MEGA-EVENTS IN RIO DE JANEIRO… AND THE WINNERS ARE?

PERCEPTIONS OF THE IMPACTS OF TRANSPORT POLICIES ON SOCIO-SPATIAL JUSTICE TO REVEAL MEGA-EVENTS CONTRADICTIONS

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ABSTRACT

To become the host of the 2014 World cup and the 2016 Olympic Games, Rio's local authorities promised a huge renovation of the city's public transport system and infrastructures which had become less and less able to respond to the demand of mobility within a city of 12 millions inhabitants in the metropolitan region. This events represents an opportunity to accelerate the transport planning process and to improve mobility for Rio's inhabitants. In order to host these mega-events, Rio's local authorities have been developing an urban marketing strategy to justify urban changes. This strategy, addressed both to city's inhabitants and international actors, emphasises economical, urban and environmental benefits. In fact, Rio's urban marketing aims to solve, at least in discourses, contradictions between short-term urban policies investments for the events needs and long term Rio's urban planning and metropolization challenges. This article attempts to evaluate the impacts of Rio's main transportation projects, by analyzing and comparing discourses and opinions collected through interviews and by field researches. Reality reveals contradictions between Rio's urban marketing short terms investments for the events' needs and long term Rio's urban planning challenges. Based on socio-spatial justice theories and a multi-scale approach, this research conclusion shows unequal social and territorial distribution of the "transportation revolution" benefits. In terms of mobility and housing, negative effects are perceived for several vulnerable populations investigated. The analysis of transport projects investments reinforces segregation aspects: on one side, investments are prioritized on the "natural centralities"; apart from that, the road model persists, even if the collective transportation system conception.

Keywords: Transportation projects, Mega-events, Urban marketing, Socio-spatial justice, Rio de Janeiro, 2014 World cup, 2016 Olympic Games.

INTRODUCTION

The 2014 World Cup and the 2016 Olympic Games represent the very top outcome of a Rio de Janeiro's urban strategy based on mega-event hosting. The period preceding the hosting of the two biggest mega-event of the world creates a positive context for Rio de Janeiro's city, regarding investments in transportation facilities, and an opportunity to accelerate transport planning policies. In a context in which the city is receiving the best transportation investments ever, the urban marketing strategy adopted by local authorities spread a discourse which emphasizes the advantageous impacts of what they have named "*transportation revolution*". The so called revolution is described, officially, as a collective, integrated and efficient transport network, able to solve carioca's mobility crisis by connecting four "*natural urban centralities*", for Rio de Janeiro's future.

If current transportation projects in Rio de Janeiro should be, in some way, interpreted as a "*revolution*", this one is also a discursive argument of the global urban marketing strategy adopted by local power. Thereby, to legitimate the restructuring of urban landscape and facility choices, the official discourse tends to minimize the major traffic problem of the last decades- increasing number of cars and motorcycles – and to overestimate social and equity positive impacts of mobility projects. As a matter of fact, there exist a contradiction between Rio's urban marketing short terms investments for the events' needs and long term Rio's urban planning challenges.

By analyzing and comparing discourses and opinions collected through interviews and field research, this article attempts at evaluating the impacts of Rio's main transportation projects. Then, this paper doesn't aim to determine if this "*transportation revolution*" is a reality or a discourse, rather it aims at showing several (sometimes contradictory) realities behind discourses. In fact, conclusions depend on the geographical scale of analysis and of the different projects, but it also depends on the point of view or discourses adopted by people and institutions according to their position within the transformation of the carioca mobility system. Based on socio-spatial justice theories and a multi-scale approach, this research conclusion shows unequal social and territorial distribution of the *« transport revolution »* benefits. In terms of mobility and housing, negative effects are perceived concerning several vulnerable populations investigated. The analysis of transport projects investments reinforces segregation aspects: on the one hand, investments are prioritized on the "*natural centralities*"; apart from that, the road model persists, even in the collective system conception.

1) THE "TRANSPORTATION REVOLUTION" CHALLENGES AND CONTRADICTIONS IN THE CONTEXT OF MEGA-EVENNTS PREPARATION

1.1) The transportation projects aim to guarantee both event's logistics needs and to solve carioca's mobility crises

Through the last decade, mega-events' literature confirmed that countries and cities have accepted mega-events strategy as a way to reinforce the economic growth, to broadcast a favorable image abroad and to transform urban space (Andranovich G, Burbank M, 2001 ; Horne J, Manzenreiter W, 2006 ; Eisinger P, 2000 ; Antier G, 2005 ; Shoval N, 2002 ; Gotham K.-F, 2010 ; Broudehoux, A.-M, 2007 ; Short J.-R, 2008 ; Hall C.M, 2006). In this way, 2014 world Cup and 2016 Olympic Games represent the very top outcome of Rio de Janeiro's "*city-image making*" and "*city boosterism*" strategy (Short J.-R, 2008, p.328) based on mega-event hosting. This is why Rio de Janeiro was candidate for the 2004 Olympic Games bid in 1996, hosted the Pan-american Games in 2007 and the military Games in 2011. According to the International Congress and Convention Association (ICCA), Rio featured at the 26th position in the 2009 ranking of cities which hosted most mega-events (Borius O, 2010). With the 2014 World Cup and 2016 Olympic Games and other events such as the RIO+20 conference or the 2013 JMJ, we can reasonably think that Rio de Janeiro will get a better ranking. In this context, Rio de Janeiro transportation has to be deeply reformed to respond to both events' specific demands and to resolve the structural problem of collective transport called the "*carioca mobility crisis*".

The importance of transportation in both 2014 World cup and 2016 Olympic Games preparation

Rio's strategy of hosting mega-events for urban changes implies new and/or reformed transportation facilities which must connect the main events places and touristic clusters to guarantee a great mobility and logistic during the event and to give a positive image of the city abroad. Furthermore, the city had to promise a huge restructuration of its transportation supply to the International Olympic Committee (IOC) in order to win the right to host the Games (Beyer A, 2011). The proposal made by the municipal government to IOC includes renovation of railway systems but, in FETRANSPOR (Federação das Empresas de Transportes de Passageiros do Estado do Rio de Janeiro) director words, the BRT system is a structuring network able to transform the mobility of the city: "*The (municipal) government made a proposal to the IOC with metro expansion and renovation of trains, but a new fact is the existence of an integrated BRT network with 160 kilometers of lines. And where these 160 km would be transversal and radials, and most importantly, they will transport 2 million inhabitants, who are going to switch from an old bus transportation system with independent lines, to an integrated system*[1]" (Interview Lelis Teixeira, director of FETRANPOR & Rio ônibus, 2012).
In any case, we can notice a kind of standardization and propagation of "best practices" in Olympic Games transportation policy, since IOC began to encourage legacy planning in 2001 (Kassens-Noor, 2012). Even if recommendations should vary depending on cities, Kassens-Noor (2012) proposed six common characteristics (among five host cities between 1992 and 2012) from all are being implemented in Rio de Janeiro : "N*ew or improved airport*

[1] Traduced by the author. From now on, each interview quoted will be traduced by the author.

city center connection", "*airport improvement*", "*New and revitalized pa*rks", "*New-high Capacity Transport modes*", "*Additional Road Capacity*", "*advanced Intelligent Transport System*" (Kassens-Noor E, 2012, p.2). Concerning the "*New-high capacity Transport modes*" field, in the words of the FETRANSPOR director – even recognizing the great transformation of rail transportation systems - BRT systems is a mass transit system : "*Metro and train are receiving investments which will duplicate from 500 000 to 1 million or 1.1 million, approximately […] and our system is making BRTs for 2 million people, with a high quality model, and mainly by transforming our bus system into a high capacity transport system, a mass transit system*" (Interview of Lelis Teixeira, director of FETRANPOR & Rio ônibus, 2012). Before whether the 160 Km lines of the BRT network constitute a high capacity system which can enable to structure urban mobility once the events are over and taking into account mobility challenge with a metropolitan scope, we should describe the "*mobility crisis*" in Rio de Janeiro and its response named "*Transportation revolution*" by local authorities.

The priority of collective transportation to solve the carioca mobility crises

First of all, the carioca mobility crisis is mainly a crisis of collective modes which has a weak physical integration and unequal distribution in the city. As a matter of fact, the rate of collective transport use fell 29% from 1999 to 2005, while the metro and train only represent, respectively 1,78 % and 1,52 % of the daily travels in the RMRJ - metropolitan region of Rio de Janeiro (PDTU-RMRJ, 2003). The structural well-below capacity of railway systems triggers off a growing bus system (Beyer, 2011) intensifying a road-transportation model which has shown its limits. In addition, the car fleet growth, which switched from 1,6 to 2,5 million vehicles in-between 2000 and 2011, emphasizes traffic congestion, increases travels' average time, and declines transportation conditions.

If not all current transportation facilities depend officially on mega-event, it is important to bear in mind that the hosting preparation create a very favorable context to make investments that would not have been possible in a "normal" situation and to catch up for the lack of investments during the three last decades. In some way, the several frustrated attempts of the municipal political agenda to reform the public transport system during the three last decades[2] (Beyer, 2011) are now within reach. This window of opportunity is particularly efficient regarding the three governments' levels (Federal government, government of Rio's State and municipal government) alignment for financing transportation infrastructure. That is why transportation in Rio de Janeiro represents 51 %[3] of the total

[2] The author quoted several failed reform attempts of the transportation system: project of dedicated lanes in the beginning of 1970's, the revitalization plan of downtown in 1985, the "*Projeto Novo Rio Ano 2000*" in 1986, the project of reintroduction of modern tramway in the hyper-center in 1990, and the mass transportation plan in 1994 (Beyer, 2011, p.8).

[3] Mobility field represents R$ 2 155 700 000 out of a total of R$ 4185 318 205. If we add the airport investments, following Kassens-Noor (2012) typology of common transport legacies, and seaport investments, mobility then mobility represents R$ 3 282 970 000, i.e 78 % of total investments for world cup. Those calculations are based on official information available on: http://www.portaltransparência.gov.br/copa2014/cidades/home.seam?cidadeSede=10 (Accesed on 17/01/2013)

world cup investments and 57 %[4]of total investments for Olympic Games. Also, out of a total of R$ 29 billion for Brazilian World cup, Rio de Janeiro ranks as the 2nd city receiving investments with 14, 4 %, just behind São Paulo (22 %).

The main collective transport infrastructures are presented in the chart below (Figure 1). Concerning the railway systems, we assist to the modernization and extension of both trains and metro. On the one hand, the suburban train system, operated by SUPERVIA Company, hopes to transport 1 million passengers in 2016 against today's 460 000. On the other hand, apart from the modernization of the two existing lines (line 1 and line 2), the controversial line 4 which will connect the south area with the area of Barra da Tijuca will permit, in the words of the Casa Civil Secretary, to transport 300 000 passengers (p/day) and to take 2000 cars in rush-hour traffic[5].

Table 1 – Main collective Transportation current projects in Rio de Janeiro.

Main collective transportation current projects in Rio de Janeiro		
Projects	**Description**	**Costs (in R$ millions)**
Trains	Renovation of stations, signalization system of railway, extension of some lines, acquisition of new trains	2400
Metro	Modernization of Line 1	438
	Modernization of Line 2	384
	Line 4 construction (South area – Barra da Tijuca)	7000
BRT	Transbrasil	1130
	Transcarioca	1884,6
	Transoeste	900
	Transolímpica	2300
VLT	VLT (Veículo Leve sobre Trilhos)	1100
	TOTAL	**17536**

Sources: http://www.portaltransparencia.gov.br/rio2016 ; http://www.portaltransparencia.gov.br/copa2014/cidades/previsao.seam?empreedimento=204 (Consulted in February 2013)

The VLT is part of the seaport revitalization named "*Porto maravilha*" and it would play the same role of reducing car use by creating a smart area of integration with boat, trains, metro and BRT. Generally speaking, railways systems cannot be considered as able to solve both Olympic mobility and the long term mobility policy of Rio de Janeiro. In other words, even with great investments in train, metro and VLT, it wouldn't have been possible to guess such

[4] We chose not to include the airport investments because this cost already appears in World Cup investments. We based our calculations from official information available on: http://www.portaltransparencia.gov.br/rio2016/matriz/projetos-area.asp?descricaoArea=Transportes (Accessed on 17/01/2013).

[5] « *Linha 4 é fundamental. Ela vai transporter 300 mil passageiros/ dia e vai permitir a retirada de 2 mil veículos/hora durante os horários de pico do trânsito* », Secretary of the *Casa Civil*, Régis Fichtner quoted by Alba Valéria Mendonça in "*Obra da Linha 4 do metro tem 92 % de aprovação, diz governo do RJ*", G1.globo.com, 08/11/2012. Available on: http://g1.globo.com/rio-de-janeiro/noticia/2012/11/obra-da-linha-4-do-metro-tem-92-de-aprovacao-diz-governo-do-rj.html (Accesed on 15/03/2013)

investments supply the lake of investments in massive transport during the last decades. In fact, BRT systems "*emerged as the dominant solution for Rio de Janeiro to meet the transportation demands of the Olympic Games*" (Kassens-Noor A, Gaffney Ch, 2013), but BRTs represent also in discourses the great massive solution for carioca mobility, and the less expensive as FETRANSPOR director explains that with almost the same cost BRT system is going to transport ten times more passengers than the new line 4 of the metro: "*The investments for the metro to Barra (da Tijuca), is going to spend the same R$ 6 billion and will transport 200 000 (p/day) passengers to Barra*" (Interview of Lelis Teixeira, director of FETRANPOR & Rio ônibus, 2012).

Rio de Janeiro local authorities' discourses are proud to nearly have the most important BRT system of the world and will transport, according to official figures, about 900 000 passengers p/day with the *transbrasil* which will connect *Santos Dumond* Airport with *Deodoro* area. Then, the *transcarioca* connecting *Barra da Tijuca* to the international airport will have a capacity of 500 000 while 400 000 passengers are expected p/day in the *transolímpica* (Barra da Tijuca - Deodoro). Finally, the *transoeste*, inaugurated the 6th june of 2012[6], will transport 220 000 passengers p/day in its full capacity and connect Barra da Tijuca with two lower-income inhabitant areas named Santa Cruz and Campo Grande. Thus, such a prospect as transporting 2 million people with BRT system we understand better the FETRANSPOR director conclusions about mega-event legacy: "*If you ask me what is the principal legacy of World Cup and Olympic Games, - it is this BRT network, plus investments in metro with the Barra line and with the purchase of new trains and the modernization. The new system will go from 18% [of daily dislocations] to 64% by mass transit system. This is the big legacy that will remain*." (Interview Lelis Teixeira, director of FETRANPOR & Rio ônibus, 2012). Will the new mass transport system be able to solve carioca mobility crisis and will benefit all social groups of the city? Exploring mega-events contradictions, through transport analysis and with a justice theoretical mark, permits to identify differentiated impacts of transportation projects

1.2) Reveal mega-event contradictions through the analysis of transportation (perceptions') impacts: the geographical theories of justice applied to mega-event

Literature Review

Growing doubts about great economical and financial positive impacts: a way to focus on social impacts of mega-events

Always used as strong arguments to justify the organization of mega-events, economic and financial benefits are more and more contested by the literature (Horne J, Manzenreiter W, 2004, 2006; Humphreys B, Prokopowics S, 2007; Owen J, 2005; Lenskyj H.-J, 2000; Pillay U, Bass 0, 2008) opening a path to the analysis of social effects. After the financial disaster of the 1976 Olympic Games of Montréal, the number of biding cities to the event significantly

[6] Cirilo Junior, "*Com a presence de Lula, Rio inaugural 1° corridor de BRT*", June the 06th 2012. Available on: http://noticias.terra.com.br/brasil/cidades/com-a-presenca-de-lula-rio-inaugura-1-corredor-de-brt,074ae7948c1da310VgnCLD200000bbcceb0aRCRD.htm (Accesed on 10/02/2013)

decreased. A turning point happened with the Los Angeles 1984 Olympic Games which made a great ex-ante study of macro-economic impacts of the Games. From that time, ex-ante impacts' studies have become systematic and necessary to persuade populations about the positive impacts of mega-events. The urban marketing actors often need to display very optimistic figures and ex-ante previsions and showing the growth of principal economic indicators. Especially in the last decades, the growing skepticism toward significant economic impacts of mega-events have stemmed first from an exaggerated difference among impacts' studies. Consultancy studies used to foresee very high economic benefit while academic studies tended to adjust downwards such interpretations. Besides, in the scientific community, contrasted results are obtained because of different theoretical fundaments - Keynesian approach, and input-output model, for instance (Barget E, Gouguet J.-J, 2010a, p.381). Each economic model of calculation shows the same methodological failings: not to take into account the leaks of the economic cycles such as the leaks outside the territory and eviction effect (Barget E, Gouguet J.-J, 2010a). Likewise, there exist several difficulties in taking into account what Horne J and Manzenreiter (2006) called the "known unknowns" such as the calculation of the number of tourists and locals who are going to leave the city because of the event.

In addition to the serious errors of calculation responsible for rough conclusions of impact studies (Barget E, Gouguet, J.-J, 2010a, p.380) there exist a trend to under-evaluate investment costs and post-Games maintenance of infrastructures expenditure, not ever well taking into account, and, when they are, often inferior to the final costs (Zimbalist A, 2010; Horne J, Manzenreiter W, 2004: Short J.-R, 2008; Barget E, Gouguet J.-J, 2010a; PriceWaterHouseCoopers, 2004). Such as the following table shows (Figure 2) the three last Olympic Games (Athena in 2004, Beijing in 2008 and London 2012) have finally cost around 3 times more the initial previsions. The 2016 Olympic Games will cost US$ 15 billion according to official figures. If the city of Rio de Janeiro follows the same trend, they are likely to be the most expensive Olympic Games of history.

Table 2 – Comparison between initial estimations and actual expenditures of Olympic Games (1976-2012). Notes: n/a- not available.

Year	**City**	**Initial estimations (US$)**	**Actual expenditures (US$)**
1976	Montreal	$74 millions	$1,1 billion
1980	Moscou	n/a	$ 3 billions
1984	Los Angeles	$333 millions	$ 97 millions
1988	Séoul	$ 2,33 billions	$2,7 billions
1992	Barcelone	n/a	$2,1 billions
1996	Atlanta	$ 400 millions	$503 millions
2000	Sydney	$ 895 millions	$1,1 billion
2004	Athènes	$5,5 billions	$16 billions
2008	Pékin	$14,2 billions	$40 billions
2012	Londres	$5,3 billions	$14 billions
2016	Rio de Janeiro	$15 billions	**?**

Source: Bergen, 2007, in Short J.-R, 2008, p.335.

The deficit of ex-post event studies prevent from verifying the ex-ante previsions (PricewaterhouseCoopers, 2004, p.20) and the growing cost of hosting such an event triggers off a growing calling into question of economic significant benefits and impacts. In some way, ex-ante studies producers and local mega-event promoters formed a coalition of special interest groups (Barget E, Gouguet J.-J, 2010s) because local power need ex-ante studies that permit to justify politically the host of the event (Crompton J.-L, MacKay S.-L, 1994; Crompton, 2006; Gravari Barbas M, Jacquot S, 2007). At the same time, Gusmão de Oliveira (2012) shows that the existence of a specialized expertise opens a powerful possibility of capital movements with the creation of a new market into the mega-event field[7]. Indeed: "*The politicians seek from the scientific the reasons of their action, the scientists try to respond to the politicians' orders; roles strengthen one another by a reciprocal legitimation*[8]" (Offner J.-M, 1993, p.8).

The emergency situation and the need for flexibility before the event allow some coalitions of special interest groups to impose their project and their vision of the city (Borius O, 2010; Gusmão de Oliveira N, 2011, Gaffney Ch, 2010; Sanchez F, 2010; Grzybowski C, 2009; Broudehoux A.-M, 2007). For Gotham K.-F (2010), mega-events reveal stronger social inequalities and emphasize social tensions. In fact, we assist to increasing conflicts in Rio de Janeiro. In this way, urban marketing operations led by municipal government[9] are social and political apparatus of legitimation of the huge public investments (Vanneste D, 2007). According to Anne-Marie Broudehoux (2007), the Beijing games (2008) have encouraged the concentration of economic and political powers headed by a coalition of governmental leaders and private investors. But, this legitimation should also legitimize the exclusion of some social groups (Atkinson D, Laurier E, 1998) which introduce directly questions of redistribution and equity of mega-events impacts.

The relevance to approach socio-spatial justice of mega-event by the study of transportation

"*While many studies highlight the positive benefits of the Games (largely funded by organizations and groups seeking to justify the Games) fewer studies examine the costs of the Games and the redistributional consequences*." (Short J.R, 2008, p. 331). As explained above, transportation expenditures are the most important in both the 2014 world cup and the 2016 Olympic Games and both events are almost entirely financed by public funds[10]. It turns legitimate for civil society and populations to question how public funds and massive investments are distributed between different spatial areas and social groups. Recently, studies about 2008 Beijing Games (Broudehoux A.-M, 2007) and the 2010 world cup in South Africa (Pillay U, Bass O, 2008; Charles P, 2010) or about other events as the "Bristol's 1996 International festival of the Sea" (Atkinson D, Laurier E, 1998) reveal that mega-events

[7] Nelma Gusmão de Oliveria analyzes mega-events with the Bourdieu's field concept which is also a social space, a multidimensional space, constructed with principles of differentiation or of distribution.
[8] Traduced from French to English by the author.
[9] As we see before, there is a coalition between the three levels of government.
[10] After L.A Games, which received a great participation of private investments, the hosting cities didn't manage to get such private support, several billions dollars were spent by public funds in Seoul (1998), Barcelone (1992), Nagana (1998), Sydney (2000), Athena (2004) and Beijing (Zimbalist A, 2010, p.10).

don't let a pertinent legacy for the cities (under-utilization of sport facilities, public debt for several years) and are likely reinforce social inequities. Transport and mobility are directly connected to the question of social inequities. Some authors remind us that the literature had recognized the strong link and articulation of social mobility and physical displacements. In this way, the access to mobility is not well distributed between social groups and should trigger off exclusion (Flonneau M, Guigueno V, 2009, p.13). One consequence of the carioca "*mobility crisis*" described above is that: "*the public crisis transport leads to a growing physical fragmentation (by saturation) and social (by the unequal distribution of accessibility*" (Beyer A, 2011, p.8).

The notions of mega-events' "*social profitability*" (Barget E, Gouguet J.-J, 2010a) and "*social utility*" (Barget E, Gouguet J.-J, 2010b) incite to study mega-events impacts for local populations with a socio-spatial justice paradigm. The first hypothesis is that decisional processes are headed by local elites who impose their projects, in accordance with "*visitor class*" interests and often to the detriment of local low-income populations (Whitson D, Horne J, 2006). The second hypothesis is that transportation projects are non-neutral (Vasconcellos E.-A, 2001) and we have to question the equity in transport policies. Mobility is a fundamental variable of spatial justice and of the "right to the city" and transport is a key basic service and primordial instrument to fight against poverty and iniquities. Alexandre de Avila Gomide insists in the fact that, in Brazil, inequalities are not only of income and opportunities and that lower income inhabitants of Brazilian metropolis[11] are deprived of collective transport access that is an essential public service according to the 1988 federal constitution (Gomide Avila A, 2006, p. 242).

To what extent are socio-spatial justice theories relevant to study mega-event impacts, and even more transportation impacts? The expression "*socio-spatial*" refers to the coincidence between spatial differentiation and social inequalities (Leibler L, Musser A, 2010; Orfeuil, 2004; Flonneau M, Guigueno V, 2009). The equity (or justice) concept is often used in place of the equality one and vice versa. The basic idea of equity is that there should exist fair inequalities (that we don't remove) and unfair inequalities (that we must correct). Inequalities of mobility are not only measurable by the distance travelled or the income percentage of transport expenditure and must be placed in a larger analysis because: "*A low mobility should be as much the expression of a constrict way of life by low aptitudes of mobility, linked for example to the lack of financial means, as the expression of a non-limited way of life, characterized by the centrality of employment and residential places and organized around proximity relations*" (Paulo C, 2006, p.13). The equity principle is often criticized to legitimate what should stay unequal and what we should correct by redistribution. But, this conflict between equality and equity should be apprehended in terms of complementarity. For Fitoussi and Rosanvallon[12] (1996) equity trigger off the research of a better defined equality criteria. Equity is a multidimensional concept (Souche S, 2003, p. 127) that is linked to conceptions that could change over time and depending on the people. But, philosophical social justice theories give a theoretical basis to the equity notion that penetrated in the 1970's a "new geography of welfare" that introduced question of redistribution and evaluation

[11] Based on studies on São Paulo, Belo Horizonte, Recife e Rio de Janeiro.
[12] Cited by Christelle Paulo, 2006, p.25-26.

of the social welfare because: "*a generalized prosperity should hide unfair spatial inequalities*" (Brennetot A, 2011, p.122). The work of John Rawls (1982) had influenced the whole geography with 3 fundamental principles[13]. The last principle called "*maximin*" is the most influent because its objective is to maximize what a person in a minimal position should earn.

Pluralist theories admitted that justice criteria depend of the studied field (Paulo C, 2006) and of local configurations (Souche S, 2003). Stéphanie Souche (2001, 2003), who studied the equity of urban trolls, concluded that it was necessary to adopt an analysis in which different sorts of equities are assembled. She suggests the use of an analytic mark to study the acceptability of urban trolls based on the confrontation of: a) economic efficiency (to orient efficiently the demand), b) territorial equity (corresponds to the "*liberty principle*": the society must guarantee everywhere the accessibility of work, goods and services); c) Horizontal equity (corresponds to the principle of equal opportunities), d) vertical equity (corresponds to the principle of difference that takes into account explicitly social inequalities and their consequences). Since social and spatial segregations are often interrelated, the application of the vertical equity means improving the situation of the poorest people (income criteria) or of areas under-served by public transport. This analytic mark seems to be well-adapted to this research to seek the differentiated impacts of transportation projects with a multi-scale approach. For instance, a BRT lines should appear economically efficient and relevant regarding mobility in a metropolitan scope. But, the same line should be considered as unfair if we focus on a smaller scale where the lower-income communities are the most affected by these projects.

Methodology

This investigation uses several qualitative research methods. On the one hand, the author conducted a large work of semi-directive interviews with transportation 'experts' (in both public and private entities, but also in the "civil society") in order to compare opinions about current transformation (and their impacts on mobility) and construct a wide vision about it. For instance, the actors of the following entities have being interviewed: the Municipal Secretary of Transport (SMTR - *Secretaria Municipal de Transportes*), the metropolitan agency of urban transport (AMTU – *Agência Metropolitana de Transporte Urbano*), the BRT's Center of Control and Operation (CCO- *Centro de Controle e de Operação*), the Federation of passenger transportation companies of the State of Rio de Janeiro (FETRANSPOR- *Federação das empresas de transportes de passageiros do estado do Rio de Janeiro*), the RioÔnibus Company (*Empresa de Transporte de ônibus da cidade do Rio de Janeiro*), the National Association of Public Transport (ANTP – *Associação Nacional de Transportes Públicos*), the Economic Regional Council (CORECON – *Conselho Regional de Economia*), the National association of research and education in Transports (ANPET – *Associação Nacional de Pesquisa e Ensino em Transportes*), the metro concessionaire

[13] The principle of equal liberty (guaranty of basic liberties for all), the principle of equal opportunities (fair equality of opportunities) and the principle of difference (maintain only the inequalities that beneficiate the most underprivileged).

called *MetrôRio*, the brasilian urban trains' company (CBTU - *Compania Brasileira de Trens Urbanos*).

On the second hand, semi-directive interviews have been realized with inhabitants in several areas affected by transportation projects. In order to investigate the BRT *transoeste* the impacts on lower-income populations, various inhabitants were interviewed in the (ex) communities of *Restinga*, *Recreio 2* and *Vila Harmonia*. In addition, to verify and generalize our conclusions about impacts of transportation projects on socio-spatial and on urban processes in the *Barra da Tijuca* area, the interviews has been completed by interviews in two communities threatened by mega-event transformations *Vila Autodromo* (linked with *Transolímpica* BRT line) and *Arroio Pavuna* (linked with *Transcarioca* BRT line). Both are located near the *Jacarepagua* lagoon and very near the future Olympic village and in an area similar to *Barra da Tijuca* regarding real-estate speculation, and urban processes. We must underline that this research is part of a PHD research which is going to study more deeply the growing effects of the other BRT lines to be implemented along 2013 and 2014.

Furthermore, the author has participated to many field-researches and on-site interviews: Three days visiting communities affected by BRT lines or mega-events infrastructures in May 2011 with the a delegation of the Rapporteur of the Right to the City (*Relatoria do Direito à Cidade* – Plataforma Dhesca). It has enabled us to investigate the situation of housing rights violation in the communities of: comunidade do metro (near to Maracana stadium), *favela Campinho* (which disappear with *Transcarioca* BRT implementation), *morro da Providência* (in *Porto maravilha* area, several houses are already threatened of expropriation for a cable-car, road-projects and some other touristic projects). *Comunidade da Restinga*, *Recreio 1*, *Vila Autodromo* and *Vila Harmonia* were also known for the first time in this occasion. Apart from the analysis of this two studied groups (transportation researchers, experts, actors and inhabitants directly impacted by transportation projects) we also did participant observation of social movements such as the "*Comitê Popular da Copa e Olimpíadas*" which discusses the social impacts (in a deeper way) of the two events. On top of that, repeated travels in Rio de Janeiro have permitted us a good comprehension of carioca territory and permit to share information with others researchers, to follow the local press, and to live carioca mobility diary.

2) THE IMPACTS OF RIO'S "TRANSPORTATION REVOLUTION" ON SOCIO-SPATIAL JUSTICE: THE CASE OF THE BRT *TRANSOESTE* IMPLANTATION.

2.1) Questioning the "transportation revolution" by analysing urban marketing

As pointed out above, there is a real "transportation revolution" regarding investments amounts and the transformation of transport infrastructures in several modes. However, some researches underline that BRTs projects are not adequate for the long-term development of Rio de Janeiro (Kassens-Noor E, Gaffney Ch, 2013). They are very often not considered as high capacity system: "*BRT is an excellent system for a stated capacity level*"

(Interview of Henrique Futuro, AMTU, 2012). Others think that BRTs are improving mobility but can't be presented as a massive transit system: *"I don't see BRTs as a massive transport. I see them as a transportation system with a capacity a little bit better than buses […] but I don't see them as a system which is going to meet big demands and passengers mobility wheels. The BRT already implemented (Transoeste) recently had a period of excessive demand and had accident problems on the line*" (Interview of Marcio Dagosto, PET-COPPE/ UFRJ; ANPET, 2012). As a matter of fact, several actors questioned the official discourses about this "*transportation revolution*" mainly based on this BRT system: "*The point is if you are selling that as 'The' solution, and it isn't, it's a substitute, you are running behind the prejudice. It will be better? Yes. It will be the public transport that Rio de Janeiro needs? No*" (Interview of Jan Krugger, 2012). BRTs have their importance and should play a role, only if there are integrated with a massive transit system (Interview of Marcio Dagosto, PET-COPPE/UFRJ; ANPET, 2012). On the other hand, traditional high capacity-systems such as railways infrastructures don't seem to be able to operate this revolution even with great investments. For instance, the metro line 4 will certainly compensate for the connection between South area and Barra da Tijuca. But, as this line is considered as a simple extension of line 1 (which is already saturated), there exist uncertainties and criticisms about the capacity of this line to afford the benefits announced officially (car-user transfer and reduction of the congestion of south area-Barra da Tijuca axis, transport time and quality increase). This line, which does not always create a true network metro, is very much criticized by various actors, specialists and inhabitants, and the sharp controversy about the current line 4 project has been illustrated by a broad opponent movement to the governmental choice (figure 3).

Figure 1 – Comparison of the local government lane choice and civil society and original project for the line 4 of the metro. Source: http://www.metroqueorioprecisa.com.br/entenda-a-questao/

The discursive framework of « *legacy* » justifies infrastructure choices (Gaffney Ch, Sanchez F, 2012) and plays a central role in the urban marketing strategy adopted by the city of Rio

de Janeiro. Hence, the "*transportation revolution*" forms part of the "*metropolitan marketing*"[14] which had to construct and address its discourse to both international and local levels. As well, if Muriel Rosemberg (2000) distinguished urban marketing (discourse that does not comes from "the city") and the marketing of the city (discourse that comes from urban decision makers), she admits that both types of marketing should form a single one thanks to the relationships between medias, economical powers, communication experts, public powers: "*Marketing of the city and urban marketing are distinct but interrelated because they form part of the same communication of the city*[15]" (Rosemberg M, 2000, p.63).The expression "*Metropolitan marketin*g" should be used in a mega-event hosting context in which the city must conform to the requirements of a global economic context of generalized world competition between cities, but also to legitimate projects and urban transformation from local inhabitants. At any rate, internal marketing and external marketing are very dependent on each other. There exists an ambivalent play between local and global objectives of mega-event marketing (even more in a city under metropolization process and challenges) which had to refocus the territory (by masking urban discrepancies and reinforcing the cohesion) and, at the same time, to decentralize it (discover the proper competitive advantage of the city as seen by people from abroad). Our hypothesis is that each type of marketing corresponds to two different groups: the "visitor class" (tourists, foreigners, investors and local institutions, companies or political powers which have the same interest of this group) and the "*inhabitants-users-citizens*"[16].

As suggests an article entitled: "*The glocal politics of sports mega-events: underestimated costs and overestimated benefits*" (Whitson D, Horne J, 2006) mega-event marketing is accused of hiding negative impacts and trying to convince that investments will benefit everyone, through progress, growth and development for each social category (Horne J, 2007; Horne J, Manzenreiter W, 2006). The metropolitan marketing aim is to construct a societal consensus on the chosen infrastructures. In this way, the marketing made for BRT system intends to eliminate other possibilities: "*Who produces space, whom for, what for: these questions are evacuated by the magic of consensus*" (Rosemberg M, 2000, p.33). In the light of this, it appears essential to question the marketing made on "*transportation revolution*" to grasp the differentiated impacts of current projects being implemented in Rio de Janeiro.

2.2) Differentiated impacts of the BRT transoeste implantation

Improving the mobility of the west area low-income populations and reinforcement of socio-spatial segregation in the *Barra da Tijuca* and *Jacarepagua* Areas.

[14] The expression used by Gilles Antier (2005) seems to be appropriate to our subject since metropolitan marketing suggests that the cities need to be known and recognized by local inhabitants and on both national and international levels.

[15] Consequently, when we use here the expression "*metropolitan marketing*" we consider both definitions together: discourses which don't come from the city but from which they are submitted and, then, the adoption and practice of these marketing techniques.

[16] This expression came from Michel Bassand (1997).

During the international Car free day on 22 september 2012, the mayor of Rio de Janeiro, Eduardo Paes, made a marketing operation in the BRT Transoeste and a journalist asked him if he would take the BRT in rush hour and not only on a Sunday morning. The mayor answered: "*BRT has been made for humble population who live in the west area. It is not my case. I'm mayor and I travel by car. I don't need BRT. I didn't made it just thinking in myself*[17]". In fact, Santa Cruz and Campo Grande inhabitants should now travel to Alvorada terminal station (Barra da Tijuca) in one hour instead two hours without BRT. That means a great improvement of the quality of life in these low-income populations that need collective transport. Notwithstanding, we observe the increase of segregation processes in the Barra da Tijuca and Jacarepagua areas and along the BRT lines. Some observations and interviews demonstrate that BRTs implantation is used to justify – sometimes with dubious reasons – the expropriation of low-income communities along the Transoeste and Transolimpica and the Transcarioca[18] lines (see for instance the 5 communities on the map above, figure 2).

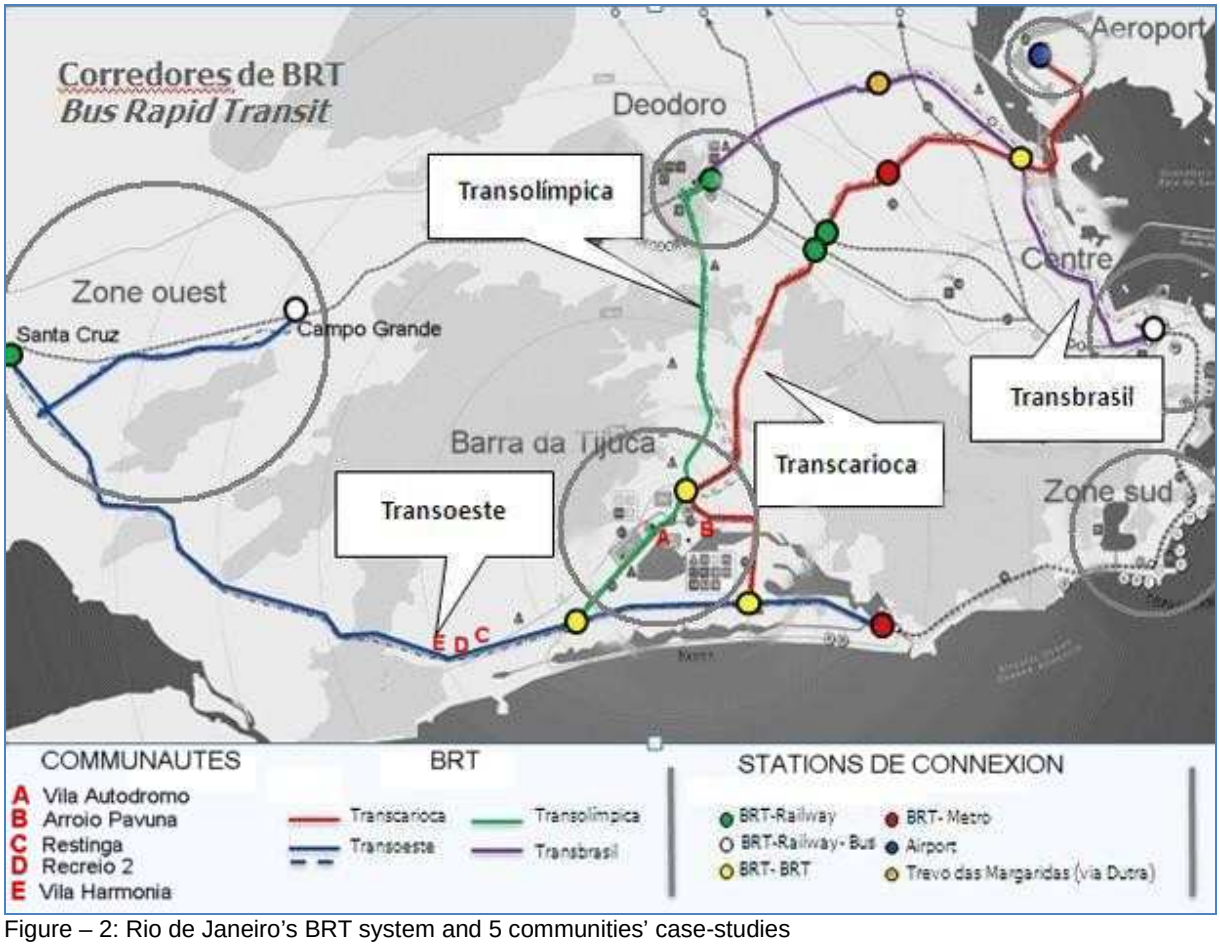

Figure – 2: Rio de Janeiro's BRT system and 5 communities' case-studies

[17] Traduced by the author from: *"O BRT foi construído para o povo humilde que mora na Zona Oeste. Não é o meu caso. Sou prefeito e ando de carro. Não preciso do BRT. Não fiz ele pensando apenas em mim*". Quoted by Caio Barbosa, "*Prefeito do Rio pede voto no ônibus*" in O Dia Online, 22/09/2012. Available on: http://odia.ig.com.br/portal/brasil/eleicoes2012/prefeito-do-rio-pede-voto-no-%C3%B4nibus-1.493122 (Accessed on 16 January 2013)

[18] BRT *Transbrasil* implementation is today the less advanced. That why it has been less studied for the time being.

Remembering the choice to use different criteria of equity, it is possible to identify in some discourses that the expropriation of a few people should be justified for the overall well-being of 220 00 people p/day regarding official previsions about the BRT transoeste. Through this way of apprehending justice we find the utilitarian theories[19] that consider equity as the maximization of the collective well-being. Pareto, with the economy of well-being, then introduced the principle of "*the less sacrifice for the lowest people*". Asking the director of the BRT-CCO (Center of Control and Operation) if there have been expropriations along the line, he answered: "*Very few, very few. I don't have the figure here but it was almost nothing. It was nearest to Santa Cruz and at the beginning of the Grota Funda tunnel also. There, they had to expropriate some parcels*" (Interview of Alexandre Castro, BRT-CCO director, 2012).
In reality, expropriations of low-income communities are not as few as it seems and represent a clear reinforcement of the socio-spatial segregation along the BRT lines, especially in areas which are under real-estate speculation processes. For instance, the enlargement of the avenue das Américas for the transoeste en the area of Recreio (see communities C, D and E on the map) triggered off the expropriation of 150 families (and 40 businesses) of Restinga favela, 120 families in the community Vila Harmonia and of 235 families of the favela named Recreio 2. Very near the future Olympic park, on the shore of Jacarepagua Lagoon, the BRT transolimpica threatened to expropriate the 500 families of the community *Vila Autodromo*[20]. The BRT *transcarioca* is also a threat to the last 28 families of the community of *Arroio Pavuna*[21]. All those expropriations happened with violence, without notice or dialogue while the financial compensations have been quite always back-below the right real-estate value of the houses demolished. The persons who accepted to be relocated by the federal Program "*minha casa minha vida*" where relocated in distant areas, such as *Campo Grande* and *Santa Cruz*. Ironically, they should now return where they lived quickly with the BRT. The worst cases had not been compensated at all as testifies Michel, an ex-habitant of the (ex-) community of *Restinga*: "(*the municipality) had compensated neither for the business nor for the house, some (families) received compensations, others not*" (Interview of Michel, ex-inhabitant of *Restinga*, 2012). The hypothesis of a transportation project excluding low-income populations living far-away should be verified when examining how those lots were used. In the place of a part of the ex-community *Vila Harmonia* the public power constructed a road-approach. With the remainder space, it is planned to construct a closed condominium.

An ex-inhabitant of the community of *Recreio 2*, named Jorge, tells us that only a few meters of the whole community extension area have been used to enlarge the road: "*Today, I prove to you that the rubble it's still there, next to the lane*". Expropriated people who stay in the area are very few: "*Nobody has gone to less than 40, 50 kilometers (…) neither of Vila Harmonia and Restinga from Recreio 2 (…) Well, I'm personally at less than a kilometer. I*

[19] Bentham, 1789; Sidwick, 1907.
[20] Vila autodromo had to resist to the expropriation threatening for three decades and realize an innovative popular plan with the help of universities and social movements to respond to the municipal solution based on the expropriation of the whole community. To see the plan:
http://comitepopulario.files.wordpress.com/2012/08/planopopularvilaautodromo.pdf
(accessed on 11/03/2013)
[21] 68 families had already been removed to let space to the construction of a roundabout that permit a greater access to closed condominiums for high-income populations, and for the duplication of a traffic lane.

respect the law in my own way" (Interview Jorge, ex-inhabitant of *Recreio 2*, 2012). Jorge lived currently in a house he rents and had not yet been financially compensated. Those socio-spatial segregation processes should be economically efficient and even considered as taking into account some "*territorial equity*" if we admit that the BRT lines guarantee a better access to the city. On the contrary, this tendency to expulse lower-income inhabitants of some areas is totally opposed to the horizontal equity because it doesn't respect the principle of equal opportunities by expulsing low-income populations in most remote areas with less access to work services and culture. In some way, the poorest people do not benefit from landscape valorization. Finally, expropriation process in do not attend vertical equity whose principle (of difference) is to give as much as possible to the people who have the less, often translated by the principle of reparation in public policies.

Collective transportation prioritization: the illusion of the calling into question of the road model transportation system

Urban marketing official discourses focus on the prioritization of collective transportation presenting investments as a "*revolution*" of collective transport system. However, Rio de Janeiro had a historical process of intensification of the road-model, with a progressive switch away from railway systems which represent currently less than 5 % of the total of diary travels in the RMRJ. As already explained, the constitution of an integrated transport network is largely based on BRT system, which is still being a transport by road. Moreover, all BRT implantations had triggered off an extension of the number of lanes for "normal" traffic. For instance, concerning the *transoeste* BRT line, especially in a great part of the avenue *das Américas* there exist today 12 lanes in total (one line of traffic for BRT in each direction and 5 in each direction for the normal traffic). In addition to the two BRT lanes the number of lanes to car traffic in each direction has been duplicated from 2 or 3 for 5, depending on the sections. So, the space reserved to collective transportation is quite marginal (3 meters for every BRT lane) compared with the space available for car-use.

In such corridors, we also notice the total inexistence of bicycle paths even if bicycles parking spaces have been set up, able to receive 10 bicycles per station. Those bicycles parking seem to have been implanted more for a preoccupation of city-image or marketing than to respond to the real pent-up demand of bicycle paths existing in this area[22]. The urban development model of *Barra da Tijuca* which is called "*the brazilien Miami*" by Eduardo Vasconcellos (Interview, 2012) is based on the intensification of the social and territorial fragmentation. Then, the inhabitants who are living in highly valorized areas are deeply dependent on cars. Referring to the possibility of taking car lanes to have, in the future, two BRT lanes in order to increase the capacity of the system, the BRT-CCO director explained that it would be easier to take the median strip green area than to rubble some space to car users because: *"(event if) it were possible, this is a very loud political and polemical decision, principally because the public of this area is a high-income one and intensely car-use*rs" (Interview Alexandre Castro, 2012). Since all BRT projects trigger off a growing space for

[22] On 09 September 2012, during a field research on the BRT *Transoeste,* as the 10 places of the Salvador Allende station were all occupied, we crossed the 5 car lanes in front of the station and counted more than 80 bicycles attached where it was possible.

cars, BRT projects (even giving the improvement of some inhabitants' mobility) should be considered as a collective transportation argument to give more space to the individual transportation modal. In this way, there is no incentive for car-users to switch to a collective transportation but, on the contrary, to maintain the road-model transportation, at least for high-income population.

The BRT-CCO director gives some support to our observation of differentiated impacts of the BRT *transoeste*. We can observe an exclusion of poor people justified by transportation projects which at the same time they offer a better transport to these people who should work in an area where they can't now live in: "*the great future of the economical center of Rio de Janeiro, is here, in Barra da Tijuca. So, in reality, these regions of Deodoro, Santa Cruz, are work force providers' that come here, hence the need to create this mobility*" (Director of BRT-CCO, 2012). Through this prism, it becomes more difficult to talk about a real transformation of collective transportation system. Last but not least, BRT lanes don't seem to have been well planned regarding the quality just six months after its inauguration creating a very fast degradation of the service.

Figure – 3: Picture of *transoeste* BRT lane degradations'. Sources: Journal *O Globo* (06/01/2013). Available on: http://oglobo.globo.com/rio/inaugurado-ha-6-meses-corredor-transoeste-sofre-com-buracos-7207730#ixzz2HIofDWcv (Consulted on 13 March 2013)

CONCLUSION

Today in Brazil, the dynamic of segregation processes and of social and territorial fragmentation is often analyzed through the identification of the stronger and stronger relationships between the State and the real-estate in the production of urban-space. Then, we can conclude that mega-events emphasize the production of urban highly-valorized areas contrasting with new areas of low-income populations, often increasingly distant from the previous one. (Gomes de Mendonça J, Soares de Moura Costa H, 2011). Observing the example of the avenues das Américas, where the number of lanes switched from 2 or 3 by 5,

the justification of the need for space to collective transportation to expropriate some communities is no more valid. As these lanes were not necessary to the BRT system, expropriated people are in some way removed to let space for car-users. Almost all inhabitants who had to leave their houses feel excluded from the benefits of mega-events and facilities investments. Their discourses form part of justice theories which a preference for the reparation principle while governments and transportation politics actors are often closer to an utilitarian vision of justice: there should exist some victims for a best common good. That is why it seems to be appropriate to use different principles of equity when studying mega-event through transportation projects.

What we have called the "differentiated impacts" of transportation projects mean adopting socio-spatial justice theories and principles to reach a wider vision of the impacts of transportation. From there, are emerging several realities. The confrontation of discourses and the deconstruction of urban marketing by analyzing what is hidden behind its consensual discourses enable to understand better urban conflicts and processes.

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