



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Applying the strategic-relational approach to urban political ecology: The water management problems of the baixada fluminense, Rio de Janeiro, Brazil

Citation for published version:

Ioris, AAR 2012, 'Applying the strategic-relational approach to urban political ecology: The water management problems of the baixada fluminense, Rio de Janeiro, Brazil' *Antipode*, vol 44, no. 1, pp. 122-150. DOI: 10.1111/j.1467-8330.2011.00848.x

Digital Object Identifier (DOI):

[10.1111/j.1467-8330.2011.00848.x](https://doi.org/10.1111/j.1467-8330.2011.00848.x)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Antipode

Publisher Rights Statement:

Published version is available online at www.interscience.wiley.com copyright of Wiley-Blackwell (2012)

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



Applying the Strategic-Relational Approach to Urban Political Ecology: The Water Management Problems of the Baixada Fluminense, Rio de Janeiro, Brazil

Antonio A. R. Ioris

Address for correspondence:

School of Geosciences,
The University of Edinburgh,
Drummond Street
Edinburgh EH8 9XP

This is the author's final draft as submitted for publication. The final version was published in *Antipode* by Wiley-Blackwell Publishers (2012)

Cite As: Ioris, AAR 2012, 'Applying the strategic-relational approach to urban political ecology: The water management problems of the baixada fluminense, Rio de Janeiro, Brazil' *Antipode*, vol 44, no. 1, pp. 122-150.

DOI: 10.1111/j.1467-8330.2011.00848.x

Made available online through Edinburgh Research Explorer

**Applying the Strategic-Relational Approach to Urban Political Ecology:
The Water Management Problems of the Baixada Fluminense,
Rio de Janeiro, Brazil**

Abstract: The complexity of water management requires an explanatory framework that is able to capture the multidimensionality of the relations between nature and society increasingly mediated by the state. The evolution of water problems in the Baixada Fluminense, a wetland area situated to the north of Rio de Janeiro, provides a paradigmatic example of how water management becomes incorporated into the fluid politics between state, nature and society. The local experience is examined by making use of the strategic-relational approach (after Bob Jessop) expanded to urban political ecology. The concept of ‘trialectics’ is proposed as an ontological representation of the interconnections between the state apparatus, class-based relations and the socionatural elements of the water cycle. The empirical results show that, in a situation of precarious water supply, regular flooding and severe river degradation, state interventions have tended to favour certain groups and areas, which only intensifies the politicisation of water management.

Keywords: Water management, water governance, political ecology, environmental justice, strategic-relational approach, dialectics, trialectics, Baixada Fluminense, Rio de Janeiro, Brazil.

The Political Ecology of Water Management

The mobilisation of resources and people for the exploitation, control and conservation of water is one of the most strategic responsibilities of the national state. Water management policies are as old as history, as demonstrated by the achievements of ancient civilisations, such as in China, Egypt and Mesopotamia, which already adopted sophisticated practices of river engineering, channel construction and agriculture irrigation (Haslam 1991). With the consolidation of the capitalist state, the public management of water reserves – either as a genuine governmental priority or reflecting demands exerted by pressure groups on the state apparatus – assumed an even more prominent role in terms of economic development and urban expansion. The management of water involves some fundamental questions that are particularly relevant for the conceptualisation of the relationship between humans and an increasingly technologised urban landscape (Gandy 2004). In effect, contemporary water management constitutes a powerful mechanism in the social production of the urban space, given that, as observed by Lefebvre (1991), the capitalist hegemony, ruled over by the state, makes use of the space on the basis of an underlying logic of capital accumulation and with the help of knowledge and technical expertise. Nonetheless, the complex expressions of urban water problems (e.g. overuse of water, river pollution, precarious water services, etc.), while strongly determined by capitalist relations, are not reducible to them. Despite the exercise of capitalist hegemony through the state apparatus, water management remains also deeply embedded in a permanent interchange between the collective and the individual, the local and the macro, the horizontal and the vertical lines of interaction. Through this interplay between particularities and generalities, the social relations around water

incarnate some of the most expressive values, expectations, accomplishments and frustrations of the capitalist form of society.

Due to its very nature, water management is rarely consensual or politically neutral, but entails different levels of politicisation according to ecological, historico-geographical and socioeconomic circumstances. Especially in situations of acute scarcity, the political networks that control water are further galvanised through contested relations to land and water (Giglioli and Swyngedouw 2008). The territorialized disputes around water, negotiated or magnified by the action of the state, situate water management in the centre of the rising debate on political ecology. That means a consideration of the balance of power behind processes of socio-environmental change, as well as the political unevenness that determines inequalities in the access and distribution of natural resources. Political ecology is in a privileged position to advance the study of the contested relationships between society and nature, likewise it can offer a common arena for intellectuals and militants to come together (Lipietz 2000). The political ecology of the urban is particularly concerned with the study of the metabolic processes (Keil 2005) that combine the human and the non-human domains in the ultimate production of (urban) socionature (Swyngedouw 2004). By linking the urbanisation of nature with everyday life and the politics of scale, urban political ecology offers a coherent approach for the examination of the interconnections between economic, political, social and ecological processes that together produce highly unjust and oppressive landscapes (Swyngedouw and Heynen 2003). At the same time, urban political ecology is, and should be, responsive to the cultural and subjective dimensions of urban environmental struggles (Grove 2009).

The evolution of urban water management in the Baixada Fluminense, a flat wetland area under tidal influence situated in the western side of the Guanabara Bay and to the north of the city of Rio de Janeiro, typifies the intricacy of the relations between state, nature and people, as well as the struggles for social opportunities and political influence. Because of its strategic location – close to the former capital of Brazil – the urbanisation of the Baixada historically attracted large contingents of slave descendents and also migrants from other parts of the country. With high rates of urbanisation in the second half of the 20th century, the lifelong problems of flooding and insalubriousness became deeply coupled with its antipode of human made water scarcity (i.e. lack of reliable potable water). It will be shown below that the complex and multifaceted water problems of the Baixada are intensely tied with the disordered expansion of the Rio de Janeiro metropolis and the insufficiencies of state action. The redemocratisation of the country began in 1979 (when the military issued the amnesty law and gradually reduced political repression) and, since then, a series of interventions and investment programmes have been directed to water management issues in the Baixada, which mobilised large sums of capital and created great expectations among the residents. However, those interventions have been largely frustrated by a combination of bad administration, demagogic appropriation of public policies and the containment of political contestation. Although some areas have benefited from the public programmes, the prevailing trend is one of discrimination and uneven development (both within the Baixada and, more importantly, in relation to the neighbouring areas). More recent projects and policies betray the inconsistencies of the contemporary agenda of institutional reforms (i.e. the ‘governance agenda’), primarily because it has left innovative thinking and public

participation on the hands of the same agencies that in the past promoted, and continue to promote, highly centralised and disjointed approaches. Furthermore, the water management dilemmas of the Baixada have become vividly entrapped in political disputes about metropolitan development, such as the construction of new petrochemical complex (which is associated with a new metropolitan ring road and the urbanisation of the last remnants of the original Atlantic vegetation) and the construction of the infrastructure for the 2016 Olympic Games.

The purpose of this essay is to discuss the connections between the historico-geographical causes of water problems and the persistence of controversies under the new institutional arrangements. The water management issues of the Baixada Fluminense will serve as a case study that exemplifies processes that are common to other Brazilian and Latin American conurbations. We believe to be helping to expand some poststructuralist and materialist analytical positions, as invited by Ekers and Loftus (2008), by specifying ways in which power is enacted and assessing the possibilities of political struggles around the use and conservation of water. The main contribution of this study is an attempt to link the emerging field of urban political ecology with the framework developed by Bob Jessop (2008), the so-called, “strategic-relational approach”. The text is organised as follows: the next section offers a tentative articulation, in the historical materialist tradition, of the ‘trialectical’ interconnections between state, society and nature (in this case, the water systems). The next section deals with the experience of the Baixada Fluminense, where it is examined the process of regional development and the evolution of political ecology problems, the series of large-scale remediation projects and the continuity of problems under supposedly new institutional arrangements. The final part of the text contains some conclusive remarks and points for further discussion.

State, Society and Nature: The Trialectics of Water Management Problems

Before we can examine the concrete experience of the Baixada Fluminense, it is first necessary to revisit the ontology of water management problems and situate it firmly within the sphere of political ecology and, ultimately, environmental justice. The inherent complexity of managed water systems requires an explanatory framework that comprehensively captures the multidimensionality of the relations between nature and society, which are increasingly mediated by the state. Water is not just a landscape resource with biophysical properties, but it is in effect a natural element that is used and transformed by different social groups according to demands and techniques, which epitomise specific historico-geographical circumstances. Water issues are embedded in particular cultural traditions, hydrological conditions and socioeconomic arrangements that incorporate institutional changes, interpersonal relations and technological improvements. As emphasised by Swyngedouw (2004), water is a hybrid whose flow describes processes that are simultaneously material, discursive and symbolic. However, the politico-economic intricacy of water management issues has been continuously neglected by policy makers and mainstream scholars alike. To a large extent, the oversimplification of water management problems primarily derives from an undertheorisation of the politicised role of the state and its involvement in class struggles (or what Jessop (2000:325) defines as ‘struggles with class-relevance’). Kalyvas (2002:105) observes that in recent years the state seems to have “retreated from the realm

of social sciences”, whilst there is a growing emphasis on globalisation and on postmodernist discourses (which both deal with the connections between global and local scales) that tends to overlook the significance of the national state.

It is also the case that most of the water management approaches advanced by the nation state nowadays emanate from international and multilateral agencies (e.g. World Bank, UNESCO, World Water Council). Those mainstream positions have advocated calls for integration and public participation, which are summarised under the expression of ‘environmental governance’. The agenda of governance insists on a transition to more flexible procedures that go beyond traditional initiatives and include the action of both the state and a multitude of organisations and movements that constitute the non-state (Conca 2006). Instead of the conventional exercise of authority, better governance is expected to create lasting and positive changes according to goals such as openness, accountability, effectiveness and participation (Batterbury and Fernando 2006). However, behind repeated references to participative governance, water management remains controlled by centralised government agencies and subject to the influence of powerful sectoral interests (Blomquist and Schlager 2005), with the material and discursive priorities of neoliberal policies being left above broader social and environmental considerations (Roberts 2008). Despite the apparent changes, today’s approaches have largely replicated the technocratic and centralised basis of water management that characterised infra-structure projects and development programmes of the welfare state period, only making use now of a new discourse grounded on the economic (monetary) value of water and instrumentalised forms of public participation (Garin and Richard-Ferroudji 2008). For example, the growing focus on the economic value of water – as initially proclaimed in the 1992 Dublin Conference on Water and the Environment – has led to an increasing commodification of water resources (also called water marketisation cf. Conca 2006).

In many countries, such as in Brazil, contemporary water legislation has nominally recognised the importance of universalising water services and public participation, but has also secured long-established advantages, increased the circulation of capital around water and environmental restoration, and paved the road for the formation of public-private partnerships (Ioris 2007). Ultimately, the documents and projects based on environmental governance have become little more than an adjunct of the neoliberalisation of public policies (Gandy 2006). Recent institutional reforms – which spread through laws, guidance and government programmes – have essentially failed to confront the sources of social injustice that underpin environmental degradation and deficient water services. The agenda of governance pays limited attention to the fact that the water problems are not “merely a question of management and technology, but rather, and perhaps in the first instance, a question of social power” (Swyngedouw 2004:174), something that is not secret or detached from the tangible socio-natural reality, but challenged and consolidated by everyday struggles fought over the material and symbolic elements of the lived environments (Loftus and Lumsden 2008). The result are successive failures in the recent history of public water management, which unfolds in a succession from one vantage point to another, in a “parallax movement” (a notion suggested by Žižek 2006:26) that never reaches a definitive solution, nor reconcile, in a satisfactory manner, social and natural demands.

At the same time, it should be pointed out that a number of political ecology scholars have concentrated their studies on popular mobilisation, moral economy and the ‘second-contradiction’ of capitalism (Mann 2009), but not yet dedicated enough attention to the evolution and the scalar linkages of water management problems promoted by (or in relation to) the state. Instead of being one among other political ecology players (as conceptualised, in an otherwise interesting book, by Bryant and Bailey 1997), the state is in effect the embodiment of political hegemonies and the immanence of social relations inscribed in the management of water. If the resolution of water management problems depends both on how citizens perceive their claims and also on how they are able to collectively negotiate their demands through identity, economic activity and spatial location (Anand 2007), the state remains the central protagonist of the assessment of (socio)natural water systems and coordination of responses. Consequently, in many cases, political ecology remains a field of interesting scholarly work, but with a conceptualisation of state action that is normally superficial or taken for granted. That creates an analytical gap, especially considering that the state is nowadays increasingly called to exercise a strong procedural power to govern not just property, rights and knowledge, but bureaucrats ultimately have to administer “the sky, the climate, the sea, viruses, or wild animals” (Latour 2004:204). Moreover, instead of simply the apparatus of the government, the structure of the state is effectively a continuation of civil society that, because of its political commitments, performs the ambivalent role as agent of both reform and stability. Whilst containing the demands of the broad society through a combination of coercion and consent, the action of the state primarily reflects “back its prestige upon the class upon which it is based” (Gramsci 1971:269). The capitalist state constitutes, thus, the main power instrument of the dominant groups, which nonetheless operates in a continuous process of formation and superseding of an unstable social equilibrium.¹ It is important to recognise that the control over nature is actually one of the decisive channels for the delivery of political power in the attempt to contain that unstable social equilibrium.

Against both the assumption that the state is a neutral organisation promoting the common good (as implicit in the theory of environmental governance) and the limited discussion of the class-based tendencies of state action (as still implicit in the work of many critical scholars), Jessop (2007) has argued that state power combines centralised and diffuse authority in conformity with the fundamental features of political economy and profoundly embedded in social relations. The state is an institutional ensemble of power centres that does not exist in isolation of the balance of political forces, but these forces are in effect responsible for shaping – at least in part – the structure and intervention of the state (Jessop 1982:221).² Yet there is never a full correspondence between the capitalist state and the interests of the dominant classes, but the cooptation,

¹ In a society with antagonistic class relations the political equilibrium is always transitory and the action of the state reflects the political hegemony achieved under concrete spatio-time conditions (Gramsci 1971). Note that the Gramscian notion of hegemony is a ‘never finished project’ that involves material and symbolic processes behind ‘emerging realities’ (Asher and Ojeda 2009).

² In terms of water services, the state can act as a direct supplier or it can delegate to private operators and act primarily as a technical regulator. The former types of intervention are more closely related to the ‘authoritarian state’ (cf. Kalyvas 2002 and based on Nicos Poulantzas) that dominated the period after the Second World War, while the focus on regulation is characteristic of the current phase, the ‘liberal authoritarian legalism’.

pressure and colonisation of the public administration by the hegemonic groups – who Miliband (1969:53) calls “men belonging to the world of business, and particularly of big business” – are not absolute. It means that to a certain extent the capitalist state remains politically separated from the circuits of capital and accumulation (Offe 1996) and, therefore, needs to be understood as a dynamic institution that offers unequal opportunities to different social groups to achieve their specific political purposes. This selectivity of the state is not given in advance, but it is the result of the interplay between state priorities and socio-political contestation within and beyond state institutions (Jessop 1990). For those reasons, the political construction of state authority requires analytical tools – such as the ‘strategic relational approach’ (SRA) proposed by Bob Jessop – that should be capable of exploring the inscribed asymmetries of state action, as well as the social forces that enjoy different capacities to pursue strategies that are more or less adapted to its selective functioning. The SRA constitutes a neo-Gramscian perspective to state power (as a social relation not entirely reducible to class domination) that considers the state as an institutional terrain of contestation. Following such strategic and relational standpoint, the state is not seen as a monolithic, separate entity but evolves according to a permanent interdependence with the complexities of society (Jessop 2008).

The SRA framework certainly represents an improvement in the understanding of the state as a factor of cohesion and as a locus of dispute, and relative autonomy, within the circuits of capital accumulation and class struggle. However, as Jessop (2008) is the first to admit, the study of the state also requires a more systematic treatment of spatial dynamics, as well as of the relations between nature and society. As observed by Swyngedouw and Heynen (2003:912-913), “...socioecological processes give rise to scalar forms of organisation – such as states, local governments, interstate arrangements and the like – and a nested set of related and interacting socioecological spatial scales. (...) These territorial and networked spatial scales are never set, but are perpetually disputed, redefined, reconstituted and restructured in terms of their extent, content, relative importance and interrelations”. The need to embrace the socioecological and sociospatial properties of the state is even more justified under the current pressures of neoliberalism, because since the accumulation crisis of the capitalist system in the 1970s the national state has been under intense pressure from the twin forces of globalisation and localisation (Neumann 2009). As a step in that direction, the spatialisation of the SRA framework attempts to link the general form of the capitalist state and the contingent historico-geographical experiences in the course of capitalist development (Brenner 2004, Brenner et al. 2003). Likewise, Jessop et al. (2008) have integrated the four key dimensions of sociospatial relations employed by social scientists in the last three decades (i.e. territory, place, scale and networks) and positioned them in relation to the SRA proposal. These authors claim that through the incorporation of a ‘polymorphy’ of conceptual orientations it should be possible to convey an instigative tool that extends through interconnected scales and integrates the multiplicity of fields of operation.

Nonetheless, this particular solution advanced by Jessop et al. (2008) seems yet to fall into a rather too prescriptive categorisation, given that it is built around undesirable binarisms (i.e. the examples given are the linkages between place and territory, scale and territory, and network and territory). According to the last authors, those ‘duets’ could become the entry points into the assessment of complex, multidimensional systems. However, such formulation has also the negative consequence of limiting the analysis of

sociospatial relations to a sort of checklist of paired associations, instead of embracing the full extent of interscalar and multisector state interventions. The conclusion is that, if the spatialised version of the SRA represents an important contribution towards recognising the geographical complexities of the state, it is still necessary to incorporate the political ecological dimension as a more integral component of the evolving relations between the state and society. Rather than too schematic constructions, our starting point for a unifying investigation of political ecology is the comprehension that water management extends through the interconnections between state intervention, social interactions and socionatural hydrological systems. Whilst rejecting any claims of geographical determinism or ecological fetishism, we submit that the biophysical characteristics of managed water systems are not only shaped, but directly influence social relations and political disputes (within and beyond the state). Examples of the vital links between water, state and society are the circumstances of water scarcity and environmental degradation caused by state action, which in turn produce social distress and provoke further interventions by the state. These are particular socio-physical phenomena through which symbolic formations are forged, social groups enrolled, natural processes and things entangled, and political power relations expressed and reconstituted (Swyngedouw 2007).

In view of that, it is neither necessary to invoke overcomplicated neologisms, nor proceed to an excessive ontologisation (as warned by Jessop et al. 2008) to incorporate the politicised relations between state, society and nature. All that is needed is to revisit the foundations of dialectical thinking, which is one of the most powerful, but least understood (Castree 1996), concepts of the Hegelian-Marxist tradition (which, incidentally, constitutes the main source of inspiration for political ecology). Dialectics dedicates special attention to the understanding of processes, flows, relations and contradictions over the analysis of elements, structures and things (Harvey 1996; see also Gidwani 2008), which is precisely the analytical device required to examine the historico-geographic evolution of water management issues. Castree (1996) observes that Harvey perceived dialectics as central for the productive tension between analysis and epistemological reflexivity, which means that a dialectical model of thinking serves as both a mode of explanation and a mode of capturing the contradictions of capitalism. In our case, it can be argued that the dilemmas of contemporary water policies originate in a dialectical tension between the capitalist and the socioecological rationality of the state apparatus at the service of the hegemonic interests. The interventions of the state in the water sector – actions that are simultaneously capitalist and socioecological in nature – interconnect, in a partial and contradictory manner, the individualisation of gains (to some social groups and areas) and the attempt to universalise the most basic living conditions (to all classes and locations).

Crucially, in order to capture the complexity of water problems, political ecology needs to go beyond the rigid categories vulgarly associated with dialectical reasoning (and perhaps inadvertently incorporated into the SRA). Comparable mistakes were made by those that tried to extend dialectics to the non-human realm (more famously by Engels in the “Dialectics of Nature”) or attempted to identify a truly socionatural dialectics but still left nature as a passive object of social agency (e.g. Schmidt, 1971). According to the most pedestrian interpretations, dialectics involves a rather simplistic synthesis (‘sublation’) of two preceding terms, which are mechanically fused in the resulting

outcome. Against the totalising closure of such inflexible binary constructions, Lefebvre (1991) argues that dialectical thinking requires the inclusion of the ‘third term’ as a rejection of the closed logic of ‘either/or’ and in favour of the radically open formulation of ‘both/ and also’. The ‘third term’ contains the first and the second, but in a more determinate form, given that it was enriched by the negation of the negation of the first term. Lefebvre (1968) believes that the renewed consideration of the third term – not simply the resultant of the dialectics of thesis/antithesis and synthesis, but as an equivalent and interrelated term with the other two – can become the solution to the problems of conflicts and contradictions. If dialectical logic is to transcend formal logic, the recognition of a more ‘embellished’ third term allows for a fruitful reunion of opposing positions without losing the invigorating force of the opposition. As a result, ‘thirdering’, or the acceptance of an inclusive trialectical continuum, can represent a radical epistemology that produces new alternatives that are both similar and different (Soja 1996).

The removal of the binary interpretations of historical materialism (that essentially replicate Engel’s narrow comprehension of Marx’s texts cf. Mann 2009) and its replacement with the more creative trinitarian formulation have serious consequences for political ecology and its praxis. The real meaning of ‘thirdering’ is to yield a revisited ontology that effectively denotes the interdependencies and contradictions of water management, which exceeds the simple dualist positions of state-society and nature-society. The strategic and relational understanding of state action can be, thus, reformulated as a ‘trialectical’ relationship between society and nature with the state as the emerging ‘third term’. The third term – in the case of the evolution of water management, the state (i.e. the ‘political society’ in the Gramscian sense) – is not the simple outcome of the interaction of the other two, but corresponds to a contested locus of action that reshapes, and simultaneously evolves, with nature and society. As mentioned above, in the long history of water management, the state constituted the mediator and executor of social demands, according to the balance of power and the socioecological conditions. In consequence, we submit that a trialectical version of the SRA – at least, for the purpose of political ecology – is a straightforward formulation that embraces the dynamic and politicised interaction between society, nature and the state. Overall, the trialectical basis of water problems allows for a better representation of the convergences and antagonisms between state and society that affects, and is affected, by environmental change.

Although the description of triads is not new in the Marxist argument (for example, Marx mentioned the internal contradictions of capitalism as the interplay between labour, capital and land, as much as Jessop makes reference to the triplet market-state-society and Gramsci saw the state as the vertex of a trialectical structure between state-economy-civil society), the explicit consideration of the state as the ‘third term’ of the interplay between society and nature offers a more creative and inclusive understanding of water management issues. Looking from this renewed perspective, water problems are grounded on the evolution of the state apparatus (as a semi-autonomous phenomenon) in relation to class-based struggles (including classes, groups, and interpersonal connections) and to the socionatural elements of the water cycle. The state is the third term that both reinforces the powers of society over nature and, in an attempt to secure social cohesion, regulates the rate of socioecological impacts. In other

words, the action of the state, as the third term trialectically interrelated with social classes and metabolised nature, not necessarily favours the interests of the stronger social groups, but it is the quintessential locus of contradictions, bargaining and contestation. Following the trialectical reinterpretation of the SRA proposal, the failures of water management can be, thus, translated as the product of the uneven balance of power within the intricate relationship between society and nature mediated, and reshaped, by the state. Power is not limited to the realm of the state and traditional politics, but permeates the channels of interaction between society and historicized nature. Furthermore, trialectics should not be seen as an artificial ontological representation of reality aimed to create artificial boundaries, but it is the vivid incorporation of highly interconnected categories that extend the spheres of action to the more-than-human world (i.e. in the sense that nature is not a passive entity that shall be dominated and exploited, but the transformation of nature reflects back to society and state).

Finally, the trialectical basis of water management has also surprising implications for the old dilemma between structure and agency: instead of an antagonistic opposition between the rigid, top-down structures and autonomous, bottom-up actions, structure and agency are both implicated in the trialectical configuration. The relational and strategic tension between state, society and nature implies that neither structure is pre-given, nor agency always emerges from the same interactions. On the contrary, agency is not purely rational and premeditated, but to a large extent it is a heuristic construction that seeks to challenge or maintain hegemonies (which are expressed through trialectical interdependencies). In other words, it is through trialectical interplays that both the structure and agency of water management are constantly reasserted and transformed. That is echoed by Karriem (2009) for whom Gramscian political ecology provides an insightful explanation of hegemonic and counter-hegemonic positions that broaden existing socio-natural relations (in this case, the landless movement in Brazil has succeeded through strategies and an organisational praxis that are profoundly territorialized and continuously evolve to revert repressive governmental interventions). Mobilisation and political protest can be, thus, reinterpreted as essentially ‘spatial practices’ (Cornwall 2004) and the use of space becomes a critical prerequisite for understanding disputes and forms of contestation (Wilson 1999). The next pages will show the trialectical formation of water management problems in the Baixada Fluminense and how structure and agency are continually repositioned in relation to politico-economic disputes.

The persistent water management problems of the Baixada Fluminense

Research background and methodology

This section draws on the preceding argument about the trialectics of water management (i.e. the politicised interdependencies between society, nature and the state) and applies it to the concrete circumstances of the Baixada Fluminense, a highly populated area with a long history of water conflicts and spatial discrimination in the periphery of the Rio de Janeiro metropolis. The study is based on a fieldwork conducted between April and October 2008 (with preliminary contacts carried out in 2007 and follow-up visits in 2009) and involved the participant observation of meetings and public

events, reviews of policies documents and archival documentation, and the application of 44 semi-structured, confidential interviews. Respondents were selected among three main groups distributed in three geographical scales: 1) local residents, municipal authorities and campaign activists; 2) regulators of the state water agency, managers of the public water utility (CEDAE), and politicians; and 3) regulators of the national water agency and activists of national NGOs. The frustration of the local stakeholders with the persistence of recurrent flooding events, precarious water supply and sanitation services, and the serious levels of pollution and environmental degradation were the predominant issues considered in discussions and interviews.

As alluded to already, the research is situated in the interdisciplinary field of urban political ecology and followed a critical realist approach. According to critical realism, ‘retroduction’ constitutes the main method of inference, which means that events are explained by postulating (and identifying) the mechanisms that are capable of producing them. The retroduction employed in critical realism is closely associated with Hegel’s dialectics of necessity and contingency that, as observed by Žižek (2008), considers universal necessity as always retroactive and emerging out of the radical contingency of the process. Realist scholars are, thus, expected to examine beyond the standard linear historical time and deal with the paradox of “a contingent actual emergency which retroactively creates its own possibility, in other words, only when the thing takes place can we ‘see’ how it was possible” (Žižek 2008:180). In our case, for example, retroduction was used to analyse whether the recent framework of environmental governance under implementation in Rio de Janeiro has improved the response to water problems or still maintained the institutional distortions that were created in the process of regional development. The decision-making process continues to operate within the same hierarchical and authoritarian forms of public engagement that historically marginalised the majority of the Baixada population. But to understand the present, it is necessary to excavate the evolution of projects and programmes, and realise that the water problems of the Baixada are the intertwined result of a combination of a chaotic urbanisation, careless state interventions and the political appropriation of projects and programmes.

Urban growth, regional development and the origins of water problems

The history of water management in the Baixada is directly related to the impacts of national politics and economic development on the production of the metropolitan space, in the sense that water problems are deeply embedded in the asymmetric relations between the Baixada and the centres of power in the city of Rio de Janeiro (the current capital of the State of Rio de Janeiro and former capital of Brazil between 1763 and 1960). In the early days of the Portuguese colonisation, farms were established in the Baixada – after the displacement in the 1550s of the tribes of the Tupinambá indigenous groups – for the production of sugarcane. The violence over people was followed by violence over land and water in the form of deforestation, drainage of swamps and the opening of roads. The primitive state and the first generations of migrants acted together in the (trialectical) appropriation and transformation of water bodies according to the overall colonising enterprise (based on slave labour). In the 18th century, the river system was intensively used as a corridor for the transport of gold (and then coffee) from the

inland to the Guanabara Bay and then to the port of Rio de Janeiro. The insalubrious environment was responsible for low demographic densities, but that started to change in the 19th century with public interventions in terms of land reclamation, the construction of railway lines and the launch of early sanitation agencies (Fadel 2009). In 1858, the first Brazilian railway was inaugurated and established a regular connection between the Baixada and the city of Rio de Janeiro. Considering the current condition of water scarcity (see below), it is an irony that, for a brief period of time in the 19th century, water was abstracted in the Baixada and then transported by train to supply the water demands of the mushrooming capital.

After the abolishment of slavery in 1888, the Baixada was one of the preferential sites where ex-slaves could settle their families and find a place to live. Around the turn of the 20th century, the economic activity in the capital passed to attract large contingents of migrants, particularly from the northern provinces, in search of jobs and opportunities. Land reclaimed in the Baixada offered the cheapest alternative to a significant proportion of poor migrants that arrived with little more than their own labour power. If the state apparatus (from local to national agencies) played a fundamental role in promoting economic growth in the southeast of Brazil, it failed to offer basic water services to a large proportion of the population, whilst also tacitly tolerated the occupation of riparian areas and floodplains. A system of polders and dikes was built in the 1930s to facilitate food production, but was later gradually dismantled and engulfed by the chaotic urbanisation. A vast and semi-illegal real estate market was created with the parcelling of farmland and the formation of low-income neighbourhoods (Monteiro 2005).³ Immigration peaked in the industrialisation effort of the 1950s and 1960s, during which demographic growth reached rates as high as 10% per year. With the construction of the modern highway connection between São Paulo and Rio de Janeiro in 1951 – which crosses the Baixada – new areas became available to accommodate the relentless flow of incoming migrants. Soon after, with the transference of the federal capital to Brasília, the whole Rio de Janeiro area entered into a phase of politico-economic reorganisation, which overwhelmed even further the response capacity of the state to cope with a booming and unequal process of urbanisation in the Baixada. The bulk of migration declined since the 1980s, but the rate of demographic growth remained positive (in the 1990s, the metropolitan rate was slightly lower than the average in the State of Rio de Janeiro, respectively 1.14 and 1.28). According to the 2007 official estimates, the eight municipalities that form the Baixada have now a population of 3.2 million inhabitants, a large proportion constituted of working class families that depend on jobs available only in the city of Rio de Janeiro.⁴ Figure 1 illustrates the location of the municipalities and the main rivers of the Baixada Fluminense (Iguaçu and Sarapuí).

³ The formation of ‘favelas’ (shantytowns) is a phenomenon not normally associated with the Baixada Fluminense, but more typically a process of occupation of the hilly areas of the city of Rio de Janeiro. The majority of the Baixada includes low-income houses built by the residents themselves through a long period of time and expanded whenever there is some money available to invest in the house. Nonetheless, in the last few years there has been an increasing expansion of ‘favelas’ in the Baixada (Monteiro 2005), particularly along the river courses.

⁴ Considering the national Indicator of Poverty and Inequality (IBGE 2003), the eight municipalities that form the Baixada present some of the highest scores (scale between 0-100) in the State of Rio de Janeiro: Duque de Caxias (53.53), Mesquita (n/a), Nova Iguaçu (54.15), Belford Roxo (60.06), Nilópolis (32.48),

[figure 1 about here]

A perverse combination of disorganized urban growth in a tropical wetland with precarious infra-structure resulted in very favourable conditions for the proliferation of serious and recurrent water problems. The overall picture is one of a highly populated area that suffers from systematic problems of flooding (in the summer) and water deficit (in the winter, the dry season), whilst a large extension of the river system is seriously affected by organic and industrial pollution (with severe levels of chemical pollution, high levels of faecal coliform, low levels of oxygen in the water and contamination of sediments by heavy metal cf. ECOLOGUS 2007). According to the statistics of the Ministry of Health, 80% of child health problems in the Baixada (children younger than five years old) are related to bad water quality. Because of mounting river degradation and high population inflow, the Baixada shifted from being a water exporter to Rio de Janeiro in the 19th century to a net importer of 90% of its demand in the end of the 20th century (most water now comes from the Guandu River, with in its turn depends on the transference of water from the Paraíba do Sul River Basin). Even though surveys are not reliable in an area where many people live in unofficial neighbourhoods, the national sanitation bureau calculates that today around 71% of the population has some form of access to public water supply and 28% is served by public sanitation (a significant fraction with 'clandestine' connections). Only less than 10% of the sewage produced in the Baixada has some form of treatment before being discharged on the local watercourses or in the Guanabara Bay. Those not officially served by mains water rely on a combination of boreholes, water sellers, unauthorised connections to the public network and various forms of joint action between neighbours. As we witnessed in many locations, it is common that a group of residents divert and distribute treated water among them, sharing the construction and operational costs (these are examples of spontaneous initiatives that defy the apathy of public authorities). See Figures 2, 3 and 4 for illustration of the lived water problems of the Baixada Fluminense.

[figures 2, 3 and 4 about here]

The urban growth and the water problems of the Rio de Janeiro metropolis reflect a pattern that is common to all the large cities of Brazil, where social inequalities and the fragmentation of the space are closely related to the priorities of market transactions and the systematic production of social discrimination (Rolnik 2008). But in the specific case, the complexity of water problems in the Baixada is fundamentally the consequence of ill-conceived development policies and an unresponsiveness or incompetence of public agencies, which are all magnified by the dramatic influx of people into a flat tropical wetland area with minimal water infra-structure. The trialectical configuration of specific water related interactions (i.e. the exogenous commitments of the state, the rising social demands and the peculiar hydrological features) led to a difficult experience of recurrent floods, unreliable water services and widespread pollution. In the end, the Baixada has become a mosaic of regularised neighbourhoods (i.e. properties with approved

São João de Meriti (47.00), Queimados (67.52) and Japeri (76.37, which is the worst result in the State). Note that the State average is 32.44.

documentation and often connected to water mains) and unofficial settlements (i.e. households illegally built in public land, often along the river courses). The tension between the poorer residents and public authorities is vividly reflected in the statements made in the interviews. After years of an uncontrolled occupation of the riverbanks and floodplains, the spatial inequalities have become ingrained in the landscape, posing major barriers to the resolution of water problems, as pointed out by a civil servant:

“Well, I have to admit, it is basically impossible for any sector of the government, at the local or state level, to control and regulate those areas. These are vast areas, totally taken by years of irregular house developments... and the result is that the population is now afraid of the river because of the miserable water quality, result of the lack of sanitation and rubbish thrown to the water, and flooding” (interview in Jul. 2008).

Government agencies seem beleaguered with the complexity of social and environmental problems and have major difficulty to take into account the dissatisfaction of the local residents, who resentfully complain about the discrimination they experience:

“We live in a poor area, which is normally called ‘favela’; discrimination and prejudice exist, no doubt. When I go to the City Hall [to complain about water problems] and mention that I live here and everybody becomes quickly very suspicious; when I say something, I introduce myself, and people move away from me. (...) That is why our community centre is so important, to try to understand what the government is trying to do with our area, we are affected in some many ways and it is not always easy to know what is coming next” (interview in Jul. 2008, location Trio de Ouro, municipality of São João de Meriti).

Such confinement of large percentages of the population in marginalised, unsuitable zones can be directly related to what Agamben (1998:08) defines as the “spatialisation of the political exception”. This is reinforced in another interview with the leader of a local cooperative of artisans, who expressed a distinct resentment with the wealthier neighbourhoods of Rio de Janeiro that seem to enjoy much better public services:

“The agencies of the government ‘don’t give a damn’ about us here in the Baixada... This issue of quality of life is not for us but for those people in the southern part of Rio; all human beings should be treated the same way, equal rights, isn’t it.... But you go there and check if they have water problems, if they suffer from the lack of basic sanitation.... I am not angry with this people that live there, but I would like to see them living here in Campos Elíseos [locality in Duque de Caxias] and saying, here is as good as there in Barra da Tijuca [in Rio de Janeiro]” (interview in Jul. 2008, in Duque de Caxias).

Moreover, if the state agencies suffer from a chronic lack of means to cope with old and new water management problems, the local population is also responsible for aggravating that condition (e.g. dumping litter into the rivers, removing the vegetation, building houses in the more flood prone areas, etc.). The turbulent relation of sectors of the local communities with their immediate circumstances can be largely traced to the limited choices available to the majority of the population in terms of where to live. The lack of understanding of the some individuals can be also explained by a weak

identification with the Baixada (especially by those that arrived more recently), the lack of coordination between old and new residents and also the absence of effective educational programmes. Several of our interviews detected an uneasiness with the behaviour of some neighbours – with numerous examples of construction material, tires and even old cars discharged into the rivers – which is an attitude that, in the end, comes back to haunt all residents. As pointed out:

“The problem is the relationship of the many members of the community with water, what once can see in small, daily attitudes. When you see someone throwing rubbish into the river, instead of demanding a proper collection [system from the council], it demonstrates a relation that is not of partnership with the river, or maybe only a negative partnership. The same is true when some [residents] ask that the small streams are channelized and lined. Many people don't see much reason to collaborate with neighbours, to try to improve the situation. (...) Sometimes, there are limited prospects that those more aware of the problems influence the others; for those [not aware], the environmental debate is something still very distant. Of course, on the top of all that, there are the failures of the government, especially when it allows people to live along the floodplains” (interview in Oct. 2008).

The persistent water problems are obviously not a premeditated objective of state policies and household expansion, but are the result of something disordered and poorly coordinated. Nonetheless, from a strategic relational perspective, it is crucial to recognise that out of ‘such chaos’ there are clear winners who have benefited from a historically unresolved situation (e.g. demagogic politicians, consultants, construction companies, real estate agents, among others). Government initiatives have been historically directed towards the locations already served by some form of public infra-structure, primarily under the justification that the state couldn't make investments where the property and legal status are uncertain. Even so, there have been numerous cases where water infrastructure was provided to private developments without proper regularisation, which suggest that the developers were able to exert political influence over local authorities and the water utility. In the same way, parts of the Baixada have been incorporated into the middle-high income real estate market, as in the case of a residential complex in the municipality of Nova Iguaçu (ironically called ‘Acqua’ in an region with serious water problems) where flats were being aggressively advertised as a great investment opportunity (during our research, flats were sold for more than US\$ 100,000, whereas the majority of the population earns less than US\$ 3,000 per year). Such expensive housing developments are evidence of an emerging middle class that benefits from a growing service industry (e.g. local shopping centres), a process that magnifies the internal spatial and social inequalities within the Baixada (see Figures 5 and 6).

[figures 5 and 6 about here]

Large-scale intervention and the fragile mobilisation of the public

The magnitude and the suffering related to water management problems in the Baixada Fluminense are not new and certainly not unknown to politicians and policy-makers. On the contrary, the local situation has been repeatedly mentioned in plans and reports (e.g. FEEMA 1989; Rio de Janeiro 2005) and, more importantly, served as a

compelling justification for launching a series of investment programmes (typically funded by foreign loans). In the last two decades, more than one billion dollars have been invested in water infra-structure and river restoration in the Baixada (cf. Porto 2003), but such large sums of money have circulated through the preparation and construction of disjointed engineering infra-structure that, by and large, have produced only partial results.⁵ Those apparent failures of government initiatives are more than operational incompetence, but constitute a coherent feature of the relation between state and society articulated through the management of water. The systematic announcement of new projects for the same problems and the same locations – without resolving the structural deficiencies and without ever changing the hierarchical, authoritarian relation between state agencies and the local communities – serves the double purpose of containing popular criticism and creating a permanent source of political profit. The perpetuation of a precarious water condition has transformed popular demands into an enduring, and profitable, political machinery that operates intermittently both during the electoral campaigns (e.g. with the promises of new investments) and between elections (e.g. occasional and paternalistic provision of water lorries by politicians in exchange for votes in the next election, which are either paid with public money or provided by the water utility according to political influence).

It is necessary to move back in time – employing retroduction (see above) – to demonstrate how the trialectics between state, society and water in the Baixada has been influenced by the political manipulation of government interventions. Already during the main immigration period, in the 1950s and 1970s, populist approaches proved to be very effective with a contingent of illiterate, impoverished and disorganised migrants (Barreto 2006). State interventions were restricted to some isolated investments in water infrastructure, a trend that continued during the military dictatorship that controlled the country between 1964 and 1985 (Britto 2003). In the 1970s, public works in the Baixada represented a significant proportion of the total amount of resources allocated to water infrastructure in the State of Rio de Janeiro, but the distribution of funds and the operation of water services primarily favoured the wealthier, and politically stronger, places (Marques 1996). Given the limited political activity during the dictatorship period (e.g. the state governor and many local mayors of the Baixada were directly appointed by the central government), the majority of the local population could neither convey their demands, nor complain about the lack of water supply and sanitation. The only residual activity existed in the realm of the Catholic Church and under the protection of the progressive bishops of Duque de Caxias and Nova Iguaçu. The final years of the

⁵ The investments made by the various levels of government in the Baixada inevitably expanded the physical infrastructure and the coverage of water services. However, because of demographic growth and operational deficiencies, the average rate of improvement has been little more than 1% per year. Data from the Rio de Janeiro statistical office (www.cide.rj.gov.br) show that between 1994 and 2004 the number of households officially connected to mains water increased from 323,957 to 354,742 (9.5% of increase) and to mains swage improved from 52 to 2,420 (4,554%, but obviously still including only a fraction of the total number of households). Individually, in the same period two municipalities reduced the number of households served by mains water, namely Belford Roxo (-17.76%) and Queimados (-9.85%). In the year 2000, the total number of households in the Baixada was 834,460 units. Furthermore, as pointed out by an anonymous referee, the international funding agencies are also guilty for the inadequacies of the projects implemented in the Baixada Fluminense in recent decades, given that they have influenced the design of the interventions and supervised the work of government departments.

dictatorship (after 1979) were a phase of intense political revival and reaction to the democratic deficit: hundreds of neighbourhood associations and, soon later, the respective municipal federations of associations (i.e. MAB in Nova Iguaçu, MUB in Duque de Caxias, ABM in São João de Meriti) were created and began to play an important role in bringing popular demands to the responsible authorities.

During the 1980s, the popular mobilisation (primarily expressed through territorialized action around neighbourhood associations) was able to exert some influence on the direction and rate of investments, particularly of the public water utility (CEDAE). However, this period of higher responsiveness of public agencies was very short lived: a combination of turbulent transitions from one administration to another and lack of genuine managerial commitment resulted in a discontinuity of projects, notorious corruption and waste of resources (Britto 2003, Marques 1999, Porto 2003). Since then, most of the interventions of governmental agencies responsible for water services and environmental protection have been geared towards a series of piecemeal, top-down responses. For instance, the first governor elected in the end of the dictatorship (Brizola) seized the opportunity to consolidate his leadership in the Baixada and was quick to recognise the strength of the newly created neighbourhood associations and of the Political Committee of Sanitation of the Baixada Fluminense (a grassroots organisation dedicated to debate water and sanitation issues). By offering paid jobs in the government to the most prominent leaders, those organisations were soon under the control of the state government and had their autonomy gradually undermined (Porto 2003).

In 1984, the Global [Comprehensive] Sanitation Plan (PEB) was launched by Governor Brizola with ambitious targets and an innovative focus on condominial sanitation schemes (i.e. a low-cost technology through which pipelines are laid under paths and across properties, rather than under roads, using local labour). However, clashes between state and federal administrations destabilised the implementation of the PEB and, out of 576 km of pipelines initially planned, only 70 km were effectively installed. The next administration (Governor Franco) redirected the PEB project to the more conventional technological design and reduced the overall target to 251 km (which was also not achieved). The problems of bad services, limited involvement of the population and a problematic integration between state and municipal administrations nonetheless persisted. The water utility (CEDAE) continued to prioritise investments in the wealthier locations within the metropolitan area, which obviously reduced the chances of the Baixada. A new initiative (called Sector Water Supply Plan) was launched by Governor Franco and aimed, but failed, to install 89 km of pipelines. In addition, in 1988 Franco introduced another project, Reconstruction Rio, in response to the outcry over the floods that castigated the Baixada two years earlier, with a budget of US\$ 288 millions (mostly funded by the World Bank) for sanitation, urban drainage and solid waste. But only around half of that amount was effectively spent due to bureaucratic delays and, more important, the end of the governor's term of office. Brizola returned as governor in 1990, but his second mandate was again marred by a tumultuous relation with the federal government.

Despite the repeated problems that characterised the various projects formulated in the 1980s and 1990s (note that only a subset is mentioned here), a much larger initiative was launched in 1994, the Guanabara Pollution Control Programme (PDBG) with a total budget of US\$ 860.5 millions (funded by the IADB and JBIC). The focus of

the new Programme was the whole territory that drains to the Guanabara Bay and, specifically for the Baixada, PDBG included major infrastructure works, such as seven new storage reservoirs (to serve a population of 575,000), two sewage treatment works (to serve an equivalent population), drainage, planning, environmental restoration and educational projects (Rio de Janeiro 1994). Unfortunately, five gubernatorial mandates later (respectively, Governors Brizola, Alencar, Garotinho, Rosinha and Cabral), PDBG is still not concluded, having been affected by constant delays, lack of dialogue with civil society, failure to engage the local authorities, and ill-conceived projects that are not easily connected to the existing water infrastructure (Britto 2003). Projects have been fraught with serious evidences of corruption, waste of resources and the overlapping of targets (Vargas 2001:145). In addition, local authorities systematically failed to apportion resources to complement investments made by the state administration (Britto 1998).

The distortions related to the sequence of investment programmes were aggravated by the insensitivity of the water utility to the demands of the impoverished communities of the Baixada. CEDAE is well known for its insensitivity to social criticism and permeability to the interests of private construction companies (Marques 1999) and, more recently, its involvement in the stock market (i.e. preparation to sell shares to private investors in the stock market cf. CEDAE 2008). Based on our interviews with residents, it is clear that the dialogue between the water utility and its customers has been very contentious. For instance, in 2006, the company suddenly started a harsh cost recovery campaign (to reduce the rate of unaccounted for water), which included draconian measures, such as cancelling water supply and entering family houses illegally and without prior permission. Because of an alleged arbitrariness in the cancellation of services, residents in some areas started to protest and organise themselves in commissions (such as in the Araruama Park in the municipality of São João do Meriti). Moreover, these are only provisional commissions with a limited mandate and small membership. Some residents have also appealed to the public solicitor [*defensor público*], who in an interview expressed his own frustration with the unwillingness of the company to negotiate old debts on more reasonable terms. Similarly, in 2007, a councillor of Duque de Caxias escorted a protest group to the headquarters of the company in Rio de Janeiro to complain about the lack of water, but the group heard that nothing could be done due to the lack of resources and, more importantly, the fact that the residents did not formally own the land where their houses were built. In the end, the group received the gloomy recommendation from CEDAE: “pray to rain, that is the best you can do...” (interview with a local resident, Jul. 2008).⁶

Overall, the more productive dialogue between the government and the neighbourhood associations that was established in the first moment of redemocratisation rapidly declined and was replaced by circumstantial and ephemeral forms of communication. Particularly in the case of internationally funded projects, the lending agencies demanded the formation of ad hoc committees and commissions, but with only a

⁶ Because of the recurring unresponsiveness of the state water utility and the influence of national policies in favour of privatisation, various municipal administrations in the Baixada have considered the cancellation of the contract with CEDAE and the concession of services to private operators. The privatisation of municipal services has been strongly, and till now, successfully opposed by the local population, sometimes at the cost of physical confrontation, as happened in the town of Belford Roxo in 2002 when the mayor tried to bypass the local council and nearly transferred the water service to an international operator (cf. various interviews, 2008).

narrow remit and questionable legitimacy (Macedo et al. 2007). With the weakening of the neighbourhood associations, there has been a growing prominence of local NGOs and similar campaign groups in the Baixada. Different than the class-based associations, which focused their action primarily on social justice, most environmental NGOs sponsor a more ‘pragmatic’ strategy centred on claims for eco-efficiency and better environmental regulation. Environmentalists seem more inclined to consider their initiatives as part of a global movement, while community leaders are more concerned with the local context. The typical NGO activist in the Baixada is someone with a university degree, low middle class professional with strong views about the environment, but not necessarily a clear political affiliation (according to various interviews in 2008). NGO activists are often willing to accept or tolerate the political disputes and the electoral mechanisms that maintain politicians in their seats, as long as they demonstrate some form of commitment to environmental matters. In addition, in many cases the NGOs rely on public funds or some form of governmental support (through various grant schemes nowadays available in Brazil), which means a more pervasive relation between environmental NGOs and the state. That often creates some level of suspicion, as observed by a local community leader in an interview:

“The NGOs, because of their interests, fail to understand the water problem as a whole, including geography, legislation, etc. But in public, it seems that the members of the NGOs know everything and we, from the community, are totally ignorant” (interview in Jul. 2008).

The latest attempts

The predominant experience of water management in the Baixada since the 1980s can be summarised as the constant announcement of new initiatives and, even before a single drop of water is supplied or metre of riverbank is recovered, the organisation by politicians of large events to celebrate the new programme (those typically coincide with the beginning of an electoral campaign, as happened in 2008 during our fieldwork). It is normally the case the last interventions ignore any lessons learned in earlier projects, but follow only a short, bureaucratised appraisal of previous experiences. As mentioned above, the consolidation of a ‘democratic’ regime in the country in the last decades paradoxically coincided with the progressive demobilisation of the grassroots movement that emerged in the end of the dictatorship and gradually transformed the treatment of popular demands into a vote-seeking machine in the Baixada.⁷ A long ethnographic study conducted by Barreto (2006) demonstrates the ambiguities of the contemporary political disputes in the Baixada, which unfold through a capricious mixture of neglect and populism. That was essentially the result of the weak forms of grassroots mobilisation with the persistent attempt to domesticate spontaneous leaders and isolate the more critical voices.

It must be acknowledged that water management and environmental restoration in crowded areas are notoriously expensive, however that is not enough to explain the persistence of precarious water services, insalubrity and flooding. Water problems in the

⁷ In our interviews after the 2008 municipal election, we heard about serious evidences of electoral corruption (apparently, votes were being bought at US\$ 20 to 35).

Baixada are first and foremost a vivid outcome of political disputes ingrained in social and spatial inequalities. As acknowledged in an interview with a municipal authority:

“The active involvement of the local actors has historically been very low, too low; we should recognise that past interventions didn’t produce much change, but only reproduced a clientistic logic. The initiatives were formulated elsewhere, they entered into the territory and eventually left without democratising urban policies and creating different relations between society and the state” (interview in Jul. 2008, member of the municipal administration of Nova Iguaçu).

The shortcomings of infra-structure and river engineering projects in the Baixada mirror the more recent introduction of the new water legislation in the State of Rio de Janeiro since 1999 (Law 3239), which conforms to the 1997 federal law (an acclaimed milestone of the history of the water governance reforms in Brazil).⁸ Formally, the river basin committees are now the democratic forums where the representatives of civil society organisations, water users and the government are expected to deliberate about the strategic management of water resources. However, the Baixada was prevented from having its own river basin committee due to an authoritarian decision of Governor Rosinha in 2005 (Decree 38,260) that incorporated it into the activities of the broader Guanabara Bay Committee. The imposed committee ended up covering all river basins that drain to the Guanabara Bay and two independent lacustrine systems. The formation of such large assembly went against the fragile mobilisation that started to emerge in the west and east sections of the Bay in the early 2000s. It represented a dilution of the stakeholder representation and reduced the focus away from the social deprivation and political discrimination that predominantly characterise the water management problems of the Baixada. In addition, even before the Guanabara Bay Committee was established, the government commissioned a master water plan to technical consultants with practically no contact with the local population (published in Rio de Janeiro 2005).

Although the new regulatory context encourages the formation of ‘multistakeholder approaches’ that are supposed to involve all the social actors, government agencies have maintained a privileged position within the Guanabara Bay Committee, whilst the weaker groups (above all, those that represent the marginalised areas, such as the Baixada) have had major difficulties to be treated as equal partners. The paternalistic forms of engaging the local residents correspond to the observation of Mosse (2001) that participation can be operationally constrained by formal and informal bureaucratic goals and, particularly, when it is oriented towards concerns that are external to the local reality. Furthermore, the entire committee has been systematically sidelined by the state administration vis-à-vis the centralised approval of economic development plans that have a significant impact on the aquatic systems of the Metropolitan Area. The most important demonstration was the decision to build a petrochemical complex to the east of the Baixada (called Comperj), which is likely to aggravate water scarcity in an area

⁸ The 1997 legislation (Law 9433) created the National Water Resources Management System (SINGREH) as an administrative structure that extends from the federal government to state authorities and river basin committees. The legislation introduced new regulatory instruments, such as plans, river classification, licences, and bulk water charges, which are classical tenets of the governance canon. Despite the national configuration, most of the resources and the decision-making power remain with the National Water Agency (see Ioris 2007).

already suffering from chronic water deficits. Five possible sources of freshwater to Comperj were under consideration at the time of our fieldwork, but the Guanabara Bay Committee (despite its legal mandate) was never involved in the decision-making process and had been only marginally informed about technical details. Comperj is also going to exacerbate the impacts on the estuarine area of Guapi-Mirim, one of the best preserved biological reserves in whole metropolitan area.

Together with Comperj, a new round of investments in terms of water infrastructure and river restoration was announced in 2007 (as part of the national Programme to Accelerate Growth - PAC) with US\$ 370 million for urban drainage (funds transferred to the municipal authorities), US\$ 100 million for water supply and sanitation (under the responsibility of CEDAE) and US\$ 135 million to restore watercourses in the Iguaçú River Basin (under the responsibility of the state water regulator, SERLA; the Iguaçú River Basin has an area of 762 km², which corresponds to 53% of the Baixada Fluminense, and it is where most problems occur). Based on our assessments, however, there are at least two fundamental problems with PAC, one political and another operational. The first problem is the decisive influence of party politics on the selection of projects and prioritisation of intervention areas, which evidently indicates a private appropriation of state action. Among the eight municipalities of the Baixada, Nova Iguaçú received substantially more resources for water supply and sanitation than the other seven, even with comparable levels of water problems (according to SNIS data, available at www.snis.gov.br). To some extent, that was due to a better structure of municipal planning (e.g. recent municipal plans were published in 1992, 1997 and 2001), which helped the PAC to identify areas of intervention in 52 neighbourhoods of Nova Iguaçú. Even so, the decisive reason seems to be the political proximity between Mayor Lindberg Farias, Governor Cabral and President Lula. Farias is a young politician that, before being appointed candidate in 2004, moved from the far-left to a pragmatic centre-right position.⁹ Water issues represented an important part of his political manifesto and during the campaign Farias declared that president Lula had promised a “massive investments in asphalt and basic sanitation” in Nova Iguaçú (quoted in Barreto 2006). All the evidence indicate that it was not a coincidence that in 2008, the year of Lindberg’s re-election, Nova Iguaçú had become the third largest receiver of PAC investments in the whole country.

The second main problem is the remaining authoritarianism in the preparation and implementation of PAC projects, despite the official discourse of participation and decentralisation. Our research followed closely and for several months the restoration project, attending public events and interviewing the various sectors involved. It was possible to notice a systematic attempt of public agencies to present the project as an advanced and improved response to the recurrent problems of flooding and river degradation. From the outset, it was evident that the project included an element of ‘millenarianism’, as demonstrated by Governor Cabral at its inauguration on 01/07/2008, when he declared that the project will be able to ‘save [sic] the people that live along the river and suffer from flooding’ and will benefit 2.5 million people (a gross exaggeration, since only part of the Iguaçú river basin will be the object of the project). Curiously,

⁹ Farias is a high-flier politician with no previous links with the city of Nova Iguaçú, but who was selected by his party (PT) as someone with a serious potential to run for governor in the near future (likely to happen in 2010, especially if Cabral is appointed as vice-presidential candidate).

despite the extensive intervention in the river system, an ‘administrative’ decision dispensed with the legal requirement of a prior environmental impact assessment and only a simplified report was produced to allow the project to be licensed by the environmental regulator. The most controversial aspect of the project, nonetheless, was the requirement to remove more than 2,300 low-income families (around 10,000 persons) in order to make space for the machinery that was needed to dredge the river courses. Our fieldwork coincided exactly with the household surveillance of those impacted by the river restoration, which provided a unique opportunity to compare current practices with the shortcomings identified in past water management projects. For example, the survey of those affected by the river restoration project was conducted by social workers hired by local NGOs, which in its turn were contracted by construction companies that provide service to the government.

The fundamental mistake of the relocation process, amplified by the inflexible dialogue with local communities, was the undifferentiated treatment of the various groups of residents. Those dwellers that are relatively better-off expressed their discontent with the fact that the investments made in their houses or the backyard space would be lost when they move to flats still to be constructed. Those relatively worse-off (mainly unemployed people leaving on social benefits) complained that they would be forced to pay for the new residences and also pay household bills (electricity, water, and council tax) they could currently manage to avoid. Moreover, in the several meetings in 2008, civil servants and consultants repeatedly presented a handful of standard PowerPoint slides with an overview of the project, but provided no specific answers about the operational details that really mattered to the affected population. Most of our interviews with residents in the days immediately after the meetings demonstrated a growing uneasiness about the project and a high level of residual uncertainty. The public did not just oppose the river restoration project in the light of bad previous experiences (which are vividly present in their memories), but the initiative seemed to multiply the vices of the previous approaches under a superficial discourse of public participation and sustainable water management that was borrowed from the theory of water governance (as demonstrated in ECOLOGUS 2007). On the whole, the alleged improvements of the ongoing initiatives (under the search for better governance) are in fact restricted to superficial changes in rhetoric without revising the discriminatory forms of addressing the complexity of local water problems.

Water Problems at the Trialectics between State, Society and Nature

The experience of the Baixada Fluminense represents an emblematic example of the complex evolution of water management problems and how these are deeply incorporated into the reproduction of social and political inequalities. The urban development of the Baixada, in the sphere of influence of Rio de Janeiro, is not atypical of other Latin American conurbations. Nonetheless, the severe reality of recurrent water problems (e.g. pollution, flooding and water scarcity) provides a vivid illustration of the asymmetries of power behind relations between the state and competing social groups. Power has been exercised over water in the Baixada both through selective public policies (i.e. that benefit the stronger and more endowed players) and through the interstices of state action (i.e. the structural limitation of the state apparatus to deal with

an area with fast population influx and unplanned land use). The same state, which represents primarily the interests of the conservative elite outside the Baixada, is also guilty for stimulating a particular form of regional development based on low salaries, fiscal incentives and abundant workforce. In that sense, the management of natural resources in the Baixada is an integral element of the public policies and class-based struggles mediated by the capitalist state in charge of the industrialisation and the economic development, with piecemeal concessions to popular demands.

The intricate and multiscale interventions of the state can only be properly analysed by making use of a dynamic theoretical framework, such as the strategic-relational approach, particularly in its more recent version that incorporates territory, place, scale and networks (Jessop et al. 2008). However, the example of the Baixada Fluminense demonstrates the need for an explanatory tool that more comprehensively articulates the tensions between social dynamics, state authority and environmental change. It was claimed above that the philosophical basis of trialectical thinking – in the context of historical materialism and the social production of space – helps to understand the origin of problems, the persistence of contradictions and the search for solutions. In the particular case of water management, the trialectics between state, society and nature provides the ontological grounds to explain nuanced occurrences and broader tendencies. Through the evolving trialectical relations between state, society and nature we can perceive how the recent calls for environmental governance and public participation have been contained by the long legacy of authoritarianism and social exclusion, which has historically characterised the allocation and use of water in the Baixada. It is in the action of the state, as the third term of the trialectics – both a mediator of clashes and an executor of the hegemonic demands – that the contradiction and the intricacies of water management become more evident. Local water problems remain part of a potentially explosive, but in practice subservient, combination of poverty, precarious urbanisation, generalised violence and opportunistic politics. If daily water problems don't seem to attract proper attention from public authorities or managers of public utilities, it serves as a compelling justification for regular investment plans and regional development programmes. Those erratic projects are in effect the only moment when the water problems of the Baixada receive specific consideration by state agencies and occupy some space in the media. Such initiatives, however, are never debated upfront with local communities, but are only based on an expert interpretation of water problems and, more importantly, on a politicised prioritisation of targets.

The combination of government unresponsiveness and internal disagreements have led a number of local residents more predisposed to resort to populist leaders rather than taking part in endless meetings and marches to complain about their water problems. During our research, it was possible to identify several politicians ready to send water tankers (naturally, in exchange for votes later in the coming election) and willing to make demagogic speeches on water pollution or on the misery of flooding. A related problem is the internal division between community members and the (partial) discredit of traditional grassroots associations. Even so, it is not because established forms of political mobilisation fail to represent all the people that social groups will be necessarily prevented from searching for alternative forms of reaction. On the contrary, the untold water history of the Baixada is the long saga of survival and popular creativity developed to overcome a range of difficulties and obstacles (i.e. what indicates that an unfavourable

sociopolitical structure has not avoided the materialisation of critical agency). Despite the fact that the performance of government agencies is still fraught with political and operational biases, the more organised communities of the Baixada continue to spontaneously raise their voice against injustices whenever they can seize the opportunity. Many grassroots organisations have understood that the construction of more effective basis of water management can only emerge from the reversal of the deep inequalities established and maintained through a broad historico-geographical configuration, which keeps treating the Baixada as the political backyard of the ‘paradisical’ places found only in the southern part of the city of Rio de Janeiro.

Acknowledgements

This research was conducted in the Institute of Research on Urban and Regional Planning (IPPUR) of the Federal University of Rio de Janeiro and partially supported by the Brazilian Research Council (CNPq). The author wishes to thank all those that took part in the interviews and the information provided by various organisations. Also Maria A. M. Costa and Henri Acselrad for the friendly research partnership and Jenny Johnston for the cartographic work. Last but not least, the comments of four referees helped to strengthen the paper and refine its argument. Of course, the responsibility for mistakes in the final product remains entirely with the author.

References

- Agamben G (1998) *Homo sacer: Sovereign Power and Bare Life*. Translated by D. Heller-Roazen. Sanford: Stanford University Press.
- Anand P B (2007) Capability, sustainability, and collective action: An examination of a river water dispute. *Journal of Human Development* 8(1):109-132.
- Asher K and Ojeda D (2009) Producing nature and making the state: Ordenamiento territorial in the Pacific lowlands of Colombia. *Geoforum* 40:292-302.
- Barreto A S (2006) “Cartografia Política: As Faces e as Fases da Política na Baixada Fluminense.” Unpublished PhD thesis, UFRJ.
- Batterbury S P J and Fernando JL (2006) Rescaling governance and the impacts of political and environmental decentralization: An introduction. *World Development* 34(11):1851-1863.
- Blomquist W and Schlager E (2005) Political pitfalls of integrated watershed management. *Society & Natural Resources* 18:101-117.
- Brenner N (2004) *New State Spaces: Urban Governance and the Rescaling of Statehood*. Oxford: Oxford University Press.
- Brenner N, Jessop B, Jones M and MacLeod G (eds) (2003) *State/Space: A Reader*. Oxford: Blackwell.
- Britto A L (1998) A evolução dos serviços de saneamento na Baixada Fluminense. In Britto A L and Porto H R L (eds) *Serviços de Saneamento na Baixada Fluminense: Problemas e Perspectivas* (pp 11-40). Rio de Janeiro: FASE.
- Britto A L (2003) Implantação de infra-estrutura de saneamento na Região Metropolitana do Rio de Janeiro. *Estudos Urbanos e Regionais* 5(1):63-77.

- Bryant R L and Bailey S (1997) *Third World Political Ecology*. London and New York: Routledge.
- Castree N (1996) Birds, mice and geography Marxisms and dialectics. *Trans. Inst. Br. Geogr NS* 21:342-362.
- CEDAE (2008) *Boletim Oficial da Companhia Estadual de Águas e Esgotos*, number 25. Rio de Janeiro: CEDAE.
- Conca K (2006) *Governing Water: Contentions Transnational Politics and Global Institution Building*. Cambridge, Mass. and London: MIT Press.
- Cornwall A (2004) Spaces for transformation? Reflection on issues of power and difference in participation in development. In Hickey S and Mohan G (eds) *Participation: From Tyranny to Transformation?* (pp 75-91). London: Zed Books.
- ECOLOGUS (2007) *Relatório Ambiental Simplificado – Primeira Fase do Projeto de Controle de Inundações e Recuperação Ambiental das Bacias dos Rios Iguaçú/Botas e Sarapuí (Projeto Iguaçú)*. Rio de Janeiro: SERLA.
- Ekers M and Loftus A (2008) The power of water: Developing dialogues between Foucault and Gramsci. *Environment and Planning D* 26:698-718.
- Fadel S (2009) *Meio Ambiente, Saneamento e Engenharia no Império e na Primeira República*. Rio de Janeiro: Gramond.
- FEEMA (1989) *Qualidade das Águas da Baía de Guanabara e Rios Contribuintes: Relatório Técnico*. Rio de Janeiro: FEEMA.
- Gandy M (2004) Rethinking urban metabolism: Water, space and the modern city. *City* 8(3):363-379.
- Gandy M (2006) Zones of indistinction: Bio-political contestations in the urban arena. *Cultural Geographies* 13:497-516.
- Garin P and Richard-Ferroudji A (2008) Les conflits de légitimité sous-jacents aux conflits d'usage. *Houille Blanche* 4:40-46.
- Gidwani V (2008) Capitalism's anxious whole: Fear, capture and escape in the *Grundrisse*. *Antipode* 49(5):857-878.
- Giglioli I and Swyngedouw E (2008) Let's drink to the great thirst! Water and the politics of fractured techno-natures in Sicily. *International Journal of Urban and Regional Research* 32(2):392-414.
- Gramsci A (1971) *Selections from the Prison Notebooks*. Trans./Edit. Hoare, Q. and Smith, G.N. London: Lawrence and Wishart.
- Grove K (2009) Rethinking the nature of urban environmental politics: Security, subjectivity, and the non-human. *Geoforum* 40:207-216.
- Harvey D (1996) *Justice, Nature and the Geography of Difference*. Oxford: Blackwell.
- Haslam S (1991) *The Historic River: Rivers and Culture down the Ages*. Cambridge: Cobden of Cambridge Press.
- IBGE (2003) *Map of Poverty and Inequality – Brazilian Municipalities 2003*. Brazilian Institute of Geography and Statistics (IBGE). Available in English and on-line at: www.ibge.gov.br [accessed on 29 Jul 2009].
- Ioris A A R (2007) The headwaters of water problems in Brazil: Commodification and exclusion. *Capitalism Nature Socialism* 18(1): 28-50.
- Jessop B (1982) *The Capitalist State: Marxist Theories and Methods*. Oxford: Martin Robertson.
- Jessop B (1990) *State Theory*. University Park, PA: Pennsylvania State University Press.

- Jessop B (2000) The crisis of the national spatio-temporal fix and the tendential ecological dominance of globalizing capitalism. *International Journal of Urban and Regional Research* 24(2):323-360.
- Jessop B (2007) From micro-powers to governmentality: Foucault's work on statehood, state formation, statecraft and State Power. *Political Geography* 26(1):34-40.
- Jessop B (2008) *State Power: A Strategic Relational Approach*. Cambridge: Polity Press.
- Jessop B, Brenner N and Jones M (2008) Theorizing sociospatial relations. *Environment and Planning D* 26:389-401.
- Kalyvas A (2002) The stateless theory: Poulantzas's challenges to postmodernism. In Aronowitz S and Bratsis P (eds) *Paradigm Lost: State Theory Reconsidered* (pp 105-142). Minneapolis and London: University of Minnesota Press.
- Karriem A (2009) The rise and transformation of the Brazilian landless movement into a counter-hegemonic political actor: A Gramscian analysis. *Geoforum* 40:316-325.
- Keil R (2005) Progress report: Urban political ecology. *Urban Geography* 26(7):640-651.
- Latour B (2004) *Politics of Nature: How to Bring the Sciences into Democracy*. Trans. C. Porter. Cambridge, Mass. and London: Harvard University Press.
- Lefebvre H (1968) *Dialectical Materialism*. Trans. J Sturrock. London: Cape Editions.
- Lefebvre H (1991) *The Production of Space*. Trans. D Nicholson-Smith. Oxford: Blackwell Publishing.
- Lipietz A (2000) Political ecology and the future of Marxism. *Capitalism Nature Socialism* 11(1):69-85.
- Loftus A and Lumsden F (2008) Reworking hegemony in the urban landscape. *Trans. Inst. Br. Geogr NS* 33:109-126.
- Macedo M E, Maia J G V and Monteiro M G (eds) (2007) *Sociedade em Movimentos: Trajetórias de Participação Social na Baixada Fluminense*. Rio de Janeiro: Imprinta.
- Mann G (2009) Should political ecology be Marxist? A case for Gramsci's historical materialism. *Geoforum* 40:335-344.
- Marques E C (1996) Equipamentos de saneamento e desigualdades no espaço metropolitano do Rio de Janeiro. *Caderno de Saúde Pública, Rio de Janeiro* 12(2):181-193.
- Marques E C (1999) Social networks and institutions in the construction of the state and its permeability. *Revista Brasileira de Ciências Sociais* 14(41): 45-67.
- Miliband R (1969) *The State in Capitalist Society*. London, Melbourne and New York: Quarter Books.
- Monteiro L A (2005) A Baixada Fluminense em perspectiva. *Anos 90, Porto Alegre* 12(21/22):487-534.
- Mosse D (2001) 'People's knowledge', participation and patronage: Operations and representations in rural development. In Cooke B and Kothari U (eds) *Participation: The New Tyranny?* (pp 16-35). London and New York: Zed Books.
- Neumann R P (2009) Political ecology: Theorizing scale. *Progress in Human Geography* 33(3):398-406.
- Offe C (1996) *Modernity & The State: East, West*. Cambridge: Polity Press.
- Porto H R L (2003) *Saneamento e Cidadania: Trajetória e Efeitos das Políticas Públicas de Saneamento na Baixada Fluminense*. Rio de Janeiro: FASE.

- Rio de Janeiro (1994) *Programa de Despoluição da Baía de Guanabara*. Rio de Janeiro: Governo do Estado.
- Rio de Janeiro (2005) *Plano Diretor de Recursos Hídricos da Região Hidrográfica da Baía de Guanabara. Bacia dos Rios Iguaçu-Sarapuí*. Rio de Janeiro: SEMADUR.
- Roberts A (2008) Privatizing social reproduction: the primitive accumulation of water in an era of neoliberalism. *Antipode* 40(2):535-560.
- Rolnik R (2008) A lógica da desordem. *Le Monde Diplomatique (Brazil)* 13:10-11.
- Schmidt A (1971) *The Concept of Nature in Marx*. London: New Left Books.
- Soja E W (1996) *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places*. Cambridge, MA & Oxford: Blackwell.
- Swyngedouw E (2004) *Social Power and the Urbanization of Water: Flows of Power*. Oxford: Oxford University Press.
- Swyngedouw E (2007) Technonatural revolutions: The scalar politics of Franco's hydro-social dream for Spain, 1939-1975. *Trans. Inst. Br. Geogr NS* 32:9-28.
- Swyngedouw E and Heynen N C (2003) Urban political ecology, justice and the politics of scale. *Antipode* 35(5):898-918.
- Vargas L A (2001). "O Programa de Despoluição da Baía de Guanabara: Uma Análise na Perspectiva de Saúde Coletiva." Unpublished PhD thesis, UERJ.
- Wilson H T (1999) Time, space and value: Recovering the public sphere. *Time & Society* 8(1):161-181.
- Žižek S (2006) *Parallax View*. Boston: MIT Press.
- Žižek S (2008) *In Defense of Lost Causes*. London and New York: Verso.