Values, meanings, and positionalities: the controversial valuation of water in Rio de Janeiro

Deliberative assessment in complex socioecological systems : Recommendations for environmental assessment in drylands

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Values, Meanings and Positionalities: The Controversial Valuation of Water in Rio de Janeiro

Abstract: Water is not only a valuable substance, but is also valued in different ways dependent on substantive social, ecological and historical conditions. The concept of *water value positionality* is introduced to describe the dynamic ensemble of meanings forged from cooperation and competition in the allocation, use and conservation of water. Positionality helps us to understand water conflicts as individuals and groups struggling to legitimise their valuation of water. The explanatory function of positionality is demonstrated with an empirical case study in the metropolitan region of Rio de Janeiro. Hegemonic positionality depicts water as an economic resource required for regional development and urban growth. This has been increasingly challenged by sectors of the state apparatus who call for the monetary valuation of water. Beyond these two perspectives, there exists a vast range of water values articulated by the local communities in their struggle for survival and political affirmation. The conclusion is that, in the process of constantly revaluing water, there are temporary 'positions of value' that last and change with socio-cultural and politico-ecological experiences.

Key words: positionality, water value, political ecology, water conflicts, ecological economics, Baixada Fluminense, Rio de Janeiro, Brazil

Introduction

Water is a vital substance whose perennial circulation helps to stabilise the climate, transform the landscape and connect the multiple forms of life. Individuals, communities and societies have developed complex mechanisms for dealing with water systems, which converge or deviate with interpretations of value. Water values are dynamic assessments of worthiness that emerge out of socio-ecological interactions and the continuous interplay between demands and opportunities. The values of nature and water in particular include a range of expressions defined through socially constructed material and discursive practices embedded in socionatural formations (Harvey, 1996). The valuation of a specific water-related activity reveals not only preferences about some hydro-ecological features, but it is influenced by different forms of reasoning seeking political legitimisation. For example, a riparian community may place a high value on the preservation of river flows and a lower value on the construction of dams or on the exploitation of the same river for hydropower and agriculture irrigation. Other stakeholder groups probably have another set of priorities, which suggests an alternative valuation of the water system and distinct management reasoning.

Despite its broad significance, most of the contemporary debate tends to ignore the politicised dimension of water value expressions and the importance of the concrete socio-ecological experiences. The ability to care about nature and assess the value of eco-hydrological characteristics directly depends on the extent to which nature figures meaningfully in the cultural and locational experience of the lived environment (King, 2003). Although a significant body of scholarly work has tried to capture such inherent complexity of valuation – from environmental ethics to natural resource economics – in most cases disciplinary boundaries have prevented a more relational understanding of the origins and implications of water value. Superficial calls for pluralism have also fallen short of recognising the situated ontology of water values and the politicised implications

of valuation mechanisms for water management. The practical consequence is that policy-making has often failed to integrate competing values and associated demands (Paavola, 2007) and led to a prolongation of conflicts and misunderstandings (Ananda and Herath, 2003). Rather than purely economic, anthropological or moral interpretations, this essay will offer a contribution to the contemporary debate on water values by emphasising the political connection between personal preferences, group trajectories and broader socio-economic processes. Examination of the value of water requires dealing with multiple expressions of worthiness that emerge according to specific historic-geographical circumstances and that are constantly reshaped under politicised interactions between individuals, groups and organisations.

Water values are qualified attributes at the intersection between individual and collective preferences, market and non-market demands and local and higher levels of activity. Furthermore, the valuation of water is a political manifestation of achievements and insufficiencies of individuals, communities and societies. Water does not have a single value, but attracts an ensemble of meanings that reflect historico-geographical circumstances, as well as cooperation and antagonisms. In that sense, water values are positioned constructions that result from the political mediation between material experience and symbolic representation. The values of water are expressed as *positionalities*, which contain the multiple values derived from economic and non-economic preferences, wishes and demands. As observed by Derman and Ferguson (2003: 285), how the valuation of water is carried out in practice demonstrates the forms "used by actors to position themselves and their interests". The different positionalities of water values need to be seen as interconnected categories, without rigid boundaries, but reflecting a perpetual process of reflexivity and experimentation. By defining positionality as the dialectics of subjectivity and materiality inserted in the structures of water management, it should become clear that water values are both relational (i.e. the outcome of relations between individuals and groups; and also between society and nature; and society, state and nature) and contested (i.e. the interface between creative agency and inertial structures happening in a particular space-time condition).

The concept of value positionality is more than just a theoretical abstraction added to the vast debate about forms of nature valuation, but it can assist examination of conflicts and collaboration around the allocation and use of water. In order to appreciate the significance of value positionalities, a study was carried out in the Baixada Fluminense, a wetland area in the southeast of Brazil comprising eight municipalities located in the northwest of the city of Rio de Janeiro, the former capital of Brazil between 1763-1960, with more than three million residents (CIDE, 2005). Catchment management in the Baixada Fluminense started with the reclamation of land for farming and the establishment of river navigation (between the 16th and 19th centuries) and expanded into river engineering, flood defence and urban water supply (in the 20th century). These interventions left a lasting legacy of water management problems; notably flooding, pollution and human-made water scarcity. Official statistics indicate 71% of the households have access to public water supply; only 28% to public sanitation; and due to untreated effluents and inadequate disposal of solid waste, the ecological condition of the main local rivers (Iguaçu River Basin) is very poor, particularly in terms of dissolved oxygen, nitrogen and phosphorous (Rio de Janeiro, 2005). Government responses to these problems have been notoriously partial, selective and even

discriminatory, with most public investment serving stronger groups and locations (Ioris and Costa, 2009). We claim that one interpretation to explain the causes of water management problems in the Baixada Fluminense, is a tense opposition between different positionalities of water values. Before we examine the case study, it is necessary to elaborate on the meaning and implications of positionality.

Water Values as Positioned Constructions: The Positionality of Water Values

Water is a complex, hybrid substance that pervades and underpins the perpetual metabolism between nature and society (cf. Haraway, 1991; Marx, 1976; Whatmore, 2002), while the phenomenological and psychological characteristics of water can be related even to the contingency and temporality of human life (Bachelard, 1942). Water captures and embodies processes that are simultaneously material, discursive and symbolic, while the mechanisms of exclusion from and access to water manifest multiple power relationships (Swyngedouw, 2004). As a result, water is not only a valuable substance, but it is valued in different ways according to specific socionatural relations. A genuine axiology of water should start with the recognition that the values of nature can only be understood in relational terms (Gruen, 2002; Huber, 2009; Jackson, 2006). The long list of water values – religious, aesthetic, economic, ethical, etc. – all are assemblages of meanings derived from exchanges that happen in specific historical and geographical conditions. Values are ultimately the enduring outcomes of past experiences that precipitate, and are stored, in the discourse, morality and imagination of human societies. It means that the valuation of water is neither neutral nor purely subjective, but encapsulates accumulated knowledge, material sensibilities, socio-economic disputes, as well as fulfilled or unfulfilled aspirations.

Failure to comprehensively address the dynamic genesis of water values has led to the intensification of problems and conflicts around the world. From the last quarter of the 20th century, official policies and management programmes have increasingly described water values using an economic language and the search for better environmental governance (Ioris, 2010). Measures associated with governance typically require translation of water values into monetary figures through the deployment of environmental economics methodology (Young, 2005). Such methods are used to assess the contingent valuation of nature derived from stated preferences and the willingness to pay for environmental conservation. Contingent valuation is based on the doctrine of consumer sovereignty – firmly grounded on the neoclassical ideology of individualism – and aims to bring water into the realm of cost-benefit assessments and commercial-like transactions (Spash, 2008), such as the payment for ecosystem services (Brown et al., 2007). After determining its money equivalent, water can be managed according to the economic return it yields (Ghosh and Bandyopadhyay, 2009); can help to establish acceptable levels of environmental degradation; and can also assist calls for higher levels of efficient use or for lower transaction costs (Pérard, 2009).

Despite its widespread use nowadays, monetary valuation has been criticised as a gross simplification of the much broader universe of water values (Gregory and Slovic, 1997; McAfee, 1999; Robertson, 2007). Critical authors insist that, instead of a reductionist interpretation based on money figures, water values must be understood as a resultant of connections between concepts and practices at the confluence between

humans and the non-human world (Gibbs, 2006; Reno, 2009). In effect, the interpretation of water values through the prism of environmental economics reveals serious methodological, operational and ideological shortcomings. First, contingent valuation methods have produced inconsistent results, given the significant influence of the magnitude of changes in water quality, as well as the average income and other characteristics of the respondents (van Houtven et al., 2007). Second, regarding its practical contribution, monetary values wrongly portray water value as static and predetermined (Gibbs, 2010) because the methodologies employed by environmental economists aim primarily to insert water into the sphere of market transactions (Roberts, 2008; Sheehan, 2005). Third, monetary valuation disregards the important connections between social inequalities, environmental degradation and the imposition of rules (Scruggs, 1998).

A second, but still partial, reading of water values is provided by social (or cultural) anthropology, especially from material culture studies that examine how things, made or modified by humans, reflect beliefs, ideas, attitudes and assumptions. Correcting some of the deficiencies of environmental economists, anthropologists argue that a thing does not necessarily need to be subjected to a commercial transaction in order to acquire value, but that objects and elements can be highly valued through cultural interaction and transmission (Rowlands, 2005). Social anthropologists describe water valuation as a process related to conceptions of the world around the speaker cast in a moral frame of reference. The valuation of water follows the belief patterns of groups or individuals and, by extension, the larger society of which these individuals are a part. In order to understand the formulation of values, one has to almost inevitably deal with issues of visibility and invisibility and to re-examine notions of power, exchange and the human person (Graeber, 2001). Appadurai (1986) describes the complex and unpredictable confrontations between different regimes of valuation as ‘tournaments of value’, which are complex events removed from the routines of economic life or situations when the disposition of the cultural tokens of value is at stake. Things acquire a sort of ‘biography’ by their frequent border crossings between different value regimes, as well as by the changes of values and meanings, ideologies and practices.

Anthropologists offer an important contribution to understanding the dynamics of values at the intersection between humans and things. However, it is not enough to consider only the cultural basis of water values, which can result in the reification and artificial differentiation between the preferences of social groups (Jackson, 2006). The common claim among anthropologists that nature is essentially a social construction – that is, the natural world as the construction of our concept of nature – may present the serious risk of moving away from the materiality of nature and towards a relativistic, uncertain ontology of constructed nature (Milton, 1997). Furthermore, anthropological studies normally neglect the scalar interconnections between different levels of water management (from home practices to the national and international policy-making), which reduces their capacity to explain exogenous influences on the local processes of valuation. The water values of a particular social group are typically seen as unique, specific and without much possibility of generalisation or association with the values of other groups. In this case, the compartmentalisation of values within the boundaries of each culture has a tendency to overlook political disputes and social discrimination (that are informed by and reinforce water values).

In addition to environmental economics and social anthropology, political economy is another discipline with a primary interest in the origin and composition of values. The starting point – particularly for the Marxist strand of political economy – is the dialectical tension between use- and exchange-value, which is related to the production and circulation of commodities. According to the labour theory of value, the transformation of natural resources into commodities, through human effort, is the fundamental source of wealth. Crucially, the commodity status is never permanent, but changes according to the specific socio-economic and political circumstances, that is, values are not mechanically restricted to the amount of labour time socially necessary to produce the commodity, but are created as part of a historical process that encapsulates broad historical and moral elements (Marx, 1976, Ch. 6). Lefebvre (1972: 98) further argues that "commodities do not assert themselves *qua* things but rather *qua* a kind of logic", which means that production and circulation of the commodity reflect the relations of exploitation and alienation that characterise capitalist production. Harvey (2006) adds that value theory – in the context of commodity production and exchange – corresponds to an expression of class relations determined by the double exploitation of humans and nature. In that sense, the application of political economy concepts to environmental issues since the 1970s (under the new sub-discipline of political ecology) has represented an important critique of the increasing commodification of water as the exacerbation of exchange values at the expense of more important use values (Ioris, 2009). The focus on exchange values pervades the language of contemporary water management – in the form of user charges, privatisation of utilities and payment for ecosystem services – and indicates its commitment to the imperative of technological innovation and capital accumulation (rather than social and ecological demands, as nominally stated).

In spite of its relevant critique, the contribution of critical political economy is sometimes curtailed by reduction of the broad universe of values to the realm of commodity transactions. Because of that narrow categorization, it is hard to explain values beyond the market arena or the interchangeability between different valuation approaches (Harribey, 2005). Marx and Engels, for instance, accepted that labour was not the only source of value and material wealth, but failed to properly consider the fact that nature is also a means of consumption and not only production (O'Connor, 1998). Such realisation "would have taken them [Marx and Engels] into the realm of environmental ethics and values and the emotional (as contrasted with the exchange) values of nature" (O'Connor, 1998: 125). In addition, the legacy of classical political economy is likely to reproduce the separation between subject and object that has historically saturated Western thought, particularly since the Enlightenment period (Brennan, 1997). Wilson (1999) observes that the dichotomy between use and exchange values is reflected in the dominance of nature by society, as much as the ascendancy of temporal over spatial concerns or paid over unpaid labour. Therefore, it is necessary to go beyond the conventional polarisation between use- and exchange-values in favour of more integrative approaches that capture the interpretations of water values manifested by groups in their multilevel interaction with other groups and the non-human world. Integrative assessments, especially among political ecologists, should recognise values as resulting from multiple engagements between society and water systems, which are experienced and interpreted within specific cultural and hydro-ecological contexts. Water

has multiple meanings in the contemporary world, which require sophisticated explanations that embrace, among other dimensions, the distinctive subjectivities and the politics and praxis of everyday life (Ekers and Loftus, 2008).

In that direction, Norton and Steinemann (2001) argue that a more holistic valuation can be achieved with the application of adaptive management principles, based on community iteration with the mechanisms of decision-making. Moreover, the last authors overlook the unevenness of power within communities and between different social groups, which only replicates the political naivety of public engagement schemes that characterise contemporary governance. For her part, Gibbs (2006, 2010) suggests that a focus on hydrological variability may foster a different thinking about water and value that goes beyond a Westernised separation between nature and society. Yet, hydrological variability seems insufficient to express the full range of water values, given that it suggests that water would be effectively valued only in acute situations of resource scarcity. Rather than confining to arbitrarily selected features of the hydrological cycle (e.g. variability), an integrative axiology should acknowledge that water values are complex formulations held by groups of individuals living in unique geographical settings and with manifold interactions with other groups and societies. Water values result of the long-term co-evolution of nature and society and are typically forged as part of the affirmation of social rights and identity, survival strategies and socio-economic aspirations. Valuation is an essential component of the mixture of language, gods, bodies and thoughts with water "to produce the worlds and the selves we inhabit" (Linton, 2010: 3).

We submit that water values exist as *positionalities*, that is, the synthesis of the various expressions of worthiness – such as the production, conservation, aesthetic, artistic and religious meanings of water – cherished by sectors of the society in specific historical and geographical circumstances. The positionality of water values condenses the importance and purpose of water for a community, an interest-group, or even a state agency (that ultimately represents the hegemonic water management agendas of a given society). Values are positioned at the interplay between the individual and the collective and are forged from the activities of cooperation and competition inserted in the institutionalisation of water management. In relation to the three considerations of value presented above – environmental economics, anthropology and political economy – the notion of positionality has the explanatory advantage of recognising the economic relevance of water as only one among other value interpretations. It also encapsulates legacies from the past, current relationships and future expectations, which all inform the rationale of values and value conflicts. Finally, positionality is an open concept that has the flexibility to define values in relation to concrete experiences and the actual reality of water use, and not the other way around (as it has been abstractly theorised).

Recognising the importance of positionalities makes clear that water values are both relational (i.e. the outcome of relations between society and nature, and society, state and nature) and disputed (i.e. the interface between structure and agency in a particular space and time). Positionality is the end result of multiple, imbricated processes of production, reproduction and political legitimacy. Values serve as references, identifiers, and tools of socio-political affirmation. Whilst some positionalities are considered by the hegemonic sectors as traditional and obsolete (e.g. the values of water articulated by rural communities), the positionalities of these stronger groups are

advanced as expressions of modernity and efficiency (e.g. the interpretation behind policy-making informed by multilateral agencies today). Furthermore, the positionality of values is not static and confined, but there is a continuum of values across groups and cultures, that is, some of the values that form a specific positionality can be shared with other groups that express different positionalities. Within this continuum of value positionalities, some values are perceived as belonging more strongly to the interests of communities and locations (this can be described as 'endogenous' positionalities), others are considered to reflect alien interests imposed from elsewhere (something like 'exogenous' positionalities).

An important analogy must be noted here between the current definition of positionality and a similar use of the word by feminist geographers (e.g. Rose, 1997). Positionality, according to Butler (1997), is the collapse of specificities, multiple points of view, interactive technologies and human differentials. That is also related to the concept of 'standpoint epistemologies' used by feminist authors as a means of exploring the impacts of social constructions of gender on the production of knowledge (Darling-Wolf, 2004). For the feminist, positionality describes situated positions from which subjects, such as teachers and researchers, come to know the world (Chacko, 2004). However, our definition of positionality attempts to bring together the relational topology of water values from the micro to macro scales of interaction. Feminist writers offer an analysis focused on the inter-subjectivity of knowledge production (Deutsch, 2004), but there is a tendency to remain too personal and concentrated on self-reflexivity (e.g. Moser, 2008), whilst, in our case, the notion of the positionality of water values is not restricted to the study of the how the human body relates to its environment, but positionality becomes an entry point into political, ideological and ethical phenomena. Water value positionalities are connected through lived interactions across time, locations and scales, which include not only economic priorities but also notions of well-being, justice and development.

There are important practical consequences to recognising the multiplicity of water values as positionalities, especially because they can help to understand the limits and the prospects of water management approaches. Different positionalities of value may coexist in the same location but follow the hierarchy of power between social groups. At the same time, oppositions between positionalities are gradual disputes in which individual conflicts play an important role in tensioning the prevailing spatial hegemony. In the end, the multiple expressions of value that form a given positionality reflect the processes of reflexivity and experimentation that characterise socionatural interactions. For instance, contradictions between value positionalities today are usually connected with broader politico-institutional spheres of interaction as part of the resistance against the insertion of water into the circuits of commodification. The contemporary pressure for the commodification of water is an indication of a hegemonic, exogenous positionality that is imposed on communities and locations that are less integrated in capitalist relations of production, consumption and regulation. Claims for the recognition of the economic value of water, the cornerstone of contemporary policy-making, are a particular positionality formulated in the sphere of the reform of the nation state and the globalisation of markets. Against these pressures, traditional water users have articulated their own positionalities of value by putting together old and new experiences. In essence, water conflicts correspond to the lived experiences of individuals

and groups struggling to legitimise their positionality of values, as demonstrated by the case study of Baixada Fluminense.

The Research Approach

The current research was motivated by the well-reported controversy around bulk water charges and investment programmes in the State of Rio de Janeiro. In that context, the investigation focused on the Baixada Fluminense, a wetland area fraught with water management problems (Figure 1). The research approach combined quantitative and qualitative methods employed in extensive fieldwork in 2008-2009. It included 44 semi-structured interviews with local residents, as well as water regulators and municipal authorities, carried out together with ethnographic work in shantytown areas, attendance of public meetings and informal conversations with residents (mostly recorded and later transcribed). Stakeholders were identified and approached according to their area of residence, professional activity or their role in terms community organisation. Systems of water entitlements and the evolution of water management practices were examined, making use of statistics, official documentation and environmental monitoring data.

During the early stages of the research, the politicised nature of water values became increasingly apparent, which called for a more integrative and politically sensitive concept (i.e. hence, the 'positionality of values'). As examined in the following pages, the empirical results led to a consolidation of water values according to three main positionalities, namely: 1) the prevailing assumption in development policies and government initiatives that water should be valued as a requirement of economic development; according to this mainstream logic, water is both an economic resource and, once degraded, a barrier to development and capital accumulation; 2) emphasis on the monetary symbolism of water value that forms the basis of the reform of water regulation, introduced as part of the ongoing reorganisation of the Brazilian State; and 3) the valuation of water as part of survival strategies and political recognition by low-income communities. Those clusters of water values ('positionalities') are never pre-given, but constantly redefined as its material and symbolic bases are situated in dynamic and contested socionatural relations.

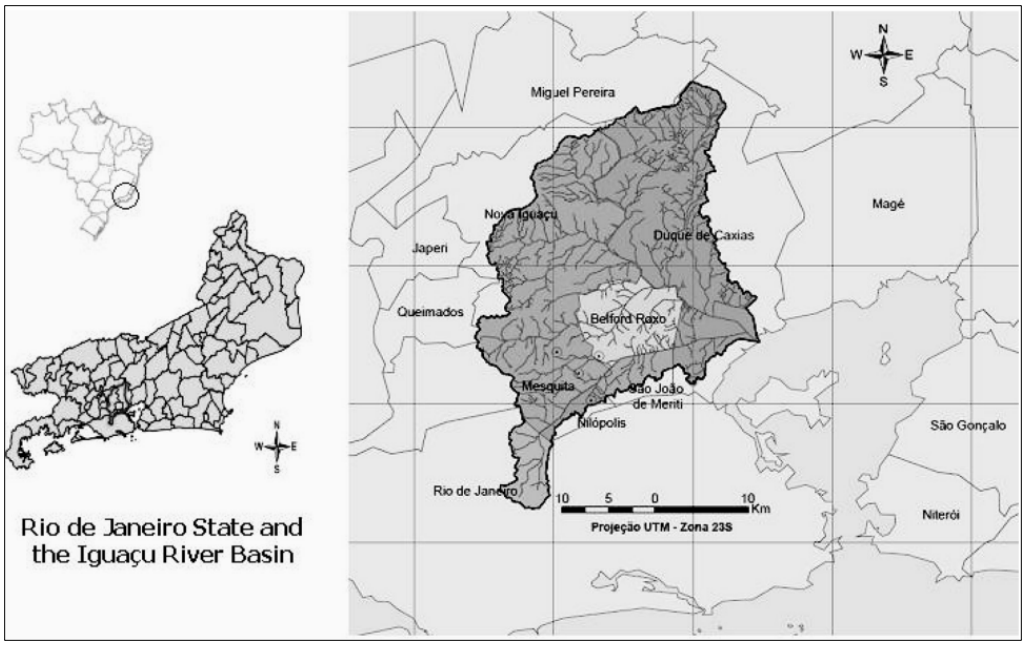

Figure 1. Map of the municipalities of the Baixada Fluminense and their location in the state of Rio de Janeiro and in the country, with the main river system (Iguacu River Basin).

The Positionalities of Water Value in the Baixada Fluminense

Water valued as a requirement of regional development

Going back in history, we find that the abundant water in the Baixada was perceived by early European colonisers as the main asset for the establishment of farming and commercial activities in the region. The first farms, churches and settlements in the Baixada were established in the mid-16th century along the main rivers and tributaries to secure navigation and access to the city of Rio de Janeiro. River navigation was particularly important after the discovery of gold and other precious stones in the central provinces of the colony in the 18th century. Since that period, the management of water by the different members of society has primarily reflected the hegemonic priorities of economic growth and territorial consolidation. That is, water values were primarily positioned from the perspective of state demands and strong economic interests. Consequently, the multiple dimensions of water use (e.g. by community life and farming activities, navigation and military defence, removal of waste and effluents, etc.) were largely influenced by the pressures of regional development. This prevailing positionality followed, and helped to reinforce, the insertion of the Baixada as a peripheral, subordinate area that was supposed to supply the capital (Rio de Janeiro) with resources and labour-power. Economic activities carried out in Baixada area were essentially based on subsistence agriculture and the production of sugarcane. Moreover, at the time of the Brazilian independence in 1822, deforestation, and the resulting soil erosion, had already produced significant environmental impact and were key reasons for coffee production failing to prosper in the Baixada (Amador, 1992).

The need to improve transport connections with the city of Rio led to the inauguration, in 1854, of the first Brazilian railway along the lowlands of the Baixada, followed by additional railway tracks in the next decades. The construction of bridges and river passages through swamps and watercourses reduced the prospects of in-stream navigation, which then started to decline (Gramacho, 2006). At the same time, the provincial government began to drain parts of the wetland to reduce the incidence of waterborne diseases, malaria in particular (Rego, 1911, mentioned in Fadel, 2009). In 1910, a technical commission was established to plan the recovery of the river system and propose ways to stimulate agricultural production and commercialisation, again using the river network as means of transportation. Between 1910 and 1916, a German company was specifically contracted to dredge, clean and interconnect the local rivers (but its operations were interrupted due to Brazilian alliances during the First World War). While the lower sections of the rivers were the object of channelization, the headwaters were mobilised to provide freshwater to the city of Rio, initially by train and, from the 1880s, through pipelines. For the great majority of local residents, though, unreliable boreholes and private fountains continued to effectively represent the only source of freshwater.

Gradually, the role of water in regional development changed from a focus on navigation and agriculture to urban and industrial activities (Góes, 1934). That conversion operated within the same positionality of water values associated with unlimited exploitation of resources to boost economic growth. The Baixada became one of the main areas of expansion in the metropolitan region and urbanisation soon engulfed agricultural areas protected by polders and dykes (Abreu, 1988). In the 1950s and 1960s, the local population increased at annual rates as high as 10% due to the flux of migrants coming from northern parts of the country in search of jobs in the industries and services available in Rio de Janeiro. That resulted in a steep escalation in real estate prices, even in an area with precarious water supply, virtually no sanitation and, by-and-large, informal land tenure. The patchy, selective water infrastructure persisted for the whole of the 20th century and became more evident after the inauguration of a large oil refinery in 1961, which required the construction of two exclusive adduction pipelines to secure water to its own operation and to associated industries.

The expansion of agriculture, urbanisation and industrialisation, according to the requirements of an unequal model of development, reduced water to a factor of production and a facilitator for the circulation of commodities and people. The water reserves and the river systems of the Baixada were used and degraded according to a valuation that underpinned metropolitan development, whilst the negative consequences of such valuation were mainly suffered by local communities who benefited only marginally from economic growth. The hegemonic valuation of water was not an expression of economic, political or cultural phenomena in isolation, but was a dynamic amalgamation of all those elements. Such positionality contained a striking ambivalence towards the worth of water, which was both considered as a valuable socio-economic resource but, because of its misuse by the same processes of development, degraded water increasingly represented a barrier to production and urban growth. The internal tensions within the mainstream positionality of water value in the Baixada (i.e. water as both a resource and a hindrance to development) have been particularly evident in the long list of government interventions. Whereas public policies describe water as an

important economic asset, insufficient and ill-conceived initiatives have favoured a top-down model of regional development that has led to river degradation and to widespread social distress.

Because water is conventionally valued by decision-makers as a natural resource with an economic function, even the responses to the water problems are also translated in costly measures (mostly funded by international loans from the World Bank and the Inter-American Development Bank). The prevalence of the developmental values of water has led to a sequence of investments in hydraulic infrastructure without much consideration of the effectiveness of those interventions. Despite the fact that between the 1980s and 1990s government projects totalled around US$ 1.5 billion, in the end they contributed little to resolve the situation of water pollution, scarcity and flooding (Ioris and Costa, 2009). The focus has been on the physical expansion of water infrastructure, but engineering works are, by-and-large, planned in isolation from city planning, and suffer from systematic interruptions and evidences of corruption. As a result, a significant proportion of the residents still have to resort to alternative sources of water, such as the purchase from water vendors or drilling boreholes:

> "Here in the Baixada one of the main problems is the need to rely on water lories to guarantee water to the communities with difficult access public services. So, water is bought, no other way. On the top of the hills, in the new communities of the Baixada, these are neighbourhoods with no water. Where I live, for example, if I don't use my borehole, I have no water. (…) There are public pipelines in my street, but I can't count on them, or I will have water only twice a week, on Tuesdays and Saturdays and for a short while. (…) On Saturday is worse, because the demand is higher. That is why I have my borehole and my own pump" (resident, Belford Roxo, 12/Jul/2008).

More recently, additional sums were announced for the Baixada Fluminense under the national Programme to Accelerate Growth (PAC), including US$ 370 million for urban drainage, US$ 100 million for water supply and sanitation and US$ 135 million for river restoration.[1] The rhetoric of PAC is apparently more responsive to community demands than previous initiatives, however, based on attendance at public meetings related to the implementation of PAC, it is possible to argue that, despite changes in the discourse, new government interventions ultimately reproduce negative elements of the prevailing positionality of water values. Interviews with PAC managers and water regulators revealed major project inconsistencies, lack of transparency about the timetable and weak control of contractors. Ultimately, water remains an important catalyst for profitable, large-scale contracts that benefit mainly politicians and economic groups based outside the Baixada Fluminense. The local population is entrapped in a powerful process of water exploitation and populist concession that has maintained, and often aggravated, water problems. The unfair and unsustainable management of water in the Baixada has been justified primarily by its role in economic development, but of a specific type of development that is predicated upon socio-spatial inequality and environmental degradation. Perhaps unexpectedly, a reaction against such trends also emerged within the structure of government in the last decade, as discussed below.

[1] PAC was the main investment programme of the Lula administration (2003-2010) and was coordinated by Ms Dilma Rousseff, who was elected president of the republic in 2010.

Water valued in the reform of water regulation

One of the explanatory functions of a notion of positionality is the recognition of continuity, in time and space, between different valuation approaches that can involve higher or lower levels of correspondence between positionalities, as well as variable forms of convergence or contradiction. In the case of the Baixada, the impacts of continued exploitation of local catchments – related to the hegemonic positionality of water values described above – became increasingly evident in the second half of the 20th century. As part of the broader process of environmental regulation introduced in the State of Rio de Janeiro in the 1990s, a new positionality of water values was advanced by sectors of the government bureaucracy, regional development academics and environmental NGOs. Environmental regulation started to emphasise the need to treat water according to its monetary value in contrast to the conventional treatment of water as the basis of economic production and urban expansion. The institutional framework included a range of regulatory tools aimed to foster higher levels of efficiency, such as user licences and bulk water charges, cost-recovery measures, water utility privatisation and payment for ecosystem services, which are all based on monetary quantification of water value. The institutional framework betrays the influence of the international search for better water governance beyond the traditional command-and-control of the early environmental legislation (Ioris, 2007).

The new interpretation of water value ultimately constitutes an 'internal critique' (i.e. a critique from within the state apparatus) of the inefficiencies of governmental approaches in the last century. Still, if part of the state apparatus has tried to amend public policies on the assessment and use of water, in practical terms the promotion of a different positionality of water values has faced major operational barriers. Particularly the introduction of bulk water charges (i.e. charges on the use of surface and groundwater) demonstrates the difficulties of replacing an old positionality with a new understanding based on the monetised value of water. The new charges are nothing short of a panacea for regulators, "an instrument that lubricates the regulatory system and facilitates the adoption of other [regulatory] instruments" (interview with a senior officer in the regulatory agency, INEA, 22/Jul/2008). However, the large water users, such as industries and farms, received such charges with serious scepticism and denounced them as a new form of taxation. Tensions in the affirmation and validation of this alternative positionality of water values pervade even within the state apparatus. Until 2009, the main water user in the metropolitan region, the state water utility CEDAE, systematically refused to pay for the charges associated with its various water licences.[2] Only when it was officially allowed to transfer the financial burden to its customers CEDAE agreed to comply with the new water legislation. It suggests strong resistance from CEDAE, as well as other main players, against the conversion of water into monetary figures and the associated internalisation of social costs.

[2] CEDAE is a public utility historically associated with mismanagement and influenced by the priorities of party politics and by the pressures of private construction companies (Marques, 1999).

In addition, the revenues obtained from bulk water charges (between 2004 and 2009, around US$ 1.5 million were collected)[3] could not be spent without an executive agency (as required by the 1999 legislation). The consequence has been a disjoined implementation of new regulation without any significant improvement in water management. Such barriers to the adoption of governance-related tools are not infrequent, but Lovett (2001) had already pointed out the controversies related to the quantification of monetary values and the complicated use of collected monies. Only a small proportion of the general public contacted during our research had ever heard about bulk water charges. Yet, when informed and asked for their opinion, almost everybody reacted against the idea on the grounds that they identified an element of unfairness between the Baixada and other parts of the metropolitan region. According to local residents, the environmental quality in the wealthier areas of Rio de Janeiro was secured in the past through public works paid out of general taxation, but the new legislation now demanded a specific payment from those that have hardly benefited from the intervention of government agencies. Those who were aware of the introduction of bulk charges also protested against the attempt to attribute money values to water:

> "I think that this is a superficial, irrelevant solution, which I really question. How can you put a price in a forest? What is the value of the river Iguaçu? What is their value? I don't see how you could mention the economic value of that river? The same with a [human] life… I know a company that discharges in the river, a lot of people may die because of the pollution, but how to pay for it, for the death of the fishes…" (community leader, Duque de Caxias, 27/Jun/2008).

It seems evident that the monetary language of the regulatory framework created a renewed gap between policy aims and the concrete experiences of water use by local residents. In that context, bulk water charges present only an emblematic illustration of the discrepancies between the new orthodoxy of environmental management and the more traditional expressions of water value. Formally, the objectives of the bulk water charges are to rationalise use, contribute to environmental conservation and to indicate the real value of water. However, as acknowledged in an interview with an NGO activist (10/Oct/2008) "the charges are important, but it cannot be the only mobilisation factor. It is an illusion to think that the problem [of water management] is just a matter of resources. Water management and water values are much broader than that". Reaction from members of the general public suggest the existence of a third positionality of water values in the Baixada, more closely connected to daily life and the struggle for political recognition, as considered below.

Water valued as survival strategies

As mentioned above, there has been a long trend of interventions by the national and provincial governments in the Baixada aimed to control the water regime and, more recently, to restore the environmental condition of the local watercourses. Those initiatives have been based on two different, but complementary, positionalities of water value, nominally, the importance of water for development and economic growth and,

[3] Figures form the water regulator (INEA), available on line at www.inea.rj.gov.br

lately, the focus on the monetary interpretation of water value. However, our research also identified a third, vibrant positionality of water value that is both influenced and reacts against the other two top-down valuation approaches. Despite cultural and social complexity, it is possible to recognise a range of preferences and statements about the value of water collectively sponsored by local residents. The plurality of water practices incorporates cultural and social elements brought by the migrants, particularly from the northeast of the country, which merged with the local traditions crafted from African, Portuguese and Indian influences. Although the values cherished by local residents may not be necessarily coherent, the way they value water is a vivid expression of reactions against unfulfilled demands, persistent frustrations and exchanges with public authorities.

Central to understanding the politicised basis of water valuation by the residents of the Baixada is their disappointment with the performance of the water utility company (CEDAE) and the commonly turbulent relation with its customers. Dissatisfaction seems to exist on both sides. In the interviews, utility managers complained that a significant proportion of the water services – something between 50 to 70% – was still unaccounted for in the Baixada due to a combination of unpaid tariffs, illegal connections and low enforcement capacity of the company. Interestingly, refusal to pay the water bill is not simply a problem of low-income, or even dishonesty, but it ultimately constitutes a subliminal political statement about the mismatch between the crucial value of water and the inability to produce lasting solutions to widespread problems of water quality, service reliability and flooding. Because of the frustrating relationship with public authorities, CEDAE in particular, many residents are forced to employ alternative solutions to secure water services. Faulty water supply has been mitigated by cooperation among residents, which ranges from emergency supply (from neighbours that have a borehole, a pump in a watercourse or a water tank in their property) to the joint construction of pipelines, and in some cases sanitation, by residents living in the same street or location. In other areas visited during our fieldwork, pumps are rented for a few hours, or even days, to fill a collective storage tank.

More emblematic was a case in the community of Pilar, located in the municipality of Duque de Caxias, where more than a hundred residents invested their own money to install a system of three connected pumps to bring water from the mains pipeline (a distance of around 1,000 metres). This case means that the residents have replaced the state and spontaneously constructed a basic water infrastructure for the community. A resident explained their willingness to work together, during a research interview, which is related to the positionality of water value as shared construction and collective reaction against the gaps of government initiatives:

> "The whole distribution system in the Street 05 de Julho [5h of July] comes from a [pipeline located in a] school. The community discussed, collected the money, and bought the pump and other necessary material (...). The community expanded and it is now necessary a 70 mm pipe and several [three] pumps to have water with sufficient pressure. (...) When the pump breaks, we split the cost and fix it" (resident, Duque de Caxias, 14/Aug/2008).

From these examples of cooperation, it is possible to infer that grassroots valuation of water tends to be ignored in public policies, which maintain a focus on macroeconomic development and political control. Crucially, according to our definition

of positionality, the failure to respond to popular demands is an indication of the imposition of a certain valuation of water over the values cherished by the local communities. Effective and appropriate public policies, as pointed out by Daniere and Takahashi (1997), should incorporate cultural values and their linkages to attitudes and behaviour. In that sense, variation in the behaviour of local residents should be noted. For instance, we were able to observe individuals that frequently discharged rubbish in the river margins and in the watercourses (even in the localities that have kerb collection). As heard in some of our interviews, there exists sometimes a problematic identification of sectors of the local population, the youth in particular, with their surrounding environment. This can be explained by personal frustrations and the sentiment of being often treated as second-class citizens. It is part of the long legacy of exclusion and subordination of the Baixada to the social values and media images that emanate from the wealthier areas in the city of Rio de Janeiro. In the end, it demonstrates that within the same social group the values of water are neither simple nor consensual, but connected, in complex ways, with interpersonal relations and broader socio-political processes.

Conclusion

The notion of positionality, as the example of the Baixada Fluminense vividly shows, is a helpful explanatory tool for understanding the genesis and practical implications of water valuation. The valuation of nature is not a purely subjective activity, but it is situated at the interface between individual and collective attitudes and preferences. Valuation can be related to the dialogue and encounter between people, mediated by the world, that serves to name (and transform) the world, as described by Freire (1996). Because the social groups are never detached from their social, cultural, historical and geographical circumstances, the values of water are a shared construction that reflects perpetual cycles of socionatural interaction. Those interchanges between society and nature are deeply politicised, in the sense that the access to nature and the impacts of its degradation are normally disputed. Specific water-related activities reveal the worth of hydro-ecological systems and also the particular reasoning seeking legitimisation. In such multidimensional process of constantly valuing and revaluing nature, there are temporary ‘positions of value’ that last and change according to concrete spatial and temporal conditions. The positionality of water values can be described as the dynamic accumulation of experiences, legacies and expectations of the social group, which is consolidated in encounters with other groups and with higher scales of interaction.

In the above case study, three main positionalities of water value were identified in the Baixada Fluminense, namely, the hegemonic treatment of water as a requirement of regional development (sponsored by state agencies on behalf of stronger interest groups, such as industrialists, farmers and construction companies), the valuation of water as a resource with intrinsic monetary expression (endorsed by regulators, NGO activists and environmental consultants) and the values of water for the daily life and survival strategies (the rich and sometimes contradictory expressions of value by the local communities). The overall pattern of values formed by the three positionalities is deeply inserted in intersectoral struggles across geographical locations and scales. The mainstream positionality of water value reflects, primarily, the demands of politico-

economic interests located in the provincial capital (Rio de Janeiro), whilst the positionality related to the new regulatory agenda reveals the influence of the global debate on governance and new basis of water management. For their part, the positionality of local communities exhibits the mix of cultures between the communities that initially lived in the Baixada and those that migrated from other parts of the country.

The identification of those distinct positionalities needs to be understood as a schematic simplification of complex processes of socionatural interaction. There are moments when the boundaries between conflicting positionalities of water value come together. In the majority of cases, however, the different groups of social actors maintain discrete and opposing expressions of water value. Most of the time in the Baixada Fluminense, politicians continue to champion a rhetoric of large infrastructure (despite the questionable effectiveness of the investments and the pork-barrel nature of most interventions) and the environmental regulators persistently advocate the need to attribute monetary figures to water resources in search for higher efficiency and raise restoration funds, while the local residents (many of them are low-income migrants from other parts of the country) struggle for every day survival. All that comprises a hierarchy of valuation approaches and a perpetual recombination of old and recently acquired interpretations of water value. The overall conclusion is that the politics of value remains an integral part of the political ecology of water and of the search for a fair basis in the relationship between nature and society. Water conflicts are, first of all, the expression of inconsistent positionalities of water value that underpin the action, reflexivity and experimentation of individuals and social groups.

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