

Governing water in the US West: Introduction to 'Water in short supply' Special Section

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Abstract

This Special Section examines the political ecology of drought, focusing on the production of drought in rural areas where regimes of water dispossession, exploitation, and extraction exacerbate drought conditions for rural inhabitants, even as water and energy produced in those impacted rural areas benefit urban areas. This introduction situates the articles in a larger conversation about drought governance practices by tracing four interwoven analytical threads. An initial examination of definitional quandaries over drought paves the way for a discussion of the problematics of governing through drought, in particular, the ways in which, following Urciuoli, "strategically deployable [linguistic] shifters" contribute to consensus-building, and the ways in which legal and regulatory regimes, as well as politics, help shape settler economic practices during droughts. The discussion then turns to social justice and unequally distributed vulnerabilities intensified by groundwater depletion and drought governance practices. The article concludes by critically considering several possible approaches to drought governance that take the coproduction of nature and culture as integral. The introduction argues, and the Special Section articles support this, that a reconfiguration of drought economics and governance, along with a prioritizing of Native American sovereignty in the US, is imperative.

Keywords: drought, political ecology of water, settler colonialism, water law, environmental governance, hydrosocial, western US

Résumé

Cette section examine l'écologie politique de la sécheresse, en se concentrant sur la production de la sécheresse dans les zones rurales où les régimes de dépossession, d'exploitation et d'extraction de l'eau exacerbent les conditions de sécheresse pour les habitants des zones rurales, même si l'eau et l'énergie produites dans ces zones rurales touchées profitent aux zones urbaines. Je situe les articles dans une conversation plus large sur les pratiques de gouvernance de la sécheresse, en traçant quatre fils analytiques entrelacés. J'examine les questions de définition, puis les problèmes liés à la gouvernance de la sécheresse. En particulier, à l'instar d'Urciuoli, comment les « décalages [linguistiques] stratégiquement déployables » contribuent-ils à l'obtention d'un consensus ? Comment les régimes juridiques et réglementaires, ainsi que la politique, contribuent-ils à façonner les pratiques économiques des colons pendant les sécheresses ? La discussion porte ensuite sur la justice sociale et les vulnérabilités inégalement réparties, intensifiées par l'épuisement des eaux souterraines et la gouvernance de la sécheresse. Je conclus en examinant de manière critique plusieurs approches possibles de la gouvernance de la sécheresse qui prennent la coproduction de la nature et de la culture comme partie intégrante. Cette introduction soutient, et les articles de la section spéciale le confirment, qu'il est impératif de reconfigurer l'économie et la gouvernance de la sécheresse et de donner la priorité à la souveraineté des Amérindiens aux États-Unis.

Mots-clés: sécheresse, écologie politique de l'eau, colonisation, droit de l'eau, gouvernance environnementale, hydrosocial, ouest des États-Unis

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Resumen

Esta sección examina la ecología política de la sequía y la producción de sequía en las zonas rurales, donde la desposesión, la explotación y la extracción de agua agravan las condiciones de sequía de la población rural, incluso cuando el agua y la energía rurales benefician a las zonas urbanas. Sitúo los artículos en una conversación más amplia sobre las prácticas de gobernanza de la sequía, trazando cuatro hilos analíticos entrelazados. Examinó las definiciones y, a continuación, analizo la cuestión de gobernar a través de la sequía. En concreto, siguiendo a Urciuoli, ¿cómo contribuyen los «cambiadores [lingüísticos] estratégicamente desplegables» a la creación de consenso? ¿Cómo contribuyen los regímenes jurídicos y normativos a configurar las prácticas económicas de los colonos durante las sequías? A continuación, el debate se centra en la justicia social y las vulnerabilidades desigualmente distribuidas que se ven intensificadas por el agotamiento de las aguas subterráneas y la gobernanza. Concluyo considerando varios enfoques posibles de la gobernanza de la sequía que toman como parte integrante la coproducción de la naturaleza y la cultura. Esta introducción aboga por una reconfiguración de la economía y la gobernanza de la sequía, dando prioridad a la soberanía de los nativos americanos en Estados Unidos. Los artículos de la Sección Especial apoyan esta idea.

Palabras clave: sequía, ecología política del agua, colonización, ley del agua, gobernanza medioambiental, hidrosocial, oeste de Estados Unidos

1. Introduction

This Special Section pulls together political ecological research regarding the causes, experiences, and meanings of drought for different groups of people in the western United States. Scores of rural and urban people across the western US experience a quotidian lack of access to potable water, depleted groundwater resources, polluted water, and differing access to the material, political, economic, legal, and social resources that could improve their experiences of drought. Our Special Section (edited with Sayd Randle) tackles the production and shaping of drought in rural areas, sites with power-saturated practices of water gathering, transportation, storage, hydropower generation and industrialized water consumption. Drought, the Special Section authors argue, is exacerbated by interlocked regimes of dispossession, exploitation, and extraction.

While the cases explored in this Special Section are spatially located in rural regions, the water and energy produced in those rural places benefit urban ones. A number of political ecologists address urban drought, examining urban conservation practices (Vine 2018; Radonic 2019; Randle 2021), representations of water conservation (Boyer *et al.* 2021), urban efforts to manage water flows (Cousins 2017b; Randle 2022), and the metabolic links through which urban centers consume and reconfigure water resources in rural areas (Cantor 2021). Shifting attention to rural areas and taking the position that droughts are socially constructed, even as economic growth and climatic conditions are used to justify practices that contribute to water scarcity, the Special Section authors interrogate the material and discursive intersections of political economies of drought, as well as its ecological conditions, knowledge production, and legal and regulatory infrastructures.

By way of introducing this Special Section, I explore several key analytical threads that can deepen our political ecological understanding of drought, and perhaps contribute to improving contemporary governance practices where drought occurs. The first thread concerns definitional quandaries – what is drought, and for whom? The second thread concerns the problematics of governing through drought, and in particular, the ways in which 'linguistic shifters' or 'floating signifiers' can contribute to consensus-building. The third thread concerns social justice and the unequally distributed impacts of, and vulnerabilities to, drought conditions. The fourth thread critically considers several possible approaches to drought governance that take the coproduction of natural and social worlds as integral. Although this introduction is organized to flow through the various threads, issues of governing drought encompass all of them. Definitions feed into governing strategies, social justice inequities are exposed in and through governing strategies, and reorientation of the way we perceive and imagine drought suggests new ways of governing it. I conclude by summarizing the particular contributions of our Special Section articles to the broader conversation. The authors interrogate specific constellations of political ecological relations where governance practices need critical rethinking and reworking.

2. Analysis, definitions, and key themes

Analytical threads

Orlove and Canton drawing on Marcel Mauss (2010, 402-403; see also Bakker 2012), assert that water is a holistic "total social fact," weaving together abstract, concrete, and material social domains into a totality of connected political, social, economic, and natural relations. If water accomplishes this totality, what does drought accomplish? If water serves as the epicenter of hydrosocial territories (Boelens *et al.* 2016) and hydrosocial worlds (Swyngedouw 2009), what purposes does drought serve? The material absence or lack of water is not the opposite of water's flowing materiality. Rather, drought intertwines its own materialities with various flows of water, working in tandem with water, and serving as a vehicle to turn water and its social relations to specific social, political, and economic purposes. Drought's materialities are first grasped by an examination of its definitions.

Definitional quandaries

Defining drought is no easy task, in part because droughts often have a slow onset, are unpredictable, and persistent in direct and indirect ways. Definitions can vary depending on disciplinary framing and can be conceptually general or operationally concrete depending on how empirical measurement is made (Wilhite & Glantz 1985). Wilhite and Glantz suggest that precise rather than universal definitions are more useful (p. 13), and while offering various scientific definitions, they insist that the social side of drought must be fully taken into account, although they reduce this to 'measurable economic impacts.' The Drought Impact Reporter² was designed to track major economic impacts on industry due to drought conditions (Wilhite *et al.* 2007). The creation of the US Drought Monitor³ offered scientific measurements of physical phenomena in a public, online near real-time trend tracking tool (Svoboda *et al.* 2002; Leeper *et al.* 2022). Goldman *et al.* (2016, 30-31, see also Wilhite & Glantz 1985, 5) cite the universally applied Palmer Drought Severity Index as an example of a standardized way of defining drought, even as standardizing practices have had to be adjusted to fit local particularities. In these cases, scientific measuring methodologies have dominated and become what Brooks (2017) calls "number narratives" or "numerical stories."

If scientifically motivated definitional quandaries are fraught, social scientific and humanities definitions must account for even more complex constellations of factors. Seeking to clarify what drought means to different people, Kohl and Knox (2016, 376) argue that because there are many scientific ways of defining drought using different combinations of measurable proxies (such as precipitation, soil moisture content, etc.), and because these are open to revision, droughts become political vehicles. Droughts, they further assert, are contingent on the framing applicable at the chosen scale of place-making (see also Brooks 2017; Randle & Linville 2024 in this Special Section). Greene (2021, see also Greene 2018) emphasizes the contrast between scientific definitions of drought and definitions borne of lived experience, highlighting the ramifications of these contrasting definitions. Becker and Sparks (2020) found that experiences of drought in California were context-dependent, including rural versus city residency, the perceived temporal and spatial relationship to drought conditions, whether a person had direct versus indirect experience of change due to drought, and their positioning in relation to the role taken by government (see also Borgias 2024b, Bremner 2024, and Zárate 2024, all in this Special Section). Adger *et al.* (2001) found that globally-scaled discourses regarding environmental degradation which influence national policies, including desertification, as used by the Intergovernmental Panel on Climate Change, may not accurately reflect local practices and experiences, and may ignore granular and nuanced political economic relations that are particularly significant for less resourced groups of people. While seeing value in tools such as the Palmer Drought Severity Index and the Drought Monitor, political ecologists challenge the measures of physical factors underpinning these tools (precipitation, etc.) as being singularly dominant, and challenge narrow economic definitions of the social side of droughts.

² <https://www.drought.gov/data-maps-tools/drought-impact-reporter-dir>, accessed May 5, 2024

³ <https://droughtmonitor.unl.edu>, accessed May 30, 2024

Another significant definitional thread is exposed by queries as to where the boundary lies between aridity and drought. Worster (1985), emphasizing the radical differences between First Peoples' and Euro-American settler ways of inhabiting arid western landscapes, and their contrasting relationships with water, suggests that definitions of drought are relative to specific ways of living in the world. Van Loon *et al.* (2016, 3635-3636, see also Haile 2019, 4) draw a sharp contrast between drought and water scarcity, arguing that droughts occur when abnormally low precipitation, low soil moisture, high rates of evapotranspiration, and/or high temperatures occur. While these conditions can lead to water scarcity, this can also be caused by the way water supplies are maintained, managed, and distributed. Goldman *et al.* (2016) argue that differences in definitions of drought actually reflect differences in the way the world is lived, is experienced, and is relationally embodied. They argue that scientists' measures of drought using precipitation as a proxy do not coincide with East African Maasai measures of drought in terms of pasture quality, disease prevalence among their livestock, etc.

Political ecologists most often turn to the study of the relationship between economic, political, and legal regimes to define drought as a product of inequity and exploitation created through intertwined governing and economic practices (Bryant 1991; Paulson *et al.* 2003; Swyngedouw 2009; Cantor 2016; Svarstad *et al.* 2018; Helmcke 2022). Wittfogel's (1957; and later Worster 1985) work on hydraulic societies, where large scale irrigated agriculture dominates production in arid regions, encouraged analytical consideration of the importance of coordinated government control over water management and technologies, labor, flood defenses, transportation, distribution and water storage systems as a basis for maintaining control over a region.

Political ecology maintains a strong Marxist orientation, illuminating class struggle, practices of capital accumulation, capitalist commodity production, the implications of private property, enclosure and dispossession and exploitative labor relations. In addition, they document destructive exploitation, extraction, and pollution of resources and habitats upon which less resourced groups of people rely for their lives and livelihoods. More recently, political ecological approaches have been including a stronger critical emphasis on entangled racialized and class practices impacting access to water resources (Gandy 2008; Jepson 2012; Sizek 2018; Pompeii 2020; Egge & Ajibade 2021; Van Sant 2021; Whear 2022; see also Bremner 2024 and Zárate 2024, in this Special Section). In arid western US environments, communally shared and managed water resources anchor senses of shared identity, often in the face of strong threats to communities' control over their water (Arnold 2008; Perramond 2019; Whear 2022; also Borgias 2024b, Cantor *et al.* 2024, and Hite *et al.* 2024, in this Special Section).

Anticolonial approaches to water resources in the western US also argue for the necessity for controlling water resources (Middleton-Manning *et al.* 2018; Yazzie & Risling Baldy 2018; Curley 2019, 2021a, 2021b; Diver *et al.* 2019; Borgias 2024a). While there is a racialized aspect to practices of colonization, for Native American Nations the issue is not simply this. Rather, key issues are their sovereignty as nations and exercising self-determination. Importantly and although often parsed as largely political in orientation, anticolonial approaches embrace the fundamental economic significance of control over water, land, and oceanic resources and habitats, as well as control over water and energy infrastructures as a basis for asserting sovereignty. Arguments for sovereignty are both economic and political, and concern self-determination, lives and livelihoods. They also question who governs, how resources are governed, developed, distributed, utilized, accessed, and how they are conserved and stewarded. Borgias (2024b), Bremner (2024), Hite *et al.* (2024), and Zárate (2024), all in this Special Section, combine a political ecological approach with such an anticolonial approach.

Definitional moments are significant because they open and close avenues of inquiry into drought and its effects, as well as inquiries into the ways in which governments and different communities understand, react to, and mitigate drought.

"Strategically deployable shifters" and their drought governing work

Political ecologists find it instructive to examine how drought and water scarcity are framed as governing tools, and to ask how such framings are made – for what purposes and with what ramifications. The threat or actuality of water scarcity often serves as a vehicle for governing bodies to legally and materially

reshape social order through regulatory regimes and infrastructures, even as governments are expected to manage drought and other deleterious environmental and social conditions. Governments deploy scarcity, real or anticipated, to promulgate infrastructural development, to justify and rationalize restructuring rights to access, use, and control of water, and to deepen and extend regulatory controls (Swyngedouw *et al.* 2002; Alatout 2008; Edwards 2013; Perramond 2019; Bakker 2000; Curley 2021a, 2021b; also Hite *et al.* 2024 and Randle & Linville 2024, in this Special Section).

Perhaps more controversially, they use scarcity to instantiate conservation programs. Alatout (2008) argued that scarcity served as a political and social justification for massive hydro-infrastructural development beginning in the 1960s in Israel, which in turn served to strengthened centralized government control. Kaïka (2003) describes the way that the 1989-1991 drought in Athens shifted from talk of abundance to scarcity and crisis, in an already politically and economically unsettled period in Greece, even though the reservoir system had shown signs of depletion before the drought. Water scarcity then became the underpinning rationale for fully commoditizing water, implementing complicated draconian water pricing schemes, water restrictions, and rationalizing new dam and reservoir construction far from Athens to transfer water to the urban center. Throughout, water and its scarcity were coded as natural phenomena. After reviewing the main political ecological categories through which water scarcity discourses operate in other places in the world, Edwards (2013) argues drought and water scarcity in Australia discursively moved from conceiving scarcity as a natural phenomenon to denaturalizing it, seeing it more as the result of government and individual mismanagement, a problem to be corrected through privatization of water and its infrastructures. This fitted with and supported the predominant neoliberal approach in Australian federal government in recent decades. Such examples show that more is instrumentally at work than simply different views of drought, nature and crises.

Drought and water scarcity are examples of "strategically deployable shifters" (Urciuoli 2003, 396-397; 2005; 2008, 214; also Silverstein 1976). These are linguistic indexical signs, in the semiotic tradition of Peirce. These shifter signs move between different sociolinguistic contexts and perspectives like empty vessels, formally staying the same, but filled with pragmatic, highly contextual and perspective-dependent meaning in each different setting. Hall (2021[1997]), in the Saussurean tradition, refers to these as floating signifiers, which allow for the same kind of highly context- and perspective- dependent practices of meaning-making.

Strategically deployable linguistic shifters can become very influential communicative tools. Urciuoli (2003) shows that because everyone across all the various settings thinks they are talking about the same thing, strategically deployable linguistic shifters or signs can help to orchestrate consensus or serve as points of consensus around which to argue out differences. 'Scarcity' is a linguistic shifter that neatly aligns with another, 'crisis,' enhancing the potential influence of both to create consensus or to quell objections. As the examples described above and several articles in this Special Section (Hite *et al.* 2024 and Randle & Linville 2024) document, large investments in water infrastructure are one of the key kinds of consensus projects that get orchestrated through talk of scarcity, but not without objections and contention.

Drought and the threat of water scarcity in the western US have engendered three general types of settler state grand infrastructure projects as a means for addressing water scarcity and its potential impacts on growing urban centers, agribusiness, mining, and energy supply. Large-scale water and energy infrastructure projects require state and federal government investment, they cross multiple jurisdictions, and include:

- 1) building systems of dams, storage reservoirs, distribution canals, and tunnels often with hydroelectrical generation and flood control components;
- 2) building canals and pumps to effect inter-basin or trans-basin transfers of water from one watershed to another, linked to dam and reservoir storage systems;
- 3) instantiating state institutional legal and regulatory infrastructure.

These three types of projects work together.

Hundley (2001) describes the history of California water as a series of major hydraulic engineering projects designed to store water and move it from one basin to another, including bringing water to California

from neighboring states. The Colorado River system and its tributaries testify to settler histories of reconfiguring water, land, and people's lives to address settler society's real and anticipated scarcities. Curley (2021a) asserts that one infrastructure project builds on another over time, and these projects are colonizing "beachheads." He points out that each individual project diverts attention from an ongoing, overarching process that must be understood as "...the transformation of Indigenous lands, jurisdictions and sovereignties into legal-political spaces consistent with colonial laws and governance" (2021a, 388), with this also enabling growth and development of these lands.

The following are a few examples of beachheads. The 1922 Colorado River Compact, a key piece of legal infrastructure, divvied up the waters of the massive Colorado River watershed spanning seven states and Mexico, but none of the Native American Nations in the Colorado River watershed and its tributaries were included in negotiations (DuMars & Ingram 1980, 42; Curley 2019, 2021b). The 1962 San Juan-Chama Diversion inter-basin transfer system (part of the Colorado River Storage Project) moves water from the San Juan River in Colorado, a tributary of the Colorado River, into the Rio Grande River system in New Mexico, insuring adequate water for urban growth and agriculture downstream on the Rio Grande River (Perramond 2019, 32-70; Curley 2021b, 713-719; Glaser nd). Curley (2019, 63; 2021b, 715-719) explains that the problematic (for the Diné People) Navajo Indian Irrigation Project was necessary for the San Juan-Chama Diversion project to proceed, because the Navajo Nation (Diné People) has reserved water rights along the San Juan River (see also DuMars & Ingram 1980). Other examples include infrastructure bringing water from the Mono and Owens Basins to Los Angeles, which has been particularly detrimental for the Nüümü Peoples in the basins (Borgias 2024a); the Central Valley Project in California, which dispossessed the Winnemem Wintu and the North Fork Mono Peoples of their lands and water (Claire & Surprise 2022, 164); the Central Arizona Project, which has been particularly detrimental for the Diné People, designed to bring rural river water to Phoenix (Espeland 1998; Curley 2021a, 2021b, 713-714).

We can add 'predictability' to the repertoire of linguistic shifters or floating signifiers necessary for governing water resources over varying spatial and temporal scales. Randle & Barnes (2018) argue that modern settler governments' efforts to create predictability in water supplies has given rise to infrastructure development that aims to compensate for fluctuating water supplies, while ensuring capitalist economic growth and current forms of social order. Overall, they note these kinds of projects have stimulated urban and agribusiness expansion, thereby creating additional fears of shortages. Perramond (2019, 117) similarly notes that reservoirs have created predictability for New Mexico state water managers, placing less stress on them to have to decide who will get what water. However, since 1907, the state's practices of finding and claiming unclaimed water interferes with extant *acequias* water management systems, effective communications between Pueblos and settler farmers, and communally oriented water sharing practices, while feeding lengthy and expensive adjudication processes (Perramond 2019). Hite *et al.* (2024) and Randle & Linville (2024, both in this Special Section) examine anticipated infrastructural projects aiming to increase and ensure predictability for energy and water managers. When the strategically deployable linguistic shifters scarcity and predictability are coupled, they can reinforce the development of consensus around an overarching political and economic position that government needs to increase water supplies.

According to Ingram *et al.* (1979, 301; see also Pisani 1996, 2003; Espeland 1998; Neuman 1998; also Randle & Linville 2024 in this Special Section), for most of the 20th century, the guiding idea behind settler state water management in the western US has been to increase the supply of water to meet current and future economic needs and to foster capitalist economic growth. While at the time Ingram *et al.* (1979) were writing, agriculture was the biggest water consumer, urban growth and energy production were poised to contribute to increasing demand. Ingram *et al.* note that in the late 1970s and amidst newly minted federal environmental protection laws, the western states won full control of the water allocation schemes in their own states, at the cost of decreased federal investment in infrastructure. This investment situation is being ameliorated through the 2021 Infrastructure Investment and Jobs Act and the 2022 Inflation Reduction Act, put into place under the Biden administration. Ingram *et al.* (1979), using the Four Corners states (Utah, Arizona, New Mexico, and Colorado) as their case, argue that by the late seventies, three of the four states were already using their full allocation of Colorado River water, and groundwater reserves were being more intensively tapped. Further, they argue, without federal investment and given the already heavily engineered Colorado River and its

tributaries, other solutions were needed. However, their surveys found that people did not want to reallocate water, hung onto the idea of managing water by creating new supplies, and that legislators were unlikely to change this supply-oriented framing of policy. This pattern of infrastructure development is replicated throughout California, which is also dependent on Colorado River water and groundwater pumping, and home to rural landowners who desire to keep extant water allocations intact (Keenan & Krannich 1997, 69-72, 85-87; Hundley 2001; Sugg 2018).

Arguably, the goal of increasing the water supply remains a more dominant law and policy driver than either equitable reallocation or conservation. Currently, new forms of water intensive energy production are being promulgated, for example, fracking (Malin & MacIlroy 2019) and pumped hydro systems designed to level out energy flows from less consistent green energy sources (Turley *et al.* 2022; Cantor *et al.* 2023; also Hite *et al.* 2024 in this Special Section). One common way to compensate for insufficient surface water supplies has been to pump groundwater into the water and energy provision systems, but as Ingram *et al.* (1979, 300) point out, this strategy has radically depleted groundwater aquifers, which are not quick to replenish (see also Walsh 2022; also Borgias 2024b and Bremner 2024, in this Special Section).

While a number of water allocation and management systems operate in the western US, including *acequias* water management systems and Native American governance, the three prominent settler legal and regulatory regimes are:

- 1) The Prior Appropriations Doctrine – the hegemonic settler state surface water allocation regime in the western US;
- 2) Indian Reserve Waters; and
- 3) groundwater regulation and its voids, discussed in the next section.

The Prior Appropriations Doctrine encompasses three interrelated notions that apply to surface waters:

- 1) 'first in time, first in line';
- 2) allocated water must be used for beneficial use, but as Neuman (1998) points out, 'beneficial' is loosely defined and varies from state to state across the western US; and
- 3) allocated water cannot be wasted, it must be used efficiently.

The key terms, beneficial use, efficiency, and waste are all contested and strategically deployable linguistic shifters. These signs change in meaning depending on one's subject position and economic and political interest in the flow of water under consideration.

'Beneficial use' is a sticking point, because benefits are usually measured in economic terms, but remain context-dependent (Ingram *et al.*, 1986; Neuman, 1998; also Cantor *et al.* 2024 in this Special Section). Bertenthal (2024 in this Special Section) points out that beneficial use distinguishes between legitimate takers and delegitimated thieves, not as a matter of equity but as a matter of moral reasoning tied to supporting a particular political-economic ordering of water use. Curley (2021b, 710) asserts that beneficial use has always favored settler agricultural production, especially agribusinesses, over Indigenous Peoples' concepts of farming, and has been and continues to be closely tied with colonial efforts to continue occupation of the continent. Cantor (2017) argues that ideas of wasted water and efficiency help define beneficial use, which often only includes reserving water for nonhuman ecosystem services and habitats after extensive legal conflict and negotiations (see also Ingram *et al.* 1986, Ingram *et al.* 2008; also Cantor *et al.* 2024 in this Special Section). Groundwater in California also has to be put to beneficial use, but there is no strong means to regulate groundwater pumping and the California 2014 Sustainable Groundwater Management Act relies on self-regulation (Brooks 2017; Müller & Boutié 2022, 567-569). For decades, Helen Ingram and her colleagues have argued for replacing 'efficiency' as a key principle of settler state water policy and management with principles of equity and justice, which they argue are intertwined and require a recognition of water's plurality of values, and which would reconfigure definitions of beneficial use (Ingram *et al.* 1986; Ingram *et al.* 2008, 2, 12).

European settlers, as well as settlers from other regions of the North American continent took possession of the land and water they needed for their mining and farming activities and for their settlements, ignoring Indigenous communities' established water systems and water rights. The forced settler reservation system exacerbated this ongoing dispossession, even as the federal government also acknowledged that reserved water was necessary for the functioning of the reservations. The history of colonial domination manifests in the ongoing tensions over sovereignty between the US settler state (federal and state governments) and Native American Nations that have lived in what is now the US since time immemorial. Water and land have been pivotal in exertions of sovereignty by both sides, with the US taking the dominant position through militarized exercises and legal cases being worked out through the federal and state Anglo legal system.

Indian Reserved Water rights were initially challenged through a settler court, culminating in the *Winters* decision in 1908, and then through subsequent court cases challenging and judicial decisions upholding the initial decision (McCool 2002, 9-19; Yazzie 2013; Curley 2019). Now known as the *Winters* doctrine, these rights are not subject to the same constraints as water rights under either riparian water regimes or the Prior Appropriation Doctrine (Hundley 1978, 463-464, McCool 2002, 12-14; Yazzie 2013; Curley 2019, 63). However, the *Winters* doctrine also leaves many issues unresolved regarding Indian Reserved Water rights and the implications are complex (Hundley 1978; DuMars & Ingram 1980; McCool 2002; Yazzie 2013; Curley 2019). Curley (2021b, 710, also 2019, 58) argues that the *Winters* decision was not about settling Indigenous Peoples' claims on water, nor about justice, but about reserving federal water rights given that the US federal government assumes that Reservations are federal lands. The relationship of groundwater to Indian Reserved Water rights is even less well articulated, but ever-present (Ingram 1979, 300).

Currently, attempts at resolutions are being addressed through water settlement agreements (McCool 2002; Curley 2019; Perramond 2019; Borgias 2024a). Yazzie (2013), on the basis of the *Winters* doctrine, argues against the Diné People accepting state and federal quantifications offered in settlements, because while settlement stabilizes and makes Diné claims on water predictable for the state and federal governments, settlement minimizes the Navajo Nation's actual allocations and limits, and truncates future allocations (see also Curley 2019). Curley (2021b) argues that like settler water and energy infrastructure projects, which have decimated tribal lands (p. 708-709), Indian water settlement agreements are forms of colonial enclosure. He contends that Indian water settlement agreements are not so much negotiated as handed to the Nations, which are often in conditions of desperate water scarcity as well as economic disadvantage largely due to settler water and energy infrastructural projects. He also asserts that these settlements foreclose tribal water sovereignty and limit future claims (p. 708), which is their stated intent, and in the Southwest, force conformance to the Colorado River Compact to which no Native American Nation was a party (p. 707, 712-715), disrupt Indigenous Peoples' lifeways, relationships, and commons (p. 711-712), and limit the kinds of water uses for Indigenous communities and individuals (p. 717).

One of Curley's key points is that a water settlement in one place can have negative consequences for other Nations and for other parts of one Nation, particularly as states not the federal government negotiate these settlements, an observation echoed by Perramond (2019). The Navajo Nation's reservation spans Arizona, New Mexico, and Utah. Under settler law, it is states, not the federal government, who must negotiate water settlements (Congress then approves these settlements). Once New Mexico negotiated a settlement for the San Juan River water to be transferred to the Rio Grande River, Diné People in Arizona were held hostage and not given access to water in the federally funded Navajo-Gallup Water Supply pipeline, without first signing away their future water claims (Curley 2021b, 716-717). Then in 2004, the Arizona Water Settlement Act set aside only 200,000 acre feet (246.7 million cubic meters) a year to settle all outstanding Indian water claims for all 22 Nations in Arizona (p. 718). A related proposed water settlement emerged in 2012, linking Colorado River Upper Basin water to a coal plant on Diné land, which again threatened Diné lifeways and was rejected by the Navajo Nation (Curley 2019, 2021a, 396-399). McCool (2002) investigated many different Indian water settlements across the western states. He evinces resignation that they seem to be the 'only game in town' and he hopes for equity and justice through these processes (p. 9), but he concludes that the successes and failures of water settlements are particular to each settlement. It is worth noting that the Trump administration's wholesale attack on equity and justice in the federal government and its services, as well as perhaps a truncation of infrastructure projects financed under the Biden administration, the future of water resources and water

infrastructure planning, governance, development, and legal settlements have entered a liminal state as of late January 2025.

I have considered several strategically deployable linguistic shifters or floating signifiers, and their operations, including water scarcity, drought, predictability, beneficial use, efficiency, waste, water rights, and the different ways these terms are made to make sense in often contrasting lived experiences of drought. While these linguistic shifters can contribute to dispossession and reinforce relations of power, they can also open avenues for resisting and redirecting control over drought.

Groundwater and unequal distributions of vulnerability

Social justice and vulnerability are key lenses through which political ecologists address drought. Drought conditions starkly expose the fraught political ecological relationship between surface water and groundwater. Many rural and small-town households in the West depend on wells. Groundwater basins are not conterminous with property lines, and those with the deepest pockets are positioned to extract water more quickly and to drill deeper, endangering other well-dependent users and often leaving groundwater sources permanently depleted (Jepson 2012; Sizek 2018; Bessire 2019; Pompeii 2020; Walsh 2022, 4; Méndez-Barrientos *et al.* 2023; also Borgias 2024b and Bremner 2024, in this Special Section). The modern distinction between groundwater and surface water arose in the mid-1800s and became increasingly entrenched with the development of new extraction technologies for accessing deeper water reserves, the expansion of the scale of agricultural production including the growing of high value, water-dependent crops in arid landscapes, and increased urban development (Walsh 2022, 2-4).

Sizek (2018) uses the recent case of the Cadiz Inc. groundwater extraction project in the eastern Mojave Desert, California, to demonstrate the many ways in which groundwater rights echo property rights (although not surface property lines) and thus benefit the largest surface property owners. Walsh (2022, 4) notes that although the Cadiz agricultural project aims to produce grapes, the excess groundwater extracted will be worth as much if not more money, if sold to Los Angeles. Walsh further notes similar goals on the part of the Kern Water Bank, which aims to recharge depleted aquifers during wet years and then sell the newly accumulated groundwater. Fairbairn *et al.* (2021) detail the ways in which Harvard Management Company's (Harvard University endowment fund manager via Brodiaea Inc., and consulting group Grapevine Capital Partners, LLC) agricultural land investment in arid Cuyama Valley in Santa Barbara County, California, appears to have been as much about aggressively taking control of groundwater resources through the development of groundwater infrastructure and participation in groundwater planning processes mandated by the 2014 California Groundwater Management Act, as it is about farming grapes, in order to increase the value of their investment. Groundwater depletion contributed to the necessity of constructing the Central Valley Project in California, in an effort to sustain economic production and development (Claire & Surprise 2021).

On the other hand, Jepson (2012) describes how water laws encouraging groundwater pumping in south Texas seriously impacted households dependent on wells. A similar pattern of excessive groundwater pumping has been observed in California when either surface water supplies dwindle or simply prove insufficient for the kinds of water-dependent industrialized production practices undertaken in a region, also impacting the water supplies of less well-off communities (Greene 2018; Walsh 2019, 2022; Pompeii 2020; Cantor *et al.* 2022; Müller & Boutié 2022; also Borgias 2024b and Bremner 2024, in this Special Section). Sugg (2018, 10-11) found that during the drought of 2012-2016 in California, when surface water allocations were curtailed for even senior water rights holders, growers responded by fallowing, laying off workers, and pumping massive amounts of groundwater, with over 5,000 new wells drilled between 2012-2015 in the San Joaquin Valley alone.

As these examples demonstrate, the legal, regulatory, and discursive regimes enveloping groundwater enable economic expansion for some groups of people, while depriving other groups of basic water supplies. These practices also contribute, sometimes irreversibly, to groundwater overdraft and depletion.

In times of lean precipitation, people turn to groundwater resources, but generally the least resourced people are hit hardest by groundwater depletion (Vásquez-León 2009; Jepson 2012; Swain 2015; Greene 2018, 2021; Walsh 2019, 2022; Pompeii 2020; Egge & Ajibade 2021; Müller & Boutié 2022; also Borgias 2024b

and Bremner 2024, in this Special Section). These authors contribute several significant observations regarding groundwater depletion.

First, as the authors point out, water vulnerability is a culmination of social, health, political, and economic structural inequalities that already position less resourced groups of people as vulnerable. Vulnerability in other words is multifaceted and each dimension of vulnerability exacerbates the other dimensions. Similar to Nixon's (2011) discussion of the slow violence of environmental degradation, Greene (2018) and Pompeii (2020) argue that the slowly unfolding nature of drought often intensifies the impacts of drought conditions for vulnerable groups of people (see also Borgias 2024b and Bremner 2024, in this Special Section).

Secondly, the fluid material connectivity among deep and shallow groundwater resources, and between groundwater and surface waters contributes to this vulnerability (Walsh 2022, 7, also Bremner 2024 and Hite *et al.* 2024, in this Special Section). Because groundwater resources are fluid and do not neatly conform to property lines, heavy reliance on groundwater wells located on better resourced corporations and homeowners' properties increases vulnerability for at-risk groups of people who rely on shallower groundwater resources, by drawing down or polluting their sources of available water. Fairbairn *et al.* (2021, 291-292; see also Müller & Boutié 2022, 572) provide a clear explanation of the way in which groundwater connectivity works in the Cuyama Valley in California. The 2014 California Sustainable Groundwater Management Act aims to bring groundwater and surface water law and management into integrated conformance with contemporary scientific understanding of their connectivity, but given the weight of extant management practices and entrenched exploitative practices, which discourage data keeping, this intent has only been partially achieved (Owen *et al.* 2019; Müller & Boutié 2022; Walsh 2022, 8).

Thirdly, the pumping of groundwater is largely invisible, in part because of deeply entrenched but now very questionable, modernist representations of groundwater reserves as deep and unknowable (Walsh 2022, 7-8). Groundwater regulatory conditions also contribute to this invisibility. Walsh (2022, 9) points out that groundwater resources, particularly as these are now deeply buried reserves, do not have customary institutions, nor historical cultural norms and rules of governance. This is further exacerbated by the predominance of neoliberal norms in Western states, especially those states that do not hold groundwater in trust. Contemporary jurisdictional and legal pathways regarding groundwater access and extraction are complicated, constrained, and shaped by law's intimate relationship with protecting private property rights regimes (Sizek 2018), which in turn, are intimately linked to fostering capitalist economies.

One result of connectivity being unacknowledged or flat out ignored, with persistent invisibility and uncontrolled or barely controlled groundwater pumping, has been overdraft and serious depletion of groundwater basins (Sugg 2018; Bessire 2019; Pompeii 2020; Fairbairn *et al.* 2021, 290; Walsh 2022; Müller & Boutié 2022, 564; also Borgias 2024b, Bremner 2024, and Hite *et al.* 2024, all in this Special Section).

Several of the above-cited authors also highlight the different kinds of social support networks that develop as coping mechanisms among less resourced groups. While some authors describe alliance building and the development of support mechanisms (Egge and Ajibade 2021; Pompeii 2020; Whear 2022; also Cantor *et al.* 2024 in this Special Section), others emphasize stronger paths to rejecting imposed decisions, including rejecting additional grand infrastructure projects (Yazzie 2013; Curley 2019, 2021a, 2021b; Whear 2022), rejecting additional groundwater extraction (Fairbairn *et al.* 2022, 294-296), supporting alternative methodologies for managing water access and uses (Perramond 2019), as well as fighting back in the name of water justice and Indigenous Peoples' sovereignty (Yazzie 2013; Curley 2019, 2021a, 2021b; Borgias 2024a; also Borgias 2024b, Hite *et al.* 2024, and Zárata 2024, in this Special Section). Curley (2019) and Zárata (2024 in this Special Section) remind us that the positions taken by any group of people are living processes, open to change as people share ideas, learn from each other and their adversaries, and there does not always have to be complete agreement on the best approach in order to move toward social justice.

The recognition of the onset of serious climate change has given rise to assessments of vulnerabilities and data gaps (see for example, Castellano 2020). Approaches examining vulnerability often direct the view back toward the responsibilities of governments, especially because the states hold surface water in trust for their publics, resulting in, for example, increasing pressures on state governments to manage the presence of

toxic chemicals in drinking water. Many western states have had a difficult time managing groundwater resources. Focusing on vulnerability highlights the tensions between fostering social justice and fostering lucrative economic growth, as well as the necessity of understanding the particularities and context of vulnerability.

Governing coproduced natural and social worlds

The authors in this Special Section emphasize the formative role that discursive framing plays in materially constituting the governance of drought. Borgias (2024b) examines the way naturalized discourses about drought serve as vehicles for exacerbated environmental degradation on the part of the powerful Los Angeles Department of Power and Water in the Mono and Owens Basins. Cantor *et al.* (2024) probe the role of discursively redirecting freshwater flows toward habitat protection. Bremner (2024) argues that groundwater overdraft needs to be reframed as dispossession in Coachella Valley. Hite *et al.* (2024) challenge the federal government's discursive deployment of 'consent' in promulgating energy-water infrastructural development on sovereign Tribal lands. Randle & Linville (2024) examine the discursive frame of flexibility in garnering support for reservoir infrastructure development. Bertenthal (2024) unpacks the complex and influential trope of water thievery in arid climates, emphasizing the various ways in which specific discursive forms are made authoritative.

Zárate (2024 also in this Special Section) examines the nature and implications of scientific discourses of drought. Goldman *et al.* (2016), Brooks (2017), and Bakker (2000) remind us that knowing 'nature,' especially scientific forms of knowing, is mediated through discursive and graphic means, and through the social framings and assumptions used to understand these mediations and to reproduce them. Curley (2019, 2021b) reminds us that the quantification of water through the instantiation of settler water rights systems commoditized water, and makes the right to use water fungible in ways that fit with expanding settler capitalism both directly and indirectly (see also Brooks 2017; Perramond 2019). Quantification makes both water and people's uses of water legible, even as it authorizes and favors one form of drought governance over another.

Approaching drought governance practices through the idea that droughts are 'produced' through representational, political, and economic practices that reinforce hierarchical relations of power, suggests that drought governance needs rethinking in ways that fully respect more than one constellation of knowing, living in, and governing the world. Two key analytical issues arise. The first concerns the coproduction of social and natural worlds, and the second is the point that there is more than one constellation of knowing and living in the world.

The coproduction of natural and social worlds is an issue that political ecology takes seriously, providing approaches that consider the empirical impacts of capitalist political economies on people and their ecological contexts. Of all the scaffolding platforms that political ecology works to reframe, the Euroamerican sundering of culture from nature in waterscapes and droughts is one of the most vexing and recalcitrant (Swyngedouw and Heynen 2003; Bakker 2012; Barnes & Alatout 2012; Carroll 2012; Linton & Budds 2014; Cousins 2017a; Randle & Barnes 2018; Claire & Surprise 2022; Borgias 2024a). Discursive practices play a key role in either challenging or sustaining this sundering, and in turn, shape the kinds of governance practices made possible or that are precluded. The idea of coproduced social and natural worlds resets the bar regarding the instrumental sundering of culture from nature in the name of capitalist exploitative water and drought economies.

This sundering has also meant that some systems of knowing and living in the world are displaced or co-opted by others, as Borgias (2024b), Bremner (2024), Cantor *et al.* (2024), Hite *et al.* (2024), and Zárate (2024), in this Special Section, demonstrate. The use of strategically deployable linguistic shifters or floating signifiers is one of the vehicles through which different social worlds are brought together cooperatively or forcefully.

Two anthropologists, Raffles and Ganapathy, and geographers Goldman *et al.* who have taken up this challenge of thinking in the vein of coproduced natural and social worlds, have inspired me to consider how we might begin to rethink drought governance practices in the western US. All three authors deploy the

Latourian notion of translocal networks⁴ to ethnographically examine the relationships between different networks of coproduced human and nonhuman social relations. They highlight the way that more than one social network can differently occupy, interpret, know, represent, and productively utilize the same or overlapping space, where even as subaltern networks are interconnected with and impinged upon by dominant networks, they remain distinct in their social practices and integrity.

Translocal networks are complex networks of social relationships, including humans and nonhumans, that can expand and contract, as well as simultaneously occupy near and distant spaces and time (Latour 1993). Latour does not explore relations between multiple translocal networks, focusing instead on conceptualizing location within a network. Interrogating Latour's idea of a translocal network, Strathern (1995, 178-180) asserts that relationality and scale implicate each other. Scale makes sense of relationality by putting a boundary around it, and relationality, in turn, anchors and defines locality. Thus, each network defines its own relationships and scale. Strathern also points out that economic relations are always an integral aspect of Latour's translocal networks (p. 178), and that it is the development of a narrative that makes the relational connections across different scales (p. 179).

Raffles (2002, 181-184) expands Latour's analytical boundaries by investigating intertwining natural and social historical narratives, as well as by integrating political economic and environmental contexts into his ethnographic descriptions of various distinct translocal networks that occupy the lower Amazon Basin. Traveling the lower Amazon River, Raffles (2002) describes different fluid intersections of power-soaked coproduced socionatural locales where humans have reshaped the dynamic river and its floodplain, as they reshape their economies and histories. For Raffles, time and space are mutually important as he connects near and distant places and pasts.

Goldman *et al.* (2016) argue that droughts in Maasailand can be understood as two different Latourian networks composed of many interconnected elements. One network is inhabited by the scientists and a different one is inhabited by Maasai communities, and each embodies a different lived experience. Goldman *et al.* argue that for the Maasai the contours of drought comprise a fluid topography that comes with the expanding and contracting social and environmental webs, as Maasai from one place carry drought along their social networks to other places in order to survive, as drought compels them to consume the resources of other people in other places. While space plays a large role in Goldman *et al.*'s Latourian translocal network, conceptualizing time does not.

Ganapathy's (2013) depiction of translocal networks in the National Arctic Wildlife Refuge, underscores translocal networks as relational and contingent, evincing varying spatial and temporal scales, different cosmologies, and different social orders. Similar to Curley (2019), Ganapathy emphasizes the differences between US settler governments' ontological relations with land and water and the Gwich'in Athabaskan's ontological relations and practices with their land and water. Ganapathy depicts different translocal networks operating in different registers across the same landscape, illuminating different forms of taking, inequality, empowerment and disempowerment (2013, 98).

Perhaps the three different approaches to governing drought examined in this overview, liberal democratic pluralism, political ecology, and anticolonial governance practices, can be seen as crucial components of different translocal networks. The above authors emphasize the ways in which operations of power saturate and shape relations between translocal networks, a critical observation when assessing drought governance processes associated with different translocal networks.

Arguing from a liberal democratic pluralist position, Helen Ingram has long advocated for making conservation, and habitat and species protection, a viable part of water management in the western US. Ingram *et al.* (1986, 186-189) argue that water is a public good that is relational, a relationality that extends to humans and nonhumans, and that equity entails respect for the pluralism of values, the rights of all groups to participate in water allocation and governance systems, and their responsibility to live up to the process, the negotiations, past agreements, and future users. Replacing efficiency with equity would have huge ramifications for social

⁴ The authors cited here are drawing on Latour's notion of networks. They are not deploying notions of translocality arising out of concerns to understand transnationalism, which, for example, Greiner and Sakdapolrak (2013) consider to be the defining conceptual substrate of translocalism.

justice, environmental protections, and water-consuming production practices, such as agribusiness, golf courses, urban growth, and energy production. Ingram insists that equity cannot be standardized, nor reduced to a universal principle. Rather, equity and justice must be defined in relation to specific contexts, including historical and future relations (p. 184-185). In other words, equity and justice are particularistic and need to be defined in and for the context in which they are applied by the people inhabiting those places. Ingram treats the water rights of the Native American Nations as sovereign (see for example, DuMars & Ingram 1980). Ingram's approach places scale and discursive framing fully front and center.

Liberal democratic pluralism does not easily create a space for groups from fundamentally different translocal networks to negotiate on a level playing field, particularly not in the participatory processes currently in vogue. More recently, Ingram (Gerlak *et al.* 2022) has added clarity regarding how fairness in participatory processes and decisions should work, including the necessity of addressing the roles of structural racism, classism, gendering, and colonialism as part of water equity, and the need to move beyond the distributional justice model that informed her earlier work on water equity. However, a key problem remains. The liberal ideal of plurality does not redress disparities in legal, political, social, and economic positioning among different groups of people who come together to negotiate an outcome, as Fairbairn *et al.* (2021) and Müller & Boutié (2022) demonstrate has been the case regarding groundwater planning in the Cuyama Valley under the 2014 California Sustainable Groundwater Management Act.

Another key issue arises in the context of internal colonial relations between negotiating sovereign entities, as in the case of the Native American Nations and the US settler governments. Liberal democratic pluralism imposes its own political and philosophical assumptions and notions. In the US, the organizing entity governs the process, and these processes are largely organized (and financed) by settler governments (federal and state) under the auspices of legal imperatives, which in turn lends the processes credibility and creates incentives for interested parties to participate. Further, such processes make recommendations, not final legal and regulatory decisions, which remain the government's prerogative. Significantly, participatory processes for integrated planning of land, rivers, oceans, and groundwater are now widely undertaken throughout the western US, so perhaps liberal democratic notions of pluralism might become sites of transformation, including transformation of the processes and perhaps the very notion of plurality. The creation of Bears Ears National Monument under the Obama administration might serve as a possible example.

One of the challenges for establishing equity through pluralist approaches will always be the long-established relationship between liberal democratic political systems and capitalist modes of production. Sugg (2018) applied Ingram *et al.*'s (1986) equity principles to a consideration of how the agriculture sector would have fared with a reapportionment of water during the 2012-2016 California drought in the Central Valley. He found that balancing equity principles would be very challenging, but concluded they could introduce a broader range of criteria for water allocations, thus improving fairness. His analysis points to some of the fundamental contradictions of expansionist capitalist agriculture, but he never fully embraces his observation that this kind of agricultural water usage is not economically, socially, or environmentally sustainable. For example, Sugg (2018, 14) notes that rather than replenishing water sources with saved water, often production is expanded (see also Walsh 2019; Müller & Boutié 2022).

Coming from a political ecological approach, Walsh (2019, 199-200) floats a potentially transformative suggestion regarding groundwater, to eliminate private property rights in the fluid water resource. He argues that groundwater should be treated as a common-pool resource where all users are fairly and fully included in management decisions, a direction he hoped the 2014 California Sustainable Groundwater Management Act would foster. Walsh (2022) also asserts that connectivity, within groundwater basins and between groundwater and surface water resources, needs to be treated differently in terms of its materiality, management, and how it is represented. While the 2014 Act aimed to do this, groundwater management has not been transformed (see Fairbairn *et al.* 2021 and Müller & Boutié 2022 for examples of roadblocks). As many of the articles cited, and as the articles in this Special Section attest, current economic practices must change as part of efforts to reconfigure equitability in water allocation and management. At the heart of western water (and energy) economic, political, and environmental relations lies a rapacious economic system underpinned by settler legal and regulatory infrastructure that prioritizes private property, economic growth, competition, and profit-taking.

While Ingram's notion of equity anchored in a liberal democratic frame might at first glance seem at odds with a political ecological social justice framing, both approaches argue that equity needs to replace efficiency and profit as the driving principle in water management, allocation, distribution, and definitions of beneficial uses. Both Ingram's liberal democratic pluralism and political ecological approaches evince a potential to redress inequalities in water access and allocations for laborers and small-scale water users. They both address pollution burdens, economic and environmental disparities, and the privileging of a small number of key actors when water is scarce.

A third approach to governance suggested in this discussion also bears consideration, and it addresses ongoing tensions between settler governments and Native American Nations. Sovereignty and sovereign claims lie at the very heart of economic, political, legal, social, and environmental water relations in the arid West. McCool (2002), Thorson *et al.* (2006), Yazzie (2013), Yazzie & Risling Baldy (2018), Bacon and Norton (2019), Perramond (2019), Curley (2021a, 2021b), Borgias (2024a), and Special Section authors Borgias (2024b), Bremner (2024), Hite *et al.* (2024), Zárte (2024) all highlight the tension around Native American water sovereignty and colonialism. Settler legal regimes, infrastructure projects, and capitalist economic priorities scaffold colonial practices of enclosure, dispossession, appropriation, and exploitation. This anticolonial approach to governance entails respecting Native American Nations as sovereign entities in water relations between Tribal governments and settler state governments, including Nations that the federal government has failed to recognize, as well as respecting sovereign governance by Nations over their own surface waters and groundwaters (Thorson *et al.* 2006; Diver *et al.* 2019). Anticolonial interrogations are reshaping political ecology, geography, and anthropology, as well as explanations of settler society-driven climate change. Anticolonial repositioning in the academy has come about because Indigenous Peoples have relentlessly worked to assert their sovereignty and their sovereign claims to their water, lands, and rights through courts, through participation in government-to-government exercises, through resistance, and through the production of knowledge, including scholarly knowledge (Thorson *et al.* 2006; Yazzie 2013; Middleton-Manning *et al.* 2018; Yazzie & Risling Baldy 2018; Bacon & Norton 2019; Diver *et al.* 2019; Richland 2021). It is important to note again that anticolonial approaches concern political and economic relations in the western US.

Each of the three approaches to governing described above contributes to the constitution of a different translocal network. Todd (2016) argues that ontological approaches have some potential to reshape social relations in more equitable and respectful ways, but only if the voices of those whose ontologies are generally excluded are instead included in meaningful, equitable ways (see also Bertenthal 2024, Borgias 2024b, Hite *et al.* 2024, and Zárte 2024, in this Special Section). Governance approaches are significant components of translocal networks, and governance practices are situated in their own coproduced sociocultural, historical, economic, and ecological contexts. Unpacking the processes and practices of each network, as well as their intersections, might suggest ways to reconsider the instrumental purposes and operations of strategically deployable linguistic shifters, as well as other influential representational practices including those of laws, regulations, and norms. One of the advantages of the translocal network approach, as developed by Raffles, Goldman *et al.*, and Ganapathy, is that it emphasizes the disparities and inequities that position different translocal networks in relation to each other as they negotiate a particular space, and in the case of drought, surface water and groundwater resources. Thus, the conceptual framework of translocal networks might provide an analytical and material toehold for redressing past inequities and ongoing colonial practices. This approach may suggest pathways to reconfigure the dominant settler models of water management, access, use, and allocation, which have consistently contributed to drought creation and its inequalities.

3. Articles in this Special Section

In this Special Section, Hite *et al.* (2024), Borgias (2024b), Bremner (2024), and Cantor *et al.* (2024) each trace a specific tangle of Western settler water law as it shapes control of surface and groundwater and the relationship between water rights and land ownership. Hite *et al.* (2024), Borgias (2024b), and Bremner (2024) pay particular attention to the highly flexible gaps in laws governing groundwater pumping, which

create many opportunities for overdraft, as well as the ways in which Native American sovereignty is repeatedly challenged by tactics of dispossession.

Hite *et al.* (2024) examine the water-energy nexus currently unfolding on Diné sovereign territory (territory of the Navajo Nation) in a proposed energy infrastructure development aiming to satisfy settler society's energy needs. Aligning its actions with US national goals for developing green energy, in 2019 the Federal Energy Regulatory Commission (FERC) entertained permit applications for three Pumped Storage Hydropower projects in Diné territory, but did not consult either the Navajo Nation, or the Hopi Nation. Pumped Storage Hydropower generates electricity by moving surface and/or groundwater water through a series of reservoirs and pumping stations. In 2021, the corporation withdrew from the two open-loop projects located directly on the Little Colorado River, but has thus far persisted with the closed-loop Big Canyon Project with a 2020 FERC permit in hand. 'Consultation' is a legally mandated requirement for all federal agencies engaging in any project situated in Native American Tribal territories. Using this current series of events, the authors unpack the fraught history of FERC relations with the Navajo Nation and the definition of consultation, pointing out that consultation is a sovereign government-to-sovereign government negotiation that cannot be delegated to corporations, and that because consultation does not entail refusal to consent, the process undermines the intent of consultation. The authors argue that what is needed at this juncture is relational justice and integrity in the consultation process on the part of the settler state government agencies.

Borgias (2024b) chronicles the history of the Los Angeles Aqueduct from the standpoint of the Nüümü Peoples who live in the Mono and Owens Basins, which lie to the northeast of Los Angeles. The ceaseless transfer of water from these two basins to urban Los Angeles has impacted water tables, lakes, rivers, domestic wells, vegetation, livelihoods, and water access in both basins. She demonstrates the ways in which naturalizing discourses about drought and its threats exacerbate the fraught and highly manipulatable relations between surface water and groundwater laws. Documenting the Los Angeles Department of Water and Power's (LADWP) efforts to legally avoid meeting court mandated environmental mitigation benchmarks, she further finds that said benchmarks reinforce already degraded environmental conditions. While some ranchers (but not all) have been able to use the court ordered mitigation stipulations to continue ranching, the sovereign Native American Tribes in the basins have been systematically excluded from negotiations, from public meetings, and from accessing water which belongs to them. Borgias concludes that drought-talk and uncoordinated surface water and groundwater legal regimes hide ongoing practices of dispossession, conceal failures of the baseline benchmarks for mitigation, drown out the voices of the communities in the basins, and allow LADWP to continue its rapacious but legal transfer of water from the rural basins to urban Los Angeles.

Focusing on various forms of water dispossession and groundwater overdraft in particular, Bremner unpacks the sordid history of settler development, land appropriations, and water grabbing in Coachella Valley. Here, water is used to sustain and expand industrialized agriculture. Paying attention to different forms of water dispossession, as well as to different modes of dispossession (legal, material, discursive), and resonating with Borgias, Bremner demonstrates how they intersect and strengthen each other. In the Coachella Valley, land transactions separating water rights from land ownership, court-driven water settlements with Native Americans, and industrial groundwater pumping, have all left the eastern valley residents without adequate water for shallow household wells for domestic use and small-scale farming. Native American communities are the worst affected by groundwater depletion. Bremner traces the ways in which the Cahuilla Peoples, who at one time controlled and inhabited the entire valley, manage desert water scarcity by building small canals from permanent streams to fields and households and by maintaining shallow wells. They foster lives and livelihoods without ruining the water table. Unchecked legal dispossessions have allowed settlers to grow industrialized commercial crops, including water-intensive ones, and to expand urbanization and recreational industries, leaving the water table under the valley dramatically overdrawn. Bremner argues that although overlooked, overdraft is a significant form of dispossession, a practice exacerbated by groundwater pollution from industrial and commercial activities.

Shifting scale and context, Cantor *et al.* (2024) argue that while Prior Appropriation Doctrine is the dominant water allocation system in the western US, a robust range of management practices operate to mitigate the conflicts and inequities caused by Prior Appropriation Doctrine, strategies that challenge the inherent hierarchization of users and extant definitions of 'beneficial uses.' The authors present a comparative

typology of different approaches, some of which pose more radical challenges to Prior Appropriation Doctrine than do others. Focusing on more localized water governing practices and while acknowledging the dominance of the Prior Appropriation Doctrine, the authors suggest potential avenues for displacing that dominance, if only partially, through alternative water allocation and use practices that recognize and materially support non-consumptive water uses and improved instream flows as beneficial uses. Their research in Oregon suggests that reworking the category of beneficial use would revise some of the social hierarchy ingrained in the Prior Appropriation Doctrine.

While the four contributions above focus on the critical role of law in shaping drought relations, the next three contributions broaden understanding of the range of discourses shaping the political economy of drought and its effects. These contributions emphasize the crucial role of narrative in rationalizing and gaining support for laws, policies, regulation, and capitalist development.

Randle & Linville (2024) examine the ways in which flexibility has become a central rationale and justification for fresh infrastructure investment in California's dam and reservoir water storage and distribution system. They argue that promulgating flexibility reinforces the inflexibility and rigidity of the already extant parts of the system, not least its supply-oriented rationale and approach to managing freshwater resources in the state. The authors argue that the recent emphasis by state agencies on building flexibility reinforces the very practices that keep the existing system from functioning more sustainably. Like Ingram, they challenge whether meeting water needs requires ever-expanding supply and water-hungry production. The current centerpiece of the proposed California expansion is the construction of Sites Reservoir in northern California, which will be filled and maintained by piping water from the Sacramento River during spring runoff. Unlike many of the other parts of the existing system, Sites will not generate hydroelectricity, nor serve as a flood control apparatus. As with the Big Canyon Pumped Storage Hydropower development (Hite *et al.* 2024 in this Special Section), Sites Reservoir is yet to be built. Randle & Linville demonstrate the way Sites, as an aspirational project, reproduces extant relations of power through narratives that foment and justify its construction, and conserve rather than challenge existing priorities, assumptions, and water consumptive practices.

Bertenthal's (2024) contribution focuses on the widely deployed trope of water thievery. She explores its nuanced and proliferating meanings in the fluid, overarching social context in which water is configured as a resource, as something that can be stolen, and in which water laws and regulations operate to foster appropriation and dispossession. Unpacking water thievery's role as a widely deployed linguistic form in the instantiation of settler water law, Bertenthal examines the ways in which thievery's connotations of good and bad order the moral universe of freshwater in the western US, while also reflecting the shifting currents of that moral order. Carefully interrogating the idea of thievery illuminates the ways in which such connotations do not necessarily neatly coincide with what is technically legal or illegal, but rather are tied to who is enabled and who is excluded from water access, and whose uses are deemed legitimate. Analyzing more than 350 texts ranging from legal documents, names of tools, to popular films, Bertenthal points to a few instances where the water thievery trope is playfully deployed for the good of the community, but more often she found examples where it is understood to constitute threats to hegemonic social order. Examining the many ways that accusations of water thievery work, Bertenthal interrogates the ambiguous moral and economic order that sustains practices of water appropriation.

Zárate (2024) bookends this Special Section by exploring the production of scientific knowledge through the prism of mending: the idea that habitats, equipment and social relations are in constant state of being repaired under climate change, and how these mending practices lend themselves to reinforcing extant power relations on Loma Ridge, Orange County, California. Focusing on the University of California Irvine's and Irvine Ranch Conservancy's chaparral ecological research center atop Loma Ridge, Zárate follows the work of researchers, conservationists, and land use specialists studying the impacts of drought. Taking a two-pronged analytical approach, Zárate highlights the hierarchy of scientific research practices that render invisible the labor making such research possible. He also highlights the ways scientific knowledge production makes invisible ongoing practices of colonial and resource enclosure and dispossession, distracts from the ways in which research facilities, as well as adjacent luxury housing subdivisions, and earlier settler cattle ranches exist because Native Americans have been displaced and their ecological knowledge has become a resource

for scientific knowledge. On Loma Ridge, these disposessions are exacerbated by the fact that the Acjachemen Nation (Juaneño Band of Mission Indians) is not a federally recognized Tribe and thus has fewer avenues through which to push back. Zárate ends on a hopeful note that practices of 'making invisible' can themselves be mended through a radically different approach to knowledge production.

This Special Section contributes archival and ethnographic research about droughts, lived experiences of drought, and drought's varying impacts on lifeways, worldviews, and differently situated groups of people in rural settings in the western US. Three of the articles, Borgias (2024b), Bremner (2024), Hite *et al.* (2024) take a deep look at legal and regulatory regimes that support and foster the enclosure and dispossession of the groundwater resources of less-resourced communities, especially Native American communities. Bertenthal (2024), Cantor *et al.* (2024), Hite *et al.* (2024), Randle & Linville (2024), and Zárate (2024) illustrate the myriad ways in which governance and political ecological systems are dependent on discursive regimes. The authors aim to foster evidence-based conversations regarding the challenges posed by hegemonic forms of legal, economic, and discursive practices linked to drought, and inequitable political ecological and knowledge-making systems. They aim to encourage discussion as to how current governance and economic practices can be reconfigured into more equitable arrangements. Our collection builds on critical thinking about the ways in which settler society laws, policies, practices of internal colonization, and infrastructure shape droughts. A serious reconsideration of how drought practices are governed and sustain relations of power, is imperative.

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