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Disputes over territorial boundaries and diverging valuation languages: the Santurban hydrosocial highlands territory in Colombia

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ABSTRACT

We examine the divergent modes of conceptualizing, valuing and representing the *páramo* highlands of Santurban, Colombia, as a struggle over hydrosocial territory. *Páramo* residents, multinational companies, government and scientists deploy territorial representations and valuation languages that interact and conflict with each other. Government politicians and neo-institutional scientists wish to reconcile diverging interests using a universalistic territorial representation, through game theory. This generates a hydrosocial imaginary that renders invisible actors' power differentials that lie at the core of the territorial resource use conflict. We conclude that this 'governmentality' endeavour enables subtle, silent water rights re-allocation.

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Introduction

In Colombia, the *páramos* (Andean highland wetlands) are strategic hydrosocial territories invigorating agricultural production systems, biodiversity conservation practices, water supply for urban centres, and multisectorial activities. These days, demographic changes in combination with neoliberal policies favouring foreign investment in large-scale extractive industries have resulted in the *páramos* becoming objects of struggle, arenas of conflicting governance interests and disputes about how to manage and value territory and its water. In this battlefield, the rights of local people in hydro-territorial management are increasingly restricted, while the extraction-based production model continues expanding with disregard for socio-environmental impacts (cf. Baud, De Castro, & Hogenboom, 2011; Bebbington, 2009; De Castro, Van Dijk, & Hogenboom, 2014; Hogenboom, 2012).

This article analyzes the illustrative case of the *páramo* in Santurban, which is located in the departments of Santander and Northern Santander. In response to development and environmental conservation challenges, and engagement in climate change adaptation and mitigation programmes, the Colombian government now proposes to delimit strategic water ecosystems – *páramos* and wetlands – to exclude them from mining,

agricultural and other activities that might affect water provision and regulation (Bermúdez, 2013; Hurtado, 2010).

This delimitation has begun generating conflicts due to the unequal distribution of socio-ecological benefits and damages that this process will entail for societal groups. They have competitive interests and divergent powers, which are expressed in discordant languages of valuation about the territory (Hoogesteger, Boelens, & Baud, 2016; Martínez-Alier, 2004; Saldías, Boelens, Wegerich, & Speelman, 2012). The case of the Santurban páramo shows these confrontations, where the rights of local inhabitants, who work in agricultural production and small-scale mining, confront the powers of large-scale (multi)national mining companies. Simultaneously, these two sectors confront the uncertainty of political-administrative effects of páramo delimitations, which imply excluding certain actors and activities while allowing others. This process is headed by the government, which as the article will show appears to be an ambivalent player in this game. On the one hand, the government needs to respond to claims for environmental conservation, and on the other, it actively pursues an aggressive neoliberal agenda that is at odds with livelihood protection and threatens the páramo's ecology functions. As the article will show, because of fierce popular protests against the 'hard face' of neoliberalism in the recent past, the government has now turned its eye to 'soft face' strategies – of new institutionalism and game theory – in order to convince the population of that same neoliberal program. It plays its subtle games on shaky grounds: recent ministers of environment, since late 2013, had refrained from revealing the new boundaries – the páramo delimitations – because of the high social and political sensitivity, since these (now for the first time with detailed maps at a scale of 1:25,000) would indicate precisely who would be affected. Meanwhile, another important actor, the environmental movement in Bucaramanga, is pressuring for decisions that will curb mining activities in the páramo and guarantee downstream drinkable water supply.

The present article examines how interest groups sustain different values and representations of what constitutes 'the páramo' to legitimize ways of managing and appropriating the Santurban páramo. At the same time, it analyzes how interest groups' socio-economic, political and ecological values and meanings are contested and wielded, according to their position and relationship with the hydrosocial territory. This shows that conceptualizing this hydrosocial territory does not lend itself to 'objectifying' a single truth; it is an area where divergent socio-environmental imaginaries are generated and contested (cf. Boelens, 2014; Crow et al., 2014; Lu, Ocampo-Raeder, Crow, & Romano, 2014; Perreault, 2014; Saldías et al., 2012).

The article is based on field and desk research done from 2011 to 2015. Its basis was laid by the 'Páramos and Life Systems' project of the Alexander von Humboldt Biological Resources Research Institute, which sought to understand páramo community livelihoods in times of severe ecosystem transformation processes. Additional research was carried out under the banner of the Justicia Hídrica alliance to study the páramo's political-ecological relationships. Fieldwork involved participatory action research, production systems analysis, landscape ecology characterization and hydro-social network analysis as the main methodological approaches. Literature review and fieldwork were used to identify and characterize actors according to their positions, interests, levels of agency, and dependence on the páramo.

The next section discusses concepts relating ‘hydrosocial territory’ to the (mis)match among diverse valuations of the páramo, used by different stakeholders to negotiate its use and management. The third section of the article compares the representation regimes of people living in the páramo with those of extraction-based companies, environmentalist groups and governmental actors. In all, we examine the representations of how hydrosocial flows are articulated through discourses, materialized by socio-legal and technological structures, and institutionalized through behavioural norms and political and economic establishments. These representations, according to the positions they defend, promote particular ways of distributing resources and decision-making power (cf. Boelens, 2014; Duarte-Abadía, Boelens, & Roa-Avendaño, 2015; Perreault, 2014; Swyngedouw, 2014).

The fourth section illustrates the role of government politicians and their leaning toward objectifying, de-politicizing scientific approaches. It examines the positivistic neo-institutionalism prevailing in environmental economics, presented as the tool to make hydrosocial territories provide water for ‘the majority’. As we argue, this theoretical approach seeks to produce and apply universally valid sets of norms and principles to design specific institutional transformations. In particular, we analyze how the governors–scientists link has applied game theory to stress the importance of a ‘collective rationality’ in managing natural resources for common use. The fifth section presents and reflects on the outcomes of the governmental hydrosocial territorialization project.

We conclude that the government’s neoliberal project subtly deploys contradictory discourses to conceal its opposing policy objectives. It closely aligns with neo-institutionalist strategies, which deny the contrasting modes of how actors value territory and pretend that things are commensurable that are not. In the Santurban case this is expressed in governmental decisions to permit large-scale mining operations in ecological protection areas, and to install universalistic ‘payment for environmental services’ that conceive of nature and territory as a zone for sustainable extraction of water and their inhabitants as individuals who maximize the benefits of collective action. At the same time, theoretical games and official plans seem unable to curb the impact of large-scale mining in the territory – or the voices of protest.

Hydrosocial territories and languages of valuation

Territories are politically organized space constituted by the interaction between their biophysical and social properties and qualities (Baletti, 2012; Bridge & Perreault, 2009). Relations and agreements among stakeholders define the limits and opportunities for actions, uses and control of territory, reflecting diverse actors’ power to symbolically appropriate and politically/economically control territorial space. Divergent actor groups seek to install their own ‘regimes of representation’ to imagine and materialize ‘territory’: they involve the rules, relationships and social actions that aim to establish how territorial reality should be known, characterized, appropriated and controlled. Since these regimes of representation commonly suit actors’ own particular modes and interests in territorial production and reproduction, in a given space there are multiple representations of ‘territory’, whereby stakeholders have unequal powers to materialize their imaginaries (Boelens, Hoogesteger, Swyngedouw, Vos, & Wester, 2016;

Hoogesteger et al, 2016; Fernández, 2005). Asymmetries regarding access to territorial benefits, in combination with a lack of political participation and cultural and institutional recognition of marginalized groups who aim to foster their ways of seeing and living ‘territory’, often characterize water and environmental justice conflicts (Bridge, 2014; Perreault, 2014; Schlosberg, 2004; Zwartveen & Boelens, 2014). Such conflicts are expressed in different valuation systems and languages. The latter tell us how social groups understand, express and relate to the world, place or ecosystem that surrounds them. Farber, Costanza, and Wilson (2002) define valuation systems as sets of norms and moral frames that orient people’s action and judgment in order to support their decisions and actions. Languages of valuation, therefore, concretize actors’ regimes of representation; they represent actors’ worldviews and knowledge systems (epistemology and ontology), socio-economic interests and cultural and political relations, expressed through concepts, discourses and normative frames (see also Escobar, 2008; Martínez-Alier, 2004)

These diverse regimes of representation clash, and transformation of hydrosocial territories¹ reflects the relative power of the different stakeholders and produces new forms of local-national-global management and interrelations (Rodríguez-de-Francisco & Boelens, 2016; Swyngedouw, 2009). In this respect, in current neoliberal policy practice it is common to see the dominant stakeholders impose market-based territorial representations and monetary language on the others, generally disregarding customary knowledge systems, values and meanings that link to context-bound ecological and socio-cultural legacies (see also Crow et al., 2014; Goff & Crow, 2014; Vos & Boelens, 2014).

Imposing such an outright neoliberal policy and market-based environmental governance rationality, however, is a tricky endeavour for Latin American governments in the twenty-first century, first because their countries still bear the deep scars of the aggressive neoliberal privatization and free-marketization policies advocated by the Washington Consensus and the Friedman/Hayek ‘Chicago Boys’ in the 1980s and 1990s. These policies met with huge peasant, indigenous and popular resistance throughout Latin America, which was usually repressed with horrifying governmental and military violence. To overcome such resistance and foster acceptance while pursuing similar (but now ‘greened’) neoliberal agendas, many Latin American governments have embraced ‘new institutionalism’ (or rational choice theory), with game theory as a crucial tool. Ostrom’s new institutionalist groundwork is highly influential here (see e.g. Ostrom, 1990; 2009). Ostrom provides a framework to regulate and direct unpredictable human behaviour by means of collective action, based on rational choice theory. Beyond market or government rules, self-organizing institutions are able to define working rules and norms that structure social, political and economic interaction (Forsyth & Johnson, 2014). According to Ostrom, individuals can conserve the common goods – as in our case water and páramos – and engage in collective action when they have credible and reliable information about the cost and future benefits of their actions, and when they are enabled to rationally define the rules of the game. Given the assumed commonalities among people’s working rationalities (such as fostering individuals’ benefits while lowering their transaction costs), the approach for conservation and water policies is generally presented as exemplary for reconciling conflicting values and interests that converge in the same hydro-territory.

Though this new institutionalist conceptual framework is often (and rightly) presented as a critique of neoliberal economic thinking, paying important attention to informal working rules and ‘people’s collective arrangements’ around common property resources, many studies have shown its deep affinities with the universalist-economic family and its fallacies, including its similarities to neoliberal presuppositions (see e.g. Boelens & Zwarteveen, 2005; Büscher & Fletcher, 2015; Espeland, 1998; Rodríguez-de-Francisco & Boelens, 2016; Mollinga, 2001; Moore, 1990). Most importantly, the new institutionalist paradigm avoids studying power relationships and understates complexities and the diversity of (water and territorial) cultures and epistemologies in order to be able to devise universally valid principles for (e.g., water) designs and policy solutions. Its efforts, first to ‘equate’ and ‘uniformize’ items that are incommensurable² and, next, to present them as universally valid definitions and categories, may carry great risks. For example, Espeland (1998, p. 223–224), who studied the application of rational choice theory and game theoretic tools to silence opposition to large dam building in indigenous territories in Arizona, argues that the framework “requires that we value in a resolutely relative way. The commensuration it demands may violate, even obliterate, other social boundaries that help order our lives and define us. ... The logic of this form can erase or diminish that which is hard to reconcile with instrumentality: thick, messy context, historical legacies, uncertainty, ambivalence, passion, morality, singularity, the constitutive and expressive salience of symbols.” Regarding its universalism and commensuration, Forsyth and Johnson (2014) add that Ostrom’s framework predefines the problems that local institutions were seeking to resolve, and thereby puts too much faith in only the economic-rationalist type of political bargaining process to achieve outcomes. Besides, it overlooks for whom and for what purposes the resource is exploited or demanded and the consequences of its socio-ecological distribution. As a result, as Mollinga (2001, p. 733) comments, new institutionalism’s appeal for policy makers “lies in its suitability for designing standardised policy prescriptions, and its exclusion, or rephrasing, of the issues of power and politics”. As this article examines, these ingredients, largely shared by new institutional and neoliberal frames of policy thought, make game theory into a welcome ‘soft face’ addition to the ‘hard face’ neoliberal policies that the Colombian government wants to install in order to exploit and transform local hydrosocial territories.

Proliferation of divergent valuation languages about the Santurban páramo

From pre-Hispanic times, the páramos have been inhabited by indigenous communities, with models of occupation based on “vertical economies” – exchange systems involving control over agricultural production in, and trade among, zones with different altitudinal and climatic properties (Murra, 1972). Indigenous mythologies and cosmogonies conceive of the páramos as sacred places where different gods came from. They controlled water, the origin of life and its continuation (Boelens, 2014; Osborne, 1990). In rural concepts, these referents survive and are expressed in protecting the páramo’s lagoons. Nowadays, these water sources supply much of the local drinking water systems, and are places of identity formation, often integrating human, natural and supranatural aspects. Cultural meanings and values regarding water tend to foster self-organization around the objectives of protecting lagoons and

ensuring local water supply, as is happening in several municipalities in Santurban. Their valuation languages have site-specific historical, ethical, economic and cultural features, constructed through goals shared by a collective (Penna & Cristeche, 2008). So, the páramos have acquired a deep-rooted social nature, built on place-based knowledge (Echavarren, 2010; Escobar, 2008; Gómez-Baggethun, 2009). The foundations of the páramos' rural economies influence construction of cultural identity, which in turn determines political capacity – changes in the one cause changes in the other (Van der Ploeg, 2010).

The páramos have been occupied by internal migration (driven by civil wars), by dispossession of indigenous peoples driven off their land, and by government colonization policies. In the 1960s and 1970s, government policies facilitated development of the potato and livestock industries. This enabled rural communities to appropriate these territories and build their livelihoods, confronting highly adverse conditions. Páramos are also strategic places to control rural production, roadways, commerce and urban centres, therefore these constitute important arenas confronting armed stakeholders. In south-western Santurban páramo, Berlín region, electrical transmission lines have been installed, along with optical fibre and gas pipelines, as strategic points for commercial relations with Venezuela.

In the 1980s, the Revolutionary Armed Forces (FARC-EP) had control over the Santurban páramo, until the so-called democratic security policies scheme, Operation Berlín, brought the military against FARC-EP and expelled them. In 2003 the military battalion set up there, enabling multinational company Greystart, currently called Eco Oro Ltda., to expand. On various occasions, this company had to suspend its activities because of FARC-EP interventions in the zone. Thus, the páramos represent positions for geopolitical control of the territory and multiple economic interests, introducing and reinforcing the corresponding valuation languages (cf. Bebbington, Humphreys Bebbington, & Bury, 2010).

In this context, Law 685 of 2001 further fostered applications for mining concessions throughout Colombian territory. Earlier legislation included property titles granting the right to use the land through three phases: licences for exploration, extraction, and mining contributions (Law 2655, 1988). This law was amended by Law 685, eliminating environmental requirements and converting no-mining zones into restricted zones, while also cancelling the economic benefits that local communities used to receive from mining (Duarte, 2012). When the Uribe government ended (2009), 9000 mining concessions had been granted in areas of páramos, wetlands and national parks; 416 of these concessions correspond to páramo areas (2014; Bermúdez, 2013). In Santurban, by 2011, there were 65 concessions, 15 of them with environmental licences to begin extraction (Ungar, Osejo, Roldán, & Buitrago, 2014).

Another sector present in the hydrosocial territory is agriculture, which wants the páramo for fertile croplands or range livestock. The sub-region of Berlín, in Santurban, is the country's second-largest producer of scallions, harvesting from 250 to 380 tonnes a day (Franco, 2013). This represents approximately USD 280,000 a month and livelihoods for 5000 families (Quintero, 2014). In the Berlín sub-region, onion growers and sellers are an economic power sector; also, several small farmer groups in the páramo grow onions. Increasingly, their interests are in conflict with environmental discourses and norms, which have grown in importance since the 1990s and, particularly since the early twenty-first century, now constitute a powerful voice.³ The latter attempt to stop the rapid agricultural encroachment transforming the páramos.

Environmental discourses applied in the region have their historical roots. According to Molano (2012), botanical and scientific expeditions at the end of the colonial period and during the nineteenth century constructed natural science-based productivist knowledge about the páramo and other Colombian ecosystems. Molano says that this knowledge facilitated economic exploitation of the land, so that the Spanish viceroyalty could cover local food supply requirements and export produce. Currently, urban and scientific societies – communities far from these places – value the páramo above all for its ecological functions, entailing water catchment, holding and regulation. These notions commonly focus on páramos as “natural spaces” (Escobar, 2010), ignoring or misrepresenting their significance for social life, cultural and historical identification, and livelihood production.

Modernistic values for the páramo exist in a context of great competition and demand for water. The north-eastern sub-region of the Santurban páramo supplies 17 municipal drinking water systems, including Cucuta and Pamplona, an irrigation district in the Zulia Basin, and the Tasajero thermoelectric power plant. In the south-western sub-region, water demands for human consumption are concentrated in the metropolitan area of Bucaramanga, Floridablanca and Girón. These compete with the mining interests of foreign companies in the municipalities of California and Vetas. They compete for the waters of the Surata, Tona and Río Frío rivers (Figure 1).

The Colombian government has considered the páramos as zones of great importance to the country’s development. This is the approach of conservation legislation and decision making and reflected in the National Natural Resource Code (Law 2811 of 1974). Law 99 of 1993 provides protection of the country’s biodiversity and especially páramo zones (No. 2 and 4, Article 1), acquisition of areas of value because of water for municipal and environmental entities (Article 111 and Law 373 of 1997), and resolutions organizing environmental zoning of the páramos (Resolution 0839 of 2003). These legal frameworks currently reinforce and interweave with new discourses about mitigating climate change and the policy measures this will require.

In summary, the historical development of the different rural populations’ knowledge systems, valuation languages and regimes of representation has diverse cultural and economic-productive sources. They coexist and are constructed between a cultural legacy rooted in a system of rural traditions and notions of modernity, immersed also in a neoliberal economic model (see also Van der Ploeg, 2010). Therefore, while páramos represent places to ‘coexist’ in small-farm subsistence livelihoods, they have also been valued and conceived as a source of wealth that must be protected and, in turn, as a place that can be “owned, moved, purchased and sold according to the whims of individual interests and economic power” (Blatter, quoted by Ulloa, 2002, p. 193). Therefore, different territorial projects are not isolated from global market dynamics. Divergent local territorial imaginaries and materialities and their respective valuation languages face off and also interact with dominant imaginaries and languages, as a subset of the contradictions and conflicts produced in the confluence of different societies (Table 1).

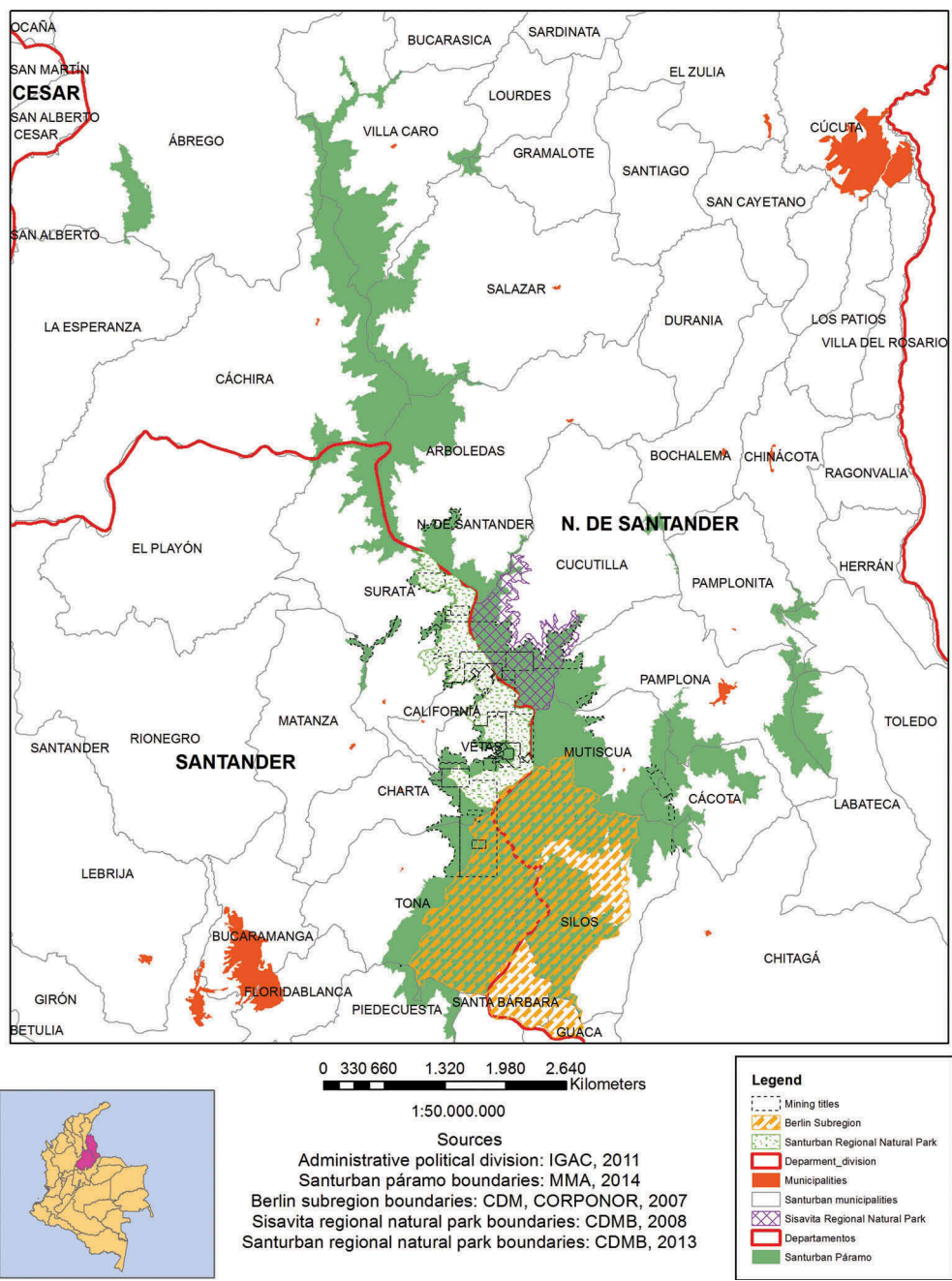


Figure 1. Santurban páramo, protected areas and mining titles. Author: Bibiana Duarte-Abadía

Table 1. Expressions of valuation languages.

Valuation language	Meaning	Actors involved	Illustrative expression
Cultural/metaphysical valuation language	Páramo as a sacred place integrating human–natural–divine relationships	Indigenous and peasants	“The people who live close to the lagoons have looked after them. The lagoons provide the water for local aqueducts, but when these are not protected the water sources may get angry. Therefore, indigenous communities always have tended to worship these sources and make ritual offerings.” (Doña Aura, inhabitant of Vetas, páramo de Santurban, 2012, quoted in Buitrago, 2012).
Natural/scientific valuation language	Páramo as highlands wetland ecosystem with unique biodiversity	Academics; environmentalist citizens (Bucaramanga, Cucuta); national government (Ministry of Environment)	“Páramo is an ecological unit with high importance for water regulation... The páramos are also ecosystems with high capacity to capture carbon; these two functions can contribute to mitigate the effect of climate change. Hence páramos need to be protected from economic activities” (MMA, 2001).
Socio-cultural valuation language	Páramo as rooted dwelling place with cultural identity	Indigenous, peasants and páramo dwellers	“We like to live in the páramo because is a healthy environment for animals, for our families. Here we want to stay, making our life and living” (Villamizar, 2013, cited in Franco, 2013).
Agro-economic valuation language	Páramo as a space for food production	Peasant organizations, agriculture organizations, onion growers, immigrants, food traders	“The páramo [is home to] farmers who by sowing potatoes provide the food to the people who live in the towns and the cities” (Villamizar, 2013, cited in Franco, 2013, p.127).
Socio-economic valuation language	Páramo as means of producing local economy and livelihoods	Mayors; small-scale miner organizations; agricultural organizations; peasant communities	“Unemployment, the indifference of the government, and interventions by foreign mining enterprises generate uncertain future for the families of California [many of whom] can only survive by extracting ore and whose hunger cannot wait” (Mayor of California, 2014, cited in Osejo, 2014, p. 58).
Economic-extractivist and developmentalist valuation language	Páramo as mineral resource to enhance national development	National government (Ministry of Mines and Energy); mining multinationals; military forces; Revolutionary Armed Forces; and small-scale local miners.	“Development research reports that in the last decade the Gross Domestic Product increased from 8% to 15%, which is why the government lists mining activities as a key driving force of development” (Corredor, 2013). “We face the challenge to promote the development of a mining economy in a sustainable way” (environment minister, cited in Hurtado, 2010).

Divergent regimes of representation and their complex interaction: páramo dwellers, government, multinational companies and environmental movements

Since colonial times, in the sixteenth century, mining has been conducted in the municipalities of California and Vetas, known as mining districts, located in páramo zones. For inhabitants of Vetas, gold and water used to be complementary. Historically, small-scale mining has been part of their livelihoods. Gold has driven the growth of towns and, along with water, has configured the territory by organizing actions to use and manage them. This has defined areas for agriculture, mining, livestock, towns and conservation. For the inhabitants of Vetas, gold represents wealth, but also history, legend, symbolizing tradition and knowledge, as well as one of the mainstays of their socio-economic livelihood (Buitrago, 2012; cf. Cremers, De Theije, & Kolen, 2012).

However, the entry of foreign capital has generated a crisis in local mining. In the last 15 years, most of the artisanal mines have been sold to multinational companies. These small-scale or artisanal mining companies were family associations, hiring an average of 20 workers; they used to be called “underground” mining, with low technical sophistication (Buitrago, 2012). Many residents of California, in Santurban, transferred their land ownership rights and mining extraction concessions to large companies, and subsequently went to work for these companies. In Vetas, for instance, Eco Oro has acquired 10% of the territory, totalling 1518 ha (Zapata, 2012, cited in Ungar et al., 2014).

Expansion of foreign capital through multinationals was enabled by various factors. The first was Law 20 of 1969, which declared mining activities to be of public utility and social interest. The second factor has to do with market liberalization policies and the strengthening of neoliberalism since the late 1980s, and later under the government of César Gaviria (1990–1994). The third factor is associated with the ‘democratic security policy scheme’ mentioned above, which consolidated territories for foreign capital and development of mining and agro-industrial zones. Finally, during the Santos government (2010–2014), the mining-energy sector was emphasized in the country’s development model.

In response to this situation, the Ministry of Environment enacted Law 1450 of 2011, which prohibits most economic activities. It forbids mining, agriculture, animal husbandry and hydrocarbons exploitation in páramo ecosystems. For this purpose, it called for delimitation of the páramos at a detailed scale of 1:25,000 to protect them more accurately. At the same time, these restrictive frameworks and public utility discourse stimulated land sales, either to the government or to multinational companies. In fact, as in the municipality of Vetas, many residents preferred to sell their land at higher prices to the multinationals rather than to the governor’s office for conservation.

The multinationals reconfigured the páramo to suit their interests in massive extraction of resources, changing the rules of play in land and water management (Buitrago, 2012). In Santurban, the recent reterritorialization by foreign capital has blurred borders and reorganized scales, mixing the local and external (Garay, 2013). Swyngedouw (2009) calls this “glocalisation”, building strategic multi-scale compositions in response to the commercial flows and geopolitical interests of multinationals. Bauman (2000) refers to the “liquid” modern world, an allusion to the fluidity with

which globalization generates a world of generalized circulation in which flows are freed of territorial constrictions.

In Colombia, formally, underground resources may be declared national property to supply public goods (Article 332 of the 1991 Constitution); however, instead of applying this article to protect public assets from deterritorialization by capital flows from the global market, the state uses it to reserve the right to authorize *private parties* to extract underground mineral ores, by granting mining concessions. In a Kafkaesque manner, governmental plans for protecting the territory are undermined by the government's own policies, bending over backwards for its multinational allies.

The government has started a campaign to declare *small-scale* national mining operations illegal. First, the 1988 Mining Code was amended (Law 685 of 2001) to eliminate small-scale mining as a legal category, placing it in the same category as informal mining, which tends to have the connotation of illegal mining (Duarte, 2012; cf. Cremers et al., 2012). Second, environmental authorities in recent years have been quite restrictive of mining activities. According to mines' technical standards, the authorities decide which ones can extract ore; this favours multinational companies and places traditional small-scale miners at a disadvantage. Moreover, water rights are allocated for extraction according to the categorization of the mining activity in terms of its legality, which directly affects small-scale mining. So, technological developments to extract gold have profound legal implications for mining rights, and access to sources of water.

Mining issues in Santurban are an exemplary illustration of how neoliberalism, rather than disempowering the national government according to a 'laissez-faire' discourse, reinforces the government's role, putting it to work for global market strategies. The government intervenes aggressively as the regulatory entity – in social, economic and cultural life, and in territorialization and deterritorialization. The recent entry of multinationals into Santurban's territory has limited free access to major lake complexes in the páramos as the companies buy up property. For the inhabitants of páramo mining districts, multinational companies' exploring for gold, buying concessions and getting environmental licences dispossesses them of not only their livelihoods but also their water.

At the same time, the demographic and economic growth of Bucaramanga and other semi-urban towns such as Cucuta and Pamplona have increased environmental demands on the páramo, particularly for water supply. Taking into account that the mining districts are concentrated at the headwaters of the Tona, Surata and Frío Rivers supplying Bucaramanga, different sectors of the city (academic, political, entrepreneurial, environmental, labour union and others) have joined to defend the Santurban páramo from mining activities by multinationals (Duarte-Abadía & Roa-Avenidaño, 2014). These sectors, particularly the urban, gathered under the Committee to Defend the Santurban Páramo, and in February 2011 they reached a consensus to deny a social licence for the Eco Oro company and prevent open-pit gold mining.⁴

In this context, the language these sectors have used in dealing with Eco Oro works to raise consciousness about caring for and respecting páramo as a 'natural space', guaranteeing water quality and supply. Their actions reinforced initiatives to expand the Sisavita regional natural park, north-east of the Santurban páramo, and declare regional natural park areas in Santurban. However, at the same time, such declarations entail

strict protection, excluding smallholder activities – restrictions that were supported by the downstream coalitions among dominant water users. The latter comprise the energy sector, the agribusiness sector (represented by the irrigation district's powerful private beverage company) and the public services enterprise.

Páramo inhabitants, small-scale miners and farmers saw these environmental protection frameworks as a threat to their livelihoods, which polarized them, with páramo defenders from urban zones versus inhabitants of these high-altitude zones. The conflict was worsened by the different multinationals' presence, which in addition to co-opting small traditional mining enterprises adopted the discourses of 'defending the rights of the territory and its inhabitants'. Even relationships between the different societal sectors of Bucaramanga and the páramo inhabitants have become conflict-ridden. Under environmental arguments, residents of the high-altitude areas are marginalized, considered water polluters and stakeholders jeopardizing the health of citizenry and ecosystem.

In recent years, because of the investment insecurity that is created by these environmental legislative frameworks, the Eco Oro laid off over 1500 workers after ending the exploration phase and has threatened to sue the Colombian government for USD 200 million dollars if prevented from continuing with mining projects.⁵ The economic and social effect of Resolution 0839 of 2003 (which created new categories of protection to organize and zone the páramos environmentally) restricts the water rights (concessions) of farmers for agricultural activities in páramo zones. This situation creates conflicts between Colombia's environmental authorities (Autonomous Regional Corporations) and rural people, especially when their actions and decisions favour some sectors over others (cf. Bebbington et al., 2010; Boelens & Gelles, 2005). Conservation policies regarding páramo use and management tend to increasingly restrict páramo dwellers' livelihoods while allowing multinational mining activities.

Making divergent values and interests commensurate in Santurban: the game of water and life

We have an ironclad commitment to delimit all the country's páramos, which we expect to finish by next year, and we will restrict activities that can be done around them, to ensure that these natural water factories can provide water catchment, regulation and supply services. (President Santos, World Water Day, March 2013)⁶

'The law [to delimit páramos] does not provide for any transition or compromise with local stakeholders, so it ultimately simplifies a reality that requires complex solutions', an expert in páramos told *La Silla* (preferring, like the other sources queried, to remain nameless because he works on a daily basis with the environmental entities). (Bermúdez, 2014).

Despite the great diversity of representations, values and interests related to páramos as hydrosocial territories, environmental authorities are clear that they are water factories that must be 'known' with objectifying scientific language and that their opposing interests must be matched with the universalistic, equalizing rationality of neo-institutionalism. Apparently, as the second quotation illustrates, the more critical

scientists, who are aware of the need to examine local complexity in greater depth, are afraid to raise their voices.

Different research institutes, consultants and environmental authorities have engaged in delimiting the páramos. One of the first was the páramo in Santurban. However, the Ministry of Environment delayed decisions for over a year, because of the socio-economic impacts of delimitation. First there is the huge investment made by the company, entitling them to sue the Colombian state if forced to leave the zone. Then there are the positions of the attorney general of the nation, governors of the region, and municipal mayors, responsible for enforcing acquired rights but also the well-being of the local people.

To find a way out of these confrontations, in early 2014 the environment minister of that time organized a discussion group with the diverse stakeholders' representatives disputing development in Santurban's hydrosocial territory. Small farmers, miners, representatives of multinationals, environmental authorities, citizens of Bucaramanga, environmentalists, researchers and the academic sector met with the expectation to learn about and reach consensus-based decisions on managing the páramo under the new delimitation. The dialogue was mediated to overcome these dilemmas using game theory and experimental economics, stressing the importance of collective rationality and reason to manage shared-use resources (cf. for example, Bromley, 1992; Ostrom, 1990). It assumes an understanding of how human beings universally reason and behave when resolving conflicts. The facilitator of the dialogue in Santurban explained:

Each chip you have in your hands costs 3000 pesos. Each of you can do whatever they want, keeping or investing your chips. Those that appear in the piggy bank get doubled and distributed in equal parts. If I invest and no one else does, what I invest gets scattered all over and I get nothing, so we need everyone to invest. We got a large proportion – nearly 80% of available resources – invested in the piggy bank, to be redistributed among everyone. (Cárdenas, 2014)

Under this scenario, the different opposing values and interests (represented by the chips) became commensurate, using the universal value of money, to facilitate a consensus among everyone. The assumption is that when incentives are 'correct', the motives of individuals to maximize their profits will ensure that opposing groups automatically try to find the most efficient way to organize the distribution of water, funds and other relevant resources. The game attempts to harmonize everyone's interests:

You have 40 chips, right? You can invest them in a large fund to produce water. And what we have are five large groups in a sequence who are going to receive the benefits of the water produced by the whole community. The problem is that, to deliver the water, we do it first for one group, we see how much water they take, and how much they leave for the rest... If shared interests produce an agreement, this should distribute the water not only more efficiently but also more fairly and equitably. (Cárdenas, 2014)

As the game's facilitator explains, this approach aims to forge agreements among the different stakeholders to distribute water more fairly, to maximize societal well-being. For this, it compares individual and group behaviour in coping with problems of equity and efficiency in collective water management. Explaining the thinking underlying this, Cárdenas (2011) refers to equity as grounded in the trust and reciprocity among

stakeholders to face their responsibilities for environmental externalities. This makes efficiency the result of efforts by each individual to contribute to maximizing societal well-being.

Faced with the problem of divergent interests, the neo-institutionalist game attempts to solve it through arrangements for cooperation and agreements for trust (Cárdenas, 2009). For example, the stakeholders furthest from water sources must increase their contributions to those higher up, in order to receive more water. The theory of working for collaboration in united exchange and marketing ‘among peers’ prefers not to speak of the major power inequalities between, for example, the multinational companies and small farmers, or between powerful cities downstream and peasant communities upstream. As if it were natural and automatic, applying game theory in the arena of water battles for the Santurban páramo has the implicit objective to make the participants understand that ‘consensus’, mediated by commensuration using money’s universal value, will lead to more rational, collective, optimal, efficient, just solutions.

The mediation in Santurban takes the neo-institutionalist perspective that conflicts originate in the ‘lack of mutual cooperation’ in allocating and distributing water. However, it ignores the fundamental *causes* for not generating cooperation on the basis of the presumed ‘shared interests’.

These include social groups’ opposing interests, and profoundly unequal economic power, in a discriminatory, exclusionary political structure. Another directly related cause is the existence (and juxtaposition) of different worlds with different cultures and worldviews, and incompatible valuation languages. Even though historically their representation regimes flow together or strategically interact in the hydrosocial territory (in, for example, political and economic co-opting of local residents; environmental discourse adopted by the multinationals; and neo-institutionalist conceptualization in the environmental movement), this does not mean that they can all be represented using a single universal valuation language (cf. Goff & Crow, 2014; Martínez-Alier, 2004). Consequently, the key is to ask whether implementing game theory and the theory of collective action, with its neo-institutional approach, actually achieves social justice and consensus as claimed – and if not, who wins and who loses in this game with water and life.

As a result of this ‘dialogue’, following instructions and foreseen outcomes of the game, stakeholders concluded that the solution to their clash of interests lay in building agreements for cooperation (Cárdenas, 2014). However, none clarified the type of cooperation to be agreed, and they have not even been able to agree about the cooperation mechanisms. Some days later, like a *deus ex machina*, the environment minister announced implementation of a public model of payment for environmental services (PES), but with no concrete scheme, to make conservation profitable and open up the dialogue in Santurban.

PES is established by monetary transactions between users downstream and residents of higher watersheds, for the latter to protect the environment to conserve and enlarge water flows to sustain economic and productive activities in the areas below. PES assumes that commoditizing water plays a harmonizing and homogenizing role with divergent interests, and therefore this universalistic reasoning and language have spread worldwide in the past decade, with strong economic and political backing by international environmental policy agencies (Boelens, Hoogesteger, & Rodríguez-de-Francisco,

2014; Büscher & Fletcher, 2015; Büscher, Sullivan, Neves, Igoe, & Brockington, 2012; Rodriguez-de-Francisco & Boelens, 2014; Rodriguez-de-Francisco et al., 2013). As a result of the presumed ‘open dialogue’, the PES model was *totally pre-planned* by the government in alliance with neo-institutionalist scholars and was *the only outcome that could ‘rationally’ emerge* from the game – a game and theory based on the inevitable superiority of collaboration and mercantile exchange among partners. As Foucault reasoned (1980), these ideas are not powerful because they express truth, but rather are true because they are backed by power (see also Robbins, 2004). In response to a scheme of neoliberal, neo-institutionalist governmentality, the language used in the ‘game’ presents options that are profoundly political (regarding fundamental issues of distribution and exclusion) as if they were neutral or technical. It applies the discourse of scientific objectivity, denying that power relationships permeate the knowledge produced and decisions made about delimitation and exclusions in the páramo. Along this line of thinking, their PES proposal treats human beings as rational individuals seeking aims focusing on their own interests. Accordingly, delimitating the páramo and hydro-territorial configuration, while commoditizing and redistributing water flows, appears and can be portrayed as ‘natural’, ‘inevitable’ and scientifically ‘rational’. Consequently, at the ‘dialogue’ in Santurban, facilitators (with all their political, institutional or economic interests) may seem to be mediators without interests or antecedents, who benevolently represent the local well-being and work on behalf of the nation’s best interests and universal truth.

For local residents, valuing their territories from the sole viewpoint of mercantile exchange of water has become a factor limiting and delegitimizing their multidimensional productive and reproductive territorial relationships and activities. Clearly, power validates certain types of knowledge and disqualifies others, promoting certain narratives and silencing others. So, under the formal discourse of national progress, efficient governance of resources to protect strategic ecosystems, climate change adaptation and mitigation, and ensuring water service for all citizens, subsistence economies in the páramos have a hard time, while proliferation of large-scale mining, with its ‘advanced, clean technologies’, seems to be the rulers’ hidden agenda for organizing and aligning territories, resources and residents.

Who wins and who loses: delimitation decisions

In December 2014, the new minister of environment, Gabriel Vallejo Lopez, announced the results of the delimitation process (Resolution 2090, Ministry of Environment and Sustainable Development, 2014), strategically blending different valuation languages:

We need to make balanced decisions in accordance with the socio-economic context; this government focuses on green development and the protection of strategic ecosystems. (Vallejo, 2014)

The delimitation process implements a zoning regime that establishes areas for restoration (25,227 ha), sustainable agriculture (5502 ha), and preservation (98,993 ha). Within “restoration areas”, mining activities can continue if the mining titles were acquired before 2010. The municipalities of California, Vetas and Surata are in these “privileged zones”. The Berlín sub-region is included in areas of “sustainable

agriculture”. In the “preservation areas”, agricultural and livestock activities cannot be expanded, while mining activities are forbidden. These three areas have to be managed according to ecological criteria in order to guarantee ecosystem services regulation and water supply. In this respect, and in accordance with our analysis in the fourth section, PES and other market-environmentalist instruments are legally installed to promote conservation as a economic activity.

Nevertheless, fundamental questions remain unresolved, such as how to reconcile ecological restoration activities with large-scale mining extraction in these areas. The new measures represent a major step backwards for social and environmental concerns since mining enterprises like Eco Oro have leeway to reactivate their extractive practices. The development of the Angostura Project through underground exploitation is but one example.

We extend our gratitude to all who participated in this process. We intend that Angostura will become an exemplary mining and investment project in the area of Santurban. We are committed to developing the Angostura Project in a socially and environmentally sustainable manner, abiding by all international mining standards and best practices that will be beneficial for all stakeholders, including our investors and the communities in which we operate. (Eco Oro, 2014)⁷

Deploying a double discursive strategy, the government/transnational company nexus, sustained by market-environmentalist scientists, plays the card of entwining valuation languages to manage differences and keep centralized control of institutional practices; this, to facilitate the perpetuation of capital and existing power relationships.

Rather than ‘technical’ or ‘biological/ecological’ criteria for establishing the limits of action in and appropriation of Santurban’s páramo, and far beyond presumably open-ended game-theoretical outcomes or predictions regarding societal win-win options, it is the power structures among the stakeholders that define the conditions of access to and control over the hydrosocial páramo territory of Santurban.

Conclusions

This article shows that hydrosocial territories, in addition to resulting from some complex biophysical and political-institutional interactions, also result from the ways they are perceived and interpreted by societies. Simultaneously, different valuations represent different relationships and concepts about the páramo, which are subject to a historical context, social changes, modernization, and expansion of market economies. Therefore, territorial imaginaries lead to technological, political and cultural projects to define their order, and conversely, water control structures and relationships generate and reinforce territorial discourse to legitimize and justify forms of governance.

At this time in the Santurban páramo there is complex interaction, because several processes are becoming more intensive at once: large-scale mining extraction and local-global transformation of the territory; territorial cultivation by multisectorial subsistence economies; the assumed threat of increasing water scarcity in cities due to climate change and extractive industries; and the government and armed forces striving to build their geo-political control over this disputed territory. Neoliberal policies backing the mining and energy sector have drastically influenced the multinationals’

territorialization of power. Meanwhile, at lower altitudes, population growth in cities and environmental policies pressure for protection of these ecosystems and restriction of economic activities endangering water security and societal well-being.

So, none of these tensions is separate from the rest. On the contrary, they are the result of globalization phenomena that have broken down the territorial boundaries in Santurban and worked their way into local dynamics. This generates ecological conflicts over distribution, and contradiction in normative frameworks, where water increasingly becomes the bone of contention. This interaction among stakeholders with opposite interests generates epistemological pronouncements and political confrontations among different regimes of representation about 'what the páramo is and should be', each with its own valuation language. Along with the conflicts, this also generates strategic political-discursive coordination among (presumed) allies – páramo inhabitants and mining companies together, defending their access to the páramo using languages of 'territorial-cultural defence'; urban environmental movements and environmental authorities together, representing the páramo as 'water factories' requiring precise delimitation and exclusion of polluters; multinational companies co-opting residents and politicians with the language of money and of national progress and modernization; etc. Each of these discursive coordinations obviously embodies profound contradictions in interests and values.

Amidst these coalitions, divergences and convergences, the government's own ambivalent policy has been forced to juggle a threefold (or more) discursive strategy, with contradictory faces. It tries to ensure environmentally sustainable management by setting limits on extraction, delimiting the páramo and restricting certain territorial stakeholders and activities. At the same time, it seeks to include and involve the different societal sectors and/or those affected by this management. Third, and fundamentally, it pursues its policy of appealing to foreign capital and mining extraction for 'the nation's well-being'.

To achieve 'consensus' and political stability (without jeopardizing the status quo and the continuity of the extraction-based model), the government has strategically combined with neo-institutionalist science, because of its depoliticizing, universalizing language. Applying game theory and the dilemma of managing the commons is a way to 'convince' and 'include' local residents of the Santurban páramo using norms of rational behaviour and economic truths. These emphasize the commoditization of water resources and the mercantilization of its services to generate 'rational, efficient water use'. This assumes that all inhabitants leave behind their own particular ways of knowing, identifying and valuing, and collaborate with each other to conserve their territory, maximizing every player's individual gains and multiplying their contribution to water conservation. Boelens and Zwartveen (2005) explain that, in fact, "neo-institutionalist formulae are attractive because of their clarity and the efficiency with which they simplify complex realities and behaviours". As manifested in the case of Santurban, "the beliefs that flows of money and water follow universal scientific laws, and that human beings roughly follow the same rational, utility-maximising aspirations everywhere, are important sources of consolation and relief for policy-makers who are confronted with increasingly complex, seemingly chaotic, and highly dynamic water situations" (p. 736).

The approach actively denies that decisions made about delimiting and reorganizing the territory and redistributing water are profoundly political rather than being just technical or socially optimal; they inherently exclude. The approach also subordinates other modes of valuation and systems of knowledge. It does not consider the factors by

which many communities constantly interact dynamically with the hydrosocial territory, including affective relationships, family relations and solidarity, and emotional, moral and cultural values that cannot be expressed in commodities and maximizing profits.

The policy proposal to implement PES seeks to constitute hydrosocial territories whose constituencies' roles and identities have been aligned with the market – water producers and clients – exchanging commodities and cooperating on the basis of universal collective rationality. This assumes that homogeneous groups of producers and consumers exist, under conditions of equal power. However, in Santurban's everyday reality actors have strongly differing power bases and divergent hydro-territorial interests and proposals. The government, therefore, seeks to silence societal conflicts through consensual discourse and through the entwining of multiple valuation languages. But the outcomes of its territorial zoning and economic-productive delimitation decisions evince the firm governmental position that Colombia's neoliberal project should not suffer from lofty socio-environmental ideals and protections.

Meanwhile, growing resistance to large-scale mining in Santander has placed at centre stage the unending contradiction permeating the state, which has enacted two opposite sets of legislation: economic and commercial opening-up to mining, and protection for ecosystems. Páramo inhabitants and communities know that the governmental strategy to present deeply incommensurable issues as if they were understandable through universalist language and solvable through a theory based on games and a depoliticized zoning process, will not solve their real-life problems.

Notes

1. Boelens *et al.* (2016) conceptualize “hydrosocial territory” as “the contested imaginary and socio-environmental materialization of a spatially bound multi-scalar network in which humans, water flows, ecological relations, hydraulic infrastructure, financial means, legal-administrative arrangements and cultural institutions and practices are interactively defined, aligned and mobilized through epistemological belief systems, political hierarchies and naturalizing discourses” (Boelens *et al.*, 2016, p. 2).
2. Incommensurable items have no common measure or standard of comparison, therefore they are impossible to compare in value or quality. Commensurability refers to what can be exactly expressed by some common unit, concept or language (Webster's Dictionary 2016: “having a common measure; capable of being exactly measured by the same number, quantity, or measure”).
3. The Berlín sub-region was declared a DMI (integrated management district) in 2007. Decree-Law 2811 of 1974 regulates land use and environmental planning.
4. The Greystart Company, in December 2009, applied for an environmental licence to make an open-pit gold mine, and on 31 May 2011 the Ministry of Environment rejected this application (Duarte-Abadía & Roa-Avenidaño, 2014).
5. <http://m.vanguardia.com/economia/local/225344-dudas-sobre-unificar-el-limite-del-paramo-con-el-parque-santurban>.
6. <http://lasillavacia.com/historia/santurban-de-ministro-en-ministro-y-sin-solucion-la-vista-4846>.
7. http://www.eco-oro.com/s/NewsReleases.asp?ReportID=688843&_Type=News-Releases&_Title=Eco-Oro-Announces-Boundaries-of-Pramo-of-Santurbn-Declared.

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