

# The economic anthropology of water

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*Anthropological research on water and economy has a long and rich history, especially among archaeologists and political economy scholars. In this review article, we discuss contemporary anthropological scholarship on water and economy to identify still-active areas of long-standing theoretical interest as well as novel theoretical approaches. We present five important threads of scholarship on the economic anthropology of water: (1) commodification, exchange, and diverse economies; (2) the political ecology of water; (3) resilience and sustainability; (4) institutions; and (5) water and health. We explain how these theoretical approaches fit into broader trends in anthropological scholarship on water, explore how they advance the economic anthropology of water specifically, and identify ways that economic anthropologists can make new contributions to these literatures.*

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Anthropological research on water and economy has a long history, particularly in the Marxist tradition, originating from scholars like V. Gordon Childe (1946), Pedro Armillas (1949), Julian Steward (1949), Karl Wittfogel (1959), and Eric Wolf (1959). Important reflections on this work—including its theoretical impacts and analytic limitations—are presented elsewhere (Harris 1968; Hunt and Hunt 1976; Orlove and Caton 2010; Scarborough 2003). Here we review contemporary anthropological scholarship on water and economy, with a focus on identifying still-active areas of long-standing theoretical interest as well as newer theoretical approaches that are inspiring anthropologists to examine water and economy in innovative ways.

Our overall goals in this article are, first, to outline the field of the economic anthropology of water and, second, to show how economic anthropology contributes to understandings of human–water relations more broadly. To begin, we discuss those areas closest to the core of economic anthropological scholarship: research on water commodification; nonmarket water exchanges (including moral economies of water); and mixed, alternative, and/or diverse economies of water. We then turn our attention to the broader range of anthropological scholarship, where economic anthropological approaches make meaningful contributions to theory building around water. We conclude with a brief discussion of crosscutting areas of interest to economic anthropologists working on water and a consideration of their real-world applications.

This special issue of *Economic Anthropology* is born of the 2018 meeting of the Society for Economic Anthropology on “Water and Economy” at Arizona State University. The ten articles published in this special issue represent important threads of scholarship presented at this meeting, including (1) commodification, exchange, and diverse economies; (2) the political ecology of water; (3) resilience and sustainability; (4) institutions; and (5) water and health. We discuss each of these areas in turn, with a focus on reviewing recent contributions to the literature and identifying opportunities for future research.

## Commodification, exchange, and diverse economies

### Water and commodification

Commodity studies in anthropology examine the multiple, and often conflicting, ways that humans value material goods. As a resource that both resists and succumbs to commodity status, water has been a powerful lens to explore

the entanglements of different forms of human value (Johnston et al. 2011). Examinations of “holy waters” and the significance of water in religious and spiritual rituals, for example, exemplify inalienable meanings that people hold for water (Alley 2002; Drew 2012; Oestigaard 2017). Ethnographers also show the role that water plays in forming identities, solidifying social relationships, and marking cultural heritage (Kaplan 2016; Sikkink 1997; Strang 2002, 2006; Veeravalli 2013; Wagner 2013). In some cases, water even takes on forms of personhood itself (Harmsworth and Awatere 2013; Salmond 2014). These culturally specific and deeply embedded values show that water frequently disrupts processes of alienation and resists the logics of capitalism.

Nonetheless, water has a long history of privatization, commodification, and management via market mechanisms (Babidge and Bolados 2018; Bakker 2010; Ballesterio 2015; Derman and Ferguson 2003; du Bray et al. 2018; O’Connell et al. 2017; Ragusa and Crampton 2016; Schnegg and Kiaka 2019; Trawick 2002, 2003b). While many scholars have shown how the process of commodification extracts water from its rich and diverse inalienable meanings (Linton and Budds 2014; Orlove and Caton 2010; Strang 2004), others demonstrate that—even as a commodity—water is central to negotiating social and political relations. For example, in this issue, O’Leary (2019) investigates how residents of Delhi’s informal settlements consume water in overtly conspicuous ways to perform and elevate their class status. O’Leary argues that conspicuous water consumption operates not only at community levels but also nationally as elites use water infrastructure to display India’s “developed” status on the world stage.

Hoag’s (2019) contribution to this issue similarly discusses the conspicuous use of water by national elites. He argues that, through a large-scale dam project, officials in Lesotho are establishing a national economy of water export. Hoag explains that the process of commodifying water for export in Lesotho requires elites first to articulate a locally embedded value for water (a value that local populations do not recognize) from which it can be extracted, refashioned into a national symbol, exported, and sold. In this way, Hoag demonstrates that, ironically, alienable market value for water frequently relies on water’s inalienable and deeply embedded meanings (Kaplan 2007; Wilk 2006)—even if those inalienable meanings must be “invented” in the first place.

### Nonmarket exchange of water

Trading, sharing, gifting, and other forms of nonmarket exchange are well established in the anthropological literature as mechanisms for coping with resource insecurity (Wutich and Brewis 2014). While much anthropological research has focused on food exchanges, new ethnographic work is beginning to reveal how water exchanges differ from those of food and other resources (Wutich et al. 2018). Brewis et al.’s (2019) contribution to this issue builds on anthropological food sharing research to hypothesize the conditions under which people share water. Based on data from eight sub-Saharan African sites, they find that water sharing occurs most frequently under conditions of scarcity and with generalized—not balanced—expectations of reciprocity. Unlike food sharing, however, water sharing is conducted between neighbors more often than kin.

Given these findings, Brewis et al. (2019) argue for the need to understand the ecological, political, and sociocultural conditions of nonkin water exchanges. In Uganda, for example, Pearson, Mayer, and Bradley (2015) found that water sharing is heavily dependent on ethnic ties, which may force ethnic outsiders to rely on water purchases and out-migration. In Namibia, Schnegg and Linke (2015) show that water sharing is bound up in multiplex relations that include the sharing of food, livestock, and other resources. Walker’s (2019) contribution to this issue suggests that water sharing is dependent on the values that people hold for different types of water (e.g., groundwater vs. surface water). Other ethnographic work suggests that water sharing could be linked to building community-based prestige and political capital (Pearson, Mayer, and Bradley 2015; Zug and Graefe 2014). With heightened threats of water crisis around the world, further research is needed to unravel the complex dynamics of water and reciprocity.

Anthropological research on the moral economics of water points to some potential ways forward (Trawick 2001; Wutich 2011). Moral economies arise in communities that have shared understandings of a basic right to subsistence and a commitment to norms of reciprocity in support of that right (Scott 1977; Thompson 1971). In rural Peru, Trawick (2001) found that a moral economy of water not only facilitates survival during times of water scarcity but also underpins social cohesion and trust within the community. In urban Bolivia, Wutich (2011) confirmed the existence of a moral economy of water but found that water-sharing norms were weak, largely nonreciprocal, and highly stress inducing (Wutich and Ragsdale 2008). In recent work comparing cases from Peru and Spain, Trawick, Reig, and Salvador (2014) have argued for the independent evolution of moral economies of water cross-culturally. Further work is needed to explore cross-cultural patterning in moral economies of water (Arnold 2017; Tilt 2014) and to examine their social, political-economic, and biocultural implications.

### **Mixed, alternative, and diverse economies of water**

The diverse economies approach (Gibson-Graham 2008), which explores mixed, nonmarket, alternative-market, and illicit economies, provides another important avenue for research on water and economy. In this vein, the nonmarket water exchanges discussed can be seen as a way to move toward more diverse economies for water. But diverse water economies also include alternative-market practices, such as “green economies” (Mendoza 2018; O’Connell et al. 2017), the provision of free basic water (Bond 2004; Muller 2008), and water-related social entrepreneurship (Dapaah and Harris 2017; Vandewalle and Jepson 2015). While many scholars are cautious about the potential for alternative-market practices (Dawson 2010; Von Schnitzler 2008, 2013), others argue that there is value in understanding the conditions under which market mechanisms can be repurposed or reformulated in the water sector for pro-poor and pro-environmental ends (Bond 2004; McGranahan et al. 2006; Wutich, Beresford, and Carvajal 2016).

Informal water provisioning provides another important yet understudied example of diverse water economies. Since Hart (1973) coined the phrase *informal economy* in the 1970s, anthropologists have been at the forefront of examining modes of income production outside of government purview and control. Less ethnographic work, however, has focused on informal modes of service provision, including water delivery and acquisition. Yet, in many communities, informal arrangements—such as informal water vendors (Ahlers et al. 2014; Wutich, Beresford, and Carvajal 2016) and illicit pilfering from municipal water systems (Meehan 2013)—are the dominant mode of water acquisition. While such arrangements can be crucial for survival and even a way to pursue water justice (Budds and Loftus 2014; Wutich, Beresford, and Carvajal 2016), they can also contribute to the formation of exploitative water cartels (Bakker 2010; Ranganathan 2014). Thus further work is needed to understand when and how informal water economies can provide people with water in safe, just, and reliable ways.

## **Economic dimensions of the political ecology of water**

### **Political ecological approaches**

Political ecological approaches to water broadly examine how power-laden economic, political, and sociocultural processes shape the dynamics of water knowledge, use, and management (Johnston 2003; Swyngedouw, Kaika, and Castro 2002). Such research often seeks to understand the ways that social structure—economic (Cole 2012), gender (Harris et al. 2017), racial (Goldin 2010; Hughes 2006), caste (Mehta 2005), and other dimensions of marginality (Moffat and Finnis 2005)—produce inequities in water ownership, access, and quality. Research on water conflicts, viewed through a political ecological lens, explores a range of topics, including borderland water disputes (Walsh 2004), mining and industrial extraction (Rasmussen 2015; Willow 2016), and dam-related displacement (Baviskar 1999; Scudder 2012). Relatedly, political ecological analyses often highlight ways in which some groups use cultural power and political discourse to define water realities (Crate 2011; Mosse 2008; Walsh 2018).

Analyses of “waterscapes,” including rivers, lakes, canals, and dams, enable scholars to examine the economic, political, cultural, and engineered dimensions of water landscapes (Baviskar 2007; Bhan and Trisal 2017; Orlove and Caton 2010). Orlove’s (2002) ethnography of Lake Titicaca revealed how a waterscape shapes the rhythms of fishing and farming livelihoods. Such work has been especially fruitful for following historical trajectories of water, economy, and development (Errante 1997; Hauser 2017). For example, de Vries and Fraser (2017) found, in the wake of Hurricane Floyd, that a housing relocation program in the southeastern United States continued a discriminatory history of floodplain management by exposing middle-class African American residents to contaminated housing and devaluing their property. An examination of waterscapes can also provide a unique lens into urban political ecological dynamics (Rademacher 2015). Ranganathan’s (2014) ethnographic research in Bangalore explores how “water mafias” have the power to control material and discursive realities of water management processes on the urban periphery.

While infrastructure is a topic of long-standing interest for ethnographers (Star 1999) and archaeologists (Morison 2015), interest in the political ecology of water infrastructure has enjoyed a recent resurgence among cultural anthropologists interested in technopolitics (Anand, Gupta, and Appel 2018; Appel, Anand, and Gupta 2015). Such work conceptualizes infrastructure as “things and also a relation between things” (Larkin 2013, 329): processual, negotiated, and embedded in everyday lives in culturally meaningful ways. In his work in Mumbai, for instance, Anand (2011, 2012, 2017) explores how the politics of water pipes, pumps, and pressures produces various forms of citizenship and abjection. Research on water infrastructure provides a lens to understand the management of canals, water, land, and forests in Panama (Carse 2012); tensions around state and communal maintenance in Egypt (Barnes 2014); and state care and neglect in postwar Vietnam (Schwenkel 2015). Future-oriented infrastructural analyses also seek to find ways forward to more equitable and socially just alternative forms of water development (Radonic and Kelly-Richards 2015; Rasmussen 2016).

## The hydrosocial cycle

Building on critical political ecology, the hydrosocial cycle is a theoretical approach to understanding the cyclical relations between humans and water as mutually co-constitutive (Linton and Budds 2014; Swyngedouw 2009). Research on hydrosocial relations places particular emphasis on the ways in which power relations—especially relations of socioeconomic inequality—are enacted through water (Budds and Loftus 2014). Given its emphasis on water’s meanings and values, the hydrosocial cycle has proven generative for anthropologists and ethnographers (Barnes 2014; Barnes and Alatout 2012; de Rijke 2018; Krause and Strang 2016; Paerregaard 2018). After Jessica Budds’ keynote address at the 2018 Society for Economic Anthropology meeting on “Water and Economy,” for example, attendees buzzed with interest in exploring the ways that the hydrosocial cycle could be applied to their own work.

Among the articles included in this special issue, six employ the hydrosocial cycle as an analytic framework (Graff, Branting, and Marston 2019; Harnish, Cliggett, and Scudder 2019; O’Leary 2019; Radonic 2019; Walker 2019; Wells et al. 2019). Here we briefly discuss two of these. First, Graff, Branting, and Marston’s (2019) analysis of the pre-Hellenistic city of Kerkenes in contemporary Turkey illustrates how hydrosocial relations were integrated through water management and related craft and food production. This is the first time—to our knowledge—that the hydrosocial cycle has been applied to an archaeological analysis. Second, Harnish, Cliggett, and Scudder’s (2019) research examines sixty years of water development projects in Zambian Gwembe Tonga farming communities. Combining the hydrosocial cycle with Cliggett’s (2014) concept of chronic liminality, Harnish and her colleagues trace the ways in which water development schemes have created precarious, insecure, and periodic socioeconomic reorganizations. As these two examples show, the hydrosocial cycle approach is particularly fruitful for economic anthropologists engaged in long-term analyses of hydrosocial dynamics.

## Economic anthropological approaches to resilience and sustainability

### Resilience

Resilience is a field that originated in ecologists' recognition that ecological systems are not inherently stable (Holling 1973) and that resilient socioecological systems are able to absorb stressors and shocks without fundamentally reorganizing (Gunderson and Holling 2002; Nelson, Adger, and Brown 2007). Lansing's (1987) study of Balinese water temples was a foundational contribution to resilience studies. This work showed how nonstate management of irrigation could produce durable complex adaptive systems. It went on to inspire other scholars to examine, for instance, how labor-exchange networks help produce resilient swidden agriculture in Q'eqchi' Maya villages (Downey 2010) and the evolving role that religious beliefs play in the management of water and other natural resources in the Tyva Republic (Purzycki 2016). Common themes in anthropological resilience scholarship related to water and economies are vulnerability (Vásquez-León, West, and Finan 2003), risk (Lazrus 2016; Roncoli, Ingram, and Kirshen 2001), adaptive capacity and management (Orlove 2009), and local knowledge (Crate 2013; Roncoli, Ingram, and Kirshen 2002; Stone-Jovicich et al. 2011).

In economic anthropology, research on resilience often focuses on (1) the efforts of economically impoverished people to manage risk and increase community resilience and (2) the ways in which governmental and nongovernmental efforts to increase resilience produce unanticipated consequences in vulnerable communities (Tucker and Nelson 2017). In a study of postvolcano resettlement in Ecuador, for example, Faas (2017), found that reciprocal labor-exchange practices—including those used to organize irrigation and potable water management—were both sustained and weakened by the intervention of disaster aid organizations. Faas also found that long-standing power imbalances and inequities were remarkably resilient, challenging the idea that resilience is necessarily a positive outcome. Barrios (2016) argues that analyses of inequitable social structures should play a much larger role in resilience scholarship on disaster vulnerability. Such work would be important because it would show when and where radical socioeconomic restructuring could improve disaster resilience. Importantly, Barrios's contribution articulates a substantive agenda for future economic anthropology research on water, resilience, and disasters.

### Sustainability

Sustainability is an approach concerned with balancing the needs of current populations against those of future generations (Cruz-Torres and McElwee 2012). Archaeologists have led the way in identifying pathways along which societies become unsustainable (Van der Leeuw and Redman 2002). Droughts, archaeological research shows, are a potential driver of societal collapse (Costanza et al. 2007; Kintigh and Ingram 2018; Lucero, Gunn, and Scarborough 2011; Weiss and Bradley 2001). Exchange networks appear to mediate drought-collapse dynamics in important ways, as shown in a comparative study of three societies in the arid North American Southwest (Nelson et al. 2010): Zuni (AD 850–1540), Mimbres (AD 650–1450), and Hohokam (AD 700–1450). When low precipitation and water overexploitation threatened these populations, exchange networks were found to offset the risks of unsustainability by facilitating the redistribution of people and resources. Such work suggests that there is much to be learned from complex archaeological analyses of water management and exchange systems that could inform sustainability efforts today (Scarborough and Valdez 2014).

Ethnographic research on the sustainability of water and water-related livelihoods has examined the negative impacts of environmental degradation (Paolisso and Maloney 2000; Tilt 2009; Wells et al. 2016; Wutich 2009), climate change (Crate and Nuttall 2016; Finan and Nelson 2001; Maldonado, Colombi, and Pandya 2016; West, Roncoli, and Ouattara 2008), and problematic sustainability interventions (Cairns 2018; Eichelberger 2014). Noting the importance of economic approaches, Orlove and Caton (2010) called for more water sustainability research exploring equity and value. For instance, Pulido (2016) and Ranganathan (2016) argue that an analysis of racial capitalism is crucial for understanding racial inequities in exposure to lead-contaminated water in Flint, Michigan.

Recent work has focused on imagining and enacting “sustainability transitions” (Avelino 2011) toward more equitable and sustainable futures, including sustainable degrowth (Martínez-Alier et al. 2010), sustainable sharing economies (Martin 2016), and diverse economies (Burke and Shear 2014). The sustainability transitions literature provides a future research area for ethnographers interested in radical economic transitions as they relate to water equity and value.

## Institutional approaches to water management

### States and institutions

Wittfogel’s (1959) hydraulic hypothesis, on the role of irrigation in state formation, has been highly influential in archaeological and ethnographic scholarship on water institutions (Butzer 1976; Harris 1968; Kirch 1994; Mosse 2003; Strang 2016). Adams (1981) found, based on archaeological work in Mesopotamia, that state-level organization preceded the development of large canal systems. Scarborough’s (1998) archaeological research on Mayan water management found evidence of elite centralization of water control but argued that the “total power” described by Wittfogel was not present. Drawing from a cross-cultural synthesis, Scarborough (2003) found that a wide array of socioeconomic relations were employed in ancient water management. Later work explored the ways in which elite power was expressed through symbolic and ritual aspects of centralized water control (Lucero and Fash 2006). A current major focus of archaeological research is on understanding the sustainability and resilience of ancient water systems (Hegmon 2017).

Ethnographers interested in irrigation have tended to focus on the organization of small-scale common-pool resources systems (e.g., Rodríguez 2006). Much of this work has employed an institutional approach that examines the function and evolution of the (often economic) rules and norms governing water management (McCay and Acheson 1990; Ostrom 1990). In the Andes, for example, ethnographers have shown how contemporary irrigation practices have developed through the historical interplay of indigenous, Spanish, and state institutions (Boelens and Gelles 2005; Gelles 2000; Mitchell 1976; Paerregaard 1994; Trawick 2002, 2003b). Recent scholarship examines ways that institutions can be designed not just for ecological resilience but also for social equity (Boelens, Perreault, and Vos 2018; Groenfeldt and Schmidt 2013; Lu, Ocampo-Raeder, and Crow 2014; Trawick 2003a; Trawick, Reig, and Salvador 2014; Tucker 2014). This emphasis on equity and justice is a particular focus of critical institutionalism, an approach that emerged from critiques of mainstream institutional scholarship and aligns well with long-standing ethnographic approaches to institutional analysis.

### Critical institutionalism

Critical institutionalism is a new approach to institutional analysis that departs from some basic assumptions of mainstream institutional scholarship. For example, critical institutionalists view with skepticism the assumption that formal institutions are designed purposefully by actors rationally pursuing their own self-interests (Clever 2017). Instead, critical institutionalists examine institutional dynamism with an analytic emphasis on factors such as culture, norms, informality, and hybrid forms of governance (Clever and de Koning 2015). One common theme has been how people and communities respond to the imposition of new institutional rules and norms, often by nonlocal elites with little knowledge or understanding of local conditions and desires. A central concept is *institutional bricolage*, introduced by Mary Douglas (1986) in *How Institutions Think*, which refers to processes in which people “tinker” with institutions—refashioning rules and norms through innovative modifications that can transform old institutions and reinvent new ones. Critical institutionalists are often concerned with the capacity of institutional bricolage to create socially just institutions for natural resource management (Clever and de Koning 2015).



An example of anthropological work that has the potential to make a major contribution to this literature is Schnegg and Bollig's "Local Institutions in Globalized Societies" project, which examines the impact of "traveling models" of rural water management reform in sixty pastoral communities in northwestern Namibia (Schnegg, Bollig, and Linke 2016). Analyzing "traveling models of participation," for example, Schnegg and Linke (2016) show how global calls for women's participation in water management were translated in unintended ways in Namibian pastoral communities by drawing on women's authority as elders in local kinship systems and empowering them as financial managers (not leaders). Schnegg and Kiaka's (2019) contribution, in this issue, examines another dimension of traveling models of water reform—the idea of water as an economic good—and shows how it failed to deliver on promises of economic growth but did produce considerable social-economic conflict and the ultimate collapse of a community water-point committee. Schnegg and Kiaka note that the imposition of traveling models creates opportunities for powerful actors to strategically modify water institutions and suggests the need for future work to explore how this can produce contradictory, inconsistent, and harmful new institutions.

### Environmentality

Environmentality is a framework for examining how changing environmental institutions, politics, and knowledge produce new forms of environmental subjectivity (Agrawal 2005). Anthropologists have explored the production of new environmental subjectivities in the contexts of water sustainability policies in a water-insecure Iñupiaq village in Alaska (Eichelberger 2012), hydroelectric dam development along the Ganges in the Indian Himalayas (Drew 2018), and the adoption of wastewater technologies in a Belizean coastal region catering to cruise ship tourists (Wells et al. 2019). Environmentality has been influential in shaping recent anthropological scholarship on water, as in articles in this special issue by Wells et al. (2019) and Radonic (2019). Radonic's (2019) analysis, for example, examines a water conservation program in Tucson, Arizona, that encourages people to install rainwater harvesting technologies. In doing so, Radonic argues, rainwater harvesters' economic relationships with water are reconfigured as they become "ethical subjects" in a water-scarce desert environment. In future work, it would be valuable to see more scholarship that explicitly combines institutional analysis with explorations of environmental subject making.

## The economic anthropology of water and health

### Medical anthropological approaches

Economic work in medical anthropology has examined how water access, cost, and rights produce disparities in human health outcomes. Whiteford and Whiteford (2005) argued that a focus on water's globalizing economic dimensions is crucial to understanding who is at risk of contracting diseases that are waterborne (e.g., cholera), water washed (e.g., shigellosis), water based (e.g., schistosomiasis), and water related (e.g., malaria). In Peru, Ecuador, and Venezuela, for instance, cholera outbreaks in the 1990s were intensified by the dynamics of socio-economic marginality (Briggs 2003; Whiteford and Padros 2011). Medical anthropologists warn that large-scale global changes—including neoliberalization, urbanization, globalization, and climate change—have created the conditions for a resurgence of water-related diseases like dengue and malaria (Baer and Singer 2016).

Socially, economically, and politically marginalized populations are more likely to suffer water pollution and contamination (e.g., White 2010). In the Akwesasne Mohawk Nation, for example, community members partnered with scientists to research how and why three Superfund sites located above their land along the St. Lawrence River were causing an array of health problems associated with contaminant exposure (Hoover 2017; Schell et al. 2008). People's concerns about and resistance to water-contaminating industries, such as mining (Li 2016); new water practices with unknown risks, including wastewater reuse (Verbyla et al. 2016); and the development of new water-intensive industries in water-scarce regions, such as wine growing (Yelvington, Simms, and Murray 2012), are emerging areas of research with important implications for medical anthropology.

Economic processes, such as privatization and commercialization, are well-documented sources of water scarcity (Donahue and Johnston 1997) and water insecurity (Wutich and Brewis 2014). Furthermore, in market-integrated water systems, economic suffering (e.g., lacking money to buy water) is common to lived experiences of water insecurity (Boateng et al. 2017; Bulled 2017; Eichelberger 2010; Jepson et al. 2017; Stevenson et al. 2016; Wutich and Ragsdale 2008). In Mexico, for example, the process known as “Coca-colonization” was associated with a shift toward privatized water management and exploitation (Nash 2007) and to consuming calorie-rich, nutrient-poor sweetened beverages instead of water (Leatherman and Goodman 2005). Workman and Ureksoy (2017) argue that syndemic theory offers a promising approach for understanding the complex, interlocking relationships between water insecurity, food insecurity, and disease risk (e.g., HIV/AIDS).

### Biocultural approaches

Research on the psychosocial impacts of water insecurity has fluoresced in the last decade. Ennis-McMillan’s (2001, 2006) work in Mexico and Sultana’s (2011) work in Bangladesh (2011) argued that “suffering from water” emerges from gendered socioeconomic inequalities in water management and access. In Bolivia, Wutich and Ragsdale (2008) found that water-related emotional distress was most strongly felt by women with insecure entitlements to water markets and water-sharing networks. These studies highlight the essential role of political-economic inequities in producing suffering and emotional distress (Wutich and Brewis 2014). Biocultural studies of water insecurity later introduced validated measures of psychosocial distress (Stevenson et al. 2016; Workman and Ureksoy 2017) and biological measures of stress (Tallman 2016). Tallman’s (2019) contribution to this issue is among the first to combine political-economic analysis of water insecurity with validated measures of psychosocial distress, and we hope it inspires future scholars to do more work in this vein.

Recent research in biocultural anthropology has begun to examine how economic dimensions of water insecurity impact human biology, including dehydration (Rosinger 2015b; Rosinger and Tanner 2015). In the United States, Rosinger et al. (2018) found that lower socioeconomic status was associated with less tap water consumption and more bottled water consumption. Reliance on costly bottled water, Rosinger et al. argued, is likely related to disparities in the availability of safe tap water among minoritized populations and may put people at greater risk of dehydration. Another stream of work, in Kenya (Collins et al. 2017, 2019) and Bolivia (Rosinger 2015a), demonstrates how water insecurity negatively impacts pregnant, postpartum, and breast-feeding women through dehydration and loss of economic opportunities. This is a very young field of research, with many opportunities for scholars interested in taking a political-economic approach to understanding how water insecurity impacts human biology.

### A brief conclusion: Crosscutting concerns and applications

Anthropologists have made nearly a century of important contributions in research on water and economy. Recently, there has been a resurgence of scholarship around five key areas: (1) commodification, exchange, and diverse economies; (2) political ecology of water; (3) resilience and sustainability; (4) water institutions; and (5) water and health. Across these areas of research are common threads of enduring concern: economic inequalities, structural injustices, sociopolitical marginality, and gender disparities.

Given water’s vital role to human life, scholarship on the economic anthropology of water makes important contributions that are both applied and theoretical (Johnston and Fiske 2014). For example, economic anthropological research in the fields of sustainability, resilience, and the hydrosocial cycle examines the outcomes of past approaches to water management. Such work suggests that exchange systems can play an important role in mediating and mitigating the human impacts of water scarcity. Economic anthropologists are also exploring and imagining alternative economic approaches for managing water, including water reciprocity, moral economies of water, pro-poor water



markets, and equitable and socially just infrastructural development. Finally, economic anthropological approaches bring unique insights into our understanding of the ways that inequitable socioeconomic structures and dynamics (such as water privatization, racial capitalism, and globalization) produce disparities in health and well-being.

While the “dark anthropology” of water (Ortner 2016)—focusing on dispossession and exploitation in water economies—is a large and important field, a number of water scholars examine new possibilities for building more just and equitable water economies. Both approaches are crucial to (1) mobilizing economic anthropology to inform applied work on water and (2) leveraging water—as a universal basic resource—to continue building the vital mid-range theories that are foundational to economic anthropology. By uncovering our water histories, demonstrating the human costs of present systems, and suggesting possible alternative water futures, the economic anthropology of water can contribute to efforts to improve global water security and sustainability.

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