Equitable Water Governance across Scales and Disciplines: Conceptualizations, Previous Research, and Future Directions

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Introduction

As we enter the second decade of the 21st century, 20 percent of the world's 7 billion people lack easy access to clean water. An unknown number of households lack water for their agriculture, forestry and fishing, their domestic tasks of cooking, washing, cleaning and childcare, and their small businesses providing goods, meals and services. Another significant number of women and children, particularly, have their ability to undertake domestic and economic work circumscribed because their daily round of tasks is dominated by the time and uncertainties of collecting of water. Not surprisingly, the poor and marginalized continue to be the most vulnerable in regard to actual and impending water crises.

While inequities are acutely experienced at the household and community levels, water access at these most local levels is directly affected by broader forces and contexts. Population growth; the economic rise of China, India, Brazil and others; and the advance of agriculture, industry and services, for example, are all requiring greater quantities of, and producing different needs for, water. Each of these phenomena affects disparities in water access and use between and among communities, countries, and regions.

Potential and existing crises not only pose threats to humans, however; naturally-occurring and human-induced water shortages and inequities produce threats to ecosystems and biodiversity, in addition to people’s economic livelihoods, health, and many others (Gleick 1998; Termeer et al. 2010; Fishman 2011). Nonetheless, the common perception of various water crises as impending shortage may, even though environmentally informed, reinforce what Swyngedouw (2004) has termed a productivist logic. This logic of focusing primarily on the
supply of water has been a characteristic part of the political economy of the water industry. More sophisticated measures of human and ecological needs are required.

The challenge of securing sustainable and equitable access to water, in particular, is enormous. Given its fluid nature; tendency to cross national and subnational jurisdictions; and the multiple actors implicated in its extraction, use, and distribution, water “poses the problem of collective action in a particularly acute way” (Bakker 2010, 191; see also Romano 2012b). That is, water as a resource transcends many of the legal and political boundaries formal laws and policies dictate. The biophysical properties of this critical resource and the ways in which multiple actors and institutions mediate its use and distribution pose challenges to confronting water crises—both local and global.

For these reasons we posit that the study of water needs to be addressed through a more comprehensive and multidisciplinary set of questions. For example, we consider it critical to ask what do different disciplines bring to these discussions of water crises through the lens of inequitable water governance? How might disciplines communicate better? Do feasible academic or practitioner proposals for the achievement of equity exist? Arguably, much research on water management is “organized in strongly regionally and sector-wise defined clusters” and is “disciplinarily divided” (Mollinga, 2007: 8). That is, the scholarship tends to be broadly clustered in regard to region or sector of focus, and scholars from different disciplines—including Anthropology, Sociology, Political Science, and Economics—tend to embrace different methodological and epistemological imaginations and approaches (see Table 1). These divisions, we argue, have important implications for our ability to study and explain equity and inequity in water governance, and hence to develop practical “solutions” to problems of water use, access, and distribution. However, these important differences are not explicitly shared across disciplines and important lessons may be lost.

This paper aims to provide a critical, albeit incomplete and preliminary, overview of the scholarship on equity and inequity in relation to governance of freshwater. The main questions to be addressed in this paper include:

1) What is equity (and inequity)? What methodological, epistemological, and normative approaches underpin existing conceptions of equity (and inequity)?

2) How have scholars identified, measured, and explained equity and inequity as these pertain to water governance? How do our disciplinary, epistemological, and methodological imaginations influence the ways we characterize and explain equity and inequity?

3) What are the major gaps and limitations in approaches to equity and inequity within water governance? What opportunities for more robust scholarship arise from considering and assessing this vast literature?

Through addressing these questions, this paper seeks to shed light on the ineffectiveness of approaches to water use and management in practice, including how the water-related scholarship addresses, and may even perpetuate, these shortcomings. Ultimately, we argue that approaching viable solutions to water crises—both local and global—will require the development of more robust theoretical frameworks for understanding and explaining equity and inequity.
Conceptualizing Equity and Inequity

Central to the pursuit of this paper is the simple question: what is equity? How have researchers, governments, development practitioners and civil society actors defined equity and inequity? In academic as well as development circles, water-related inequities are most often assessed in terms of quantity and quality. Equitable sharing of water quantities is, for example, a central principle in the Helsinki Rules which guide diplomacy on international rivers (Salman 2007). The United Nations’ Millennium Development Goals’ Target 7.3 to “Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation,” also reveals a notion of inequity in terms of water quality and quantity. National and subnational laws reflect a similar bias. For example, the South African Constitution articulates citizens’ right to “sufficient water” (see article 108, 7(2), 1996), while the state of California’s Assembly Bill 685 (passed in September 2012) establishes “that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes” (Section 106.3(a)). Inequity is implicit in these legal “rights” to water. Some have access to sufficient and clean water, while others do not.

However, how to implement the “right” to water—enshrined in some national and international legal provisions—is complicated by the issue of determining appropriate water allocations/distributions in regard to quantity and quality, not to mention how in practice people will access water. While minimally a political and legal tool for seeking more equitable access and holding decision-makers accountable (see, for example, Bakker 2007), the “human right to water” remains challenging to implement in practice—in part related to how this right emphasizes minimal water access for individuals without foregrounding inequities and issues of redistribution of resources.

In other words, how inequity or inequality is assessed in normative terms—and addressed in practical terms—may depend less upon how we conceive inequity and more upon how we define equity in theory and practice, or in what spaces or dimensions we seek to achieve equality (Sen 1992). Equity in water provision at the individual and household level of analysis is frequently evaluated through volume and cleanliness of water delivered (e.g. do households or businesses get equal quantities of clean water?) We suggest that the issues that constitute equity

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1 Cite UN right to water; Constitution in Paraguay, others.

Romano et al., “Equitable Water Governance” (3)
in access to, and provision of water, are wider than the quantity and quality of water. They may include: *labor* time collecting water, health outcomes from inadequate water and sanitation, work and other opportunities foregone because of water collection, certainty of supply, and the valuation of domestic work, income earning and business opportunities made possible by water supply. A useful metric in evaluating equity of access to water is through freedoms and capabilities; how does access to water facilitate the range of capabilities (e.g. washing, laundry, agriculture, small-business and the like) characteristic of any given society?

** Freedoms and Capabilities **

Sen’s freedoms and capabilities approach is particularly helpful for understanding equity in social change. Its focus on social relationships that enable individual abilities provides analytical purchase on a wide range of human potential, including those most basic capacities required for survival and flourishing. The approach can be expanded to encompass collective action and institutional change (Dreze and Sen 1989; Evans 2002) so it may also have possibilities for examining the scale of action. Sen (1999) argues that freedoms are both the ends and the means of intentional social change. This bold claim has been influential and it is not necessary to accept that entire claim to recognize the analytical value of a focus on capabilities and freedoms. Sen disaggregates the idea of freedoms as means, with this range of instrumental freedoms:

1. Political freedoms (free speech and elections) help to promote economic security.
2. Economic facilities (opportunities for participation in trade and production) help to generate personal abundance and public resources.
3. Social opportunities (education and health facilities) facilitate economic participation.
4. Transparency guarantees to prevent corruption, illicit deals and financial irresponsibility.
5. Protective security to provide a social safety net against famine and other causes of extreme distress. (10)

Whether simultaneous achievement of all these freedoms will best promote equitable social change is a question for further analysis. Nonetheless this range of social characteristics provides a fruitful checklist for thinking about aspects of change.

Sen proposes equity as access to a range of freedoms or capabilities established in comparison with the freedoms routinely enjoyed by others in a community or globally. The notion of encouraging and evaluating individual and collective freedoms and capabilities is particularly helpful in thinking about water. Water has many dimensions and uses that add diversity and complexity to the idea of H₂O, or the common perception of water that Linton (2005) calls ‘modern water’. These many social uses which water enables – from drinking, through cleaning, cooking, agriculture, power, industry and much else – can be fruitfully conceptualized as capabilities and freedoms. In practice, the freedoms and capabilities made possible by water are much wider than access to equal *quantities* of water.

However, Linton and Sen’s conceptualization of equity tends to focus on individual benefits and action. Assessing inequity as relative to members of the same local community or similar communities in other regions, for example, fails to consider processes and dynamics which help to determine the local context under study. These might include “higher up” decision-making around regional water distribution and/or historical patterns of water allocation and distribution. Importantly, then, explaining the distribution of a given resource, like financial capital or water, across communities, countries, or regions may require analysis of decision-making processes occurring beyond the community level.

Romano et al., “Equitable Water Governance” (4)
Attention to these politically higher up as well geographically broader dynamics and decision-making processes would richen our understanding of patterns of inequity in at least two ways. First, this more macro-lens would shed light on inequities between and among different communities, regions, and/or states. Second, and as a result of the first, we would be better equipped to explain the absolute availability of a given resource “comparable” communities. We could argue that we overlook broader social justice implications when we fail to consider how certain communities, groups, and regions have relatively less access overall to a particular resource or service than others. Understanding and rectifying inequities between and among wealthy and impoverished communities, for instance, would also support recognizing, and hence improving, the access of the latter in absolute terms. Also it becomes important to understand how individual entities, like nation states make decisions since they often only consider their own context and are unaware of the global footprint of their actions (Hoekstra and Mekonnen 2012).

Thinking about how resources are distributed, and relatedly, how people gain access to and/or use them, may also help us conceptualize equity and inequity in practice. Ribot and Peluso’s (2003) “theory of access” is useful insofar as it allows for consideration and examination of the ways people and communities access resources that are not dependent upon formal or legal rights. As they assert,

By focusing on ability, rather than rights as in property theory, this formulation [of access] brings attention to a wider range of social relationships that can constrain or enable people to benefit from resources without focusing on property relations alone.

(154, emphasis in original)

The authors thus seek to broaden the idea of access to one not solely conferred by property rights. While this framework does not directly conceptualize/define “equity,” it facilitates examining patterns of use, access, and distribution of material resources, like water. More empirically-grounded assessments of equity and inequity can stem from the recognition that systems of laws and formal rights do not necessarily reflect or determine actual practices and norms in regard to resource use and management (see Boelen, Getches and Guereva-Gil 2010; Hendriks 2010). Likewise, legal frameworks and laws governing a given resource can be highly fragmented, making it difficult to locate actual or legitimate sources of authority (see Perreault 2005; Abers and Keck forthcoming).

Legal Pluralism

One approach is Ribot and Peluso’s theory of access that dovetails with several authors’ application of the concept of legal pluralism, which refers to the many and diverse rights regimes and sources of authority that govern a particular material good or resource (see, for example, Benjamin 2008; Boelen, Getches and Guereva-Gil 2010; Roth et al. 2005). Legal pluralism points to the relevance of “local concepts of equity,” as Boelens, Getches and Guereva-Gil found in their examination of the “struggle for local water rights in the Andes” (9). Indeed, several scholars have pointed to the importance of locally- and culturally-relevant definitions and standards of equity. What constitutes equitable governance, in practice, may be determined by local social norms that have developed over time (see, for example, Bruch et al. 2007). The notion of locally- and culturally-relevant conceptions of equity is not limited to water: internationally-agreed upon food security principles also demonstrate a concern for recognizing non-universal conceptions of equity. For instance, the Declaration of Nyeleni, signed by civil society actors from more than 80 countries in 2007, defines food sovereignty as “the right of
peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems” and calls for a “respect for local autonomy and governance” in regard to food systems (emphasis added; http://www.nyeleni.org/spip.php?article290).

The recognition of legal pluralism not only matters for seeing and characterizing different kinds of inequity, but also for approaching solutions to inequitable governance dynamics and outcomes. As Roth, Boelens, and Zwarteveen (2005) contend, “understanding legally plural conditions may be the first step toward finding location-specific solutions to existing problems of [water] scarcity, overexploitation, and redistribution” (13). Legal pluralism calls upon us to assess legal and political frameworks as well as look between, among, and beyond these to identify inequities within water governance.

**Broad Environmental Change**

Broader ecological processes of change, like changing climate patterns producing new sequences of drought and flood, also matter for explaining inequities in a “local” context. The concept of “water security,” which emphasizes “balancing human and environmental water needs,” could also be thought of as one approach to equitable water access in practice (see Bakker 2012, 914). According to Bakker, water security implies “an acceptable level of water-related risks to humans and ecosystems, coupled with the availability of water of sufficient quantity and quality to support livelihoods, national security, human health, and ecosystem services” (Bakker 2012, 914). This kind of approach recognizes how social and ecological systems are interactive. Indeed, many political ecologists would see social and natural systems as co-constitutive.

In a fundamental sense, then, attention to multiple scales—be they ecological, social, cultural, political, etc.—are central to conceptualizations and measurements of equity and inequity. As the next section reveals, the scalar emphases that inform our analyses oftentimes depend upon our given disciplinary approaches and biases. For this reason the next section explores how characterizations of equity and inequity in water governance vary by discipline, as well as across dimensions (ecological, temporal, social, political, institutional) of water governance.

**Describing Inequities in Water Governance**

How does research on water characterize equity and inequity in water use, access, and decision-making? Arguably, the challenge of studying water use and management mirrors the richness and diversity of this resource and its attendant social practices and meanings. As a resource fundamental to livelihoods, identity formation, and productive processes; that transcends ecological, social, territorial and political scales; and that “[links] humans so integrally to the nonhuman world,” this critical element “poses the problem of collective action in a particularly acute way” (Bakker 2010, 191). How is water, a resource spanning multiple bio-physical, social, and political scales, to be governed equitably and sustainably? As academics, what theoretical frameworks and methodological approaches best support characterizing and examining equity and inequity within water governance?

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Romano et al., “Equitable Water Governance” (6)
As noted earlier, there is a popular perception that water crises and lack of access to water are direct results of water scarcity. This is too simple. While there are local water shortages, and regional scarcity may be exacerbated by climate change, such shortages arise from a hybrid combination of social investments and environmental context (Rijsberman 2006). This paper assumes that problems of water access, distribution, use, and conservation are largely problems of governance; that is, problems of “how decisions about water resources are made, by whom, at what geographical scales, and to whose benefit” (Perreault 2008, 835). The myriad actors engaged or implicated in water management practices and outcomes represent, and pursue, different interests and agendas (Mollinga, 2008). Hence, as Bakker (2007) contends, “the real water ‘crisis’ arises from socially-produced scarcity” (441)—that is, scarcity that results largely from human decisions that produce an uneven distribution of resource flows and benefits.

Yet, acknowledging the multi-scalar nature of water politics and access regimes is only one important step towards engaging in scholarship that can better identify, examine, and explain inequity. We must recognize the complexity and pluralism (in regard to norms, practices, laws, organizations and institutions) characterizing water governance in order to develop empirically-informed and appropriate frameworks for studying patterns of equity and inequity. We must also recognize that the biophysical properties and socio-cultural significance of water itself affect patterns and experiences of inequity. Notably, however, our diverse disciplinary lenses and methodological approaches affect which scales, actors, and dynamics we emphasize in our research, and hence affect definitions (and indicators) of inequity. As a result, what dimensions and characterizations of equity and inequity we reveal, and how we explain them, varies considerably.

The following review of the scholarship on water governance from across disciplines (including anthropology, sociology, geography, economics, environmental studies, political science, and development studies) reveals a fundamental concern with equity and inequity, despite variance in regard to disciplinary lenses, methodological approach, and normative approaches. However, two shortcomings of this scholarship emerge. First, scholars in particular disciplines may tend to focus their studies on a single spatial scale. Anthropology may focus on a community, Environmental Studies on the consequences of a dam, Economics on a water market, Politics on water in the national political process, Development Studies on an irrigation project, and so on. Even global policy advances, such as Integrated Water Resources Management, may have a preferred spatial scale built into them. Such disciplinary and policy boundaries may lead to a neglect of actors, institutions and practices at different scales (geographic, social, political and temporal). In short, much research has been undertaken within a particular spatial unit, focusing on socio-geographic groupings (village, slum) or intervention conditions (dam, irrigation project, urban water supply), political jurisdictions (municipal, regional, national), according to the time scales (electoral, seasonal, project-based, generational, daily) of that unit. Yet, what are the explicitly multi-scalar social and political processes through which people experience inequity within water governance? How are water uses and decision-making processes regulated and determined, respectively? What dimensions of equity and deprivation may arise in regard to material and other forms of inequity? A second possible limit on water-focused research arises from disciplinary blinkers, with a researcher’s vision limited by the characteristic methods, agendas and boundaries of a particular academic specialization. We suggest that a broader—and more explicitly integrative— theoretical

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3 This is a misperception promoted from some unlikely places (e.g. Maude Barlow, Senior Advisor on Water to the President of the United Nations General Assembly, 2008-9).
framework and comparative approaches will better account for the patterns and dynamics of inequity across multiple dimensions of water use, access, distribution, and decision-making.

**Axes of Inequality: Class, Gender and Ethnicity**

Several axes of social inequality, such as gender, ethnicity, and class, have received much attention in water-focused scholarship. The reason is that actors are bound to understand and value water differently (Orlove and Caton 2010). Studies emphasizing gender—particularly the role of women in relation to water access regimes—reveal a number of ways inequity manifests in water governance (Zwarteveen et al. 2012; Narayan, 1999; Crow, Swallow and Asamba 2012; Meinzen-Dick and Zwarteveen 1997; Pandolfelli et al. 2008; Wood 1999). As “the primary managers of domestic water” in the global South (Narayan, 1999), women have been argued to have a crucial role and interest in local water governance. Nevertheless, gendered analyses of water governance reveal material and procedural inequities along gender lines.

Importantly, some considerations of inequity have transcended the dominant discussions of inequity in terms of water quantity and quality. Crow, Swallow and Asamba (2012) note that many in Africa have access to about one tenth of the quantity of water routinely available to those living in industrialized countries (35 liters per day compared to about 400), a disparity strongly reflected in health and well-being. Beyond considerations of equity in relation to water quantity and quality, however, the concept of “time poverty” becomes a way to reflect the freedoms forgone as a result of the time consumed in collecting household water. Spending from one to several hours fetching water for household use might prevent a woman in Kenya and/or members of her household from being educated or engaging in economic activity. In addition to these unfreedoms, the variability of time and cost devoted to access to household water can cause households to forgo daily activities from laundry and personal hygiene to meals (Crow and Odaba 2010). Such daily deprivations arising from difficulties of water access impose costs far beyond considerations of quantity and quality.

Ethnographic studies have uncovered a more locally complicated reality relating to the gendered dimension of water inequities. For example, medical anthropologists working in Latin American communities have shown that poor access to water causes bodily and emotional distress in women (Ennis-McMillan 2001, Wutich & Ragsdale 2008). Furthermore, water insecurity differentially affects men and women in urban settings in Bolivia (Wutich 2009). These findings raise important questions, such as the need to understand, monitor, and document water inequities in more ways than just political, economic, or western health measurements since they do not always reveal the full range of local health concerns. Furthermore they also suggest that new governance propositions may need to be gendered as well in order to reach the most affected populations.

Gender and socio-economic inequities have surfaced in other senses as well. Regarding state policies, Wood’s (1999) analysis of Bangladesh’s Flood Action Plan highlights a privileging of expert knowledge over democratic process, which is characteristic of most large scale water management projects. The interests of the poor, landless, and women are often unrepresented. In this study, attention to both social and institutional scale is of paramount importance to revealing inequities that result from formal institutions and policies.

In other instances, ethnographic research has revealed that gender and class are important when observing how a particular group of people chooses to engage with new technologies or policies related to water distribution or treatment. For example, gendered differences in water values and notions of health impact the preference of drinking fountains versus water bottles.
In Nepal, women in hospitals displayed a hard time following water treatment instructions from doctors who insisted in using Western notions of hygiene and purity (Burghard 1996) leading to intercultural miscommunications heavily anchored on socio-economic and class disparities. In fact, class, gender, and ethnicity are often variables that studies uncover as key factors in situations where a seemingly new and improved water option became available yet people chose to not use at all or use in unexpected ways. This was the case even in similar rural communities in Alaska who chose to engage with centralized water systems differentially because of a series of cultural, environmental, and economic differences (Marino et al 2009). Race and ethnicity have also been central in water governance and disputes in the Andes (see Boelens 2008; Boelens et al. 2006) an issue that has been noted as critical by researchers but ignored by local policy-makers.

Scholarship has also been attentive to the ways in which social class generates inequities in regard to water use and access (see, for example, Crow 2002; Mollinga 2003; Chambers 1988; Wade 1988; Cleaver et al. 2005). This scholarship has focused on how the poor and politically marginalized are differentially affected by formal mechanisms of water governance, and point to the need to critically assess the institutional structures and design that affect water access in practice (Cleaver et al. 2005). In low-income urban areas, such as Kibera in Nairobi, large populations live near residential areas where piped household water supply is available (Crow and Odaba 2010). Such inequities combine the social scales of class and ethnic privilege with the generational patterns and politics of public investments in water supply. Large-scale water supply and sanitation projects, usually built in the early twentieth century, ensure piped water supplies in parts of many postcolonial cities, inhabited by more affluent groups. These infrastructure projects are not easily extended to the slums or informal settlements built in later times. The physical availability of water in a postcolonial slum can reflect the spatial constraints and social institutions particular to that community, as well as seasonal scarcities arising from demand from citywide water supply systems. A woman collecting water may therefore face unpredictable hourly, weekly and seasonal patterns, which can require multiple trips. These many dimensions of freedom and deprivation in access to water generate a wide terrain to be addressed by equitable governance.

In other examples, class alone seems to be a critical variable. For example, in some instances class differences help maintain and perpetuate entrenched policy paradigms that prevent disenfranchised stakeholders from benefiting from new water policies as has occurred in India (Kashwan 2006) and Israel (Menahem 1998). In other cases, private interests collide with local realities as has happened in Peru where mining interests disregard the water needs and uses of local rural populations (Bebbington and Williams 2008). And yet in other cases class differences are manifest in the topography of an area, as in the case of Mumbai where the poorest tend to live in the highest elevation where water pressure is weak, a spatial manifestation of class which is not recognized by engineers or politicians (Anand 2011). This highlights the need to seriously consider the role of class in the effective implementation of equitable water policies because as the examples illustrate preexisting networks, often between government and private entities, or infrastructures may be difficult to avoid.

In general, insights from investigations anchored in ethnographic methods reveal that the socio-cultural context of a locale is important as environments, subsistence, and indeed water is valued and understood differently by different societies (e.g. Hoque et al 2008, Merz et al 2003) but also by various members of a society. Ethnographic and quantitative studies in Sociology, Economics and Development Studies have also provided rich insights into the generation of
inequality in the design and operation of irrigation projects, including spatial and income inequalities (Mollinga 2003; Chambers 1988; Wade 1988), gendered inequalities (Meinen-Dick and Zwarteveen 1998; Pandolfelli et al. 2008), and inequalities in access to domestic water in the slums and peri-urban settlements of cities in the "developing world" (Dill 2007; Crow and McPike 2009). These works illustrate that differences in the way people relate to water manifest in a variety of manners such as competing water narratives as is the case of Israel and Palestine (Fischer 2006), or the existence of dynamic water meanings that are part of complex and ever changing political, historical, cultural and spatial landscapes (Strang 2004). However, clearly the challenge also lies in operationalizing local differences at a global scale without compromising different value systems. Although interdisciplinary investigations are suggesting solutions to this dilemma, as is the case of focusing on catchment-based management (Wallace et al 2003), the complexity of issues observed at the local level continue to be critical when it comes to a group of people deciding to engage or not with new policies or technologies available. In other words, Gleick (1998) is correct in stating that there are no effective global institutions that adequately deal with water issues and the diversity intrinsic to its stakeholders. For this reason some have even suggested arranging ethnographic insights regarding water into watersheds, water regimes and waterscapes in order to allow for the diversity and complexity observed at the local level (Orlove and Caton 2010).

The Particularities of Gender and Water

Women’s lack of formal property rights and exclusion from official decision-making structures, like water users’ associations, speaks to legal and procedural inequities along gender lines (see, for example, Meizen-Dick and Zwarteveen 1997; Zwarteveen 1997; Zwarteveen and Meizen-Dick 2001). In the South Asian case, Meizen-Dick and Zwarteveen found that property rights are often vested in men, despite women’s key roles in management of water for irrigation. Notably, women’s incorporation in formal water users’ associations was ultimately not accepted “on grounds of equity, participation or democracy” (no page, 1997), but rather as a result of practical and financial considerations, such as the ability to women participants to enforce local rules (see also Zwarteveen and Meizen-Dick 2001).

While not explicitly focusing on water, development economist Bina Agarwal (2000) also found that “ungendered” evaluations of community natural resource management mask the inequitable dimensions of this work. That is, what appears to be successful forest management in rural South Asia in regard to participation, equity, and/or efficiency were found to be largely non-participative and inequitable from a gender perspective. Like Meizen-Dick and Zwarteveen (1997), Agarwal finds that women are rarely elected to the leadership of community forestry groups (CFGs), and hence don't participate in the development of formal rules. Yet, women "often play an active role in the [forest] protection efforts, keeping an informal lookout or formal patrol groups parallel to men's, because they feel the men's patrolling is ineffective" (286). Moreover, formal rules around forest conservation (i.e. foregoing use of forest resources) are largely borne by women, for instance, in their having to take the time to find "alternative sites for firewood and fodder" (286). A principle implication of both studies is that governance would be more equitable and effective if participation was better equalized along gender lines, in part because of what information and experience women can contribute to CFGs that men cannot.¹

¹ Approaches claiming or seeking to equalize and/or expand participation in decision-making around water resources have had mixed results, however. Ivens (2008) found that reduced collection time for women does not

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These aforementioned studies address important dimensions of equity beyond a focus on water quantities—a bias found in much academic and development work addressing water scarcity (see, for example, Adullayev et al. 2008). The quality of water, reflected in potability and pollutants, is an additional dimensions of equity and justice that has been examined (see, for example, Washington et al. 2006; Lerner 2010).

The Community Level of Analysis and “Local” Dynamics

If water governance is inherently multi-scalar in geographic, ecological, social and political senses, can we expect that inequities within water governance have multi-scalar causes and consequences? Certainly, in some cases “local” contexts and dynamics may be the ones that matter most for explaining certain patterns of inequity. Broadly speaking, scholars of common property regimes (CPRs) have made outstanding contributions towards understanding the conditions under which communities may viably manage common pool resources—like water, pastures and fisheries—over time. The common property literature details how water users have adapted or responded to barriers to local water access by overcoming the collective action problem in a wide variety of ways, not the least of which is devising local institutions for water management and access. Successful CPRs have been characterized by a number of elements: small group size, locally-devised system of rules, clearly delineated resource boundaries, and effective local monitoring arrangements that external government authorities do not undermine (Becker and Ostrom 1995; Gibson, Williams, and Ostrom 2005; Ostrom 1990; Ostrom 2002; Feeny et al. 1990; Lu 2001).

One classic anthropological study of common property regimes (CPRs) is Netting’s Balancing on an Alp (1981), which discusses the tenure, management, and use of irrigation water, among other resources, by residents of Torbel, Switzerland. These families stood out for the longevity of their kinship lines, customs, and institutions, and appeared isolated and closed from larger society and external forces; similar analyses and claims were made for South Indian irrigators from Andhra Pradesh (Wade 1992) and Balinese rice cultivators (Lansing 1992). Such pivotal CPR studies, many undertaken by anthropologists, powerfully argued for the role of culture, custom, and connection to place in establishing viable—and often under-acknowledged—management regimes that served to foster local livelihood security, social cohesion, and ecological sustainability.

Because of the CPR scholarship’s emphasis on the local or community level of analysis, it has the potential to reveal local power dynamics and manifestations of inequity (Agrawal 2003). However, the privileging of certain scales, actors, or processes may contribute to overlooking certain determinants of inequity. The CPR scholarship arguably proves insufficient for understanding increasingly complex landscapes of environmental (including water) governance. While a CPR frame of analysis has the potential to account for some local-extralocal (including CPR-state) dynamics, a focus on internal institutional dynamics tends to always lead to strategic gender gains. Relatedly, Yacoob and Walker (1991, as cited in Narayan 1999) found that women involved in local fee collection for water service in Rwanda were “spending as much time collecting fees as they had earlier spent collecting water” (11).
sideline larger contextual factors, such as the ways in which local institutions are both embedded within, and framed by, national government policies, international financial institutions, and nongovernmental organizations (NGOs) (Agrawal 2001; Brosius et al. 1998). Broader processes and policy shifts like decentralization and privatization, and accompanying changes in state-society relations, are putting new pressures on common property regimes, making conventional CPR schema relevant, yet inadequate.

A focus on national level indicators, for instance, can mask local variation in water access, as Kaczan and Ward found after reviewing the scholarship on water and poverty in Africa (2011). Conversely, even seemingly “local” patterns and relationships that are the focus of much scholarship in Anthropology are often tied to larger dynamics that affect equity in a “local” context. For example, sociologists Smith and Hanson’s study of water management in Cape Town, South Africa, revealed that neglecting procedural forms of equity may come at the expense of addressing the “root causes” of social inequities (2003). Hence, distributional and procedural equity are intimately linked in practice, but understanding the link requires a frame of analysis that encompasses several social and political scales.

A more encompassing framework may call upon us to rethink inequity purely as a byproduct of competing users and uses for water at the local level. The concern with equity in regard to quantities of water surfaces in studies of conflicts between irrigators (Chambers 1988; Rodriguez 2005), domestic and industrial users (Rogers et al. 2002), upstream and downstream appropriators (Wolf 1999), rural versus urban users/uses (Abdullayev et al. 2008); allocations for environmental benefits (e.g., fisheries) and human needs, and nations sharing trans-boundary waterways. Inequitable water access has also been documented among similar stakeholders (e.g. rural water users’ associations) based upon differential access to resources, or biophysical determinants of access, like proximity to a water source within a region (Abdullayev et al. 2008).

**Development Projects and the Dynamics of Capitalism**

Much research is focused on “intentional” social change, as represented by particular development projects, including irrigation schemes, large dams and reservoirs, community action to introduce water and sanitation, and flood control schemes. Several disciplines focus primarily on intentional projects, overlooking the frequently much larger influence of immanent, or background, change. Intentional development *projects* occur in the larger context of ongoing change arising from processes of family reproduction and economic accumulation and dispossession. Water often plays a critical role in these processes.

Households and individuals buy land and introduce irrigation to ensure their survival and better lives for their children. In the countryside, land is purchased, wells are dug, pumps are purchased, agricultural output increases and land rises in value. For some, this process leads to accumulation of wealth. Other families have little land, find their livelihoods under threat, and are forced to sell. This is a process of social differentiation (Bernstein 1982) in which access to

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system [of resource governance] that may not endure over the long run” (102). For example, the CPR “design principles” emphasize the importance of the state granting legitimacy to common property institutions (CPIs) through minimal recognition of and/or respect for the right to organize at the community level as well as the importance of large-scale CPRs being “nested” within broader structures of rules and norms.

7 International policy contexts, for example, matter greatly for local commons management as international financial institutions and development organizations continue to promote and invest in community-based natural resources management models (Agrawal & Ribot 1999; Richards 1997).

Romano et al., “Equitable Water Governance” (12)
water plays a pivotal role. Those households with irrigation will routinely fare much better than those without, or with constrained access.

In urban areas, access to land and water is no less critical. The daily processes of capitalism operate through water and other resources, like land. Factories, workshops, and businesses of all kinds, big and small require land on which to operate and water for a range of tasks. Those with wealth and influence gain access to more water and are able to accumulate more investment resources by deploying that water in production.

Who gets land and water is a question for historical research. Likely it is those with more political influence, economic resources and social connections. Poor people, subordinate ethnicities, and workers are less likely to have access to these crucial means of production. This is part of the uneven, contradictory process of capitalism.

**Government Policies, Privatization and Innovations in Urban Water Governance**

Analyses of water governance emerging from Political Science, Legal Studies, and Economics are important for their documentation and examination of explicitly political dynamics and processes within the realms of state, inter-state, and global water politics (Mollinga 2008). Dominant approaches within these disciplines privilege examination of formal laws, institutions, and political actors to explain power dynamics within water governance. This emphasis is hardly limited to these disciplines, however. For example, Anthropologist Guillet’s (1992) study of communal irrigation management in Peru contends that “localities are caught up in the dynamics of more inclusive systems, be it a region, state, or world system” (4). Expanding state power via new laws and government ministries has had consequences for local irrigation regimes, oftentimes to the detriment of long-standing communal resource management organizations and practices.

Inequity is also produced and experienced—though often overlooked—in regard to higher level decision making around water resources. A vast literature on economic restructuring and privatization has pointed to both procedural and distributional inequities in water governance (see, for example, Budds and McGranahan; Bakker 2007, 2012; Hall et al. 2010; Perreault 2005; Spronk and Webber 2007; Romano 2012a; Terhorst 2008; among others). As Budds and McGranahan argue, “Much depends on the way privatization is developed and the local context” (2003: 88). Nevertheless, privatization of basic services, like water, has been found to increase costs at times to prohibitive levels, especially for the poor, hence decreasing access to water in practice. “Pro-poor” privatizations have been promoted by the World Bank and other international financial institutions and “tend to focus on low-cost technology, flexible payment systems and participation” (Budds and McGranahan 2003: 112). Nevertheless, these schemes “do not address the more fundamental reasons for which poor groups in low income countries lack access to basic water and sanitation services” (112). They also, as Budds and McGranahan contend, may serve to “obscure” the existence of other kinds of resource management regimes, particular those at the local level which may not be recognized in legal or political terms (see also Boelens et al. 2010a; Romano 2012a, 2012b). The political process of privatization has entailed issues related to procedural equity as well, given the often “behind closed doors” unfolding of privatization schemes, particularly in the global South.

Problems of resource distribution and access in practice have ensued with the implementation of other kinds of top-down governance arrangements as well. As an integrated or holistic water management paradigm, Integrated Water Resources Management (IWRM) promises to transcend politics by creating mechanisms for community input and participation;

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yet in practice it is unclear how decisions are made about the prioritization of water users after everyone has weighed in. The extent and manner in which IWRM prioritizes certain water uses and users is important to understand, especially with respect to people’s water access and livelihoods at local scales and across urban and rural communities.\textsuperscript{8}

Scholars of decentralized water management have made important contributions to our understanding of contemporary innovations in urban water governance at subnational (i.e. regional and city) levels of analysis (see, for example, Abers and Keck 2009, Forthcoming; Brannstrom 2004; Brannstrom et al. 2004; Brown 2010). Among the many motivations for devolving decision-making authority to subnational governments include increased accountability to local populations; improved public goods/service provision in terms of equity and efficiency; and greater potential for civil society participation in governance. The outcomes of decentralized water management have been mixed. Anthropologist Brown (2010), for example, found that participatory water governance in South Africa had the consequence of reproducing procedural and distributive inequities. As she explains, “the legacy of long-established institutional frameworks and powerful actors [affecting the participatory water governance model] continues to exert influence in post-apartheid South Africa, and has the potential to subvert the democratic and redistributive potential of the water reforms” (171).

A clear strength of governmental and institutional approaches is their attention to how laws and policies are implemented. Decision-making around water is inherently political: not only in the sense of how decisions affect relative equity (and inequity) in regard to water use and access, but also in regard to who is participating in decision-making, how, and at what scales. These decision-making landscapes are complex. Abers and Keck (Forthcoming) speak of an “entangled political environment” to refer to the myriad actors and levels of decision-making involved in freshwater governance in Brazil. Speaking to the realm of formal governmental decision-making, these authors’ notion of “practical authority” refers to that decision-making power and know-how emerging not from the mandates of formal legal-political responsibilities, but rather out of concrete experience in a given sector. Power and decision-making authority hence has sources other than the state itself.

Of course, the existing of formal state water policies does not ensure their implementation. Examining a “large scale land deal” in Tanzania, Arduino et al. found that at the “national level there is still a large gap between the intent of legislation to protect water resources and local communities’ interests, and its implementation” (2012:358). Importantly, this analysis of rural development scholars reveals the importance of looking beyond formal legal frameworks to assess how water and land policies are translated—or not—in local contexts. State-society synergy and overlap matter as well for analyzing policies in practice. The important concept of “mobilizing the state,” for example, highlights how activists within and outside the state have a crucial role to play in contributing to the state’s capacity to implement policy decisions made by deliberative bodies (Abers and Keck 2009).

\textbf{Cross-Scalar Political Analyses}

As Budds and Hinojosa (2012) argue, “The governance of water resources, its principles, and the scale at which it is organised, is at the forefront of both water policy and scholarship within resource geography. The importance of multiple spatial scales has been recognized

\textsuperscript{8} Conversely, “local actions or policies can be beneficial at the local level while leading to big problems on the aggregated level” (Termeer et al. 2010).

Romano et al., “Equitable Water Governance” (14)
beyond the field of Geography, as seen in certain Anthropological, Political Science, and Sociological analyses of how official/formal and “unofficial” resource management regimes overlap (Roth et al. 2005; Romano 2012b; see also Perreault, 2008). Public policy and administration scholars Termeer et al. (2010) emphasize the scalar politics and approaches of several disciplines, including public administration, political science, and environmental science.

Notably, predominantly “monocentric” approaches to governance with Political Science and Legal Studies wherein the “state is the center of political power and authority” run the risk of overlooking the myriad scales—ecological, social, political, etc.—that are necessary to view “the inherent complexity and unpredictability of dynamic social-ecological systems” (Termeer et al. 2010). Scholars of decentralization, for instance, often focus on transfers of power to official bodies at the local level, overlooking the role of non-legal or “unofficial” community actors in resource governance and support from international and transnational actors. Examining formal rights and policies as a means to assess water governance in practice may overlook the norms, practices, and “unofficial” policies and practices transcending formal systems legal-political systems. For example, acknowledging the customary land tenure that influences rural water management requires engagement with political scales (and their respective jurisdictions) that encompasses non-state realms of decision-making, like communities and tribes (Mehta et al. 2012).

Moreover, while the gender and social class-based inequities in water governance highlighted by scholars in Anthropology, Sociology and Development Studies are only possible through careful attention to social and temporal scale, these studies may overlook how water governance regimes operate at multiple political scales as well. These range from the most micro-level commons management to transnational resource governance in the form of international and/or hemispheric-wide environmental agreements and treaties.

Attention to scale particularly important as governments, development agencies and financial institutions have come to promote community participation and community-based models of water management and service provision. Part of the “rescaling” trend within water governance has entailed attempts to devolve natural resource management responsibilities and decision-making authority to local communities (Agrawal and Gupta 2005; Agrawal and Ribot 1999; Narayan 1999; Ribot and Larson 2005), the creation of new resource management organizations, and increased civil society participation in resource governance (Norman, Bakker, and Cook 2012, 52). Indeed, an “increasing awareness” (Mwangi and Wardell 2012, 80) of the need to look across environmental and political scales in assessing and designing resource governance arrangements has contributed to a growing body of scholarship focusing on “multi-level governance” (Pahl-Wostl 2009; Termeer, Dewulf, and van Lieshout 2010), “polycentricity” (Nagendra and Ostrom 2012; Ostrom 2010b), state-society relations (Singh 2002; Pomeroy and Berkes 1997; Wilson et al. 2006), and CPRs in the context of globalization (Rudel 2011).

In rural areas across the global South, millions of local, non-state groups participate in resource management and provision of “public goods,” like water. Yet, the vast majority of these local regimes operate “below the radar” of formal decentralization initiatives or state policies, oftentimes compensating for inadequate state reach or capacity to manage or distribute resources necessary for livelihoods. Romano’s work on water governance in Nicaragua frames water users’ associations as having an “organic empowerment” as resource managers to reflect that the water management and provision responsibilities that have fallen to some 5,000 rural

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9 Pretty and Ward (2001) estimate that between 408,000 and 478,000 new groups for common property management emerged during the 1990s, citing cases from just 17 different countries in both the global North and South.
communities have not been formally granted from above, but rather assumed in the wake of the construction of rural water infrastructure funded by international development agencies. Like many of their counterparts globally, the Potable Water and Sanitation Committees have had only an indirect relation to formal government policies historically, which have tended to be both incomplete and urban-centered since the late 1970s (Romano 2012b). These findings confirm those of CPR scholars that these kinds of regimes oftentimes function without much external support. Nevertheless, the ways in which “local” associations articulate at scales beyond and above the community level (see below) speak to the importance of viewing CPRs through a broader frame of analysis.

A growing scholarship focused on the problem of “scalar mismatches” sheds light on the problems that can arise from policies that overlook the inherent multi-scalarity of water governance (see, for example, Termeer et al. 2010; Norman et al. 2012; Lovell et al. 2002). Because problems like climate change, pollution, and droughts “cut across traditional jurisdictions and scopes of organizations” (Termeer et al. 2010, 29), they defy legal, political and technical interventions that are limited to a singular geographic or territorially-demarcated scale. Norman et al. (2012) point to similar issues of scalar mismatching in noting “socially constructed political demarcations that aim to fix water to a territorial scale for the purposes of management” (55). Water, of course, cannot be fixed to such scales. Moreover, natural resources are co-constitutive. The concept of “waterscapes” attempts to address the overlapping of different resources, like water and land, as well as the important socio-natural dimensions of water resources. That is, “water’s materiality and its social relations constitute and express each other” (Budds and Hinojosa-Valencia 2012: 120; see also Boelens 2008; Sosa and Zwarteveen 2012; Linton 2010; Swyngedouw 2004).

Analyses of urban-based water management may similarly overlook important ecological and political linkages/overlap with rural water management. Broadening the geographic and/or territorial frame of analysis may shed light on the ways in which certain actors and contexts (e.g. community-based resource management regimes) are embedded within larger environmental, social, and political contexts that significantly affect their practices, effectiveness, and viability over time. Even when policies and institutions exist to regulate and manage water resources, they may be undermined by water’s biophysical properties and the potentially conflicting and overlapping legal jurisdictions and property rights applying to water from a given source. Certainly, foregrounding scalar and disciplinary biases/approaches allows us to be more attentive to what is left outside the frame of analysis in considering issues of equity and inequity in water governance.

**The Importance of Ecological and Biophysical Scale**

Importantly, studies emphasizing institutions and formal, “official,” or legal political actors have a tendency to be less attentive to ecological and biophysical scale. However, the inherently multi-scalar nature of water itself necessitates research approaches and governance structures that mirror the complexity of this resource in practice. The biophysical characteristics of water itself greatly inform the extraction, use, distribution and regulation of this resource. The budding scholarship on “water grabbing” highlights the intersection of ecological and political dimensions of the “accumulation by dispossession” (Harvey 2003) of water resources (see Water Alternatives special issue June 2012, ed. Mehta et al 2012.). Taken as a whole, the literature on resource grabbing reveals serious limitations to how governments and private actors regulate and

Romano et al., “Equitable Water Governance” (16)
protect natural resources, including water. Examinations of land grabbing, for example, highlight the absence of effective water governance mechanisms in practice—as well as the importance of attention to ecological scale. As Sociologists Mehta and her coauthors (2012) argue in regard to water grabbing,

[The] fluid properties of water interact with the ‘slippery’ nature of the [water] grabbing process: unequal power relations; fuzziness between legality and illegality and formal and informal rights; unclear administrative boundaries and jurisdictions, and fraught with negotiation processes. (194, emphasis added)

Quite clearly, neither water nor social activities conform to the spatial and temporal boundaries established by academic practices or formal legislation, including established property rights. Ultimately, the nature of water and the multiple scales implicated in its use, management, distribution and conservation necessitate a research approach that aims to capture these dynamics and processes across temporal, geographic, social and political scales (Bakker 2010; Perreault 2008; Zwarteveen 1997; Romano 2012b). Spronk and Webber’s comparison of the water and gas “wars” in Bolivia reveals important differences in how natural resources themselves influence the scale and scope of collective action in cases of resistance to privatization. While the authors draw the conclusion that water resources “do not have the same economic importance in the contemporary capitalist system” as natural gas, this claim might be complicated by greater attention to water’s necessary role in the extraction and development of gas, oil, and other “structurally important” (2007:33) resources.

The scholarship on water grabbing brings to the foreground the ways that water resources intersect and interact with other natural resources. Yet, this is not a new observation, of course. As Guillet argued in 1992, “Without water, land is virtually useless…For the land rich, water makes material the otherwise unrealizable returns on investment and land” (147). Freshwater resources co-constitute multiple resources like arable land, forests, and fisheries, as well as intersect with productive processes engaging multiple resources. Acknowledging these overlappings and intersections, Mehta et al. (2012) assert that “water grabbing can be seen in relation to a much wider range of activity that spans the food, water, energy, climate and mineral domains” (194).

**Time-Scale and Temporal Analysis**

As Termeer et al. argue, “due to long-term challenges in fields like climate change or food security, the temporal scale has been growing in importance too” (2010, 30) within water-related scholarship. The availability of water for human activities may be subject to daily, weekly, seasonal, annual and generational patterns. Non-human processes of geology, climate and landform contribute to these patterns. These processes combine with the accumulated artifacts, boundaries and changes of historical social action to influence complex patterns of water availability. At most places on the globe, water availability is a hybrid of human and non-human.

In the case of Kibera, an informal settlement in Nairobi, Kenya (Crow and Odaba 2010), household water availability reflects:

1. Seasonal rainfall, moderated by limited reservoir storage,
2. Seasonal demands for the Nairobi agricultural show,
3. The priorities of influential users (military base, former president) on the same segment of the network, and more generally the ‘balancing’ of water supply by

Romano et al., “Equitable Water Governance” (17)
the utility between established segments of the city, with household connections, and informal settlements / slums.

4. Rationing (3 days per week) established by the water utility, moderated by household and trader storage,

5. Rumored collusion between traders and utility plumbers to create local shortages

6. Availability of cash to buy, and time to find, queue and transport water

Historical inequalities of class, nation and ethnicity establish fixed physical objects (pipe networks, roads, reservoirs, treatment facilities) that impose some of their boundaries, practices and power relations onto subsequent generations. The imagined worlds of infrastructure architects extrapolate contemporary assumptions into the worlds of subsequent generations. This phenomenon matters when, for example, water investments consume substantial social resources and when, as seems to happen, they occur in generational waves.

The wave of universal urban water and sanitation provision, what Melosi (2000) terms the sanitary city, was most influential in Europe and the US from the mid C19th to the early C20th. Cities of the colonial world got water pipes and sewers a little later. Since WWII, or perhaps earlier, the equalizing process of universal water service provision has been substantially curtailed. The world-changing, post WWII migrations of rural residents to urban areas, have not been accompanied by comparable attempts to provide urban services to all. Urban water facilities established by the 1930s remain and contribute to inequalities between city and shantytown.

The historical scales of water inequalities are established by generational investments in dams and other forms of storage, pipe networks, and treatment works. These artifacts of past social priorities often shape contemporary inequalities in ways that are frequently overlooked. Human-related climate change may introduce new uncertainties and scarcities into this hybrid, socio-natural waterscape.

Spatial and time scales intersect in important ways: large-scale water management and development schemes (e.g. irrigation, flood control, urban treatment and distribution networks) unfold over decades yet generate inequities in local user communities on a daily, weekly and seasonal basis in smaller communities. For example, “top-down” interventions, such as those associated with Integrated Water Resources Management (IWRM), have a tendency to overlook negative impacts on certain groups of water users. While the IWRM approach has begun to rectify the omission of geographic, geologic and hydrological conditions in the formulation of water policies and distribution infrastructures, its focus on the hydrologic watershed tends to separate the study of rural conditions from those of urban slums and give attention to large scale uses, such as irrigation, and interventions, like flood control, to the detriment of domestic uses of water. Indeed, we must consider how our own scalar emphases and biases as scholars mirror the scalar mismatches characterizing water governance in practice.

**Struggles and Conflict over Water**

What dimensions of equity and inequity are revealed when we focus on social and political struggles around water? Arguably, contestation in water governance provides an important window of insight into actual and perceived inequities in water governance. As a resource fundamental to productive processes and the livelihoods of diverse urban and rural stakeholders, water use and distribution is a highly contested and dynamic policy and political terrain. Indeed, policies and decision-making at different political scales, and between different political authorities, often intersect and come into conflict with one another.

Romano et al., “Equitable Water Governance” (18)
Mollinga argues that a focus on contestation, in particular, “seems warranted” given that “societal issues around water management are proliferating” (2008, 10). Much scholarship addressing water conflicts in Latin America confirms this opinion. Scholars in Geography and Political Science have honed in on struggles related to water control (i.e. use, access, and distribution) and decision-making around water resources as a lens for examining procedural equity and more encompassing political struggles (see, for example, Perreault 2006, 2008; Romano 2012a; Spronk and Webber 2007; Baer 2008; Romano 2012a). In some basic respects, the collective action of “local” actors at scales beyond the community level speaks to the inherently complex, multi-scalar politics of equity within water governance. For example, external “threats” to equity at the local level (access, quality/quantity, decision-making authority) oftentimes produce collective action at higher political and more encompassing geographic scales (see Boelens 2008; Boelens et al. 2010; Romano 2012b). These dynamics are thus both vertical and horizontal in nature. Horizontal dynamics are evident, for example, in the mobilization of both rural and urban water users in Bolivia during the 2000 “Water Wars”—cross-sectoral mobilization that also speaks to the intersection of rural and urban water governance in practice (see, for example, Assies 2003; Finnegan 2002; Perreault 2006).

Multi-Scalar Analysis of Contestation

Responses to inequitable water access and/or decision-making powers include attempting collaborative forms of co-governance with private or state actors, “scaling up” through multi-actor stakeholder associations, and harnessing social movements to intervene in formal (i.e. governmental) decision-making realms. Not surprisingly, efforts to confront, change, challenge inequities or injustices respond to, require, as well as produce multi-scalar politics (linkages, networks, relationships, movements, etc.). As several authors argue:

Increasingly, struggles to create and defend alternative water rights repertoires and to embed them within water territories are not limited to the local scale…control-localizing strategies implicate wider political objectives related to social transformation and reform of laws, discourses, governance frameworks and class, gender and ethnic structures. Local user groups engage in scalar politics and scalar alliances to build territorial alliances and networks that link diverse peoples, identities and places. (Boelens, Getches, and Guevara-Gil 2010, 18, emphasis added).

The collective action of water users and managers “beyond” the community level speaks to the inherently complex, multi-scalar (actors, institutions, processes) nature of these issues of equity. At the same time as they respond to external forces and dynamics, efforts to confront, change, challenge inequities or injustices produce multi-scalar politics (linkages, networks, relationships, movements, etc.). These collective efforts and interventions the span actors and institutions at different scales must be taken into account as influencing water equity in practice.

Importantly, normative biases, epistemological approaches, and disciplinary agendas all influence scholarly examinations of water conflicts. For example, as Zwartteveen et al. (2005) assert, “authors who are more skeptical about the regulatory powers of the state and who question its willingness to bring about or protect water justice and equity are more likely to be interested in other [i.e. nonstate] forms of power and in other sources of law and legitimacy”(260). These kinds of concerns are reflected in work of political ecologists who “draw attention to the multiple sites and scales through which the governance of particular resources or environments are contested” (Perreault 2006, 152). Boelens, for instance, draws attention, how local actors seek to protect local prerogatives, related not only to “the material
control of water use systems [but also] over the right to culturally define, politically organise and discursively shape their existence” (2008:50).

There is a more general assertion of the connection between social power and the control of water in the work particularly of Swyngedouw, who writes that water should be seen as ‘a vehicle for exploitation and generation of social power’ one that will continuously ‘generate, consolidate, [and] reaffirm mechanisms of marginalization, exclusion and domination’ (Swyngedouw 2004: 145). Reisner (1993), writing about water in California, makes a similar point succinctly, ‘water flows uphill, towards money.’ The accumulation of capital in agriculture provides one example of such a process. Rich landowners, across the globe, with access to water can invest in irrigation, increase the value of their land tenfold, accumulate, buy more land, and in so doing contribute to the dispossession of marginal farmers (Reisner 1993; Bernstein 1982). Comparable processes connecting water, land and the accumulation of wealth and influence, operate in urban areas, too. A range of thinkers across disciplines have called for increased research into how power plays into water governance and equity, in the hope that it will lead to improved project outcomes (e.g. Agrawal 2003, Mollinga 2008, Smith & Hanson 2003, Cleaver et al. 2005, Houdret 2012).

While concurring that the confluence of water and power is a fertile area for research, we suggest that it is, with current research, difficult to translate these ideas into pragmatic propositions for increased equity. It is possible that such rhetoric leads more easily into calls for the overthrow of capitalism than into more limited, but nonetheless substantial, demands for universal access to adequate water and sanitation.

Several useful typologies and frameworks for understanding conflict and contestation in water governance also exist. Mollinga (2008) proposes a “political sociology of water resources management” to describe an “emerging” approach that brings to the forefront the social embeddedness of water management and the extent to which this is a contested (i.e. political) realm of policy and practice. He presents a typology of water politics that captures dynamics and power struggles at different spatial scales, starting with the “everyday politics of water resources management” which captures “situated water use and management” in the sense of locally-grounded conflicts—whether centered upon large projects like dams or small-scale irrigation systems. These everyday politics, constituted by competition among different water users and uses, contrast with the politics of “water policy in the context of sovereign states.” This domain directs attention to struggles taking place in the realm of policy and national states, and encompasses the ways in which international development agencies intervene and play a role in this arena of decision-making and contestation. “Inter-state hydropolitics” refers specifically to conflicts between national states. Lastly, “global politics of water” refers to the “invigorated international level of water discourse, policy and tentative regulation” (13) involving institutions and organizations such as the World Bank (WB) and the Global Water Partnership (GWP) and international “agreements” such as the Dublin Principles which came out of the 1992 World Summit in Rio de Janeiro (see http://www.irc.nl/page/10433). Water politics and processes transcend these domains, of course, hence the importance of looking for “linkages” (Mollinga 2008:13) across and among them.

Rutgerd Boelen’s “Echelons of Rights Analysis” also calls direct attention to scalar politics, albeit through highlighting different dimensions of water struggles (2008; see also Zwarteveen et al. 2005), versus the more tangible socio-political and legal-jurisdictional realms.
where these play out, as Mollinga’s conceptual framework emphasizes. The struggle for “water rights and control” may variously manifest as a struggle to 1) obtain access to physical resources; 2) shape rules and norms, including water rights and laws that inform water use and distribution; 3) participate in formal decision-making, governmental and nongovernmental; and finally, 4) influence “discourses used to articulate water problems and solutions” (Zwarteveen et al. 2005:258). Boelens and Zwarteveen et al. name the fourth echelon struggles over “regimes of representation,” alluding to the “important linkages between the way in which problems and solutions are defined and conceptualized, and the political agendas they promoted” (Zwarteveen et al. 2005:259). Part of the usefulness of these frameworks lies in their interdisciplinarity and ability to capture and help explain different dimensions of equity and inequity. Mollinga’s typology is explicitly multi-disciplinary, bridging political and sociological approaches in an effort to better assess in empirical and theoretical terms the actually-existing landscape of water governance (and conflict).

Towards a More Integrated & Comprehensive Understanding of Equity and Inequity within Water Governance

Undoubtedly, a dynamic combination of demographic, economic and climatic forces is challenging how the world’s people live, work, and play, and how water is valued, understood and distributed. Water is crucial to numerous aspects of individual and collective life, yet inequities within water governance continue to be profound. The complexity of water governance in practice and as a policy realm suggest the need to develop a nuanced understanding of water-related inequity—including its ecological, social, cultural, political dimensions and determinants. Scholars of water governance have characterized, measured and explained equity and inequity in diverse ways. While water quality and quantities are perhaps the most oft-referenced dimensions of equity and inequity within water governance, this review demonstrates attention to many other forms of inequity.

Some of the key findings of this paper include the following:

- Scholars have granted attention to different scales in their examinations of water politics; they similarly have captured diverse manifestations of inequity in their studies. Nevertheless, examining inequity along one dimension (e.g. quality) may come at the expense of a thorough examination of another (e.g. procedural).
- Scholarship across disciplines shows that dynamics, relationships, processes at one socio/political/spatial scales affect inequity at other scales.
- An additional finding that emerges from this review of the literature is that much water-focused scholarship integrates attention to multiple scales, but does not explicitly define or address inequity.

One issue that is particularly challenging is the fact that the wide range of insights available from the social sciences is often overlooked on the ground since policy makers tend to only consider economic data as valid social data. This has been shown to be the case in related environmental issues like the management of marine protected areas (see Blount and Pitchon 2007) and should be considered as a possibility in situations relating to water equity. Another important lesson that emerges from the environmental anthropology literature is having explicit conversations about what kinds of data are more likely to influence policy and appeal to decisions makers since certain kinds of qualitative data may not be feasible to present in certain

Romano et al., “Equitable Water Governance” (21)
forums (Charnely and Durham 2010). The reality is that multidisciplinary research programs and products, although appealing to academics, may not appeal to local populations, policy makers and activists who may perceive them as difficult to operationalize in the field.

**Possible future directions**

To reach beyond the spatial and temporal constraints of current research, collaborative insights from across social science and natural science disciplines are required. Specific attention must be paid to how best to document and explain inequities in water access, based on an integrated examination of current water management practices and their distributive impacts in ways that foster inter-case study comparability; transcend disciplinary norms of time, space and lines of inquiry; and explore governance structures at both the grassroots and broader geographic and higher political scales. This approach also requires bridging between approaches to the study of water governance (e.g., common property theory, political ecology, and ethnography) and the practice of water governance (e.g., IWRM, Multiple Use Systems, and Water Justice). This focus on praxis of water governance reflects the complexity of this common pool resource (e.g., in its varied forms, uses, and characteristics) and the criticality of its availability as a basic human right.

Questions for future research are myriad, and include the following:

- Can initiatives pushing for equity in water support new capabilities? Can water supply in low-income urban areas support new capabilities – better domestic work, more remunerative livelihoods, improved health?
- How do reductions in time collecting water interact with access to water for business and safer water for health?
- Could water rights be extended to include water for tiny businesses and would it help?
- What could be accomplished through synthesizing the models of hydrologists, economists, daily life experiences, politics, philosophy and history?
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