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Knowing Equity When We See It: Water Equity in Contemporary Global Contexts

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Abstract and Keywords

This chapter argues for a greater commitment to water equity and a transformation of water governance. Marrying contradictory principles flawed the global water governance paradigm that emerged in the 1990s. Efficiency and equity are often incompatible, and unequal power relations are embedded in many longstanding water institutions and concepts. The chapter suggests that the epistemology of water and the vocabulary and fundamental concepts used to understand water, including its socio-nature and close relation with politics, must be transformed. It introduces five “directional principles” to guide thinking about a transformational governance. It also reviews these principles in light of four real-world cases. Decades of water scholarship provide a critical lens to search for equity, but recognizing equity when it occurs in specific contexts, such as the Colorado River Delta or the city of Detroit, where new networks have emerged to challenge existing rules and power relations, is also vital.

Keywords: socio-nature, transformational governance, networks, global water governance, water equity

Introduction

Water is the quintessential equity issue because it is absolutely necessary to sustain life, livelihoods, and environmental quality. The provision of secure, safe, ample, and affordable water and sanitation are fundamental functions, and performing these tasks fairly is a hallmark of just and democratic governance. Equitable solutions to water problems build public support and avoid debilitating conflicts that erode capacity for collective action (Gerlak et al. 2011; Zeitoun and Mirumachi 2008; Wolf 2007; Weinthal

2002). However, despite decades of worldwide efforts at local, regional, national, and international scales, equity-related water problems persist and in many cases worsen. Thus poorly maintained water systems worldwide deliver less secure water supplies of uncertain quality to some economically disadvantaged city dwellers. Rural areas lose livelihoods and lifestyle, as they become targets of water transfers to urban areas. The water needs of indigenous peoples are slighted in favor of mainstream, nonindigenous cultures. These and other problems are amplified by climate change (Intergovernmental Panel on Climate Change 2014). By 2010, the water-related Millennium Development Goal (no. 7) for improving access to water supply by 2015 had been met, yet the sanitation goal lagged far behind. Worldwide, 783 million people lacked access to a safe and secure water source and 2.5 billion people lacked adequate sanitation (World Health Organization and UNICEF 2012, 3). Globally, water appears to be in a crisis, but it is a crisis primarily of governance failure, such as inequity, not of natural scarcity (Bakker 2010; Conca 2006). A transformation of governance is needed, and a greater commitment to water equity is at the heart of the required change. Yet a call for greater equity creates a conundrum—what are the principles of water equity? That is, how do we know water equity when we see it?

There is widespread agreement that water equity must be prioritized in contemporary water governance and that equity has been shortchanged (Maas and Anderson 1978; Roa-Garcia 2014; Perreault 2014). To be seen as legitimate, the hegemonic neoliberal views of water must be counterpoised by elevating equity to a higher level rather than subsuming it as a value of lower priority. This chapter argues that water equity is not a set of universally prescribed principles but rather is embodied in governance processes and results that are viewed as legitimate, representative, accountable, and just. Like democracy, water equity is aspirational—it is about constructing a kind of process in order to achieve a better outcome. Water equity is also contextual—it is achieved in particular places and contexts and is broadly participatory and inclusive. And water equity is relational—it turns on the relationships among different governance actors and those of humans with the environment (Lemos and Morehouse 2005; Pelling et al. 2008). Water equity can be achieved in governance processes designed to embody multiple meanings, values, and knowledges of water (Blatter and Ingram 2001; Ingram and Lejano 2009) and to involve a diverse “community” of human, nonhuman, and biophysical actors (Schmidt 2012; Strang this volume). Efficiency not leavened by equity ignores the needs of the many to serve the few.

In this chapter, we develop this argument in the following way. The first section provides a brief overview of the current challenges of global water supply and provision and details the failures and shortcomings of the current global water governance paradigm. The second section presents the principles that frame the concept of water equity, and

the third analyzes how the rich concept of equity has been eclipsed by discourses of security and scarcity, the legacy of past inequitable policies, and other emerging contemporary concerns. The fourth section presents case studies that illustrate the dimensions of equity and inequity and the promise of an alternative paradigm despite challenging conditions, and the final section presents conclusions.

Overview of the Dominant Governance Paradigm

Water equity tends to be shortchanged due to a dominant paradigm that treats water as an economic good and portrays that economic view of the resource as entirely compatible with integrated water resources management (IWRM), markets, decentralization, public participation, privatization, and depoliticization. This paradigm emerged in the early 1990s with the United Nations (UN) Earth Summit in Rio de Janeiro (1992), which promulgated the principles of sustainable development (Conca 2006). The formulation of the Dublin Principles on water that same year was also pivotal, by advocating that water should be treated as an economic good and championing the principles that became associated with sustainability, including decentralization and local participation (Gleick et al. 2002; Conca 2006). European countries such as England and Spain adopted marketization reforms in their water sectors during this period (Bakker 2005, 2002). The World Bank's 1993 water resources policy implemented the new principles broadly through its lending programs across the Global South. Preceded by Chile's early reforms (Bauer 2004), in the last twenty-five years Mexico, Peru, Bolivia, and South Africa have all adopted neoliberal water legislation and/or policy reforms (Wilder 2010; Boelens and Zwarteveen 2005; Bustamante, Crespo, and Walnycki 2012; Perreault 2005; Goldman 2007). The paradigm called for marketization, privatization, decentralization, and local participation in water governance (Groenfeldt 2013). In addition, IWRM became a central feature of policy prescriptions for water management and acquired "normative force" within the global water governance paradigm (Conca 2006, 125; Vandever 1997). IWRM promotes a holistic, river-basin approach to water governance that recognizes the social, economic, and ecological uses of water; emphasizes cross-sectoral planning (e.g., agricultural, urban, ecosystemic); and promotes the coordination of governance at multiple scales (Conca 2006).

Yet the governance paradigm has not yielded the desired results such as substantive local control in water policy, the removal of politics from decision-making around water, or improved use and conservation of water. Overall it has failed to deliver on promises to be more equitable as well. Marrying contradictory principles perhaps flawed its essential architecture; treating water as an economic good is fundamentally inconsistent with the other principles of sustainability such as decentralization, participation, and local

stewardship. Attempts at decentralization foundered in many contexts on the shoals of elite capture of “participatory” practices or lack of financial resources for decentralized management agencies (e.g., Ribot and Larson 2013), and privatization schemes led to such disastrous outcomes and disenfranchisement of marginalized populations in Latin America that they triggered a widespread antiprivatization movement (e.g., Bustamante et al. 2012; Loftus and McDonald 2001; Wilder and Romero Lankao 2006). Neoliberal laws and institutions intended to promote efficient use of water resources have not improved water services in cities or extended them to marginalized areas (e.g., Bakker 2010) and have caused disproportionate negative effects on small-scale farmers that dispossessed them of their water supply (Bauer 2004; Wilder and Whiteford 2006; Swyngedouw 2005). IWRM has been explicitly linked to equity by the Global Water Partnership, which stated that IWRM “maximize[es] the ... economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (Conca 2006, 125). Yet recent scholarship illustrates IWRM’s mostly unsatisfactory results (Huitema and Meijerink 2014; Conca 2006; Ingram 2011). Conca (2006, 157–158) points out that the “malleable” language of IWRM provided a broad umbrella for rival water users to legitimate their claims to water, without any way to sort priorities, and that participation in water management by local water users is often “rhetorical” and tends to privilege expert, technocratic knowledge over other forms of knowledge. Huitema and Meijerink (2009) provide several international case studies of IWRM approaches that have fallen short or failed altogether due to lack of implementation and effective citizen engagement. Tanzania appeared on paper to adopt IWRM reforms but did so only to gain contributions from the World Bank and the International Monetary Fund and involved only local elites by promising rewards gained through privatization rather than engaging broad public participation (Goldin and Kibassa 2009). Reform faltered in Thailand because IWRM concepts were too ambitious and vague (Lubell et al. 2009).

Another shortcoming of the current governance paradigm is its inability to grapple meaningfully with the politics of water. Although politics is at the root of many water management decisions, the paradigm strives to be objective and technocratic and is not adept at accounting for political considerations (Ingram 2011). Water scholarship has frequently treated politics as an afterthought or, even worse, as an unmentionable best kept out of policy discussions. This began to change with the emergence of scholarship on the political ecology of water, gathering force beginning in the early 2000s.

Swyngedouw (2004), Bakker (2003), and others (Linton 2010; Castro 2006) advanced a concept of water as a “socio-nature” that represents both material flows of water and social flows of capital and power. Political ecology has become a compelling analytical approach to understanding how political power and neoliberal values become literally embodied in the water channels and networks that course across the landscape. By and large, the governance and political ecology bodies of scholarship speak past one another

in terms of equity, with the governance research seeking a prescriptive space (e.g., the terrain of best practices, model institutions, and processes) while the political ecology literature occupies a critical space (e.g., issues of inequality and lack of power). Bakker's work constitutes an influential exception. Her writing has been an important bridge between the policy-oriented governance literature and the politics-infused political ecology of water literature (Bakker 2003, 2010), yet in general the reigning governance paradigm and scholarship on water governance disregards the workings of politics in water decision-making, to its detriment.

Twenty-five years of mobilization around the global water management paradigm have not yielded solutions broadly viewed as more equitable nor led to fewer or more malleable conflicts. While equity is often stated as a priority even in the global water paradigm, markets, decentralization, privatization, and depoliticization take precedence in practice. The melding together of water as an economic good and water equity as if the two were compatible has led to the practice of the first and symbolic endorsement of the second. Subordinating a multifaceted understanding of the character of water with a narrowly economic view has skewed the management of water to serve those who have the ability and means to use water to produce the greatest economic returns (Roa-Garcia 2014). The international water agenda that blends concepts of efficiency, equity, and sustainability has been assumed to equally benefit all members of society when, in practice, these concepts are neither applied co-equally nor is their impact neutral toward different economic and social classes, geographical areas, or water values and uses.

The Andean region is a particularly appropriate illustration of the shortcomings of the global water management paradigm because it is a region where human appropriation of water has reached unsustainable levels. As a result, demands come from a wide range of needs and uses with different levels of political power, including indigenous peoples. A close examination of water laws in Colombia, Ecuador, and Peru indicate that while efficiency has been elevated as a key component of neoliberalism, equity and sustainability principles are either neglected or become subsidiary. Equity has remained ill-defined and vague and does not promote the interest of the disadvantaged. After examining the evidence, Maria Cecilia Roa-Garcia (2014) concludes that achieving a balance between equity, efficiency, and sustainability appears unrealistic, suggesting the need to remove efficiency as a principle of water allocation and affording it only subsidiary status.

Overall, the current water governance paradigm has failed to yield equitable solutions to water conflicts (Ingram 2011). Citing an unprecedented "intellectual ferment" in water scholarship today, Ingram (2011, 241) nevertheless concludes "everyday water governance falls further and further behind mounting problems." Water as an economic commodity fails to incorporate the many public-good aspects of the resource. The

necessary convergence of factors for successful collaborative approaches or watershed-based cooperation, such as is envisioned in IWRM, is rare, and although markets perform many tasks well, they do not make up for government in pursuing more equitable and fair distribution of water resources. Science-based approaches like adaptive water management, and participatory approaches like IWRM, have failed to realize their goals because they are divorced from the politics that shape real change. Ingram (2011) concludes that the problem with all of the water management concepts envisioned as panaceas is not what they propose but what they leave out. Ingram looks to inspiring leadership, environmental networks, and context-based approaches rather than universal prescriptions to engender a distinct new paradigm (Ingram 2011; Lejano, Ingram, and Ingram 2013). Others point to hybrid modes of governance (e.g., comanagement by public authorities and community groups) as a locus of needed innovation (Bakker 2010; Lemos and Agrawal 2006). A transformational governance approach that raises equity to an equal or greater level with efficiency is needed for making the required changes.

Framing the Aspirations of Equity

Like a compass, equity principles point in the direction in which water policies must move to serve fairness as contexts and circumstances change. Researchers have been at work documenting the historic and continuing meaning of and aspirations for equity in water for many decades. Like most scholarship, the hopes and expectations related to equity have evolved to reflect events and the dominant concerns of the times. It is a testimony to progress in value-based thinking that contemporary concerns are more robust and inclusive than they were forty-odd years ago. At the same time, not all the normative rules emerging from this work are compatible in specific circumstances, and it is difficult to set priorities and make trade-offs among principles in the abstract, absent real-world situations.

Writing in the 1970s, Arthur Maass and Raymond Anderson (1978) took on the issue of whether large-scale water development such as had been occurring in the postwar United States necessarily led to strong centralization of political power and what Wittfogel (1957) termed “oriental despotism.” On the basis of in-depth historical study of irrigation projects in Spain, California, Colorado, and Utah, Maass and Anderson found success in avoiding domination by expert bureaucracies and the yolk of federal rules accompanying grants of federal money. The genius for such success was in popular participation and local control of operating systems and institutions. Preserving the autonomy of communities from outside power was essential to serving social justice and avoiding unequal treatment of individuals. Evidence in every case suggested that people

were willing to forgo some economic development, the supposed goal of much water development, and efficiency in water use and delivery in order to preserve their local autonomy and serve fairness and equality.

The massive lawsuits over water allocation and the increasing use of water transfers to move water from rural areas to thirsty cities spawned an outpouring of research related to water equity in the 1980s. The role of social and cultural equity in water allocation to Hispanic and Native American communities attracted the attention of a number of legal and historical scholars (Dumars, O'Leary, and Utton 1984; Meyer 1984). Tracing the roots of water law and practice into Spanish water law, extending all the way back to 1265 and applied in Northern New Spain in North America, Meyer (1984, 159–159) found a consistent preference in favor of community concerns or the common good over individual rights and interests. Water rights in these specific historical settings were not fixed and quantifiable but instead were flexible as population changes occurred and needs changed. Spanish colonial judges had broad powers to consider fairness to litigants, other individuals, and the community and relied heavily on these equity concerns in their judgments (Meyer 1984, 159–164). Clearly, preserving access to water for the most vulnerable populations such as native peoples was part of an historic legacy of serving the common good, but it remained unclear whether moving water to its highest economic value served general welfare in a community. Brown and Ingram (1987) tackled this question and concluded that water had a community value that transcended the economic values associated with its use. These authors found that water had an emotional and symbolic value that was as or more important to communities than its economic value. Especially in arid lands, to have control of water is to have security and opportunity, and communities that lose the chance to participate in decision-making related to water are not perceived as having much of a future. Along with participation in community water decisions comes the obligation of caring for the resource, stewardship, and prevention of waste.

The collective accountability for water by the community is the center of one of the first attempts to articulate a set of principles on water and equity. Ingram, Scaff, and Silko (1986) set out five distributive rules—reciprocity, value pluralism, participation, promises, and responsibility—that they claim are the “necessary and sufficient” condition to recognize equity when one sees it. They regard these principles as collectively representing an equity perspective. The principles are potentially in tension and should be considered together and weighed against each other. The definition of each principle is as follows:

- 1. *Reciprocity*** means that all members of the community should share advantages and costs related to water.

2. *Value pluralism* means that community water users have rights to employ water to pursue whatever they consider legitimate, provided that the user does not degrade the resource or harm others.
3. *Participation* dictates that there be no infringement on the right of members of the community to participate in water decisions.
4. *Promises* signify the need to stand by previous decisions and that, when changes are imperative, consent is obtained from all the parties.
5. *Responsibility* to future generations means avoiding risks that would irreversibly diminish the quantity and quality of the resource for the community.

The impact of water resources development on nonhumans is neglected in early scholarship on water and equity. Environmental “ethics” replaces equity as the keyword in much of the writing after 1990, marked by the publication of an important book on water ethics by David L. Feldman (1990). While much of this ethics writing retains the concern with procedural and distributive fairness that is the heart of equity, it tends to focus more on physical consequences of water management including such things as species and habitat protection. Writing under this rubric, Adrian Armstrong (2009, 143–146) provides some “rules of thumb” about water equity and the environment that supplement social principles:

1. Water is a common good that should be made available to all human beings and to all landscape units and creatures if at all possible.
2. Where there is competition between users of water, natural proportionalities should be maintained so far as possible, allowing for positive action to preserve endangered species and habitats.
3. Uniqueness should be protected. Extinction is bad.
4. Wetlands are good, providing valuable processes, unique habitats and water-flow regulation.
5. Water bodies should be kept as close to natural conditions as possible, and protected from over-exploitation and contamination.
6. Prudent storage of water is generally a good thing.
7. We should plan to prevent extreme events—floods and droughts—from having bad impacts on both human and non-human systems.
8. Rivers and river systems should be left to function as closely as possible to their original state, so maintaining material flux through the hydrosystem.
9. Social justice should attempt to remedy the disadvantage of groups and ecosystems due to poor water management.
10. Water use decisions should include all human participants, and in public decisions should include additional representation for those who speak for the natural world.

However carefully fashioned, abstract rules such as these can come alive only as they are applied in concrete situations that may or may not encourage ethical reasoning. Applying rules depends on complex political processes in which losses and risks must be shared. Different parties rarely wield equal amounts of political power, and patterns of participation tend to reflect power asymmetries (Molle 2008). Further, the rules discussed thus far fail to consider the importance of a socially supportive context for individual moral reasoning and collective deliberation (Feldman 1990, 23).

The central contribution that Feldman (1990) made to the framing of equity was to recognize how existing institutions and perspectives shape our capacity for moral reasoning and fair collective decision-making. Life in a highly fragmented, industrialized society that reduces water to its commodity value, reifies individual self-interest, and elevates narrow economic prosperity as a measure of social welfare results in alienation and estrangement from nature and society, and the breakdown of civility and social bonds. Feldman (1990, 23) writes, “extreme egoism is unnatural and found only in individuals whose cognitive development is stunted ... a commitment to the welfare of society requires a sense of authenticity acquired through participation in the affairs of society.” It is through creating and nurturing the bonds of fellowship based on a sense of being rooted in a physical place and a temporal society that equity can be served. For Feldman, commitment to regional social contracts is the preferable means to provide a supportive context for equitable social choices.

Focusing on the ways commonly held ideas and perspectives bias, undermine, and sometimes foster a supportive social context in which equitable decisions might be made is a hallmark of a critical turn in water and equity research. As Molle (2008) observes, influential concepts in decision-making are never neutral or merely scientific. Rather, they take on a life of their own, framing options and empowering some but not other social groups. For instance, the editors and authors of a 2006 collection titled *Water Place and Equity* (Whiteley, Ingram, and Perry 2008) identify the efficiency framework that dominates much contemporary thinking about good water policy as a serious impediment to equitable decision-making. Once efficiency in water management is elevated to a central criterion of evaluation, it tends to swamp and drive out all other considerations. While equity and environment are supposed to be coequal concerns, as they are characterized in IWRM, decisions based on such values are rejected unless they can be justified in economic terms. Molle writes that IWRM has a built-in bias toward rational discourse and a denial of the spiritual, symbolic, and political aspects of water resources.

The neoliberal political thought behind many water policies not only serves a narrow set of values, but the philosophy is also found to be at odds with what is known about the psychological underpinnings of peoples’ water choices. Syme, Nancarrow, and

McCreddin (1999) found that the public in Australia applied a “fairness heuristic” for judging the justice of individual water allocation decisions and that it was stable for over a decade during which research was conducted. The heuristic provided a cognitively available summary judgment in which values rather than rational calculation is the driving force. Meisch (2014) calls for more value-reflexive governance in what he terms an age of the anthropocene, an epistemic-moral hybrid idea that has a normative core very different from utilitarianism.

Deep, historical understanding of how various institutions, rules, and practices have evolved over time can illuminate how they have been and can be employed to serve normative goals of fairness. James Wescoat (2013) considers a norm of water known as the “duty” of water. Seemingly technical, a water duty is defined as the amount of water reasonably required to irrigate a substantial crop with careful management and without waste on a given tract of land. Yet duty can be reconstructed in ethical terms to become an alternative to, and limit on, property rights to water. Wescoat elaborates a series of duties that could flow from considering the burdens and responsibilities attached to water at a time of increasing stress imposed by climate change:

- 1. *Duty of intensification.*** The duty to intensify water use (i.e., getting the most from every drop of water), subject to the constraints of environmental impacts and third-party impacts, can and is advancing beneficial water conservation.
- 2. *Duty of equitable access, allocation, and use.*** While such a formulation of duty does not square with earlier standards, it is supported by the public trust doctrine that the state has an inalienable trust responsibility to act on the behalf of its citizens.
- 3. *Duty to ensure safe water and sanitation.*** Rather than extending a human right to water, this duty may gain greater traction if framed as part of an expanding bundle of social duties attached to water.
- 4. *Duty to nonhuman beings.*** In Islamic water law, both humans and animals have a right to take water necessary for survival, and even in the West this can be recognized as a social duty.

As Wescoat’s work suggests, there are longstanding ideas, like water duties or the rule that water must be put to “beneficial use” (usually thought to promote a “use it or lose it” culture) that can be resurrected and redefined to better serve equity. After all, beneficial use could include conservation for future generations or leaving water in situ for fish and wildlife. Moreover, Wescoat’s emphasis on duty is consistent with other analysts’ claims that foreground the increasing obligations, risks, and burdens associated with water that need to be borne equitably. Feldman (2012) considers the fairness of conservation

innovations, increasing water rates, and risks associated with reclaimed wastewater and desalination.

Directional Principles Toward Water Equity

There is a good deal of overlap and commonalities as well as some differences among the lists of properties to which various writers about water and equity aspire. Drawing on central themes in the literature and observant of emerging problems and burdens, we suggest the following guides or “directional principles” that identify some core qualities of processes that support water equity in particular contexts. Water policy is moving in the right direction when

- 1.** water is treated as a common good that serves multiple values and when it is not reduced to mere property or an economic commodity that serves utilitarian purposes.
- 2.** when it is mindful of the needs of nonhumans, including plants, animals, places, and habitats, as well as of the inheritance of humans in future generations not yet born. It is on the right path when each new generation is socialized into making equity judgments and when spaces exist to reconsider or reimagine the practice of water equity over time (S. P. Mumme, personal communication, 2014).
- 3.** when decision-making processes are open to broad participation of all affected parties, including through such mechanisms as networks, voluntary associations, and public/private partnerships, and when procedural fairness is as important as making fairer water allocation and distribution choices.
- 4.** when there exists not only shared allocation of rights and benefits but also sharing of the risks and burdens associated with population growth, climate change, and emergent technologies.
- 5.** when imbalances in political and economic power are being redressed rather than simply reproduced in water policy.

In sum, while the list of directional principles we offer here, as well as those of other authors cited previously, are useful in identifying what to look for in the quest for equity, there are no absolutes that hold in all contexts or as circumstances and priorities change. While helpful in identifying equity when we see it, a simple listing of principles does not provide recipes or instructions that can be followed on the ground. What is possible in one context may be an unreasonable overreach in another, depending on surrounding uncertainty and climatic variability, physical and social attributes, and human resources including social capital, past experience, and existing institutions. Moreover, the lists provide abstract advice, not observations drawn from practice (although in the following

section we present illustrative cases that relate to these five principles). Knowing equity when we see it means engaging in a process of critical inquiry that delves into the value bias of existing institutions and processes, the openness and accessibility of political arenas, an appraisal of what and who is being served by water-related decisions, and what and who may be left out. We turn now to a focus on broad issues of political ecologies and the ways in which water is situated in specific historical and sociocultural contexts (see also Benson 2010; Crow, Lu, and Ocampo-Raeder 2014).

Realizing Equity Within Global Water Governance: A Critical Appraisal

The rich legacy of water scholarship related to water equity has been sidelined by the global water paradigm that emerged in the 1990s and persists today. Other ideas such as scarcity and security have come to be associated with water. The institutionalized legacy of water rights become a barrier to equity. Further, other concepts considered in this section, such as virtual water, community control, human rights to water, and the inclusion of indigenous knowledge to water decisions, have also affected equity in surprising ways.

Lyla Mehta (2011) argues that the concept of scarcity has been naturalized and universalized and evokes standard neoliberal solutions that shortcut a value-based discussion about the value of equity. Schmidt (2012) identifies water “scarcity” and “security” as framings that bias decision-making processes and that must be critically questioned. These terms are not even-handed descriptions of the state of global water but instead judgments of a community of experts that condition arguments about water allocation and protect professionalized, hegemonic narratives occupied with rational planning, water pricing, and privatization. Jeremy Schmidt (2012) states that in 1977 the UN Conference on Water took aim at what it characterized as the cavalier attitude that treated common water as somehow “free.” Scarcity meant that water must be husbanded, channeled into high-value uses, and guarded against the uncontrolled profligacy of the ordinary users who were not getting the “right” price signals about the value of water. To fulfill the global economic development agenda, objective scientific and technical expertise is engaged to guide water users to modern practices. Some users, such as large-scale commercial enterprises, agribusiness firms, private drinking water companies, and mining and hydropower conglomerates, are lauded as efficient. In contrast, people who use traditional irrigation systems for growing crops are branded as backward and must either disappear or correct their behavior (Zwarteveen and Boelens 2014).

Inherited and institutionalized biases result in short-changing equity and ethics in decision processes. Groenfeldt and Schmidt (2013) state that the first step in finding governance arrangements that recognize multiple values and support moral reasoning is to identify the inherited, operative mechanisms that tip the scales against fairness. For instance, “prior appropriation” as it operates in the western United States was initially designed to ensure orderly distribution practices and originally functioned as a simple, judicially enforced system to divide small streams for a region sustained by mining, livestock grazing, and eventually irrigation (Tarlock 2001). It fostered the quantification and use of water rights as property. Once placed in a context where water is treated as a private rather than a communal resource, and in which water is moved around through markets to the highest bidder, prior appropriation serves to undermine environmental values that would leave the water in situ, in stream, or in service to cultural and place-based values. Similarly, segregated policies of colonial rule and unjust land policies are historical legacies that cast a long shadow over contemporary attempts to make water access more equitable in places like Dar es Salaam, Tanzania, and Nairobi, Kenya (Dill and Crow 2014). It must be noted that rules and institutions adopted to better serve equity for disempowered groups in times past, such as the irrigation reform movement in the United States in the early 20th century, became enshrined as “rights” that later served as barriers to other equity reforms later on.

Concepts such as “virtual water” link scarcity, population growth, demand for food, and global trade, and while intended to promote conservation and discourage growing water-intensive crops in arid lands, it has been used to justify turning water into a commodity. Appropriate water pricing, and the movement of water through markets to the most economically productive uses, are portrayed in neoliberal terms to be the best means for advancing development and avoiding conflict. Water is bound up with the food that it grows and can be (virtually) transferred from one place to another through international trade between water-scarce regions that would be better off not growing crops and water-rich regions that can. Such a calculus does not take into account the multiple cultural, emotional, and symbolic attachments to water not associated with economic productivity. For many desert dwellers, to forego agriculture is to give up a way of life. Similarly, linkages among water scarcity, rising demand, and the imperatives of sovereignty have led to preoccupation with security. Fishhendler and Katz (2012) argue that the common use of security jargon in post 9/11 environmental policy language distorts the policy narrative by focusing on a scarcity and danger that are not actually present. Security framing advances the notion of water as property appropriately under control of individuals and states, not as a boundless resource embedded in nature.

A number of additional ideas in good currency among water professionals would seem to advance equity in the abstract. As they are applied in particular contexts, however, they

often do not promote fairness and justice as expected. Instead of focusing the debate on underlying values and inviting participation, these high-minded notions often serve to close off debate and support control by professionals. Since the 1970s, decentralized arenas for decision-making have been strongly favored, even by writers concerned about equity who are not enamored with utilitarian reasoning. However, the level at which decision-making authority is located has not proven to be a guarantee of equitable decisions. Supposedly, water compacts forged within the boundaries of river basins, which are seen as appropriate arenas within which to include upstream and downstream perspectives on water diversions as well as polluters and those who may suffer the consequences, better serve equity. Yet a recent study of river basin organizations' performance in various parts of the world finds little evidence to support the notion that they lead to better and fairer governance (Huitema and Meijerink 2014). Similarly, watersheds have emerged as a privileged scale, at least in part because public participation is supposedly easier to mobilize at lower levels. However, as Perreault (2014, 237) observes, "to the extent that particular scales are seen as 'natural' and immutable, ... they run the risk of obscuring the politics that lie behind the production of such scales." Further, definition of the relevant community in hydrologic terms contributes to the technification of water decision-making as well as to its depoliticization (Roa-Garcia 2014).

It seems reasonable to suppose that community control of water will lead to greater sensitivity toward culture and place (Brown and Ingram 1987; Blatter and Ingram 2001). At the community level it may be possible to include nonhumans and biophysical systems in the calculation of fairness. Yet, as Karen Bakker's work (2010, 2013) indicates, while the community may be good at expressing values and interests, it may not be able to marshal support and competence for governance. Power imbalances and the significant barriers to participation of women and low-income minorities, rooted in resources, skills, and culture, may render community control meaningless. This has often been the case, for example, in the United States, where Native Americans on reservations have been unable to prevent the pumping and diversion of their water resources (McCool 1994). Rather, the generation and maintenance of formal and informal networks and social capital are an essential part of effectively expressing public preferences. The creation of relationships that transcend geographic, economic, racial, and other social divisions may be decades in the making but can positively influence more equitable decisions (Laird Benner and Ingram 2010).

Human rights to water, another concept widely adopted in international forums and by a number of nations, would seem to advance equity claims of disadvantaged and underserved peoples (Meyer et al. this volume). At the same time, elevating human uses to a privileged position over environmental, symbolic, emotional, and other nonuse values

breaches the spirit of equity. Equity implies value pluralism and fair treatment of many diverse values, including the nonhuman and nonuse. Water must come from somewhere, and serving the human right to water in some rapidly growing urban areas where there are many poor and underserved residents may well deprive equally underserved rural agriculturalists of their livelihood as well as damage the environment. Further, what constitutes essential human water consumption is a matter of some debate; quotas tend to be determined by the same water agencies and experts that failed to serve the disadvantaged before human rights were granted. The human right to water, in those countries that have institutionalized it as a constitutional protection, may be significant as a moral articulation and as a basis for legal challenges, yet it is difficult to implement on the ground (Gerlak and Wilder 2012). And, as others have pointed out (Bakker 2008; Perreault 2014), rights in general tend to be individualized, atomized, universalistic, and state-centric. Insofar as rights commodify water and adhere to individuals rather than to communities, they undercut water as a common resource. At the same time, it may well be that the human right to water has enormous mobilizing potential and may help redress inequities between the haves and have-nots (Sultana and Loftus 2012).

The addition of experiential and indigenous knowledge to that of conventional Western science in water resource decision-making is another contemporary innovation that would seem to serve equity. Much of conventional science portrays knowledge as if it came from detached observers divorced from their role as biased humans whose judgments cannot be divorced from their values. While it certainly helps to formally recognize multiple ways of knowing, melding them together may entail unanticipated losses of information about places and their inhabitants. Knowledge is situated, and knowing where and how knowledge is produced is essential information for evaluating its credibility and trustworthiness (Zwarteveen and Boelens 2014). Conventional science struggles with the often-false dichotomy between humans and nature. Experiential and indigenous knowledge can transcend this divide. The narrative form is the vehicle for conveying most lay information and may serve better than scientific reasoning in portraying humans, animals, and plants as characters in stories without assigning to humans the role of omniscient outside observers. Normative and factual knowledge are not separated in narratives, and while conventional science is willing to accept the in-depth detailed knowledge that peoples who have long lived on the land have about their particular places, the values presented in narratives often fall by the wayside (Lejano et al. 2013).

Recognizing Equity

Beyond these abstract observations, how can water equity be recognized on the ground? Although any given case is full of complexities, we provide a few examples with reference to the five “directional principles” toward equity set forth earlier. The four cases presented here include two sets of contrasting cases, with each pair representing several of the principles we have identified as associated with water equity. The observations we make here are meant to be illustrative of the qualities of water equity rather than definitive statements about equity in these particular circumstances. The first two cases are quite recent and are based on journalistic accounts and personal communication; the second two cases have been the subject of scholarly studies where the evidence on water (in)equity is stronger.

In the first two cases dealing with water for people—in Detroit, Michigan (USA) and Colonia Tres de Mayo, Morelos (Mexico)—local communities have used different processes (social mobilization and lawsuits, respectively) to contest state policies that frame water as an economic good and manage water services primarily to serve efficiency principles, with differing outcomes. In the second pair of cases, dealing with water and the natural environment, binational networks have struggled to conserve water flows in natural riparian watersheds in two sites on the US-Mexico border, again with contrasting outcomes.

Water for People

Detroit Water Shutoffs

In March 1, 2014, 19,500 households (representing more than 100,000 people) in Detroit, Michigan, in the Great Lakes region of the United States, had their water shut off due to nonpayment (Mitchell 2014; Wahowiak 2014). People affected by the shutoff included senior citizens, children, and disabled people (Wahowiak 2014). Because Detroit’s population is 80 percent African American, and 40 percent of total residents earn less than the federal poverty level, low-income and minority residents were disproportionately affected by the water shutoffs. Since 2013, Detroit has been under emergency management due to municipal bankruptcy, and unemployment and housing foreclosures are systemic problems. In the water shutoff crisis, the Water and Sewerage Department (under the emergency manager) mandated shutoffs for any account with a \$150 balance or two months or more in arrears, due to \$90 million in “bad debt” (Mitchell 2014). The

city had a \$5.6 million contract with a private contractor to shut off the water (Mitchell 2014). The shutoffs were done with little public consultation and virtually no warning (“Editorial” 2014). Once the demonstrations made the issue a political crisis, the emergency manager transferred authority over Detroit’s water back to the elected mayor, and this change led to some improvement. In 2014, for example, residents received a seven-day warning handbill on their doorknobs to alert them of a pending shutoff (Mitchell 2014). When it first took over the problem from the emergency manager, the local government completely reversed course, instituting a thirty-day moratorium on shutoffs and extending the payment deadline by twenty days but more recently again reverted to shutoffs for nonpayment (Wahowiak 2014). A *Detroit Free Press* editorial called the shutoffs “terrible public policy” (“Editorial” 2014).

A coalition of local people and community groups known as the Detroit Water Brigade formed to protest the massive water shutoffs and claimed the action violated the UN’s principle that water is a human right. The Brigade organized emergency water deliveries around the city and helped develop public information and media appeals. UN experts pronounced the city’s actions “a violation of the human right to water and other human rights” (Wahowiak 2014, 1). On October 20, 2014, two UN human rights rapporteurs visited to investigate and stated that, to avoid violation of their most basic human rights, Detroit must restore access to water for residents who are unable to pay (“In Detroit” 2014).

The emergency manager and water utility couched the water shutoffs in economic terms to support their action, framing water as an economic good and not recognizing any other values of water. *The Nation’s Health* (Wahowiak 2014, 1) stated that the city manager made it clear at the time of the July 2013 bankruptcy that “Nothing was off the table when it came to balancing the city’s budget.” That included the almost 200-year-old water department, and putting it on a firm financial footing was a way to make it more attractive in the lead up to the utility’s privatization (Lukacs 2014).

The case of water shutoffs for the urban poor in Detroit illustrates actions moving away from equity. Water is framed by the water utility as a purely economic good (in violation of principle 1), without regard to multiple other values such as the health, sanitation, and well-being of low-income and minority communities. The process was not open to broad participation (principle 3) of the affected public; rather, there was little public consultation and no individual warning prior to the shutoffs. Finally, rather than redress existing political and economic power imbalances (principle 5), the implementation of the water shutoffs has deepened local power struggles to the extent that it is referred to as a “water crisis” or “water war.” The 2015 case of lead contamination in the water supply of Flint, Michigan, another low-income, majority African-American community, raises parallel equity issues.

Cuatro Mujeres: Morelos, Mexico

In contrast to the Detroit case, a case we call *Cuatro Mujeres* (Four Women) in Morelos, Mexico, outside of Cuernavaca, had a very different outcome that is broadly viewed as equitable. Four women from an irregular community (squatter settlement) called Colonia Tres de Mayo sued for water services to be extended to their town of 100 families by the water utility in their municipality, Xochitepec. For twelve years, the municipality rejected their demands while providing little justification for doing so. Yet wealthy surrounding developments with ample water service included the World Trade Center of Morelos and a waterpark on one side of the colony, and a golf course and luxury home subdivision, with pools, on another side. Situated near the Colotepec River, the colony could no longer use the river as a water source due to excessive contamination. In 2011 four women from Tres de Mayo sued the municipality and asked for water services to be extended to their colony. In September 2011, a federal judge returned a decision in their favor, citing international agreements that recognize a fundamental human right to water and finding that the water utility had failed to provide sufficient reason for rejecting the colony's request for services—in essence, a failure to consult sufficiently with the public. The utility was ordered to extend water services there, and, by late October 2011, 30 of the 100 families (i.e., those who could afford the hookup fee) had water hookups. Unfortunately, due to poor infrastructure, the taps provide water for only four hours a day (although this is not unusual for water systems in Mexico).

In 2012 Mexico adopted a constitutional guarantee of a human right to clean and safe water and environment, which served as an even stronger basis for advancing claims for better service. For the first time, in 2014, the Supreme Court of Justice of the Nation in Mexico issued its judgment in the Lidia Velazquez Reynoso case (Case No. 49/2014), determining that the constitutional and international obligations for the human right to water and establishing the United Nations' standard of 100 liters per person per day as the minimum right (Marcos 2015). The court also found that each person has a right to sanitation. Both decisions set significant precedents for the judicial system.

The *Cuatro Mujeres* case is moving in the direction of improving equity. It illustrates the value of viewing water as a common good rather than only as an economic good (principle 1). Procedural fairness (principle 3) was paramount in determining that the water utility had failed to follow the proper procedure of public consultation, thus yielding a positive decision for the plaintiffs. Finally, the decision redressed power imbalances (principle 5) that existed between the municipal water utility and four rural housewives.

In summary, the cases of Detroit's water shutoffs and *Cuatro Mujeres* illustrate opposite outcomes related to the same three directional principles. In the Detroit case, where these key principles were violated, the outcome is largely viewed as inequitable, and an investigation by UN human rights officials denounced the shutoffs as an abrogation of basic human rights; in the Morelos case, where the principles were followed, the outcome, while imperfect, is viewed as more equitable.

Water and Environment

Alamar Riverpark Plan

Two cases relevant to environmental equity involve binational environmental networks at the US–Mexico border. Like the previous cases, these illustrate different directions taken with respect to several of the equity principles we have identified.

People pass by it every day and even live on banks overlooking it, yet through the trash and overgrowth they do not even know it is there: it is the Alamar River, one of the last wild patches of river in Tijuana (Baja California, Mexico). Yet, beginning in 2001, a binational initiative was undertaken to envision a riverpark in the Alamar River, at that time, a 9-mile stretch of the last remaining free-flowing river in the area, host to a rich riparian area. The Alamar River constitutes about one-third of the Tijuana River Watershed and is a major tributary. On the upper banks of the Alamar are hundreds of low-income, irregular settlements, or *colonias*. Since Tijuana is well below international standards for urban green spaces per capita, communities and planning groups envisioned developing a riverpark along the Alamar, proposing sustainable and natural alternatives to control floods and safely move water through the area (Alamar Sustentable, n.d.). Proponents believed the riverpark and riparian areas would provide recreation areas, improve public health, and preserve ecological values to benefit people living along its banks and might stimulate investment interest. The broad-ranging study involved university students led by researchers and included visual plans, workshops, charettes, and surveys of local communities. The Alamar Riverpark Coalition produced an impressive and thorough vision plan, conducted an extensive public consultation process, and believed it had buy-in from key government agencies.

Yet, in 2011, members of the environmental coalition were unpleasantly surprised. They learned that, within weeks, two-thirds of the watershed would be concrete-lined by Mexico's National Water Commission (CONAGUA). In 2012 the Tijuana River Valley Recovery Team (2012) report stated that CONAGUA had nearly completed construction

of a concrete-lined channel on the Rio Alamar for an upstream distance of approximately 6 miles (10 km). It may be that attempts were made to communicate the reason for this decision to channelize the Alamar River after years of planning an alternative treatment. But in a May 2013 workshop (after the first 6-mile channelization was completed), members of the Alamar organizing group still expressed frustration and anger that the community mobilization efforts had been ignored.

CONAGUA officials defended the initial channelization project by claiming it would protect squatters from building in unsafe floodplains and provide more effective flood control than the natural channel (Good 2012). But CONAGUA did not justify its unilateral decision to ignore the Alamar Riverpark plan. Worse, CONAGUA announced imminent plans to concrete-line the remaining 4 kilometers (2.5 miles) of the channel. Community groups in Tijuana, with financial support of the Environmental Health Coalition, filed injunctions and pursued other means in 2012 to halt the concrete-lining of the final unlined portion of the Alamar River (Dibble 2012). The sustainable alternative won out in the end. CONAGUA'S plan to concrete-line the remaining channel was intact until the agency abruptly reversed course and, in 2015, agreed to form a technical committee to consider the case. On July 16, 2015 the governor of Baja California signed an accord agreeing that state and federal funds would be used to develop the sustainable wetlands alternative for the final unlined portion as the coalition had proposed (Martínez 2015).

The concrete-lining of two-thirds of the Alamar River channel in the binational Tijuana River watershed illustrates a violation of several of our directional principles. CONAGUA ignored the environmental value of the unlined natural riparian area (as envisioned in the restoration plan) and the need to resolve water challenges in light of environmental impacts (principle 2). The decision ignored the Alamar Riverpark plan, which represented years of binational, multiscale collaboration to manage the Tijuana River watershed in an environmentally sustainable way, in violation of our principle 3 calling for broad public participation in decision-making around water. The concrete-lining has a disproportionately negative impact on the hundreds of low-income *colonia* residents who live on the hills overlooking the Alamar River riparian channel, violating the principle (4) that risks and burdens should be equally shared. Finally, the decision violated principle 5, that political and economic power imbalances should be redressed in equitable decisions. The concrete-lining of two-thirds of the arroyo deepened and worsened the existing power imbalance between the low-income *colonia* residents and the Alamar Riverpark Coalition vis-à-vis the Mexican state agency. Ultimately, the Alamar Riverpark Coalition was successful in resisting the concrete-lining of the final portion, which may indicate an increased understanding in recent years of the value of urban ecosystem services or that unilateral government decisions in the face of opposition from civil society have become less politically feasible or desirable.

Minute 319 and Water for Environment

An example from the Colorado River Delta at the Mexico-US border serves to positively illustrate our framing of water equity. Minute 319, adopted in November 2012, is an addition to a treaty between the two countries. Although it is a temporary agreement that is still being implemented, it has already resulted in unprecedented water releases for the environment. Minute 319 elevated equity above efficiency, mitigated uneven relations of power, and was led by a network of state and nonstate actors and environmental organizations that influenced the state to adopt an alternative paradigm for water use.

Environmental decisions about transboundary water have often been made by the United States and Mexico on the basis of national self-interest and with little public input. However, beginning in the 1980s with the La Paz Agreement (1983), Mexico and the United States, whose transboundary waters are governed by the International Boundary and Water Commission, have increasingly cooperated on resolving transboundary water issues and in doing so have been influenced by networks of environmental organizations, indigenous tribal representatives, scientists, and water users in their consultation and decision-making processes (Mumme 2003; Maganda 2012; Varady et al. 2013).

The agreement by both sides to Minute 319 was both unexpected and unprecedented. For two decades, a coalition of government agencies, environmental organizations, Native American tribal representatives, local outdoor recreation organizations, and scientists from both sides of the border had been working to protect the Ciénega de Santa Clara wetlands in the Colorado River Delta (located entirely within Mexico, just south of the small city of Yuma, Arizona). The group received formal designation as a recognized stakeholders' organization (known as the Colorado River Joint Cooperative Process) in 2008. A binational research network not only became a boundary organization for the stakeholder coalition that spanned a number of institutions and interests, but individuals and groups within the network also provided significant scientific input at key nodes in the decision-making processes, including inventories of birds, wildlife, and vegetation; estimates of minimum ecological flows necessary to sustain the delta's wetlands; and monitoring of the impacts of a trial operation of the Yuma Desalting Plant on the Ciénega de Santa Clara (Gerlak, Zamora-Arroyo, and Kahler 2013; Flessa et al. 2013).

After an April 2010 earthquake affected the agricultural region of Mexicali in Baja California, the two countries agreed to allow Mexico temporary storage in US reservoirs (e.g., Lake Mead) and to vary the delivery schedule of water to Mexico (Minute 318). To deal with the continuing earthquake impacts in the valley, Minute 319 extended this arrangement for five years. Minute 319 allows Mexico to store some water in Lake Mead, the giant reservoir behind Hoover Dam; establishes new rules for sharing shortages in

times of drought; and commits the two nations to return some water flow to the delta as part of a five-year pilot project to sustain and restore the wetlands. The biodiverse, water-starved delta wetlands are a major stopover on the Pacific Migratory flyway and a winter home to over 350 bird species, several of which are endangered. The first pulse flow releases of Colorado River water to the delta took place on March 23, 2014, to cheering applause.

The achievement of Minute 319 is a significant example of elevating the equity principle (in this case, equity for the environment) above the level of efficiency. In a political environment where the scarcity and security discourses promulgate a sense of water crisis, the framers of Minute 319 chose to provide critical (albeit minimal) water flows to sustain the wetlands (principle 2). Minute 319 also mitigated the uneven power relationship between the two countries, providing Mexico greater autonomy and security over its water allocation (principle 5). Minute 319 involved the mobilization of environmental organizations, local groups, and university scientists and researchers, who worked effectively with government agencies and the International Boundary and Water Commission and led the process of developing an alternative way to envision water use in the contested southwest US and border region (principle 3). Local communities on both sides of the border (principle 4) will benefit from a healthy wetlands ecosystem—for example, by sustaining the economically important outdoor tourism sector. Minute 319 demonstrates new capacities for achieving equity in a complex social-ecological system of extreme scarcity and contested water resources.

The two binational cases illustrate different ends of the spectrum with respect to water equity. Although both cases have well-established binational environmental networks (principle 3), in the Alamar River case the network's participation in creating an alternative management paradigm for the watershed was ignored (for most of the watershed), while in the Colorado River delta, the network's alternative vision was enacted, at least for five years, in Minute 319. The burden and risk of the concrete-lined riparian channel is disproportionately borne by low-income *colonias* living near the Alamar River banks, while the benefits of healthy wetlands in the Colorado River delta are likely to accrue to local communities on both sides of the border (principle 4). Finally, the uneven power relationships in the Alamar Riverpark case were deepened as a result of the decision to concrete-line most of the natural channel, while the uneven power relations around transboundary water in the Colorado delta case were arguably redressed to some extent in the Minute 319 agreement (principle 5).

These cases illustrate how water equity and inequity may be recognized in real-world contexts and provide some ballast to ground the abstract concepts we found important in the literature. The role of emerging human rights discourses, decision-making

arrangements, and understandings of social-ecological relationships may help point the way toward transformation in the water governance paradigm.

Conclusion

The global water paradigm adopted in the 1990s is in need of a basic transformation. While the Earth Summits, Dublin Principles, and IWRM highlight various aspects of equity—including sustainability, participatory approaches, and the water needs of the disadvantaged—the paradigm’s vision of water as an economic good, the movement of water to its highest economic use, and governance of water delivery have in practice eclipsed fairness. After two decades of experience that shows prioritizing water as an economic commodity does not lead to fairness, it is clear that economic efficiency and equity are often incompatible and that fairness ought to come first. The cases of four women successfully mobilizing for water access in Mexico and Detroit’s failed policy to shut off water of low-income people due to nonpayment demonstrate contemporary instances where efficiency and equity values have clashed. Only when water governance is transformed so that equity is the primary goal will real progress be made in addressing mounting global water problems.

Water and life, including human life, are mutually constitutive. Water as a socio-natural resource must replace the notion of water as a physical or natural resource if equity is to be served. Water principles should include recognizing the socio-nature of water. Research over the past decade has documented extensively that political economies are integrated with the way water is conceived of and managed. Along with treating water as a common good, this is the second major challenge—transforming the epistemology of water and the vocabulary and fundamental concepts we use to understand water issues. Water is an undeniable social actor (Strang this volume)—both the “blue” water that flows through aquifer, rivers, lakes, and dams and the “green” water in soil moisture that flows back to the atmosphere (Falkenmark and Rockström 2006). In the anthropocene, the atmosphere is increasingly recognized as actively though unintentionally socially engineered, in ways that change patterns of precipitation and the livelihoods of all that depend on it. As the case studies of water in the lower Alamar/Tijuana River watershed and Colorado River delta illustrate, water supply for nature is bound up in physical structures and legal, institutional, and social processes. Scarcity and shortage are human constructs that are not mere descriptions but agendas that serve the interests of some over others. The governance transformation needed must treat water within its historic social, institutional, and environmental context. Otherwise, the processes that create water problems are perpetuated, not alleviated. As we have argued here, longstanding rules and institutions, including definitions of water “rights,” duties, decentralized

decision-making, river basin organizations, user-pay principles, and beneficial uses, must be reconsidered in terms of their service to equity rather than to the neoliberal agendas presently favored.

Water is fundamentally political. Power must explicitly be part of any consideration of water and equity, and its impacts cannot be escaped by the adoption of high-minded rules that are not implemented or commitments of water professionals unable to marshal political support. Water equity must redress power inequality and lack of voice and representation in water matters. The individualized, anthropocentric, atomized, state-privileging vision of water that currently dominates the global water paradigm is designed to perpetuate elite domination rather than engage democratic deliberation. Many participatory forums set up in the global water paradigm are only superficially democratic with sparse and unequal involvement, especially of women, rural and urban poor, and minorities, including indigenous groups.

While political mobilization is not enough for transformational change, it is undoubtedly a necessary ingredient. Grassroots mobilization as has occurred in many Latin American countries over privatization of water delivery has resulted in assertions of power but not sustained and effective governance. Nor have states consistently proven themselves capable of filling the breach. As our case studies in Detroit and the Colorado River delta illustrate, longstanding institutional mechanisms set up to serve the powerful can be challenged by bottom-up networks built around a shared vision of water as a common socio-natural resource. Building such networks may take decades and may involve efforts such as restoration that engage people not usually identified with political coalitions or interest groups. Such networks create skills and build resources as they make and sustain connections through practice. While they often involve scientists and government officials, they can and should also embrace a variety of identities and ways of knowing, depending as much on symbols and emotions as material interests. Importantly, such networks are not tied to some unified theory adopted and propagated by the professionalized international water community that has proven adept at generating new governance templates. Instead, networks respond to and involve people on the ground, who are redefining relations with each other and with water in new terms suited to their contexts.

As we have shown in this chapter, water and equity have been the focus of some water scholars for a very long time. While their critical voices have often been slighted, they have been present, and their messages are increasingly difficult to set aside as global inequality and environmental degradation worsen. While no one should look to the considerable literature reviewed in this chapter for a set of rules that can be universally applied, equity scholarship provides a lens and perspective that allows us to recognize equity when we see it.

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