

1

Introduction: The Multiple Challenges and Layers of Water Justice Struggles

Rutgerd Boelens, Jeroen Vos, and Tom Perreault

1.1 Introduction

Water is a resource that triggers profound conflicts and close collaboration, a source of deep injustices, and fierce struggles for life. In many regions of the world, rising demand and declining availability of adequate-quality water foster severe competition and ferocious clashes among different water uses and users. People also suffer from flooding; contamination caused by industry and mining; privatization of public water utilities; corruption; and displacement by large dam projects. Climate change intensifies most human-made water problems. In struggles for water security, the poor tend to lose (e.g. Crow *et al.*, 2014; Escobar, 2006; Harvey, 1996; Perreault *et al.*, 2011).

Through exemplary cases, the chapters in this book show how new competitors – including megacities, mining, forestry, and agribusiness companies – demand and usurp a mounting share of available surface and groundwater resources (e.g., Donahue and Johnston, 1998; GRAIN, 2012). Water deprivation and water insecurity affect marginalized urban households, and rural smallholder families and communities. In many regions, this poses profound threats to environmental sustainability and local and national food security (e.g., Escobar, 2008; Mehta *et al.*, 2012; Mena *et al.*, 2016).

Such proliferating problems of material and social “water injustices” provide the backdrop for this book. Distribution of access water rights and water-related decision-making is extremely skewed. Smallholder communities’ water-based livelihoods and rights in many countries of the global South are constantly threatened by bureaucratic administrations, market-driven policies, and top-down project intervention practices.

Despite the fact that water injustices have existed throughout human history, water justice problems and related policy interventions have changed rapidly over recent decades (Zwarteveen and Boelens, 2014). For instance, rather than focusing on simply enlarging water flows through new hydraulic engineering projects, new perspectives focus on water saving and conservation (Vos and Marshall, 2017; Zwartveen, 2015). New scientific fields and water professionals have entered the water policy-making and intervention worlds to accompany (increasingly high-tech) hydraulic engineering

(Buscher and Fletcher, 2015; Goldman, 2007, 2011). Also, climate change threats and water-related disasters have changed science and policy debates and water funding projects related to issues such as “mitigation and adaptation,” flood control and drought prevention (Heynen *et al.*, 2007; Lynch, 2012; Martínez-Alier, 2002). Further, global neoliberalism has assured that water development and governance are no longer seen as the exclusive realm of the state, with water knowledge and authority concentrated in powerful public agencies (Hommes *et al.*, 2016; Loftus, 2009; Zwartveen, 2015). Water governance scales have changed: the nation-state has lost territorial sovereignty in water control. Civil-society organizations and, particularly, multinational companies and global policy institutes have entered the water governance scene (Molle *et al.*, 2009; Perreault, 2015; Swyngedouw, 2004). In practice, this has shifted accountability relations, from publicly-elected governments or local water user groups to non-democratic multilateral financial institutions (Zwartveen, 2015; see also Bakker, 2010; Swyngedouw, 2004).

An important starting point of the book is the authors’ shared recognition that understanding and challenging water injustices requires conceptual tools to recognize the power and politics of water use, management and governance. Beyond their expression in laws, explicit rules and formal hierarchies, the book calls attention to how power and politics also significantly work through more invisible norms and rules that present themselves as naturally or technically ordered. These rules are part of established water development intervention procedures and practices, and are embedded in water expert communities’ cultural codes of behavior (Zwartveen and Boelens, 2014). Therefore, in addition to dealing with the urgent issues such as water grabbing and dam building, the book’s attention goes beyond such overt water injustices and open conflicts, showing how unfairness and injustices are intrinsic to standard ways of knowing and governing.

Understanding how water injustices are embedded and situated, and possible ways to remedy them, is a central aim of this book. This entails an acknowledgment of diversity and plurality – in views, knowledge, rights systems, ideas and norms about fairness etc. – without embracing a stance of cultural relativism or denying the broader similarities across specific instances of injustice (Roth *et al.*, 2005).

This introductory chapter provides some starting points for the water justice explorations that the book will elaborate on. As we argue in the next sections, the evolving field of water’s political ecology builds on transdisciplinarity (Perreault *et al.*, 2015). As such, it treats nature, technology and society as mutually constitutive (Haraway, 1991; Latour, 1993; Swyngedouw, 2009), forming hydrosocial networks that establish how water and decision-making power over water control are (to be) distributed. By deconstructing technical discourses of efficiency, economists’ stories of productivity and naturalized ideas of scarcity, it searches for new insights to challenge unequal power structures as manifested in and through water. The sections examine the multiple layers of water injustices, ranging from the brutal, visible practices of water grabbing and pollution to the subtle

powers and politics of misrecognition and exclusion, and covert equalization and subjugation techniques.

1.2 Examining Water Justice

The combination of intensified resource extraction, land and water degradation, increasing competition over water access and control, and growing reliance on market forces and forms of water expertocracy, have profound implications for debates over water rights and justice. On the one hand, it is increasingly clear that water scarcity and insecurity are not so much related to the absolute availability of fresh and clean water, but rather are expressions of how water, and water services, are unequally distributed among societal groups. Unequal water distribution and exposure to contaminated water, flooding and failed water projects often reveal elite capture of the state and related biased policies and corrupt practices. In other words, the so-called “water crisis” is less a consequence of generalized scarcity than a manifestation of uneven power geometries (UNDP, 2006). On the other hand, the mainstream water policy community tends to avoid scrutinizing the root causes of water problems. Instead, in accordance with its own positivist, universalist epistemologies and its belief in expert knowledge systems, formal legal structures and market forces, it blames the victims: local water user groups, communities and their “chaotic, inefficient plural rights systems” (Boelens and Zwarteveen, 2005).

Recently implemented global water reforms tend to ascribe water inequities and unsustainability to incomplete implementation of the universalistic, market-based expert model (Achterhuis *et al.*, 2010). Therefore, paradoxically, the remedy that is often prescribed is to follow the rationality and forces that largely have caused the problem in the first place: to increase free-market rules in local communities, and give more leeway to outside and private-interest groups (Bauer, 1997; Heynen *et al.*, 2007; Perreault *et al.*, 2015).

Such policy practices form part of a larger phenomenon in the water world: most international policy models and national water laws are not adapted to local populations’ contexts, assuming that it is these local populations, rather than official plans, laws and theories, that need to adapt. These models aim to create their own, utopian water world. Consciously or subconsciously, such policies hold that local water territories are basically unruly – or at least unruly: disorganized humans, irrational values, unproductive ecologies, inefficient resource use, and continual water conflicts. Existing water norms and practices are misrecognized by overlooking water values, identities, rights systems, and users on the ground. Mainstream water policy-makers then construct imaginary water users, with identities that conveniently fit the models, with needs and rationales matching the interests and knowledge of those in power, shored up in their science, technology and policy towers. This way, policy models justify dramatic interventions, even when well-intended (Boelens, 2015a).

It is for these reasons that we base our understandings of “water justice” on a notion that sees environmental governance not as the “governance of nature” but “as ‘governance

through nature’ – that is, as the reflection and projection of economic and political power via decisions about the design, manipulation and control of socio-natural processes” (Bridge and Perreault, 2009: 492). More specifically, we situate “water justice” conceptually and politically in the field of the “political ecology of water,” which may be defined as: “the politics and power relationships that shape human knowledge of and intervention in the water world, leading to forms of governing nature and people, at once and at different scales, to produce particular hydro-social order” (Boelens 2015a: 9). This political ecology of water thus focuses on unequal distribution of benefits and burdens, access to and control over water, winners and losers, and disputed water rights, knowledge, and culture. It is also about practical and theoretical efforts to build alternative water realities. Therefore, our questions address fundamental issues regarding how water scarcity is being constructed by dominant agents, and how power relations influence water knowledge and development to produce particular claims to truth. Our questions also intrinsically engage research and transdisciplinary social action, focusing for instance on how knowledge production can contribute to strategies that contest water dispossession and accumulation; and how the knowledge systems of scholars, activists and water users can be mutually enriching and complementary.

Approaching such questions requires an understanding of “justice” as based on a complex set of notions and dynamic principles that are grounded in particular social realities. It means that we must deviate from prevailing liberal political-philosophical theories that have tried to present justice as a universal, transcendent concept (Lauderdale, 1998; Roth *et al.*, 2005). We therefore differ with positivist traditions, such as the utilitarian philosophy of eighteenth-century political economist Jeremy Bentham, who defined justice as that particular societal order that would bring the greatest happiness to the greatest number of citizens. To this end, the rights and happiness of some may be sacrificed – generally, this means society’s most vulnerable social groups. Bentham sought to establish a system “that aims to construct happiness societally by means of reason and law” (1988 (1781): 1–2), whereby happiness could be exactly calculated. Echoing the current water expertocracy, this calculated design of happiness and overall wellbeing would be the task of moral and justice experts; common people would lack reason. Utilitarian justice as defined by Mill (1874, 1999) – advocating legal rationalization and the use of economic theory in political decision-making to, ultimately, devise a politics oriented by human happiness – also means excluding “irrational deviants” from (Western positivist) justice. Most legal justice constructs deploy variations of these liberal-universalist ideas and theoretical ideals of justice.

We also differ with “social contract” notions of distributional justice based on Rawls (1971), which stress “procedural fairness” and “ethics-based autonomous decision-making.” Rawlsian justice takes place behind abstract, illusory “veils of ignorance” (which supposedly allow people to make just decisions without knowing the impact these decisions will have on themselves), but ignores actually existing class, gender, education and ethnic inequality structures. And in the same vein, we challenge liberal-individualist or socialist-collectivist theories that concentrate only on distributive justice but overlook sources of everyday injustices based on discrimination, misrecognition, and exclusion from

decision-making. Young (1990), Fraser (2000), Schlosberg (2004) and Escobar (2008) have shown how such (universalistic) distributive models and procedures fail to “examine the social, cultural, symbolic and institutional conditions underlying poor distributions in the first place” (Schlosberg, 2004: 518). Next, we are profoundly distant from libertarian entitlement (e.g. Nozick, 1974) and neoliberal appropriation theories (e.g. Hayek, 1944, 1960; Friedman, 1962, 1980) that stress the relationship between individual freedom and private property maximization. Hayek and Friedman see no conceptual or empirical problems in building “justice” precisely on expanding economic-distributive inequalities and further dis-protection of the vulnerable: equality is defined as all individuals’ freedom to become rational market actors (Swyngedouw 2005; Ahlers and Zwartveen 2009).

For these reasons, differing with these universalistic (mis)understandings of justice, we deploy a relational perspective (see also Boelens, 2015a; Perreault, 2014; Roth *et al.*, 2005, 2014; Zwartveen and Boelens, 2014): to understand the embeddedness of particular ideals of justice, and the way these get constituted through social practices, requires a grounded, comparative and historical approach (Lauderdale, 1998). Such critical, grounded justice perspectives must understand how diverse people see and define justice within a specific context, history and time (Joy *et al.*, 2014; Perreault, 2014; Zwartveen and Boelens, 2014). They also examine the effects that particular definitions of justice have on how a society distributes wealth and authority (Roth *et al.*, 2005). Justice proposals based solely on abstract, universalistic criteria, have been unable

to respond to indigenous and peasants throughout the world who are still experiencing the full presence of injustice in the form of poverty, landlessness, dispossession, political and religious oppression, and genocide. Philosophical formulas become hollow without systematic explorations of the sources of injustice, including those within indigenous and peasant societies.

(Lauderdale, 1998: 5–6)

Consequently, we argue for the need to analyze, in all their diversity, how living people experience injustice, facing political oppression, cultural discrimination and economic marginalization. We relate these injustice experiences to, on the one hand, locally prevailing perceptions of equity and, on the other, hegemonic discourses, constructs and procedures of formal justice. Moreover, we also call for an analysis of the actors who develop or impose these views, and why certain perspectives on justice or equity are promoted while others are ignored, plus the effects of these views and conceptualizations for specific groups.

As Fraser (2000) has argued, injustice combines issues of distribution with those of (cultural) recognition, in often complex and sometimes paradoxical ways (also see Schlosberg, 2004; Young, 1990). Cultural, ethnic and gender discrimination often constitute the (implicit or explicit) foundation to privilege allocation of water rights to some over others. For example, in many African countries, a common feature of irrigation modernization projects is that they have cut off women from any possibility to control land or water. In Mali, after 50 years of investment

in irrigation, only 12 of the 2,500 farmers under the Office du Niger were women. In Burkina Faso, all land titles granted by the Volta Valley Authority went to male household heads. In Senegal, women own less than 4 percent of the newly irrigated areas. In Mauritania, nearly 20 percent of the households in the river area are headed by women, and yet women comprise only 5 percent of participants in new schemes (Dankelman and Davidson, 2013; Zwarteveen, 2006).

Exclusion from decision-making often has direct effects on unequal allocation of and access to water. In turn, decision-making authority is determined by economic power relations and cultural and behavioral norms that interlink with how particular forms of water knowledge are legitimized and privileged. Indeed, questions of participation, recognition and distribution are intimately linked to water control. Further, in addition to Fraser's three domains of justice struggle ("recognition" and "participation" and "distribution"), a fourth domain of water justice may be expressed as "socio-ecological justice." This refers to the ways in which water-allocation decisions and struggles are embedded in sensitive, dynamically shaped socio-natural environments, seeking to sustain livelihood security for contemporary and future generations (Boelens, 2015a; Zwarteveen and Boelens, 2014; Escobar, 2008). Before returning to this relational, engaged understanding of water justice, and what we see as important ingredients of an approach to identifying, understanding, challenging and defying water injustices (in Section 6), we first consider some examples of water injustice in practice.

1.3 The Cruel Face of Water Injustice: Some Expressions in Practice

1.3.1 Agribusiness Water Grabbing

The world is experiencing a boom in transnational agricultural produce trade. Exports of fresh vegetables, fruits, and flowers have doubled in the last decade (Vos and Hinojosa, 2016). Governmental policies support large agribusiness companies that buy up land in countries in the South on a massive, unprecedented scale (Rulli and D'Odorico, 2013; Woodhouse, 2012). Land grabs of this sort lead to competition for water with local communities, degrade local ecosystems, jeopardize local food security, and profoundly alter existing modes of production and income distribution (Van der Ploeg, 2008; Zoomers and Kaag, 2014). The land purchased is worth little if not accompanied with access to water. In most cases, therefore, land grabs are in fact water grabs, a process that dispossesses and displaces existing water users (Mehta *et al.*, 2012; Woodhouse, 2012).

Based on the data set of *The Land Matrix* (2012), Rulli and D'Odorico (2013) calculated that total land deals reported by foreign companies amounted to some 43 million ha. Water used in agricultural products can be seen as "virtual water" embedded in those products. Export of crops from the 43 million ha would represent some 497 billion cubic meters of virtual water exported to rich consumers. This would increase current virtual water exports by one-third, as calculated by Hoekstra and Mekonnen

(2012: Table 1). Some 22 percent of these reported land deals was under production in 2013.

Clearly, this “hydro-colonialism” goes beyond classic North-South opposition: companies from Asia have in recent years bought more than 8 million ha in the Nile basin, to grow export crops that need water far beyond the entire water availability of the basin. According to GRAIN (2012: 8) this is “hydrological suicide: four countries alone already have irrigation infrastructure established for 5.4 million ha of land and have leased out a further 8.6 million. Irrigating just these lands would require much more water than is available to all ten countries in the Nile basin.” As GRAIN reported, the Ethiopian Government aims to evict 1.5 million people from their territories to make irrigated land available (GRAIN, 2012: 18).

National policies often allocate water to where “its marginal returns are highest” and link this to promotion of commercial (export) crops, which replace staple crops. This may endanger food security. Gaybor (2011) provides an illustration of this for Ecuador. Nationally, according to official registration, the large-scale export sector represents 1 percent of the farms, but has concessions for 67 percent of the total available irrigation water. Peasant and indigenous producers in community irrigation systems represent 86 percent of the water users, but own only 22 percent of irrigated land and have access to only 13 percent of the total allocated irrigation water. In some provinces, water allocation inequality is outright appalling. In Imbabura Province in the north, for example, a small number of large landholdings (>100 ha) account for 91 percent of the total allocated volume of water (Gaybor, 2011: 200). Actual water distribution is even worse than official figures show, as more than half of the water that is used by large-scale agribusiness companies is not registered and is illegally tapped.

In Peru, we can witness similar practices. In the dry Ica Valley, with fertile soils and strategically located near Lima, rainfall is close to zero. Groundwater, therefore, is a vital resource for thousands of small farmers. For the past decade, however, the aquifer has been dramatically over-pumped, with its water table dropping by nearly one meter per year (Progressio, 2010). New agro-export companies have purchased most valley land to produce high water-consumption export crops such as grapes and asparagus. Small and medium farmers, who are unable to compete with these large owners’ powerful water pumping technologies, have seen their wells run dry. Agro-exporters, who constitute 0.1 percent of the users, consume 36 percent of the water. Small farmers, who account for 71 percent of all users, have access to only 9 percent of the water (Cárdenas, 2012). As in India, Mexico, Chile and other regions around the world, only those who can afford to purchase powerful pumps and ever-deeper wells are able to access groundwater. The resulting inequality is a major source of conflict (Joy *et al.*, 2014; Roth *et al.*, 2005, 2015).

This also places the dominant neoliberal logic regarding the benefits of virtual water export in a different light. The discourse on virtual water efficiency assumes that, through global trade liberalization, virtual water flows from water-rich to water-poor areas (Vos and Hinojosa, 2016). In many cases, however, this is simply incorrect. Water-poor countries such as India and China, Kazakhstan, Australia, and Tanzania are net exporters of virtual

water. Water-rich countries such as the Netherlands, UK and Switzerland are net importers of virtual water. The NAFTA agreement between Mexico and USA led to virtual water flow from dry areas in Mexico to the USA. As mentioned above, asparagus and grapes exported by large-scale agribusiness, from the desert coast of Peru, deprive local communities of water and income. Flower production for the USA and Europe in vulnerable areas of Kenya and the Andean mountains of Colombia and Ecuador profoundly affects the quantity and quality of local community water sources, as well as overall livelihood conditions (Mena *et al.*, 2016; Vos and Boelens, 2014).

1.3.2 Extractive Industries

Encroachment on water territories by extractive industries provides another illustrative example of brutal water injustice. In many parts of the world, mining companies make use of water in headwater catchments, thereby diverting and polluting the downstream flows on which peasant and indigenous communities (and sometimes entire cities) depend. In the highlands of the Andean countries, for instance, mining companies buy up water rights and gain de facto control over water resources, which sometimes leads to conflict (e.g. Budds, 2010; Preciado-Jeronimo *et al.*, 2015; Sosa and Zwartveen, 2012). In the lowlands, hydrocarbon industries are increasingly dominating water control. As Bebbington *et al.* (2010) show, in Ecuador's Amazon region, approximately half of the total area is allotted in concessions to oil companies (see also Lu *et al.*, 2017). In neighboring Peru, it is even worse: nearly three-quarters of the Amazon region is allocated or subject to leasing to hydrocarbon transnationals (Bebbington *et al.*, 2010: 309–11).

A telling illustration is a Canadian gold mine intervention in San Luis Potosí, Mexico. Cerro de San Pedro is an ecological reserve and cultural heritage site. Water is fundamental for local livelihoods and the large city of San Luis Potosí. New water extraction is entirely forbidden in this desert region. In 2007, however, international laws and Mexican politics led the mining company to circumvent all local rules, annexing the previously untouchable communal land and water rights, with disastrous effects for the ecological reserve (Peña and Herrera, 2008; Stoltenborg and Boelens, 2016). Cerro de San Pedro has been converted into a large, toxic cyanide dump. Land and waterscapes have been destroyed, and the river has stopped flowing. National politicians forced the local mayor to accept the mine. He had no alternative: the former mayor, his father, had opposed the mine and was murdered. Internationally, however, the Canadian company is recognized for its corporate social responsibility, suggesting deep concern for community development and the environment. It has been issued a Conflict-Free Gold Certificate. International agreements actively support the mine's plunder. The NAFTA water charter forced the local population to accept the mine. Complaints from local communities receive no consideration. They have no right to participate in decisions about their own future.

Meanwhile, Latin American governments increasingly invoke anti-terrorist laws and discourses – initially a response to civil wars in the 1980s but given new impetus by the

global war on terror – to label and imprison protesting villagers as “environmental terrorists.” A Peruvian environmental movement leader said: “We now have a state that no longer protects people’s rights and instead protects investment” (The Guardian, 2014). In 2014, the Inter-American Human Rights Commission (IACHR, 2014) investigated 22 large-scale Canadian mining projects in nine Latin American countries, concluding that they all caused profound environmental impacts, contaminating rivers, displacing people, impoverishing communities, and dispossessing water rights. Protesters have been killed. As the report observes, development cooperation increasingly promotes mining; Canada has advised Latin American governments on how to circumscribe protective laws and curtail civil rights to facilitate mining. China, Australia, Europe, and the United States may follow suit (Stoltenborg and Boelens, 2016).

1.3.3 Hydropower and Mega-Hydraulic Development

Water injustice also originates from hydropower development, large irrigation schemes and other mega-hydraulic infrastructure, triggering broad societal struggle (e.g. Baviskar, 2007; Kaika, 2006; McCully, 2001). Mega-dams drastically change hydrological regimes, flood important cultural landscapes, and often alter local rural livelihoods irreversibly. In many places around the world, dispossessed or resettled people bear the burdens, while benefits accrue to distant cities, financial institutions and construction, hydropower and mining industries (see Duarte *et al.*, 2015; Hidalgo *et al.*, forthcoming; Hommes *et al.*, 2016).

Notwithstanding growing public criticism of this top-down, supply-driven hydraulic development, these projects have gained new impetus worldwide, since they are portrayed as key ingredients of the new “green economy” (Goldman, 2011; Hommes and Boelens, 2017; Huber and Joshi, 2016; Sneddon and Fox, 2008). Hydropower generation as “clean development” is currently a basic justification for dam projects. However, new mega-works often ignore the lessons of past decades, also disregarding these projects’ contribution to climate change (Jasanoff, 2010; Moore *et al.*, 2010). The nexus among state bureaucracies and politicians, private companies, engineering schools and global capital lending steers policy, giving preference to large-scale hydraulic works over context-sensitive, less capital-intensive, interactively designed alternatives (e.g. Hommes *et al.*, 2016; Moore *et al.*, 2010; Sneddon and Fox, 2008).

Mega-hydraulic development tends to be neatly integrated with a market-based capitalist model of economic growth, triggering rights and resources accumulation by some players and the simultaneous dispossession of vulnerable groups.

A horrifying example is the Chixoy Dam in Guatemala, detailed by Barbara Johnston in Chapter 9. In order to construct the dam, the Achi Maya indigenous population living there was labeled a “backward people” without territorial rights or homestead properties, and the dam site was labeled “unruled, empty space.” Project documentation ignored the Achi Maya’s strong cultural-productive roots in their territory. The project blended participatory jargon with racist ideas to explain why these ignorant people resisted displacement. An Inter-American Development Bank report states: “In the native peoples’ world

view, traditional lifestyles and agricultural practices are expected to remain changeless for evermore, which explains why native *campesinos* ... have proven resistant to change and innovation” (IDB, 1991, annex II-2:1, cited by Lynch, 2006: 14). When Achi Maya communities peacefully resisted displacement from their homes, the World Bank, donor governments and international consultants actively ignored state-sponsored military violence (Johnston, 2005; Lynch, 2006). As a consequence, many years of intimidating, torturing, and raping the local population left 440 men, women, and children dead and displaced thousands of local families (Aguirre, 2014).

1.3.4 Rural-Urban Transfers and Intra-Urban Water Provision Inequality

In many places in the world, the expanding thirst of cities and industries is quenched at the expense of rural communities and smallholder families. Ironically, supply-oriented engineering projects that divert water from increasingly distant rural areas to urban areas are justified, among others, by references to the Human Right to Water, the Millennium Development Goal of ensuring safe drinking water access for all, and the national importance of megacities (Hommes and Boelens, 2017). While such references may be well-intended, water transfers are represented as neutral, scientifically justified options, while the societal power relations inscribed in such technologies generate very unequal outcomes for different groups (Bakker, 2010; Yacoub *et al.*, 2015). They often evoke the image of water-supplying watersheds and forests as being uninhabited or even virgin lands, in which water is freely accessible for “high-priority demands.” Historically grounded customary water rights are often considered clandestine.

An exemplary case is Peru’s capital, Lima. As Hommes and colleagues have shown, much of its drinking water is transferred from the Andean highland territories, and any opposition by smallholder communities is characterized as backwardness, ignorance or stubbornness, to be resolved by “awareness-raising.” As the national drinking water agency writes in its public relations book, tellingly entitled *The Land of the Lagoons*,

Living in a natural paradise, they [communities affected by water extraction] find themselves a bit distant from the reality which our country lives, and even more so from the necessities of other Peruvian regions. Accordingly, their initial attitude was one of indifference towards the great project that will benefit the regions of Lima and Callao with new water sources ... Nevertheless, SEDAPAL planned actions to benefit the community, such as this book, which ... has the value of striving to integrate the most remote communities and those least informed about the country’s reality ... Explanations about the project’s kind-heartedness ... conquered local leaders’ resistance.

(SEDAPAL, 1998: 17–18, cited in Hommes and Boelens, 2017: 77)

Drinking water extraction is sustained and legitimized by a discourse and policy that present the countryside as embodied by abundant resources and backwardness, and the city as a place of civilized society and progress that has natural water scarcity. At the same time, the discourse naturalizing water scarcity, legitimizes ever-larger rural–urban water transfers without touching upon the fundamental issues of obsolete water infrastructure

and low efficiency inside the city, plus huge inequality in water access within the city's neighborhoods (Hommes and Boelens, 2017; Ioris, 2016). As elsewhere, Lima's water scarcity is referred to as a natural problem caused by its arid environment and by climate change, rather than as a problem of distribution or of uneven power relations (Bakker, 2007; Linton, 2010; Lynch, 2012). Around one million inhabitants in Lima lack access to public drinking water and sanitation systems, but in the wealthy neighborhoods pools are filled and parks intensively irrigated (Ioris, 2016). As can be witnessed in Lima, as in many of the world's megacities, "water transfers are promoted as charitable 'water for all' projects even though the water often does not reach those most in need" (Hommes and Boelens, 2017: 78).

1.3.5 Water Service Privatization

Neoliberal thinkers and policy-makers advocate treating water as an economic good. According to neoliberal logic, policy measures such as privatizing water and water service provision, granting concessions to operate distribution networks, and implementing full-cost recovery in water service pricing would lead to improved water service, increased investments in infrastructure, and more efficient operation and maintenance. However, several studies have shown that privatizing public utilities has often failed to benefit water users; rather, tariffs hiked, investments in infrastructure lagged behind, quality of service provision did not improve, and the environment was jeopardized. Companies also faced disappointing returns and now retreat from selected countries and intensify privatization in more profitable regions (Bakker, 2010, 2013; Van den Berge, *et al.*, Chapter 12 of this book). In recent years, protests have been organized in various parts of the world to stop privatization of drinking water utilities or demand cancellation of these contracts: e.g. in Dar es Salaam in Tanzania, Jakarta in Indonesia, and in different cities in South Africa, India, Brazil and Spain. Because of these social protests, the meager service provision results for the people, and lower-than-expected profits for companies, many drinking water companies have been "re-municipalized." By 2014, over 180 water utilities worldwide had been returned to public management (Lobina *et al.*, 2014).

Water services are often privatized by means of public-private partnerships (PPPs). However, in many cases the public partners in a PPP assume a relatively higher share of the burdens and risks, while the private partners take a higher part of the benefits. The "commons" partners are not even considered in such alliances, which exclude local water-management collectives from decision-making about their own systems or territories. A PPP example is the recently built irrigation system in Olmos, on Peru's desert coast, promoted internationally as a high-tech, modern project. Locally, it met with resistance from communities that envisioned completely different hydro-territorial development. Building the dam, tunnel and irrigation canal cost an estimated US\$800 million, of which the Peruvian state put in US\$450 million and the Brazilian

company, Odebrecht, that constructed the infrastructure put in US\$350 million (Eguren, 2014). The 43,000 ha of land that will get irrigation water was sold to ten agribusiness companies at very low prices. Amnesty International reported gross violations of human rights when local farmers and goat farmers were evicted from the land claimed by the project (Amnesty International, 2013). Two major companies acquired large tracts of land: the Peruvian agribusiness company Grupo Gloria (15,600 ha) and Odebrecht itself (18,000 ha). The average cost per hectare was only US\$4,723 (implying US\$3,370 state subsidy per hectare, and far below market value). Eguren (2014) calculated that, after 50 years of operating the Olmos irrigation system, Odebrecht would have made a net profit of US\$464 million by selling land, water and energy, and the Peruvian state would be left with a loss of US\$328 million (at current market prices). This loss could be seen as an investment in water infrastructure that would create jobs for poor people. However, the total value of income for field laborers generated over these 50 years would hardly amount to this “investment.” After Odebrecht CEO Marcelo Odebrecht was sentenced to 19 years of prison for acts of corruption in Brazil, the Odebrecht company sold their share in the Olmos system to Suez in December 2016. The press release by Suez CEO Jean-Louis Chaussade on this deal stated:

We are proud to bring our expertise and our solutions to a project that is vital to the development of the Olmos region and its inhabitants. In a world of scarce resources, the agricultural sector needs sustainable, efficient solutions in order to nourish expanding populations. *It is therefore crucial that we work to distribute water more equally.*

(SUEZ, 2016, emphasis added)

Similar modernist promotion and elite capture of the state (resulting in vast subsidies for agribusiness) happen in many parts of the world (e.g. Vos and Marshall, 2017).

1.4 The Subtleties of Water Injustice

Although water injustices sometimes become manifest through large or even violent conflicts, they more often occur in less visible ways, where resistance or disputes may (seem to) be absent altogether. For example, the fierce global policy effort to make water rights transferable by formalizing and standardizing rights systems typically results in silent water take-overs, rather than open disputes. Use of technological or policy innovations, such as deep tube wells, or financializing the water sector, can also induce silent water take-overs.

Throughout the world, we can witness how social norms and scientific standards in water governance naturalize and normalize injustices and inequities (Boelens and Vos, 2012), with water policies often sanctioning rather than questioning concentration of water rights in the hands of a few private powerful actors (e.g. Loftus, 2009; Swyngedouw, 2005; Venot and Clement, 2013). Neoliberal discourses have become so dominant in framing the terms of water debate that they have come to be accepted as normal or inevitable, making it difficult to recognize them for what they are: deeply ideological ideas (Achterhuis *et al.*,

2010). Eduardo Galeano underscored the subtlety of this process in *News about the Nobodies*:

Up till recently, poverty was the fruit of injustice. But times have changed greatly: now, poverty is the just punishment that inefficiency deserves, or simply a way of expressing the natural order of things. The world has never been so unfair in dividing up resources, but the system that governs the world – now discreetly called “the market economy” – takes a daily dip in the bath of impunity.

(Galeano, 1995: 1)

Water (in)justices involve both quantities and qualities of water, the modes of accessing and distributing water, and the meanings, discourses, truths and knowledge that shape water control (Zwarteveen and Boelens, 2014). Therefore, water conflicts include questions about decision making, authority and legitimacy, which extend into questions of culture, territory and identity.

1.4.1 Equalization, Commensuration and Inclusion

Modernist water policies emphasize unity and uniformity in water governance, whereby the state is increasingly instrumentalized to protect and enforce market rules and forces. At the same time, the state’s monopoly on water rule-making, rule-enforcement and dispute-solving overrides all other tribunals or rights frameworks. A fundamental principle is blanket enforcement throughout national territory, based on the proclaimed equality of all citizens. Though the referent model of “being equal” is, in practice, often based on the class, gender and cultural standards and interests of a powerful minority, the image of a neutral legal-justice framework is strong.

The diversity of context-based, “intangible” water rights systems in most countries poses a tremendous problem for water bureaucrats, planners, and international companies. The diverse authorities, territorial autonomies and community rules make state domination or free-market operation very difficult (Achterhuis *et al.*, 2010; Boelens, 2015b). To bring about a uniform property framework, the construction and functioning of law in social action tends to be conveniently ignored. Participation and consensus-seeking policy-making presume the commensurability of values and equal power of social groups to voice their ideas and preferences. Formal water laws and institutions are presented as objective, rational systems for designing societal life, rather than as deeply cultural and political products, developed and enacted by societal groups, classes, and governmental agents who ply their strategies to foster their interests (Benda-Beckmann *et al.*, 1998; Roth *et al.*, 2015; cf. Sousa-Santos, 1995).

Mainstream water policies and discourses tend to pay much attention to the issues of “participation,” “integration,” and “recognition of local rights and cultures,” appealing to common-sense notions of justice and equality. The hidden principle, however, is the active destruction of “inconvenient otherness” through subtle strategies of “managed multiculturalism” (Baud, 2010; Boelens, 2015b; Hale, 2002), while “convenient expressions” of local water-rights pluralism are, as much as possible, included in the modern private

property market economy. Compared to the earlier top-down state-centric and neoliberal policy interventions, we see here how current ideas about redistribution, private property rights and market-based governance represent a shift. Rather than being based on explicit top-down hierarchies, visible rulers, exclusion, and sometimes brutal violence, modern equality ideologies aim to subtly seduce, include, and make equal. Indeed, in modern water policies everybody is potentially equal and *should be* equal.

Evidence from around the world regarding water allocation and administration makes clear, however, that this ideology of “equality of all” is not used to abolish the enormously unequal distribution of water property or stop water grabbing. Rather, making water users equal means: oppressing their *deviation* from the formal rules, norms and rights. Modern water policies impose “equalization.” Following universalistic good governance discourse, governments differentiate “responsible water citizens,” who are state- and market-compatible, from “irrational water spoilers,” who devise their own rights systems. Nowadays, all too often, “making water use and rights rational” has become a missionary process of supplanting relationships of community, local property, knowledge and ethics, often in combination with large-scale water transfer and grabbing practices.

1.4.2 Knowing Water, Naturalizing Water Solutions, and Expertocracy

Water policy plans and intervention models commonly rely on professional-discipline knowledge and the expertise of international water research centers, and are implemented by established water bureaucracies (Linton, 2010; Molle *et al.*, 2009; Whatmore, 2009). Water problems are increasingly framed in global expert terms, promoting standardized expert solutions, assuming that these have generalizable answers and global applicability (see e.g. GWP, 2000; UNDP-CLEP, 2008; World Bank, 1999, 2012). At the same time, emerging proposals for dealing with water management issues increasingly look to private actors. Assuming that water has globally commensurable meanings and values, and treating water as a scarce and “therefore” economic good, is closely coupled with this tendency to extend expert roles and involve the private sector, even in water allocation and management functions (e.g. Duarte and Boelens, 2016; Mollinga, 2001). This shows how water knowledge production and implementation is deeply political.

When examining water (in)justice practices it is therefore important to consider that knowledge about water, including scientific knowledge, does not spring from natural reality but instead helps to construct these realities. Water knowledge and truth claims are internal to the socio-natural networks that constitute reality (e.g. Foucault, 1980; Whatmore, 2009). The choice and classification of concepts and their interrelationships do not represent the nature of water control, but the human intentions to tame and order water affairs. As Haraway (1991) argued, they sprout from situated knowledge. Water knowledge, power and truth all depend on and reproduce each other. As Foucault (1975) argued, power cannot be exercised without knowledge, and knowledge necessarily engenders power. Power, therefore, produces water reality and knowledge claims.

Naturalizing one version of “water reality” helps justify and depoliticize unequal water orders – as sedimented hegemonic practices (Mouffe, 2005, 2007). Dominant water-governance discourses, for instance, aim to unequivocally present *the* water problems and solutions. They tend to invalidate other types of knowledge, making it difficult or impossible to see other, “inconvenient” (non-dominant) water realities. Global discourses and transnational relationships influence the articulation of water problems and promote authorized water knowledge and governance models, applying concepts that often obscure the contextual and political nature of water management. Universalizing policy concepts such as “good governance,” “rational and efficient water use,” “decentralization,” “transparency and accountability,” or “best practices,” often conceals and reproduces inequalities and misrecognition (Boelens and Vos, 2012). These presumably value-free, depoliticized concepts, cornerstones of leading water-policy models, erase context, situatedness and power.

1.4.3 Some Important Expressions in Water Use and Governance Practice

1.4.3.1 Formalizing Local Water Rights amidst Legal Plurality and Divergent Water Securities

Water rights express the legitimacy of claims to water and to water management decision-making. Rights need endorsement by an authority that has legitimacy in the eyes of users and non-users and that is able to enforce these rights. State officials commonly equate “legal” and “legitimate” water rights, but local user groups usually differentiate between the two and challenge this conflation: in many water-control settings around the world, water-user collectives consider that they have several authorities, both state and non-state, simultaneously – each representing different socio-legal systems and often taking divergent positions on the legitimacy of water-use claims (Perreault, 2008; Rasmussen, 2015). These different water-rights regimes coexist, complement or even contradict each other. In this way, users actively produce inter-legality and pluralism. Everyday water control is a product of this pluralism (cf. Cleaver and de Koning, 2015; Roth *et al.*, 2005; Sousa-Santos, 1995).

Despite this empirical, context-based heterogeneity of what constitutes a “water right,” water rights and property relations in modern global expert centers (and government institutes and intervening agencies that follow their advice) tend to consider water rights as merely standard black boxes that juxtapose the frameworks of positivist technical and economists’ water science (e.g. GWP, 2000; Ringler *et al.*, 2000; World Bank, 2012). Habitually, water law and rights are seen both as instruments to “engineer” water society and as the standards according to which existing water reality is judged (Roth *et al.*, 2005). Indeed, this follows from a long tradition in which water rights have been treated under the paradigm of state-defined, centralized water control. Today, this state-centric water rights model is fused with a market-focused neoliberal paradigm.

One enduring supposition of modernist water policy programs is that standardized rule-making will benefit all and produce efficient rights, mutually beneficial exchange, and

rational organization (Boelens, 2009). In direct relation to this, there is a widespread assumption in policymaking that “formalizing local water rights” is the key to increasing water security for local user groups – as also attested by international financing institutions’ worldwide support for numerous large water-rights formalization programs (e.g. Soussan, 2004; World Bank, 2012). Hernando de Soto, the influential World Bank policy scholar, for example, explains that the lack of such universal norms in “closed” countries in the South is the main reason they cannot fully enter the world system of capitalist exchange. Thus, the civilizing mission of the academic community would be “to help governments in developing countries build formal property systems that embrace all their people” (De Soto, 2000: 180).

Not just mainstream policies but equally many critically engaged policy scholars and benevolent “pro-poor advocates” assume that formally recognizing customary water rights will directly enhance water security for marginalized communities. Nevertheless, many in-depth studies have shown how the widespread (techno-economic and rationalized-legalistic) recognition of local water access and water control rights contradicts existing use and allocation practices, authority, and management modes. This might weaken rather than strengthen water security, with a negative impact for food and livelihood security (Boelens and Seemann, 2014; Lankford *et al.*, 2013; Seemann, 2016; Zeitoun *et al.*, 2016).

As one country example out of many, Peru has received US\$200 million from the Inter-American Development Bank to foster water rights security by formalization while battling the country’s “limited water culture” and “irrational water use” (Ministerio de Economía y Finanzas, 2007: 3, 24). In the modernist minds of the Bank’s formalizers and national elites, these two are seen as two facets of a single objective. That is no coincidence, since local understandings of water-rights autonomy and water security tend to be a primary obstacle for formal rule-makers and intervening agents. Their multi-faceted, dynamic character makes them intangible and unrecognizable in positivist, bureaucratic, neoliberal frameworks.

1.4.3.2 Payment for Environmental Services

In many of the world’s regions, national governments and international policy, development and funding agencies have worked to re-scale water governance structures: upwards to transnational governance scales and simultaneously downwards to local governments operating in public-private partnerships. Cities, often situated in downstream areas, seek regular, reliable supplies of sufficiently clean water, which governments, drinking water utilities and industries increasingly want to secure through Payment for Environmental Services (PES) schemes, which have boomed in Costa Rica, Colombia, Ecuador, Mexico, South Africa, China, and the Philippines, among others. The idea behind PES schemes is that downstream users pay upstream land managers to implement land and water conservation measures, such as erosion control, afforestation programs, reduced use of pesticides, and nature reserves around water sources. These measures should increase base flows, reduce peak flows and increase water quality. PES schemes are portrayed as “win-win” deals: city dwellers and industries pay for a necessary service

and upstream farmers receive extra income (Büscher and Fletcher, 2015; Duarte-Abadía and Boelens, 2015; Rodríguez-de-Francisco *et al.*, 2013). PES schemes are presented as alternatives to state-imposed land-use planning and conservation in the catchment areas, applying voluntary free-market principles of supply and demand for ecosystem services. This principle reduces water security to a monetary value relationship (Castro, 2007; Robertson, 2007).

In practice, many of these schemes do not function as predicted. City dwellers, water utilities and industries are unwilling to pay for conservation measures upstream. This is partly because increased water security is attained only in the long run, and effects of conservation on water flows are hard to measure (Schröter *et al.*, 2014). Many PES schemes receive large subsidies and conservation measures rely more on imposed conservation regulation than on free-market initiatives (Schomers and Matzdorf, 2013). On balance, PES favors the largest landowners but tends to have negative effects on most upstream communities, particularly the poorest families, who lose their livelihoods (Rodríguez-de-Francisco *et al.*, 2013). Moreover, these PES schemes are usually imposed non-democratically, favoring the companies that install them. Policy discourses highlight win-win neoliberal “PES-speech” in the foreground, commodifying production/reproduction relations, and sidelining alternative ways to organize conservation. In many cases, PES deeply transforms vernacular community reciprocity bonds (cf. Li, 2011; Neumann, 2004; Rodríguez-de-Francisco and Boelens, 2015; Sullivan, 2009).

1.4.3.3 *Water Rationality and Efficiency*

Many of today’s water deprivations are justified or presented on grounds of privileging efficient uses and users over inefficient ones (Achterhuis *et al.*, 2010; Bakker, 2010; Ioris, 2016; World Bank, 2012). However, concepts such as irrigation efficiency, water productivity, or crop water requirements are not socially neutral (Roa-García, 2014; Zwartveen, 2006). These dominant analytical/policy tools are developed in particular scientific/policy settings. They have political, material, and discursive force.

Policy documents often relate the need for water efficiency to the necessity to produce more food for the growing population, easily leading to promotion of “efficient” technologies such as drip irrigation. However, irrigation water that percolates beyond a crop’s root zone is often not “lost”: it is used downstream, or pumped again from the groundwater. Consequently, installing drip technology concentrates water for the early implementer, but does not necessarily generate more crops per drop (Seckler, 1996; Venot and Clement, 2013).

Similar problems arise when solely “economic water efficiency” criteria are applied, to “increase water productivity” by introducing water pricing and marketing, and “maximize water allocation efficiency” from a neoclassical economist’s perspective. Policies based on such notions generally entail full-cost water pricing to encourage water saving and reallocate water to the economically “most efficient” user. Also here, different stakeholders’ normative frameworks are likely to hold different notions of values, risks, costs and benefits.

Reallocating water (rights) to gain “productive efficiency” implies that some groups win and others lose access to water (Boelens and Vos, 2012; Budds, 2009; Moore, 1989).

Aside from technical and economic reasoning, efficiency/inefficiency labels imply moral judgment. Blaming inefficient farmers is a powerful discursive practice with political consequences. For example, Diemer and Slabbers (1992, 7) found that many project planners classified African farmer-managed irrigation systems as “unscientific and wasteful.” According to Gelles (2010), project planners in the Majes project in Peru found that local farmers lacked water culture and were morally backward. In general, in many places around the world, irrigation modernization and economic development is promoted as a civilization project based on moral superiority/inferiority relationships.

1.4.3.4 Corporate Social Responsibility and Sustainability Certification Schemes

As we have argued above, transnational agro-export companies have depleted and contaminated water sources the world round. They have accumulated land- and water-use rights at local users’ expense, and appropriated water without formal use rights. Partly in response to critics, and partly to secure stable supplies, food industry and retail companies from the Global North demand environmental and social certification of producers that export fresh products to Europe and the US. The standards increasingly include criteria that inhibit and prescribe certain water management practices. The certifications form part of a wider politics of corporate social responsibility, that alters local-global relations of production and water use. Multinational export companies proudly display the multiple certifications on signs at the entrances to their production units and on their websites. However, the standards are problematic because they do not take into account local diversity in social and biophysical conditions: they are expensive to obtain and thus exclude smallholders from the export market, they seek to standardize smallholder practices, they are non-democratic, and in many instances they fail to prevent depletion or contamination of water sources (Vos and Boelens, 2015; Vos and Hinojosa, 2016).

Private environmental and social standards are defined by a variety of organizations, which are dominated by major retail companies. These dominant standards reshape knowledge frameworks and truth claims about water realities (Goldman, 2011). Producers’ compliance with production standards is monitored by third-party private audit companies that usually inspect production facilities once a year. Competition between the various standards and also among the audit companies contributes to superficial inspections and permissive enforcement (Vos and Boelens, 2016).

Retailers and the food industry have the power to set norms and reshape local and global food production (Roth and Warner, 2008), so ideas and norms regarding “good” agriculture change, increasingly externalizing water communities’ knowledge, production and governance rationalities (Boelens and Zwarteveen, 2005; Van der Ploeg, 2008). This way, water certification regimes become gauges to detect and “correct” deviations from the universal norms (Moore, 1989; Venot and Clement, 2013).

1.5 Water Governmentalities

As the previous sections have shown, producing water knowledge, rules, policies and technology concentrates increasingly on aligning people, their mind-sets, identities and resources with the interests of dominant water-sector groups. Modernist water development projects deploy forms of governmentality through water. They re-pattern water space and territory, which reshapes rules and authority; redirects labor and production; induces new norms and values; and rearranges people in new, externally driven techno-political constellations. Many designs underlying these water-development projects, far beyond just installing a new hydraulic technology, introduce new management hierarchies, commoditized (or privatized) water services, new legal frameworks, often resulting in a new socio-nature hostile to the autonomy or even survival of existing water cultures and user collectives. New hydraulic power grids, commonly linked to nation-state authority, markets and companies, de-pattern and re-pattern local water control systems. So, natural resource governance efforts are based on truth regimes that aim to (re)produce socio-natural order and acceptance via the particular positioning of and control over natural resources, infrastructure, investments, knowledge, and ultimately, whole population groups (e.g. Harris, 2012; Scott, 1990; Swyngedouw, 2009).

As Foucault (1991) argued when examining these “government-mentalities” (i.e. the rationality and strategies of dominant groups to conduct subjects’ conduct), rulers increasingly deploy governance tactics to economically manage and direct society instead of legal-bureaucratic regimes based on sovereign power (cf. Dean, 1999). Thus, aside from the direct rule of law, two forms of governmentality are prominent in water governance: disciplinary and neoliberal governmentality. Disciplinary governmentality works through normalizing power (Foucault, 1975). Deviant thinking and acting is oppressed, where possible through self-correction based on internalized norms. Disciplinary power “produces” a model water user: efficient, responsible and modern.

Neoliberal governmentality works by directing people’s thinking and acting according to “rational” economic principles. People are approached as rational actors who strategically pursue their personal interests, based on calculated costs and benefits (Boelens *et al.*, 2015; Fletcher, 2010). Neoliberal principles such as private water rights, decentralized decision-making and volumetric water pricing are based on the assumption that maximum welfare will be reached if all citizens behave as profit-maximizers seeking the right incentives. In water governance, the assumption is that neoliberal incentives will automatically yield maximum investments and efficient, productive water use. In neoliberal logic, the state’s role is to install market rationalities in all spheres of society (Foucault, 2008; cf. Harvey, 2003; Hayek, 1960). Indeed, neoliberal water governance, far from *laissez-faire*, builds on aggressive state vigilance and intrusion. Or as Bourdieu (1998: 86) stated, “what is portrayed as an economic system governed by iron laws of a social nature is actually a political system that can be set up only with official political powers’ active or passive complicity.”

Currently practiced combined modes of disciplinary and neoliberal governmentalities present political choices (e.g. distributive and representational questions) as

technical-managerial options. Denying any connections between power and knowledge, and assuming new-institutionalist rationality (viewing humans as rational individuals pursuing only self-interested goals), have pervaded mainstream water-policy discourses: wide-ranging redistributions of water and authority seem natural, inevitable and scientifically rational (Espeland, 1998; McCarthy and Prudham, 2004).

1.6 Water Conflicts and Water Justice Struggles: Entwining Different Layers, Scales and Actors

1.6.1 Conflicts over Resources, Rights, Authority and Discourses

Water control conflicts are everywhere. Disputes and struggles may occur over how water is to be used, distributed, managed, treated or talked about (e.g. Donahue and Johnston, 1998; Dimitrov, 2002). What follows from the previous section is that they cannot always easily be witnessed. Water conflicts may be open and visible, but often also happen in subtler, less directly visible ways. Moreover, as Frances Cleaver explains in Chapter 13, marginalized user groups appear to accept the large-scale environmental injustices inflicted upon them. In those cases, they avoid opposition and instead accommodate unequal water-based relationships, trying to give them meaning in local historical, cultural and political constellations. Such accommodation of water injustices may be based on mechanisms of control over grassroots groups (e.g. resulting from oppression by political, economic and military powers, or from disciplining through symbolic violence and discursive powers), or on grassroots groups' strategies of how to deal with the asymmetrical interdependencies and power relationships they experience vis-à-vis dominant private and state actors.

In overt and covert water conflicts and struggles for water justice, there is more at stake than just water distribution. We distinguish four interrelated echelons ("Echelons of Rights Analysis," Boelens, 2015b; Boelens and Zwarteveen 2005; Zwarteveen *et al.*, 2005). At a basic level, there is the dispute concerning *access to and use of water-related resources*: which users and use sectors have access to water, hydraulic infrastructure, and the material and financial means to use and manage water resources. At the next level, there is contestation over the *contents of rules and rights*: formulation and substance of water rights, management rules and laws that determine water distribution and allocation. And at a third echelon, we see the struggle over the *authority and legitimacy* to make and enforce those water rights and rules: who has decision-making power about questions of water use, allocation and governance. And fourth, there is the conflict among *discourses*: the power-knowledge regimes that articulate water problems and solutions, and that defend or impose particular water policies and water hierarchies. As we have argued above, water policy and scientific discourses make fixed linkages and standard logical relations among concepts, actors, objects, defining their identity, position and hierarchies, and forcefully defining problems and their solutions.

These four echelons are intrinsically related; conflict and outcomes at one echelon define the contents and contestations at the next echelon. The struggle over discourses, the fourth echelon, is about inducing a coherent regime of representation that strategically links the previous echelons together and makes their contents and linkages appear natural, as the morally or scientifically best “order of things.” For example, a particular discourse will also defend the decision-making arrangements and authorities it considers convenient, who in turn will formulate and enforce the rules; according to which the resources are to be distributed. Therefore, contestations range from opposing current distributive inequalities and undemocratic forms of representation to challenging the very politics of truth themselves, including the identities that are imposed upon marginalized water cultures and user groups by state and market-based governmentalities.

1.6.2 Water Justice Interlinking Multiple Dimensions, Knowledge, Scales and Actors

Attention to water rights’ cultural embeddedness, plurality and complexity requires a shift of focus, away from exclusive attention to formal structures and regulations towards an interest in how and by whom water rights and governance forms are produced, reproduced and transformed in particular ecological and cultural settings. It examines how people experience law in the context of their own local society and use it as a crucial resource in their day-to-day aspirations and struggles (Benda-Beckmann *et al.*, 1998; Roth *et al.*, 2005, 2015). Therefore, local water societies often see water rights framed as instruments to arrange their systems and as weapons to defend themselves. Far from egalitarian micro-societies, they are an effort, a process and a capacity to merge collectivity with diversity and to exercise mutual dependence on nature and on each other (Boelens *et al.*, 2014).

In their struggles, these water cultures continually reinvent rules and identities and traditions. Water user collectives and federations know that their existence depends on defending their water rights and rule-making spaces and will continue to create “non-conformity” and “complexities,” while at the same time trying to conquer representation and achieve changes in the policy institutes, intervention projects, and the state institutional network.

Most water-user communities integrate with national and international policies, markets and partnerships, embedding local in global and global in local. Conflicts over water governmentality involve community-state contradictions and conflicts among local small-holders and new water lords, as well as the transnational extractive industries and globalized policy-making that operates across spatial scales (cf. McCarthy, 2005; Perreault, 2015). These processes and relationships comprise patterns of multiple actors, scales, and trans-local networks arising in many places – “the continuous reorganization of spatial scales is an integral part of social strategies to combat and defend control over limited sources and/or a struggle for empowerment” (Swyngedouw and Heynen, 2003: 912–13). In many regions, grassroots organizations build multi-actor federations to contest the neo-liberalization of water, the negative effects of dams, water pollution, separation of water rights and decision-making powers from local livelihoods, and policies and actions that

attack rights pluralism, polycentrism and the integrity of their territories (e.g. Bebbington *et al.*, 2010; Hoogesteger and Verzijl, 2015; Romano, 2017). Such networks also show that state, scientific, and policy-making communities are not monolithic, but reflect the track records of their social conquests. Many state employees, professionals and scientists struggle “from within,” forming alliances with water-user groups to capture cross-scale opportunities. Social movements also need to frame their demands in ways that align with values and ideas of national political parties and/or the general public (Benford and Snow, 2000).

Therefore, fundamentally, struggles over water are contests over resources and legitimacy, the right to exist as water-control communities, and the ability to define the nature of water problems and solutions. By connecting material with cultural-political struggles, they demand both the right to be equal *and* the right to be different. Increasingly, affected water user communities combine their struggle against highly unequal resource distribution with their demands for greater autonomy and sharing in water authority. The intimate connection among people, water, space, and identity fuses their struggles for material access and control of water-use systems (distributive justice) and ecological defense of neighborhoods and territories (socio-ecological integrity) with their battle over the right to culturally define and politically organize these socio-natural systems (cultural and representational justice) (cf. Fraser, 2000; Martínez-Alier, 2002; Schlosberg, 2004; Young, 1990). Therefore, to understand “water justice,” as we did when starting this chapter, we move from universalist, descriptive theories that prescribe what water justice “should be,” to focus on understanding how people on-the-ground experience and define water justice. In the formal water policy and governance world, liberal, socialist, or neoliberal models of “equality” have generally tended to reflect the dominant water society’s elitist, capitalist or scientific-expert mirror – ignoring peasant, indigenous and women’s interests and views. Beyond abstract, de-humanized models, but also beyond localized romanticism, we urge a systematic exploration of the sources of water injustice, local views on fairness, and the impacts of formal laws and justice policies on human beings and ecosystems. Indeed, understanding water justice calls for a contextual, grounded, relational approach (Joy *et al.*, 2014; Perreault, 2014; Roth *et al.*, 2005; Zwartveen and Boelens, 2014).

As the following chapters demonstrate, appeals for greater water justice call for combining grassroots, academic, activist, and policy action: engagement across differences (Schlosberg, 2004). Accordingly, we may understand “water justice” as:

the interactive societal and academic endeavor to critically explore water knowledge production, allocation and governance and to combine struggles against water-based forms of material dispossession, cultural discrimination, political exclusion and ecological destruction, as rooted in particular contexts.

(Boelens, 2015a: 34)

Water justice research and action, therefore, engages diverse water actors, to see multiple water truths and world views and to co-create transdisciplinary knowledge about understanding, transforming and distributing nature. It explores connections among the diverse ways of struggling for water justice. Water justice research involves critical engagement with water movements, dispossessed water societies, and interactive design of alternative hydrosocial orders. These alternatives cannot be engineered by scientists or policy-makers; they result from interweaving cross-cultural water knowledge and cross-societal pressures from the bottom up.

1.7 The Book's Contents

The following 18 chapters aim to provide a detailed understanding of the questions, complexities and opportunities for research and action regarding the issue of “water justice.” Four sections address a broad variety of themes, approaches, geographical regions, and research, policy and action strategies. Even though most authors take a political ecology perspective, the book does not advocate one overall perspective on water justice. Nor does it suggest the opposite, the relativist trap that gives equal value to all particular views on social justice. As we have argued above, the book's chapters and authors take seriously the idea of “engagement across notions of justice – something crucial to notions of justice as recognition and political process” (Schlosberg, 2004: 532). Water-justice theories, scholars and movements bring together a critical plurality of contexts, experiences, views, tools and strategies. What is common to all our authors is that they expressly engage and identify with those groups in society that have the least rights and power over water access and decision-making. They all aim to support their water security struggles.

The book is divided into four sections, which examine different water justice themes and their associated social and political struggles. Each section begins with an introductory essay to introduce and contextualize key themes in the section's chapters.

The chapters in Part I deal with the theme of “Repoliticizing water allocation”: they provide insight into the multi-layered contents and everyday working rationality of on-the-ground water rights and governance systems, and unfair water distribution and water-grabbing. These chapters highlight water injustices in common rural or urban water management frameworks and cultural realities that are often omitted from scientific water studies, legal frameworks, and policy proposals. Other chapters tell about the overt and covert ways in which intervening agents and elites take over water resources.

The chapters in Part II examine dominant policies and intervention projects fostering “Hydrosocial de-patterning and re-composition,” and struggles to build alternative socio-natural and techno-political configurations. State, market, and expert networks use water interventions to reshape existing water societies according to their imageries or ideologies, often favoring specific interests and promoting specific developmental pathways. These chapters explain how these changes or clashes may provoke more or less open water

conflicts, and unravels how such conflicts evolve in contexts of highly differentiated power relationships.

Part III chapters scrutinize cases and theories regarding “Exclusion and struggles for co-decision.” The authors identify exclusion mechanisms and possible responses to and solutions for water-injustice problems, inspired by the ways in which local user collectives, sometimes through multi-level alliances with others (water citizen groups, professionals, rights coalitions, tribunals, scholars and policy-makers), strategize to defend, reclaim and re-embed their water rights, knowledge systems and governance forms.

Finally, Part IV chapters focus on theories and empirical cases that delve more deeply into notions of “Governmentality, discourses and struggles over imaginaries and water knowledge.” Clashes between discourses and imaginaries constitute an important dimension of water justice conflicts. These struggles to protect and secure water resources as well as water communities, identities, territories and cultures provide the creative, pragmatic ingredients of strategies towards a more water-just world.

In short, the book does not promise easy one-size-fits-all analyses or silver-bullet solutions, but instead explicitly engages with the complex linkages between ecosystems and societies that characterize questions of what is fair, equitable and sustainable in water. By identifying with those who stand to lose or remain marginal in contemporary water development and policy reform processes, the book provides ingredients for new ways of thinking about and acting on water that make visible the many entanglements among culture, power and knowledge.

References

- Achterhuis, H., Boelens, R. and Zwarteveen, M. (2010). Water property relations and modern policy regimes: Neoliberal utopia and the disempowerment of collective action. In R. Boelens, D. Getches and A. Guevara (eds.), *Out of the Mainstream: Water Rights, Politics and Identity*. London and New York: Earthscan, pp. 27–55.
- Aguirre, M. (2014). “Reparations for the Maya Achi Chixoy Dam affected” (16/01/2014) and “Healing begins for the Maya Achi people of Guatemala” (17/11/2014) International Rivers Network blog, www.internationalrivers.org/blogs/223.
- Ahlers, R. and Zwarteveen, M. (2009). The water question in feminism: Water control and gender inequities in a neo-liberal era. *Gender, Place & Culture*, 16(4), 409–26.
- Amnesty International Peru (2013). “Fuente de vida – Visita a la comunidad La Algodonera en Olmos” (video), www.youtube.com/watch?v=Zq_1jyASiec.
- Bakker, K. (2007). The “commons” versus the “commodity”: Alter-globalization, anti-privatization and the Human Right to water in the Global South. *Antipode*, 39(3), 430–55.
- Bakker, K. (2010). *Privatizing Water: Governance Failure and the World’s Urban Water Crisis*. Ithaca, NY: Cornell University Press.
- Bakker, K. (2013). Neoliberal versus postneoliberal water: Geographies of privatization and resistance. *Annals of the Association of American Geographers*, 103(2), 253–60.
- Baud, M. (2010). Identity politics and indigenous movements in Andean history. In R. Boelens, D. Getches and A. Guevara-Gil (eds.), *Out of the Mainstream: Water Rights, Politics and Identity*, London and Washington, DC: Earthscan, pp. 99–118.

- Bauer, C. (1997). Bringing water markets down to earth: The political economy of water rights in Chile, 1976–95. *World Development*, 25(5), 639–56.
- Baviskar, A. (2007). *Waterscapes: The Cultural Politics of a Natural Resource*. Delhi: Permanent Black.
- Bebbington, A., Humphreys, D. and Bury, J. (2010). Federating and defending: Water, territory and extraction in the Andes. In R. Boelens, D. Getches and A. Guevara (eds.), *Out of the Mainstream: Water Rights, Politics and Identity*. London and Washington, DC: Earthscan, pp. 307–27.
- Benda-Beckmann, F. von, von Benda-Beckmann, K. and Spiertz, J. (1998). Equity and legal pluralism: Taking customary law into account in natural resource policies. In R. Boelens and G. Dávila (eds.), *Searching for Equity*. Assen: Van Gorcum, pp. 57–69.
- Benford, R. D. and Snow, D. A. (2000). Framing processes and social movements: An overview and assessment. *Annual Review of Sociology*, 26(1), 611–39.
- Bentham, J. (1988 [1781]). *The Principles of Morals and Legislation*. Amherst, NY: Prometheus Books.
- Boelens, R. (2015a). *Water Justice in Latin America: The Politics of Difference, Equality, and Indifference*. Amsterdam: CEDLA and University of Amsterdam.
- Boelens, R. (2015b). *Water, Power and Identity: The Cultural Politics of water in the Andes*. London: Earthscan, Routledge.
- Boelens, R. and Seemann, M. (2014). Forced engagements: Water security and local rights formalization in Yanque, Colca Valley, Peru. *Human Organization*, 73(1), 1–12.
- Boelens, R. and Vos, J. (2012). The danger of naturalizing water policy concepts: Water productivity and efficiency discourses from field irrigation to virtual water trade. *Agricultural Water Management*, 108, 16–26.
- Boelens, R. and Zwarteveen, M. (2005). Prices and politics in Andean water reforms. *Development and Change*, 36(4), 735–58.
- Boelens, R., Hoogesteger, J. and Baud, M. (2015). Water reform governmentality in Ecuador: Neoliberalism, centralization and the restraining of polycentric authority and community rule-making. *Geoforum*, 64, 281–91.
- Boelens, R., Hoogesteger, J. and Rodriguez de Francisco, J. C. (2014). Commoditizing water territories: The clash between Andean water rights cultures and Payment for Environmental Services policies. *Capitalism Nature Socialism*, 25(3), 84–102.
- Bourdieu, P. (1998). *Acts of Resistance against the Tyranny of the Market*. New York: New Press.
- Bridge, G. and Perreault, T. (2009). Environmental governance. In N. Castree, D. Demeritt, D. Liverman, and B. Rhoads (eds.), *Companion to Environmental Geography*. Oxford: Blackwell, pp. 475–97.
- Budds, J. (2009). Contested H₂O: Science, policy and politics in water resources management in Chile. *Geoforum*, 40(3), 418–30.
- Budds, J. (2010). Water rights, mining and indigenous groups in Chile's Atacama. In R. Boelens, D. Getches and A. Guevara (eds.), *Out of the Mainstream: Water Rights, Politics and Identity*. London and Washington, DC: Earthscan, pp. 197–211.
- Büscher, B. and Fletcher, R. (2015). Accumulation by conservation. *New Political Economy*, 20(2), 273–98.
- Cárdenas, A. (2012). *La carrera hacia el fondo: Acumulación de agua subterránea por empresas agroexportadoras en el Valle de Ica, Perú*. Wageningen: Justicia Hídrica.
- Castro, J. E. (2007). Poverty and citizenship: Sociological perspectives on water services and public–private participation. *Geoforum*, 38(5), 756–71.
- Cleaver, F. and de Koning, J. (2015). Furthering critical institutionalism. *International Journal of the Commons*, 9(1), 1–18.

- Crow, B., Lu, F., Ocampo-Raeder, C., Boelens, R., Dill, B. and Zwartveen, M. (2014). Santa Cruz declaration on the global water crisis. *Water International*, 39(2), 246–61.
- Dankelman, I. and Davidson, J. (2013). *Women and the Environment in the Third World: Alliance for the Future*. London: Routledge.
- Dean, M. (1999). *Governmentality: Power and Rule in Modern Society*. London: Sage Publications.
- De Soto, H. (2000). *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.
- Diemer, G. and Slabbers, J. (eds.) (1992). *Irrigators and Engineers*. Amsterdam: Thesis.
- Dimitrov, R. (2002). Water, conflict and security: A conceptual minefield. *Society & Natural Resources*, 15, 677–91.
- Donahue, J. M. and Johnston, B. R. (1998). *Water, Culture and Power, Local Struggles in a Global Context*. Washington, DC: Island Press.
- Duarte-Abadía, B. and Boelens, R. (2016). Disputes over territorial boundaries and diverging valuation languages: The Santurban hydrosocial highlands territory in Colombia. *Water International*, 41(1), 15–36.
- Duarte-Abadía, B., Boelens, R. and Roa-Avendaño, T. (2015). Hydropower, encroachment and the repatterning of hydrosocial territory: The case of Hidrosogamoso in Colombia. *Human Organization*, 74(3), 243–54.
- Eguren, L. (2014). “Estimación de los subsidios en los principales proyectos de irrigación en la costa peruana.” Lima: CEPES, www.cepes.org.pe/sites/default/files/Eguren-Lorenzo_Subsidios-proyectos-irrigacion-costa_2014.pdf.
- Escobar, A. (2006). Difference and conflict in the struggle over natural resources: A political ecology framework. *Development*, 49(3), 6–13.
- Escobar, A. (2008). *Territories of Difference: Place, Movements, Life, Redes*. Durham, NC: Duke University Press.
- Espeland, W.N. (1998). *The Struggle for Water: Politics, Rationality, and Identity in the American Southwest*. Chicago: University of Chicago Press.
- Fletcher, R. (2010). Neoliberal environmentalism: Towards a poststructuralist political ecology of the conservation debate. *Conservation & Society*, 8, 171–81.
- Forsyth, T. (2003). *Critical Political Ecology: The Politics of Environmental Science*. London: Routledge.
- Foucault, M. (1975). *Discipline and Punish: The Birth of the Prison*. New York: Vintage Books.
- Foucault, M. (1980). *Power/Knowledge: Selected Interviews and Other Writings 1972–1978*, ed. C. Gordon. New York: Pantheon Books.
- Foucault, M. (1991 (1978)). Governmentality. In G. Burchell, C. Gordon and P. Miller (eds.), *The Foucault Effect: Studies in Governmentality*. Chicago: University of Chicago Press, pp. 87–104.
- Foucault, M. (2008). *The Birth of Biopolitics*. New York: Palgrave Macmillan.
- Fraser, N. (2000). Rethinking recognition. *New Left Review*. May/June, 107–20.
- Friedman, M. (1962). *Capitalism and Freedom*. Chicago: University of Chicago Press.
- Friedman, M. (1980). *Free to Choose*. Harcourt and New York: Harvest Book.
- Galeano, E. (1995). Noticias de los nadies. *Revista Brecha*, Dec. 1995, www.brecha.com.uy/numeros/n522/contra.html.
- Gaybor, A. (2011). Acumulación en el campo y despojo del agua en el Ecuador. In R. Boelens, L. Cremers and M. Zwartveen (eds.), *Justicia Hídrica: Acumulación, Conflicto y Acción Social*. Lima: IEP, pp. 195–208.
- Gelles, P. H. (2010). Cultural identity and indigenous water rights in the Andean Highlands. In R. Boelens, D. Getches and A. Guevara-Gil (eds.), *Out of the Mainstream: Water Rights, Politics and Identity*. London and Washington, DC: Earthscan, pp. 119–44.

- GRAIN. (2012). "Squeezing Africa dry: Behind every land-grab is a water-grab," www.grain.org/e/4516.
- GWP. (2000). *Integrated Water Resources Management*. TAC Background Papers No. 4. Stockholm: GWP.
- Goldman, M. (2007). How "Water for all!" policy became hegemonic: The power of the World Bank and its transnational policy networks. *Geoforum*, 38(5), 786–800.
- Goldman, M. (2011). The birth of a discipline: Producing authoritative green knowledge, World Bank-style. *Ethnography*, 2(2), 191–217.
- Hale, C. (2002). Does multiculturalism menace? Governance, cultural rights, and the politics of identity in Guatemala. *Journal of Latin America Studies*, 34(3), 485–524.
- Haraway, D. (1991). *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge.
- Harris, L. (2012). State as socionatural effect: Variable and emergent geographies of the state in Southeastern Turkey. *Comparative Studies of South Asia, Africa and the Middle East*, 32(1), 25–39.
- Harvey, D. (1996). *Justice, Nature and the Geography of Difference*. Cambridge and Oxford: Blackwell Publishers.
- Harvey, D. (2003). *The New Imperialism*. Oxford: Oxford University Press.
- Hayek, F. A. (1944). *The Road to Serfdom*. London: George Routledge.
- Hayek, F. A. (1960). *The Constitution of Liberty*. Chicago: University of Chicago Press.
- Hendriks, J. (1998). Water as private property: Notes on the case of Chile. In R. Boelens and G. Davila (eds.), *Searching for Equity: Conceptions of Justice and Equity in Peasant Irrigation*. Assen, The Netherlands: Van Gorcum, pp. 297–310.
- Heynen, N., McCarthy, J., Prudham, S. and Robbins, P. (2007). *Neoliberal Environments: False Promises and Unnatural Consequences*. New York: Routledge.
- Hidalgo, J. P., Boelens, R. and Isch, E. (forthcoming). The Daule-Peripa Multipurpose Hydraulic Scheme: Technocratic reconfiguration of a hydro-social territory and dis-possession in coastal Ecuador. *Latin American Research Review*.
- Hoekstra, A.Y. and Mekonnen, M. M. (2012). The water footprint of humanity. *Proceedings of the National Academy of Sciences*, 109(9), 3232–37.
- Hoogesteger, J. and Verzijl, A. (2015). Grassroots scalar politics: Insights from peasant water struggles in the Ecuadorian and Peruvian Andes. *Geoforum*, 62, 13–23.
- Hoogesteger, J., Boelens, R. and Baud, M. (2016). Territorial pluralism: Water users' multi-scalar struggles against state ordering in Ecuador's highlands. *Water International*, 41(1), 91–106.
- Hommel, L. and Boelens, R. (2017). Urbanizing rural waters: Rural-urban water transfers and the reconfiguration of hydrosocial territories in Lima. *Political Geography*, 57, 71–80.
- Hommel, L., Boelens, R. and Maat, H. (2016). Contested hydrosocial territories and disputed water governance: Struggles and competing claims over the Ilisu Dam development in southeastern Turkey. *Geoforum*, 71, 9–20.
- Huber, A. and Joshi, D. (2015). Hydropower, anti-politics, and the opening of new political spaces in the Eastern Himalayas. *World Development*, 76, 13–25.
- Inter-American Human Rights Commission (IACHR). (2014). *The Impact of Canadian Mining in Latin America and Canada's Responsibility*. Working Group on Mining and Human Rights in Latin America. Organization of American States (OAS), Washington, DC.
- Ioris, A. (2016). Water scarcity and the exclusionary city: The struggle for water justice in Lima, Peru. *Water International*, 41(1), 125–39.
- Jasanoff, S. (2010). A new climate for society. *Theory, Culture & Society*, 27(2–3), 233–53.
- Johnston, B. R. (2005). *Chixoy Dam Legacy Issues Study*, Vol. 1–5. International Rivers Network. www.irm.org/programs/chixoy/index.php?id=ChixoyLegacy.2005/03.findings.html.

- Joy, K. J., Kulkarni, S., Roth, D. and Zwarteveen, M. (2014). Re-politicizing water governance: Exploring water reallocations in terms of justice. *Local Environment*, 19(9), 954–73.
- Kaika, M. (2006). Dams as symbols of modernization: The urbanization of nature between geographical imagination and materiality. *Annals of the Association of American Geographers*, 96(2), 276–301.
- Lankford, B., Bakker, K., Zeitoun, M. and Conway, D. (eds.) (2013). *Water Security: Principles, Perspectives, and Practices*. London: Earthscan.
- Latour, B. (1993). *We Have Never Been Modern*. Cambridge, MA: Harvard University Press.
- Lauderdale, P. (1998). Justice and equity: A critical perspective. In R. Boelens and G. Dávila (eds.), *Searching for Equity: Conceptions of Justice and Equity in Peasant Irrigation*. Assen: Van Gorcum, pp. 5–10.
- Li, T. (2011). Rendering society technical: Government through community and the ethnographic turn at the World Bank in Indonesia. In Mosse, D. (ed.), *Adventures in Aidland: The Anthropology of Professionals in International Development*. Oxford: Berghahn, pp. 57–80.
- Linton, J. (2010). *What is Water? The History of a Modern Abstraction*. Vancouver: University of British Columbia Press.
- Lobina, E., Kishimoto, S. and Petitjean, O. (2014). “Here to stay: Water remunicipalisation as a global trend,” Public Services International Research Unit (PSIRU), Transnational Institute (TNI) and Multinational Observatory, www.tni.org/files/download/heretostay-en.pdf.
- Loftus, A. (2009). Rethinking political ecologies of water. *Third World Quarterly*, 30(5), 953–68.
- Lu, F., Valdivia, G. and Silva, N. L. (2017). *Oil, Revolution, and Indigenous Citizenship in Ecuadorian Amazonia*. London: Palgrave Macmillan.
- Lynch, B. D. (2006). *The Chixoy Dam and the Achi Maya: Violence, Ignorance, and the Politics of Blame*. Mario Einaudi Centres, Ithaca, NY: Cornell University.
- Lynch, B. D. (2012). Vulnerabilities, competition and rights in a context of climate change toward equitable water governance in Peru’s Rio Santa Valley. *Global Environmental Change*, 22, 364–73.
- Martínez-Alier, J. (2002). *The Environmentalism of the Poor*. Cheltenham, UK and Northampton, MA: Edward Elgar.
- McCarthy, J. (2005). Scale, sovereignty and strategy in environmental governance. *Antipode*, 37(4), 731–53.
- McCarthy, J. and Prudham, S. (2004). Neoliberal nature and the nature of neoliberalism. *Geoforum*, 35, 275–83.
- McCully, P. (2001). *Silent Rivers: The Ecology and Politics of Large Dams*. London: Zed.
- Meehan, K. (2013). Disciplining de facto development: Water theft and hydrosocial order in Tijuana. *Environment and Planning D*, 31, 319–36.
- Mehta, L., Veldwisch, G. J. and Franco, J. (2012). Water-grabbing? Focus on the (re)appropriation of finite water sources. *Water Alternatives*, 5(2), 193–207.
- Mena-Vásquez, P., Boelens, R. and Vos, J. (2016). Food or flowers? Contested transformations of community food security and water use priorities under new legal and market regimes in Ecuador’s highlands. *Journal of Rural Studies*, 44, 227–38.
- Mill, J. S. (1874). *A System of Logic*. New York: Harper & Brothers.
- Mill, J. S. (1999). *On Liberty*. Peterborough, Canada: Broadview Press.

- Ministerio de Economía y Finanzas [Government of Peru]. (2007). Documento conceptual de proyecto “Programa de Recursos Hídricos I,” PE-L 1024. Ministerio de Economía y Finanzas. Lima, Perú, April 9, 2007.
- Molle, F., Mollinga, P. and Wester, F. (2009). Hydraulic bureaucracies and the hydraulic mission: Flows of water, flows of power. *Water Alternatives*, 3(2), 328–49.
- Mollinga, P. (2001). Water and politics: Levels, rational choice and South Indian canal irrigation. *Futures*, 33, 733–52.
- Moore, M. (1989). The fruits and fallacies of neoliberalism: The case of irrigation policy. *World Development*, 17(11), 1733–50.
- Moore, D., Dore, J. and Gyawali, D. (2010). The World Commission on Dams + 10: Revisiting the large dam controversy. *Water Alternatives* 3(2), 3–13.
- Mouffe, C. (2005). *On the Political*. London: Routledge.
- Mouffe, C. (2007). Artistic activism and agonistic spaces. *Art & Research*, 1(2), 1–5.
- Neumann, R. P. (2004). Nature-state-territory: Toward a critical theorization of conservation enclosures. In R. Peet and M. Watts (eds.), *Liberation Ecologies: Environment, Development and Social Movements*. London: Routledge, pp. 179–99.
- Nozick, R. (1974). *Anarchy, State, and Utopia*. New York: Basic Books.
- Peña, F. and Herrera, E. (2008). El litigio de Minera San Xavier: Una cronología. In M. C. Costero-Garbarino (ed.), *Internacionalización Económica, Historia y Conflicto Ambiental en la Minería. El caso de Minera San Xavier*. San Luis Potosí: COLSAN.
- Perreault, T. (2008). Custom and Contradiction: Rural water governance and the politics of usos y costumbres in Bolivia’s irrigators’ movement. *Annals of the Association of American Geographers*, 98(4), 834–54.
- Perreault, T. (2014). What kind of governance for what kind of equity? Towards a theorization of justice in water governance. *Water International*, 39(2), 233–45.
- Perreault, T. (2015). Beyond the watershed: Decision making at what scale? In E. Norman, C. Cook and K. Furlong (eds.), *Negotiating Water Governance: Why the Politics of Scale Matter*. London: Ashgate, pp. 117–24.
- Perreault, T., Bridge, G. and McCarthy, J. (eds.) (2015). *The Handbook of Political Ecology*. London: Routledge.
- Perreault, T., Wraight, S. and Perreault, M. (2011). *The Social Life of Water: Histories and Geographies of Environmental Injustice in the Onondaga Lake Watershed*. New York. Justicia Hídrica, www.justiciahidrica.org.
- Ploeg, J. D. Van der (2008). *The New Peasantries: Struggles for Autonomy and Sustainability in an Era of Empire and Globalization*. London: Earthscan
- Preciado-Jeronimo, R., Rap, E. and Vos, J. (2015). The politics of land use planning: Gold mining in Cajamarca, Peru. *Land Use Policy*, 49, 104–17.
- Progressio. (2010). *Drop by Drop, Understanding the Impacts of the UK’s Water Footprint through a Case Study of Peruvian asparagus*. London: Progressio, CEPES, WWI.
- Rasmussen, M. B. (2015). *Andean Waterways: Resource Politics in Highland Peru*. Seattle: University of Washington Press.
- Rawls, J. (1971). *A Theory of Justice*. Cambridge, MA: Harvard University Press.
- Ringler, C., Rosegrant, M. and Paisner, M. S. (2000). *Irrigation and Water Resources in Latin America and the Caribbean*. EPTD Discussion Paper 64. Washington, DC: EPTD, IFPRI.
- Robertson, M. (2007). Discovering price in all the wrong places: The work of commodity definition under neoliberal environmental policy. *Antipode*, 39(3), 500–26.

- Roa-García, M. C. (2014). Equity, efficiency and sustainability in water allocation in the Andes: Trade-offs in a full world. *Water Alternatives*, 7(2), 298–319.
- Rodriguez-de-Francisco, J. C. and Boelens, R. (2015). Payment for environmental services: Mobilising an epistemic community to construct dominant policy. *Environmental Politics*, 24(3), 481–500.
- Rodriguez-de-Francisco, J. C., Budds, J. and Boelens, R. (2013). Payment for environmental services and unequal resource control in Pimampiro, Ecuador. *Society & Natural Resources*, 26, 1217–33.
- Romano, S. (2017). Building capacities for sustainable water governance at the grassroots: “Organic empowerment” and its policy implications in Nicaragua. *Society & Natural Resources*, DOI: 10.1080/08941920.2016.1273413.
- Roth, D. and Warner, J. (2008). Virtual water: Virtuous impact? The unsteady state of virtual water. *Agriculture and Human Values*, 25, 257–70.
- Roth, D., Boelens, R. and Zwarteveen, M. (eds.) (2005). *Liquid Relations: Contested Water Rights and Legal Complexity*. New Brunswick, NJ and London: Rutgers University Press.
- Roth, D., Boelens, R. and Zwarteveen, M. (2015). Property, legal pluralism, and water rights: The critical analysis of water governance and the politics of recognizing “local” rights. *Journal of Legal Pluralism and Unofficial Law*, 47(3), 456–75.
- Rulli, M. C. and D’Odorico, P. (2013). The water footprint of landgrabbing. *Geophysical Research Letters*, 40, 6130–35.
- Schlosberg, D. (2004). Reconceiving environmental justice: Global movements and political theories. *Environmental Politics*, 13(3), 517–40.
- Schomers, S. and Matzdorf, B. (2013). Payments for ecosystem services: A review and comparison of developing and industrialized countries. *Ecosystem Services*, 6, 16–30.
- Schröter, M., Zanden, E. H., Oudenhoven, A. P., Remme, R. P., Serna-Chavez, H. M., Groot, R. S. and Opdam, P. (2014). Ecosystem services as a contested concept: A synthesis of critique and counter-arguments. *Conservation Letters*, 7(6), 514–23.
- Scott, J. (1990). *Domination and the Arts of Resistance: Hidden Transcripts*. New Haven, CT: Yale University Press.
- Seckler, D. (1996). *The New Era of Water Resources Management*. Research Report 1. International Irrigation Management Institute (IIMI), Colombo, Sri Lanka.
- Seemann, M. (2016). *Water Security, Justice and the Politics of Water Rights in Peru and Bolivia*. Houndmills, Basingstoke: Palgrave Macmillan.
- Sneddon, C. and C. Fox (2008). Struggles over dams as struggles for justice: The World Commission on Dams and anti-dam campaigns in Thailand and Mozambique. *Society & Natural Resources*, 21(7), 625–40.
- Sosa, M. and Zwarteveen, M. (2012). Exploring the politics of water-grabbing: The case of large mining operations in the Peruvian Andes. *Water Alternatives*, 5(2), 360–75.
- Sousa-Santos, B. de (1995). *Toward a New Common Sense: Law, Science and Politics in the Paradigmatic Transition*. London and New York: Routledge.
- Soussan, J. (2004). *Poverty and Water Security: Understanding How Water Affects the Poor*. Manila: Asian Development Bank.
- Stoltenborg, D. and Boelens, R. (2016). Disputes over land and water rights in gold mining: The case of Cerro de San Pedro, Mexico. *Water International*, 41(3), 447–67.
- SUEZ. (2016). Press release, Paris, December 14, 2016. “SUEZ announces agreement for two concessions involved in irrigation and agricultural production project in Peru’s Olmos valley,” <http://newsroom.suez-environnement.fr/wp-content/uploads/2016/12/PR-suez-irrigation-agricultural-production-olmos-peru-20161214-EN.pdf>.

- Sullivan, S. (2009). Global enclosures: An ecosystem at your service. *The Land*, 2008/9, 21–23.
- Swyngedouw, E. (2004). Globalisation or “glocalisation”? Networks, territories and rescaling. *Cambridge Review of International Affairs*, 17(1), 25–48.
- Swyngedouw, E. (2005). Dispossessing H2O: The contested terrain of water privatization. *Capitalism, Nature, Socialism*, 16(1), 81–98.
- Swyngedouw, E. (2009). The political economy and political ecology of the hydro-social cycle. *Journal of Contemporary Water Research & Education*, 142, 56–60.
- Swyngedouw, E. and Heynen, H. (2003). Urban political ecology, justice and the politics of scale. *Antipode*, 35(5), 898–918.
- The Guardian (D. Hill). (May 14, 2014). “Canadian mining doing serious environmental harm, the IACHR is told,” www.theguardian.com/environment/andes-to-the-amazon/2014/may/14/canadian-mining-serious-environmental-harm-iachr.
- The Land Matrix. (2012). The Land Matrix Database, available at landmatrix.org.
- United Nations Development Program (UNDP). (2006). *Beyond Scarcity: Power, Poverty and the Global Water Crisis*. Human Development Report 2006. Houndmills, NY: Palgrave Macmillan.
- UNDP-CLEP. (2008). *Making the Law Work for Everyone*. Report of the Commission on Legal Empowerment of the Poor Volume I. UNDP-CLEP, chairs M. Albright and H. De Soto. New York: United Nations Development Program.
- Valladares, C. and Boelens, R. (2017). Extractivism and the rights of nature: Governmentality, “convenient communities” and epistemic pacts in Ecuador. *Environmental Politics*, 26, 6, 1015–34.
- Venot, J. P. and Clement, F. (2013). Justice in development? An analysis of water interventions in the rural South. *Natural Resources Forum*, 37, 19–30.
- Vos, J. and Boelens, R. (2014). Sustainability standards and the water question. *Development and Change*, 45(2), 205–30.
- Vos, J. and Boelens, R. (2015). Water in global agrifood chains. In K. Albala (ed.), *The SAGE Encyclopedia of Food Issues*. Thousand Oaks: SAGE Publications, pp. 1459–63.
- Vos, J. and Boelens, R. (2016). The politics and consequences of virtual water export. In P. Jackson, W. Spiess and F. Sultana (eds.), *Eating, Drinking: Surviving*. Cham, Switzerland: Springer, pp. 31–40.
- Vos, J. and Hinojosa, L. (2016). Virtual water trade and the contestation of hydrosocial territories. *Water International*, 41(1), 37–53.
- Vos, J. and Marshall, A. (2017). Conquering the desert: Drip irrigation in the Chavimochic system in Peru. In J. P. Venot, M. Kuper, and M. Zwarteveen (eds.), *Drip Irrigation for Agriculture: Untold Stories of Efficiency, Innovation and Development*. London and New York: Routledge, pp. 134–50.
- Whatmore, S. (2009). Mapping knowledge controversies: Science, democracy and the redistribution of expertise. *Progress in Human Geography*, 33, 5, 1–12.
- Woodhouse, P. (2012). New investment, old challenges: Land deals and the water constraint in African agriculture. *Journal of Peasant Studies*, 39(3–4), 777–94.
- World Bank. (1999). *Tradable Water Rights: A Property Rights Approach to Resolving Water Shortages and Promoting Investment*. Washington, DC: World Bank.
- World Bank. (2012). *Evaluating the Impacts of the Formalization of Water Right for Agriculture Use: Water Rights in Peru*. Washington, DC: World Bank.
- Yacoub, C., Duarte, B. and Boelens, R. (eds.) (2015). *Agua y ecología política. El extractivismo en la agro-exportación, la minería y las hidroeléctricas en Latino América*. Quito: Abya-Yala.

- Young, I. M. (1990). *Justice and the Politics of Difference*. Princeton, NJ: Princeton University Press.
- Zeitoun, M., Lankford, B., Krueger, T., Forsyth, T., Carter, R., Hoekstra, A., Taylor, R., Varis, O., Cleaver, F., Boelens, R., Swatuk, L., Tickner, D., Scott, C., Mirumachi, N. and Matthews, N. (2016). Reductionist and integrative research approaches to complex water security policy challenges. *Global Environmental Change*, 39, 143–54.
- Zoomers, A. and Kaag, M. (eds.) (2013). *Beyond the Hype: A Critical Analysis of the Global "Land Grab."* London: ZED.
- Zwarteveen, M. Z. (2006). "Wedlock or deadlock? Feminists. Attempts to engage irrigation engineers," PhD thesis. Wageningen: Wageningen University.
- Zwarteveen, M. Z. (2015). Regulating water, ordering society: Practices and politics of water governance. Inaugural lecture, University of Amsterdam.
- Zwarteveen, M. and Boelens, R. (2014). Defining, researching and struggling for water justice: Some conceptual building blocks for research and action. *Water International*, 39(2), 143–58.
- Zwarteveen, M., Roth, D. and Boelens, R. (2005). Water rights and legal pluralism: Beyond analysis and recognition. In D. Roth, R. Boelens and M. Zwarteveen (eds.), *Liquid Relations*. New Brunswick, NJ: Rutgers University Press, pp. 254–68.