents in the district of Santa Cecília, central area, filed a police report, claiming that the local authorities implemented a portion of cycle track without hearing them, limiting parking and disturbing commerce (DIÁRIO DE SÃO PAULO, 11 AUG 2014)

The city, that already has some initiatives in favor of the bicycle for some decades, besides resistances that emerge from a “low cycling context” (ESCR, 2012), also faces challenges corresponding to the greatness of its urban issues – such as the high rate of motorization and a violent traffic. In the words of the city mayor, “it is a culture that needs to change. And it takes time” (O ESTADO DE SÃO PAULO, 13 AUG 2014).



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Discussions and final considerations

The city of São Paulo, one of the largest urban agglomerations in the world, grew rapidly and intensely during the twentieth century, assimilating a road culture in a very explicit manner. Hence, little by little, urban spaces have been occupied by road structures for motorized transportation, mainly individual vehicles that represent today, approximately 27% of journeys.

In this context, the use of the bicycle – that had major importance in Brazil until the 70's – is affected by security and comfort issues, and mainly by cultural changes (that have associated, through the years, the possession of the car to social status). Even so, as one has already seen, there have been initiatives – some fragmented, others more structured – in favor of the bicycle in São Paulo, so that, currently, important measures have been taken in the field of infrastructure.

Leisure cycle lanes, initiated in 2009 and intensified in 2012, represent a transformation in the leisure habits of São Paulo's inhabitants, approximating the citizen – including drivers and non-cyclists – of structures and practices related to bicycle.

While acknowledging that cycle tracks do not represent the whole effort of incentive to bicycle in São Paulo, the expansion of cycle path network, in course, represents a reversion of trends, also in symbolically speaking and of historical emphasis of public management, in favor of non-motorized transportation. With support of the Strategic Master Plan, approved in 2014, the building of a Bicycle Path System – a process initiated in 2010, from specific works done by the newly created CETSP Department of Bicycle Path Planning – should consolidate the diversity of the Urban Mobility System, conferring more space to several forms of transportation, in line with urban mobility policies prescribed by the Ministry of Cities.

The forecast is that, until the end of 2014, the city has a network of 200 km of cycle tracks – a significant advancement from the infrastructural point of view, but also an impulse for political discussions, once now, citizens (mainly drivers or involved by a driving culture) need to coexist with new structures, recognizing and fulfilling additional traffic rules.



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According to the Australian case (Vreugdenhil and Willians, 2013) and Curitiba (Duarte et al, 2014), social sectors of the city (small sized, for Brazilian patterns) have opposed to the implementation of a cycle tracks system, because the lanes have been implemented in a very simplistic way using spaces of pre-existing routes. Thus, despite of the apparent visual simplicity, the cycle tracks impose an operational complexity on the road system, particularly with respect to cyclists and also pedestrians security – once, which is not rare, pedestrians do not recognize the exclusive meaning of these routes, and use them as an extension of the pavements (for walks and rides, for commuting or even to expect the moment to cross the streets).

The cycling system in São Paulo already shows concerns, namely:

- Difficulty of embarking and disembarking of elderly or people with locomotion restrictions (on taxis, for example), a situation that is made worse by the fact that cycle tracks are implemented in high-density residential (with multi-family buildings) areas. This aspect contributes to the generation of discomfort with certain groups, who tend to oppose to such structures as they see spaces they are familiar with now shared with cyclists;
- Disregard to physical-material context of streets in which cycle tracks have been implemented (once they are just painted on the original route, cycle tracks end up generating risks and discomfort to cyclists, with imperfections in the ground and even holes). Thus, the argument that cycle tracks guarantee more security is questioned, once, from a technical point of view, there seem to have issues to be solved;
- Opposition in an environment extremely dependent upon the automobile, so that the citizens – with access more and more facilitated to a private vehicle – get annoyed with the exclusivity of space guaranteed by the cycle track to cyclists. Thus, as the road system historically has been hostile to the cyclist (and even to pedestrians), currently, the volume of cycle track users is still low (particularly considering that new cycle tracks are still under a process of implementation).

Animosities and differences of certain urban sectors – namely those more dependent on automotive vehicle – are also important to refine the cycle path policy in São Paulo, particularly because it is a “sociotechnical” discussion – and not only technical! By way of conclusion, what really matters is that, from an environment of “low cycling culture”, it is possible to have a glimpse that São Paulo – despite its complexities and



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difficulties in planning, management and urban experiences – will gradually assimilate the bicycle and other non-motorized means of transportation, with possibilities to revert trends of excessive motorization, which have been emerging over the last decades.



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