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Who Decides: Is Water Life or Capital? Contesting Visions of Western Water Management in the 21st Century

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Who Decides: Is Water Life or Capital? Contesting Visions of Western Water Management in the 21st Century

**By
Ceorl**

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Committee Approval

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Abstract

There is an ideological divide between the goal of universal access to clean water and the outcomes of how water regulations are implemented. John Fleck, author of *Water is for Fighting Over: and Other Myths about Water in the West* and Sivas, et al. in *California Water Governance in the 21st Century* present contesting prescriptions for Western water management. The ideologies advocated by Fleck and Sivas, et al. differ as to who enacts and profits from each and exemplify the divide between the goals of water regulations and how they are implemented. Fleck regards water as property and an economic good, and his prescriptions benefit an exclusive network of experts and senior appropriators. Sivas et al. argue that water is a life-giving public and environmental good that can only be managed ethically and sustainably if the public establishes water use priorities. It may be impossible to reconcile these conflicting perspectives, with Fleck representing the status quo of maintaining seniority rights-based water allocation systems, and Sivas, et al. championing democratic water governance.

Keywords: water governance, water management, water justice

Who Decides: Is Water Life or Capital? Contesting Visions of Western Water Management in the 21st Century

Introduction

There is an ideological divide between the goal of universal access to clean water and the results of how water regulations are implemented. What are the contesting visions that guide Western water management practices, and who establishes and benefits from them?

“Water is life” is familiar to everyone, but this vision of water means different things to different people. Some might see it in California’s 2012 Human Right to Water Act (HRTWA), which states:

It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes (AB 685, 2012).

California has the world’s fifth-largest economy (Forbes, 2020), but over 1 million of the state’s residents still do not have access to safe, affordable, and reliable sources of drinking water (State of CA, 2018; Lohan, 2017b). The HRTWA was adopted to guide policymaking and contains no enforcement mechanisms. There is a gap between the goals of the HRTWA and what it can achieve.

The perspective of “water is life” includes the idea that waterways have an inherent right to exist. The main goal of the federal Clean Water Act (CWA), to prevent the discharge of pollutants into the nation’s protected waterways by July

1, 1983, might also be regarded as more aspirational than actual but at least the CWA contains mechanisms for its enforcement, unlike the HRTWA (Fed. Water Pollution Control Act, 2002). The toothless vision of “water is life” in the HRTWA stands in stark contrast to the seniority rights-based management of California’s waters.

California allocates water based on a complex mix of three main types of water rights, but the most common, as is the case in other Western states, is based on the doctrine of prior appropriation. Prior appropriation is often abbreviated as “first in time, first in right” because the first persons to appropriate surface waters for “beneficial” uses (i.e. economic: farming, industrial, municipal) are referred to as senior appropriators, who have priority of access over junior appropriators. In theory, this means that during times of water scarcity the most senior appropriators receive their allocations in full while the junior appropriators’ allocations are curtailed (FindLaw, n.d.). Under certain circumstances junior appropriators may be able to buy water from the more senior appropriators. In California, particularly during periods of water scarcity senior appropriators substitute their surface allocations with groundwater and sell their surface allocations to junior appropriators at inflated rates (Vekshin, 2014; Henry, 2017). Today there is a race among speculators to acquire California farmlands located over aquifers, not to produce food but to establish associated groundwater rights before critical benchmarks are reached in the implementation of the 2014 Sustainable Groundwater Management Act (SGMA) (Arax, 2019; Kelleher,

2018). This valuation of water as property and capital undermines any vision of “water is life.”

What follows are two examples of individuals with contesting water visions and unequal powers to realize their visions, to illustrate the gap between the water quality and accessibility goals specified in state and federal regulations like the HRTWA and CWA, and the management of water as property and capital (Mack and Wrase, 2017; Walton, 2019, Allaire et al., 2018).

Humberto Lugo, member of Comite Civico Del Valle

California’s HRTWA does not apply in Humberto Lugo’s community in Brawley, California. His residence is one of approximately 3,000 households in the Imperial Valley that are not connected to a community water system. Instead, the State has provided an exemption for the Imperial Irrigation District (IID) to allow these rural households to pump raw water from the IID’s unlined, open irrigation ditches if the residents can demonstrate that they have a contract with an approved private water purveyor to receive treated bulk or bottled water for drinking and cooking (CA OEHHA, 2017). Households such as Lugo’s use the raw canal water for showering, washing dishes, and cleaning (Lohan, 2017a). It is not uncommon to see algae, fish, and dead animals in the irrigation canals (Lohan, 2017a). Contaminants in the canal water include herbicide glyphosate, the industrial solvent dichloromethane, and concentrations of uranium and manganese that exceed federal drinking water standards (CA OEHHA, 2017; Comite Civico Del Valle, 2017). Users of the canal water claim that it smells bad, stains fabric, and causes infants to develop skin rashes (Lohan, 2017a). Brawley

is designated as an “environmentally disadvantaged” community, whose residents have higher than average rates of health problems such as asthma and heart disease, which increases their vulnerability to the adverse effects of contaminants (CA OEHHA, 2017).

The cruel irony is that the IID holds some of the most senior water rights to approximately one-fifth of the total allocated flow of the Colorado River, at 3.1 million acre-feet (Lippert, 2015). The IID has entered into very lucrative agreements with the city of San Diego and the Southern California Metropolitan Water District (SCMWD), the largest water broker in the state, to ensure that their urban clients have a reliable source of clean water (Harkinson, 2014; Lippert, 2015). Humberto Lugo is a member of *Comite Civico Del Valle*, a nonprofit organization founded by farmworkers, whose mandate is to educate and organize Imperial Valley communities regarding health and environmental social justice issues, such as the lack of safe and affordable sources of water for the valley’s rural households (Lohan, 2017a). The water vision that the members of *Comite Civico Del Valle* are actively pursuing, according to Luis Olmedo, the organization’s executive director, is for these rural households to have access to safe drinking water directly from their faucets (Lohan, 2017a). California has exempted what is arguably the most powerful rights-holder of Colorado River water, the IID, from being required to service these households in its district with clean water, unlike the urban communities that purchase water from the IID.

Ted Kowalski, senior program officer of The Walton Family Foundation

The Walton Family Foundation (WFF) is a philanthropic organization run by the heirs of Walmart founder Sam Walton, which has dispersed approximately \$100 million in grant money to influence Colorado River policymaking, according to a 2019 E&E article by Jeremy P. Jacobs. Over the past five years, the Walton Foundation has:

...funded environmental groups (Environmental Defense Fund: \$5.55 million since 2017, National Audubon Society: \$2.6 million, Trout Unlimited: \$2.7 million), university research (Yale University: \$60,000, Stanford University: \$98,000, Utah State University: \$150,000), even journalists (KUNC, a community radio station for northern Colorado: \$155,000). Earlier this month, the University of Colorado, Boulder, announced a journalism "water desk." Its funder: Walton (\$700,000) (Jacobs, 2019a).

The WFF supports entities that otherwise might criticize the Foundation's involvement in the management of the Colorado River, including government agencies, environmental groups, journalists, and academics (Dyer, 2018). The reach of the WFF's influence extends from support for research, symposia, and conferences, to river pilot projects (Jacobs, 2019a). The WFF gave \$8 million to an Arizona conservation program that provided crucial assistance for the State of Arizona to sign on to the 2019 Colorado River Drought Contingency Plan, in which the seven states that use Colorado River water negotiated shared cutbacks to prevent water levels in Lake Mead and Lake Powell from dropping to

critical levels during periods of water scarcity (Jacobs, 2019a; GovTrack.us., 2019).

The WFF provided almost half of the money for the Colorado River Sustainability Campaign, which Jacobs describes as “an important behind-the-scenes player for environmentalists working on the waterway” to the tune of \$4 million (Jacobs, 2019b). This money was funneled through the black box of the New Venture Fund, which does not disclose the identities of donors or how the grantees spend their money (2019b). The New Venture Fund coordinates grantees’ efforts so that they can collaborate more effectively, while it shields them from political blowback (2019b). For example, The New Venture Fund coordinated the Colorado River Sustainability Campaign grantees’ response to IID’s threat to pull out from the Drought Contingency Plan negotiations. The IID objected to the inclusion of a rider to the agreement that would have waived environmental laws, as well as the absence of federal funding for environmental remediation of the Salton Sea (2019b). The drainage from IID farms is directed into the Salton Sea, but when farmland is fallowed and irrigation water is redirected to urban communities, the lake shrinks and exposes a bed of toxic sediments that become airborne pollutants that negatively impact the health of residents in the Imperial Valley, like the previously-mentioned Humberto Lugo of Brawley (2019b). Senator Barbara Boxer voiced her opposition to the rider in an op-ed piece in the district’s local newspaper, but seven environmental groups that had received either WFF or New Venture funding signed on to a contesting op-ed piece supporting the rider (2019b). In the end, the Colorado River Drought

Contingency Plan Authorization Act was approved in May of 2019, but without the participation of the IID because funds for the remediation of the Salton Sea were omitted, although the environmental rider was dropped from the agreement. This is an example of how private money can have more influence on water policymaking than an elected representative of the U.S. Senate.

Ted Kowalski, the senior program officer for the WFF, is very clear about the power the WFF wields to shape a grand vision guiding the management of the Colorado River, and how indispensable the Foundation is for the realization of that vision. At the invitation-only 2019 Colorado River Symposium, Kowalski called for a bold “visionary” plan that dispenses with “incrementalism” (Pitzer, 2019). The Water Education Foundation (WEF) sponsors this exclusive, biannual event at Bishop’s Lodge near Santa Fe, NM, which was the location of the signing of the Colorado River Compact in 1922. The WEF claims that it is “an impartial nonprofit organization” whose mission is “...to create a better understanding of water resources and foster public understanding and resolution of water resource issues through facilitation, education, and outreach” (WEF, 2018). The organization is funded primarily by California water agencies and irrigation districts, corporate farmers, and private companies who do not refer to water “as life” but as an economic good and a resource that provides ecological services (WEF, 2018). It is reasonable to question why a foundation like the WEF, who hand-pick the attendees from the seven Western states and Mexico that use Colorado River water for this three-day event where informal conversations initiate policymaking that guides the management of a river that

serves 40 million people. The WEF symposium is closed to the public to encourage these informal discussions to take place, so the details of Kowalski's grand vision for the management of the Colorado River are not known. What is known is that the first and most important of the four tenets¹ of the WFF's work on the Colorado River is their advocacy for the creation of water markets (Jacobs, 2019a).

A more restrained call for a comprehensive vision guiding the management of the Colorado River than Kowalski's is outlined in a study funded by the WFF and authored by Anne Castle, who served as assistant secretary for water and science in the U.S. Department of the Interior from 2009 to 2014 and is a senior fellow with the Getches-Wilkinson Center at the University of Colorado Law School, and co-author John Fleck, director of the University of New Mexico's Water Resources Program (Castle and Fleck, 2019). In an email sent to WEF writer Gary Pitzer, Castle wrote:

I suggest that the best way to proceed is to have an articulated visionary goal with specific incremental steps to get there... The vision is needed to guide choices along the way, but it's not either desirable or realistic to suddenly make big changes in operations on the river, precipitously undermining investments and reliance on the previous status quo (Pitzer, 2019).

Castle's co-author, John Fleck, provides prescriptions for Colorado River governance in his book, *Water is Worth Fighting Over: and Other Myths about Water in the West* (Fleck, 2019). Although he limits his focus to the Colorado

River Basin, as the title of his book suggests, he intends for his prescriptions for water governance to be valid generally in the Western states where appropriative water rights are used. Fleck does not mention the WFF in this book, but his perspective aligns with the first of the four tenets of the Foundation's work on the Colorado River. Like Castle, Fleck believes that the Law of the River² guiding Colorado River management should be preserved. He proposes that water markets, which he refers to as "water-sharing agreements" are central to solving the problem of the historic overallocation of Colorado River water rights, a problem that can no longer be ignored because of reduced flows due to climate change and expanding development in the Western states. Water markets are an economist's answer to scarcity, as opposed to government-imposed solutions. Fleck provides examples throughout his book of why "water-sharing agreements" would increase the system's resiliency to the impacts of climate change and increasing water demands.

A contrasting vision of Western water management is presented in the Stanford Law School policy paper, *California Water Governance for the 21st Century* (Sivas, et al., 2017). Sivas et al. limit their policy paper to water management in California, but their prescriptions for water governance are valid, as with Fleck's, more generally. The authors insist that the public must democratically determine California's vision of water management, one that recognizes water as a life-giving environmental and public good. Sivas et al. claim that water markets are not a solution to scarcity because the most profitable uses of water are not the most social and ecologically beneficial uses,

and that water managed for profit causes environmental degradation and widening water wealth inequities. The authors do not advocate for the elimination of water rights but offer a strategy for how socially and ecologically beneficial uses of water can be prioritized over seniority-based allocations.

An analysis of underlying assumptions that support these two contesting prescriptions for Western water governance can clarify the ideological divide between the vision of universal access to clean sources of water, which is implied, of not explicitly stated in water regulations such as California's HRTWA and why those goals are not realized. These two texts present contesting visions of water management to guide policymaking, as well as who should be entrusted to carry out these visions and profit from them. Both texts agree that the specter of climate change-induced water scarcity is a problem, but their prescriptions create very different outcomes for the physical and economic well-being of people like Humberto Lugo and Ted Kowalski.

Research Question

What are the assumptions that support the contesting visions of Western water management presented in the two texts, *Water is for Fighting Over: and Other Myths about Water in the West*, and *California Water Governance for the 21st Century*? This question can be answered by analyzing each text's position on the following three key aspects of Western water governance:

1. How does each text define and support their definition of water (i.e., as a private, economic, public, and/or environmental good)?

2. How does each text describe the role of expertise in Western water management?
3. How does each text define what water justice is and its importance?

Methods

This academic multiple book review essay will use the template for the point-by-point method provided by the USC Library Research Guide,³ in which the positions of both texts will be compared to each other concerning each of the three key aspects of Western water governance.

Summaries of the two texts

Water is for Fighting Over: and Other Myths about Water in the West

John Fleck begins and ends his book with a story about international negotiations that enabled the release of a pulse of water from Lake Mead in Nevada as an experimental, yet successful attempt to reinvigorate the dry environment of Mexico's Colorado River Delta at the river's outlet into the Gulf of California. Fleck presents this story to counter several myths about Western water management that he claims inhibit solving the problem of the overallocation of the Colorado River. ("Overallocation" means that the water rights granted on paper are greater than the amount of water available from the environment.)

Fleck's (2019) first "myth" is that Western water is inherently "for fighting over" (p. 6). The story of the 2014 pulse flow is supposed to demonstrate how a network of professionals--water managers, environmentalists, diplomats, and other experts—who developed longstanding relationships through ongoing

informal and formal collaborative efforts, negotiated a solution to a challenging problem that satisfied their conflicting interests. Fleck (2019) pits this example of a “win-win’ solution against “winner-take-all fights” in court or through legislation, which he claims do not get at the root cause of the problem (p. 6).

Another “myth” is that there is not enough water to meet everyone’s needs, such that “we are about to run out of water” (p. 6). Fleck describes this myth as the most pernicious because it elicits irrational fears that motivate senior appropriators to fight to maintain their allocations in full, rather than to collaborate to achieve broad reductions of water use (p. 6). The 2014 pulse flow occurred during drought conditions when the water elevation in Lake Mead was lower than usual. Fleck claims that the people who believe this “myth” do not recognize the success of conservation efforts that have decoupled urban water use from population growth in the major cities of the Southwest. He adds that there is still plenty of slack in the system regarding agricultural uses of water, which can be reduced through technological solutions, in addition to the implementation of “water-sharing agreements” that move water from agricultural to urban uses (pp. 6-8, 28).

The third myth is that “water flows uphill towards money” (p. 6). Fleck seems to suggest that the rules associated with seniority rights-based allocations are a bulwark against water speculation (pp. 6, 22). He argues that appropriations for agriculture account for 70-80% of Colorado River water, but agriculture only contributes 2% to the economies of Western states, so this demonstrates that senior appropriators are not forced to give up or sell their

water rights to wealthier cities (p. 6). He does advocate for the creation of institutions that facilitate the implementation of "water-sharing agreements" between agricultural and urban water users so that this type of water transfer will happen voluntarily.

Fleck does not question the effectiveness of prior appropriation, or the associated perspective that property rights are the best solution for allocating common-pool resources. He refers to the tragedy of the commons⁴ as an explanation of why no state, local, or private entity will voluntarily reduce their water usage unless there are new rules governing water use throughout the Colorado River Basin (CRB) that ensure water reductions are shared by everyone (p. 200). Fleck does provide examples of the effectiveness of science-based methods for reducing water used for agricultural irrigation, but he emphasizes that water use rules and institutional infrastructure must change to allow water to be "moved from one place to another" as the more important and challenging problem to be rectified (p. 28).

He insists that solutions cannot and should not be imposed on water users by the federal government, so the most critical aspect of CRB governance then becomes "the network" (p. 9). "The network" includes "lawyers, hydrologists, farmers, water managers, diplomats, and environmentalists" who have cultivated longstanding collaborative relationships "in conferences, on river trips, and in hotel bars" (p. 9). The "informal" nature of their interactions deserves emphasis here, as only those who have acquired the requisite level of "social capital" are invited to participate in CRB "network governance" (p. 10). The implication is that

“wicked” problems associated with maintaining the Law of the River well into the 21st century are so complex that decision-makers must have a certain level of expertise and be enough on the same page to negotiate mutually acceptable goals. Fleck claims that broadening the network of decision-makers to include more diverse interests and points of view would create “...the risk of constant conflict. A free-for-all could crash our system and leave someone the loser—it is hard to know who—without the water on which the community has come to depend” (p. 10).

Fleck repeatedly emphasizes that social capital is as important as physical infrastructure (pp. 10, 162). He quotes political economist Elinor Ostrom’s definition of social capital: “the shared knowledge, understandings, norms, rules, and expectations about patterns of interactions that groups of individuals bring to a recurrent activity” (Dasgupta and Serageldin, 1999, p. 176). Much of Fleck’s book consists of examples, including the story of the 2014 pulse flow, to demonstrate how he believes this works. Fleck (2019) insists that this informal network of experts “are the ones who have to figure out how our society can live with less water. This is where our adaptive capacity must come from” (p. 10).

Fleck believes that the management of the Colorado River Basin is decentralized such that “no one is in charge of the whole system” (p. 30) and “there is no one big policy lever that can be pulled” (p. 23) to impose mandates on all users. While it is true that a complex mix of federal, state, local, and private entities are responsible for the management of the Colorado River, his perspective should be considered alongside his agreement with former Deputy

Interior Secretary Mike Connor that the US Secretary of the Interior and other federal agencies should not impose “some grand solution... from on high” (p. 200). Fleck claims that appropriators are more willing to negotiate voluntary water reductions under the threat of Congressional or Supreme Court interventions, despite his belief that grand solutions imposed from above are otherwise unproductive.

Fleck claims that the problem of the overallocation of the Colorado River can no longer be ignored, given climate change and expanding development in the West that harden legal claims to water, yet he is optimistic that ongoing conservation efforts combined with developing institutions that will facilitate the creation of "water-sharing agreements" will stabilize the system (pp. 8, 16-18, 193-194, 197-198). Fleck claims that these agreements can be arrived at through network governance, with the participants consisting largely of water experts, urban water brokers and farmers (senior appropriators), but he also calls for the inclusion of certain underrepresented groups in negotiation and decision-making circles, such as tribal governments, environmentalists, and diplomats representing the nation of Mexico (pp. 161-174, 197). He believes that although these groups have conflicting interests, the cultivation of social capital through informal collaborative efforts is an essential element of successful negotiations for broad-based voluntary water reductions to prevent water shortages or the involvement of the courts when conditions of shortage arise (pp. 194-198).

California Water Management in the 21st Century

The authors of this Stanford Law School policy paper are mainly lawyers who declare that current California water management practices are “ineffective, inefficient, and injurious” (Sivas et al. 2017, p. 8). Sivas et al. support this claim by pointing to the degradation of the state’s waterways to argue that current water management practices are unsustainable for the environment, and statistics that indicate over 1 million Californians do not have access to safe, reliable, affordable sources of drinking water as evidence that the state’s current water management practices create unacceptable water wealth inequities (p. 22). Although the authors describe the state’s historic overallocation of water rights as problematic, the central issue presented is one of ethics; they believe that is reprehensible for the state’s rights-based system of water management to enrich senior appropriators while so many residents do not have access to water to meet basic needs. The story of Humberto Lugo, who pumps untreated water from an IID irrigation ditch for showers and washing dishes is not mentioned in this paper, although it clearly illustrates the authors’ description of water wealth inequities caused by the state’s current water management practices. The prescriptions put forth in this policy paper touch on the broader subject of ethics as it relates to the purpose of society (p. 22). Is society organized to enrich a minority of people, or to empower the public to create communities and governance structures that serve the well-being of the majority?

Sivas et al. call attention to the values that support California’s current water management practices. Concepts like “sustainable” and “efficient” water

management practices align with particular values; if water is critically life-sustaining in nature, as the authors of this policy paper claim, the health of ecosystems and the necessity for living beings to access clean water is prioritized. If, as stated in the 1992 United Nations Dublin Principles, “Water has an economic value in all its competing uses and should be recognized as an economic good” (ICWE, 1992), then sustainable water use supports continuing economic growth, and the most efficient uses of water are those that generate the most profit. Sivas et al. (2017) are firm in their position that “water is first and foremost a public good to be allocated for human and environmental needs” (p. 13). They describe water’s life-sustaining nature as incompatible with water managed as an economic good and allocated through markets, because markets benefit users who can pay the most for it and exclude those who are unable to participate in markets, including ecosystems (p. 6). Furthermore, water markets harden demand because conserved water is sold for other uses (p. 20) and that there has been no evidence of markets in California re-directing conserved water back to the environment or to serve disadvantaged communities (p. 16). Water markets function when appropriators have adjudicated (legally validated) water rights, but it is improbable that the bulk of water rights issued statewide will ever be fully adjudicated. Sivas et al. claim that it is unfair for senior appropriators who benefit from historic “giveaways of the public’s water” to also profit from the “political allocation” of taxpayer-subsidized water, whether their profits are derived from the production of commodities or the transfer of their allocations to other water users (p. 17). The authors claim that although water markets are

often promoted as the best solution for dealing with the state's water management problems, they are far more likely to undermine water management practices that safeguard the state's waters (p. 28).

Sivas et al. (2017) disagree with the perspective that seniority rights-based water allocation systems must be maintained, and claim that that the power of government can and should respond to the political will of the public:

We are not prisoners to our existing allocation structure. We can take back our power of thoughtful, informed choice based on social and ecological criteria. We can choose to do this carefully, based on our values, or we can let climate change and commodification do it for us, in ways we may not like. We can choose to protect small towns and fish populations over further expansion of massive corporate farms. We can choose to prioritize growing healthy food for local (low greenhouse gas) consumption, over exporting luxury foods or heavily subsidized animal feed. We could support land retirement for positive social uses, such as wildlife habitat. We can do this all under existing law, including through the waste and unreasonable use doctrine, the public trust doctrine, and other protective measures that ensure that California's waters are respected for their life-sustaining essence (p. 23).

Sivas et al. emphasize that this shift from defining and managing water as property and an economic good to managing water as a public and environmental good can be accomplished with current California water laws, specifically Water Code Section 275 regarding waste and unreasonable use,

which constrains the use of water rights (p. 26). The authors argue that the definition of waste and unreasonable use evolve along with societal and environmental goals, so Californians do not need to accept water allocation decisions that were designed to address conditions that existed a century ago (p. 26). Sivas et al. point to five recommendations⁵ made by the former Chief Counsel of the State Water Board and Delta Watermaster Craig M. Wilson, which outline how the State Water Board can use the waste and unreasonable use doctrine proactively rather than as solely an enforcement mechanism, to prioritize societal and environmentally beneficial uses of water over seniority-based allocations (p. 27). The authors suggest that another powerful, yet under-utilized tool is the public trust doctrine, which also “evolves over time according to changing social values” (p. 27). Although Sivas acknowledge that the public trust doctrine has rarely been applied, most notably in the *Audubon* case that protected Mono Lake from the City of Los Angeles exercising its water rights, they describe the application of the public trust doctrine as an essential element in any strategy that aims to manage water as a life-sustaining public and environmental good (p. 27). It should be noted that Sivas et al. do not call for the elimination of seniority rights-based allocations. They propose that the waste and unreasonable use provisions within the California Constitution and the public trust doctrine can be interpreted and applied more broadly to enable allocations directed for socially and environmentally beneficial uses to be prioritized over rights-based allocations (p. 27). The authors believe that expanding the interpretations of these provisions is justified because of the state’s fiduciary duty

to future generations to protect its waterways, as well as to satisfy public welfare regulations like the HRTWA (p. 27).

Sivas et al. believe that a comprehensive vision guiding water management decision-making should not be designed by those who have expertise in water management. The authors call attention to the difference between *why* and *how* we manage water; in a democracy, the broadest spectrum of the public should determine why we manage water, and experts can handle the technical aspects of how to carry out the public's priorities. Sivas et al. use the example of public involvement in the California Redistricting Commission as an initial template for how the public can be involved in California water governance:

The Redistricting Commissioners conducted significant outreach to get the public's input in drawing new lines. This included speaking to the media, holding public meetings, streaming meetings online, and providing a website that included Commission records and documents. For the first map drawing, they held 34 public meetings in 32 locations around the state. More than 2,700 people participated in person and over 20,000 submitted comments. After the draft set of maps was released, the Commission held 11 more public meetings to collect reactions and comments. Majority votes were needed by the Commission to submit the final maps. Though the final redistricting maps were challenged in courts, they were upheld unanimously in the California Supreme Court and in the U.S. District Court (p. 58).

Conversely, the authors point to the two Water Commissions in 1912 and 1978 as not achieving meaningful changes in water governance because the interests of water-poor communities and waterways were not represented, despite statewide public hearings (p. 56).

Not all of what the authors promote is unorthodox. They support the acquisition of instream water rights as an aspect of more comprehensive strategies to protect waterways, including legal recognition of waterways' inherent right to exist (p. 29). They call for transparent collection of data on stream flows and groundwater levels to achieve better oversight of water withdrawals, to prevent illegal diversions, and for the enforcement of existing water regulations (pp. 30-31). Incentives for urban and agricultural water users to reduce their demand must also ensure that conserved water does not support new water uses (p. 32). They also compare how land-use laws have evolved from the title phase to current regulations that include nuisance laws and zoning restrictions and suggest that water laws can also evolve in a similar direction (p. 22).

Sivas et al. accuse California of lacking a comprehensive vision for water management, and in its absence the state's "ad hoc, reactionary approach" grafts water management tactics on to a dysfunctional, historic seniority rights-based allocation system (p. 10). The authors support the enforcement of the state's current water laws but strongly advocate for a broad spectrum of the public to establish a "water vision" respects the value of water as a public and

environmental good, and for the development of meaningful ways for the public to participate in implementing and overseeing their water vision (p. 35).

Analysis

1. How does each of the two texts characterize what water is?

Sivas et al. repeatedly define water as undeniably a “public and environmental good, of a critical life-sustaining nature (p. 4). Fleck does not explicitly define what water is, although he characterizes water primarily as an economic good, and supports the preservation of the doctrine of prior appropriation for structuring the allocation of Western waters. He is absolute that we must accept allocation decisions that were made about a century ago, including the 1922 Colorado River Compact, which overestimated the average flow of the Colorado River and resulted in the overallocation of water rights. Fleck does not criticize the development of sprawling Western cities that Colorado River water enabled, although he does mention in passing the political corruption associated with the overbuilding of Western water infrastructure (Fleck, 2019, p.4). Sivas et al. do not promote economic growth as a societal goal, but instead on the notion that a society should be judged by how it treats its most vulnerable members (Sivas et al., 2017, p. 4). Sivas et al. insist that the public must be clear about the ethics that they want to be incorporated into water management practices, and that begins with a clear definition of what water is.

If Fleck found it too difficult or unnecessary to characterize what water is, in his defense this is not so simple, because water has political, ecological, and economic dimensions. The Director of the Program of Water Governance at the

University of British Columbia, Karen Bakker describes this complexity: “It is simultaneously an economic input, an aesthetic reference, a religious symbol, a public service, a private good, a cornerstone of public health, and a biophysical necessity for humans and ecosystems alike” (Bakker, 2014, p. 471). Some hydrosocial cycle advocates suggest that water is a social product; how a society defines water indicates how water and society have co-created each other over time (Linton, 2010). Neither text offers such an intellectually esoteric analysis of the relationship between water and society in the Western United States in the 21st century, but that itself is revealing. Although both texts mention climate change as a factor that is stressing current Western water management practices, neither explicitly acknowledges that climate will change society as it changes society’s relationship with water.

Both texts agree that climate change will stress current Western water management practices to the breaking point if changes are not made. Sivas et al. claim that Californians must change their relationship with water by managing it as essential for life rather than as property if the public desires to protect ecosystems, save native species from extinction, and serve the needs of disadvantaged communities. Sivas et al. (2017) support the idea that waterways have an inherent right to exist:

If water rights are the legal system by which water is allocated to humans, then the law should also recognize the inherent rights of rivers to flow, and the rights of fish to swim. Such laws would level the playing field for

waterways and better guide us to modify our behavior to reflect their needs (p. 29).

Fleck (2019) also believes that “we will come to terms with our new reality” shaped by climate change, but he does not see society changing other than for the public to do more with less (p. 207). He does not refer to water as an environmental good, although he begins and ends his book with the 2014 pulse flow story, and names environmentalists as having been unjustly excluded from CRB policymaking. He disagrees with Sivas et al. that waterways like the Colorado River have an inherent right to exist and that their rights deserve legal recognition and protection. Fleck admonishes that the primary value of the Colorado River is economic, so any notion of extending rights to the Colorado would be too unfair and economically destabilizing for the communities that rely on legally sanctioned appropriations from it:

We can debate whether it was a good idea throughout the twentieth century to allocate so much water in this way. But that's done. Farmers like Herkenhoff in places like San Acacia made good-faith decisions about where to build their homes and how to make a living based on a national policy of subsidizing irrigation water and the infrastructure needed to deliver it. Change requires that we come to grips with the reality that the Colorado's history has made it a working, agricultural river, and that communities built their lives around those choices (p. 19).

Fleck does not question the doctrine of prior appropriation because he values water as a form of property and as an economic good, but he

acknowledges that the enforcement of seniority during conditions of water shortage would be politically untenable. He quotes Mike King, the former director of the Colorado Department of Natural Resources: “I don’t care what you think about the Law of the River, we are not going to dry up a city of 2 million people” (p. 197). King is saying that it would be politically untenable for the IID to receive allocations to grow alfalfa in the desert while cities like Phoenix, AZ receive no water at all. Complex layers of rules have been implemented to prevent the system from collapsing under conditions of water shortage, but Fleck does not believe that revisiting the 1922 Colorado River Compact to address the problem of overallocation should be considered:

...we have no omniscient power giving us the ability to decide which water uses will continue. When we decide our future, the Imperial Valley and Las Vegas are at the table, defending their right to exist. As a result, the only tractable plans are ones that work with current water users (pp. 7-8).

Presumably this refers to the legal concept of “takings” in which the holders of property must be fully compensated when the government seizes private property to implement a societal goal (i.e. eminent domain.) In tandem with the issue of takings, Fleck (2019) claims that there are “questions of justice and equity” regarding the protection of longstanding investments people have made in the rural agriculture-based communities along the Colorado River, which underlines his belief that fairness is associated with maintaining the economic value of water (pp. 7, 19, 136).

Sivas et al. strenuously object to the management of water as property capital and describe California's seniority rights-based allocation system as dysfunctional for being based on the values of profit and exclusion. They are unequivocal that markets are fundamentally incompatible with water's nature as essential for life and as a public and environmental good.

Fleck (2019) does not refer explicitly to water as an economic good, but he continuously lauds its economic value by advocating for the creation of institutions that facilitate "water-sharing agreements" that direct water to its most profitable, therefore most economically efficient uses:

As we will see, getting the institutional infrastructure right—arranging a deal between willing buyers and sellers, agreeing on a way to measure the saved water and get it to the alternative uses, changing the rules so it can be moved from one place to another—is a much harder problem.

Corky Herkenhoff would be happy to work out a deal, for a price, to share some of the Colorado River water he currently spreads on his alfalfa fields with one of the central New Mexico cities to the north.

So far, the cities have not been parched enough to need to work out such a deal, but it is easy to imagine what it might look like: In a dry year, the city pays Herkenhoff to lay off the irrigation, sending some of his water to the city's municipal treatment plant. Herkenhoff takes the money and heads to Florida to go fishing. The barriers here are in the rules and procedures—the institutions through which we manage the water. Currently, New Mexico water law and policy don't allow a deal like that.

But as water gets scarcer, pressure to reduce those barriers will grow (pp. 28-29).

What Fleck is describing is a water market by another name. He uses the words “water market” only once in his book, as something “that economists had long dreamed of to improve the efficiency of California’s water allocations” (p. 140). Fleck refers to the “use it or lose it” aspect of prior appropriation as hindering water conservation efforts because “beneficial uses” do not typically include conservation, so appropriators have no incentive to conserve water if their allocations are reduced proportionally to the amount of water that they do not use (p. 193). When water is managed as an economic good, “efficient” water use means that water is directed towards the most profitable uses, rather than to maintain the full allocation of one’s water right. Sivas et al. object to this definition of efficient water use because profit is prioritized and water is directed away from more socially and environmentally beneficial water uses, like allowing conserved water to remain in the environment.

Both texts agree that the overallocation of appropriative water rights is unsustainable, but they define sustainability differently, and their prescriptions for solving the problems associated with overallocation reflect their opposing visions and definitions of water. Fleck proposes that "water-sharing agreements" and "network governance" are strategies to work around overallocation while leaving seniority rights-based allocation of the River’s flow intact. From Fleck’s perspective, sustainability requires the preservation of ecosystems so that they maintain the Colorado River’s economic value for appropriators, therefore water

must be managed primarily as property and as an economic good. Sivas et al. also propose to work around the problem of overallocation, except they suggest a strategy for overriding California's seniority rights-based allocation system by prioritizing new water management practices based on the value of water as a life-sustaining undeniably public and environmental good.

2. How does each text describe the role of expertise in Western water management?

To move water from areas where it is abundant to arid regions involves technological expertise. Historian Karl Wittfogel proposed that complex systems for moving water are produced by managerial states with hierarchical, complex, and sometimes despotic systems of governance; for example, small irrigation ditches require physical labor and simple negotiations as to who performs that labor, but societies that produce aqueducts for moving large quantities of water require specialized classes of workers, such as skilled technicians that have an understanding of engineering and hydrology, workers with police powers to induce the less skilled to perform the hard labor associated with the upkeep of the system and to protect the settlement from intruders, an elite to keep the police in check, etc. (Wittfogel, 1957). Political theorist Timothy Mitchell, the author of *Rule of Experts: Egypt, Techno-Politics, Modernity* provides an account of the construction of massive infrastructure projects on the Nile River such as the Aswan Dam, which harmed communities even as they empowered a class of professionals who served the elite, and whose projects functioned less well for the agriculture-based communities and the environment than the small scale

irrigation practices that these projects replaced (Mitchell, 2002). There are countless examples where experts with reputations for being the “smartest people in the room” have made tragic, socially destructive decisions that benefited primarily themselves or their class interests. In his 2019 book, *Goliath* Matt Stoller critiques monopoly and muses without irony, “We didn’t always organize our world around the ideas of highly educated technocrats with bad judgment. We once could do greatness in our politics. So where was a tradition I could honor?” (p. xiii).

Democracy is the solution that Sivas et al. point to by distinguishing between *why* society does anything and the more technical aspects of *how* the implementation of societal goals are accomplished. As water management has become more technical, the public has largely relinquished to experts the power to form a vision of why water is managed that guides policymaking and management practices. Sivas et al. associate the *why* of water management with ethics, values, and vision and the *how* with expertise. Water managers may believe that the goals of the federal CWA and California’s HRTWA are aspirational and seemingly naïve, but in a true democracy, expert opinions concerning why water is managed cannot substitute for democratic decision-making processes and accountability, because a society’s foundational ethical perspectives and the political will to realize societal goals must come from citizens themselves. For this reason, Sivas et al (2017) insist that water must be managed as a life-sustaining substance:

...from the ground up, with the state sponsoring local policy discussions that involve broad citizen representation, rather than just professional water experts and large water stakeholders. This will be critical to transform state policy from one in which water is treated as a private good and allocated to entrenched interests, to one where water is treated as a public and environmental good essential to the health of all life in California (p. 25).

Sivas et al. call on the public to rethink their relationship with water and create a comprehensive water vision that reflects their values and guides policymaking. The authors want the public to challenge the “powerful elite” who currently control California’s water management policymaking in part by recruiting representatives from a diversity of disciplines who know how to integrate the perspective of water as a life-giving public and environmental good within the state’s water management practices (p. 35). “Democratic accountability for the protection of the state’s water future is key, and the public must not only be part of that discussion, but active participants in ensuring that agreements are implemented” (p. 35). The authors recognize that values and ethics are rarely discussed when experts craft water policies. Sivas et al., believe that experts can support democratic decision-making processes by helping to enact societal priorities that are determined by the broadest spectrum of the public.

Conversely, Fleck (2019) argues that a small network of professionals are the ones who must maintain the Law of the River well into the 21st century: “They are the ones who have to figure out how our society can live with less water. This

is where our adaptive capacity must come from” (p. 10). Fleck provides examples throughout the book that emphasize the critical role that the cultivation of social capital serves in creating bonds between the experts of the network, which are based on:

...a shared understanding of the resources, of one another’s needs, and of the complex set of rules that govern water’s use. They have built trust and reciprocity over years of working together across difficult boundaries. Social capital is every bit as important and worthy of investment as physical capital: the pumps, dams, and ditches we build to manage and move our water (p. 10).

Fleck insists that the exclusive nature of “the network” of experts and major stakeholders who have fairly aligned interests is “better than the alternative, which is the risk of constant conflict. A free-for-all could crash our system and leave someone the loser—it is hard to know who—without the water on which the community has come to depend” (p. 10). Fleck repeatedly claims that “we” have no practical or moral ability to determine who the major water users are or what they use their water allocations for. Water experts and markets should determine how Western water is allocated rather than any democratic process.

The experts and major stakeholders that constitute “the network” do not question why the Colorado River should be managed, either. It is a settled matter. Fleck is adamant that these imperatives were decided about a century ago and we must continue to adapt to them today. The irony is that “the network” preserves the status quo by displacing the politically accountable representatives

of governmental agencies with opaque informal collaborations funded and conducted largely by private interests (including “non-litigious” environmental groups that receive large grants from corporate impact investors), and are implemented in part through “water-sharing agreements” that profit private interests. Fleck derisively recounts an environmental group’s “combative” demand for the prioritization of allocations to meet environmental needs over rights-based allocations, as “hopeless, strident, and naïve” when he refers to one of the former members of this group who supposedly grew up enough to later be admitted “into the inner sanctum of Colorado River policy debates” (p.173). This is an example of how the interests of the public are regarded paternalistically if at all by the experts of “the network.”

To answer to the question of what role does expertise play in each text’s perspective on Western water management, Sivas et al. insist that the public must envision water as a life-sustaining public and environmental good, and that experts assist with carrying out that vision. Fleck entrusts experts and the major stakeholders of “the network” to enact a vision of water as capital and property through management practices such as “water-sharing agreements.”

3. How does each text address issues of water justice?

Issues of water justice center on who has decision-making power and access to resources and who does not. Historian Donald Worster claimed that the 19th-century colonization of the arid American West, which was enabled by the development of extensive irrigation infrastructure, entrenched oligarchy and never resembled the romanticized vision of the West that Henry David Thoreau

associated with “freedom, creativity, independence and equality” (Worster, 1985, p. 7). Worster’s description of water management in the West is still relevant, although the elite exercise their wealth differently than in the heyday of the state hydraulic era that Worster refers to when private interests allied with government actors to fund the pork-barrel projects that Marc Reisner described so well in *Cadillac Desert* (Reisner, 1986). The late-20th century neoliberal push for the privatization of public utilities, the involvement of unelected, democratically unaccountable individuals into decentralized policymaking processes like “the network,” and the promotion of markets to achieve efficient and equitable water allocation is still advocated by neoliberal institutionalists⁶ like Fleck.

“Equitable” water management for Fleck does not support a human right to water, or for the residents of disadvantaged communities like Humberto Lugo to be included as important “stakeholders” in decision-making processes. For Fleck, questions of “equity and justice” are limited to the preservation of investments made in communities like Brawley, California, where the corporate farmers of the IID have generated substantial profits by entering into “water-sharing agreements” with the SCMWD, while the members of Humberto Lugo’s household wash their dishes and take showers with untreated IID irrigation water. From a legalistic perspective “equitable” Colorado River water allocation concerns the interests of appropriators and has little to nothing to do with provisioning disadvantaged communities that do not have access to safe, affordable, reliable sources of water (Robison and Kenney, 2012).

Fleck does not question whether seniority rights-based allocations systems are socially just, unlike Sivas et al. who describe prior appropriation as the historic giveaway of California's waters. Fleck provides a brief account of how Native American communities have been excluded from CRB decision-making processes, including the negotiations of the 1922 Colorado River Compact. Fleck (2019) describes the main problem as to where "the boundaries have been drawn" regarding who are the essential stakeholders to include in decision-making processes: "The issue here is not so much barring people from participating in the process as it is finding the right people to invite in" (p. 163). Fleck mentions the 1908 *Winters v. the United States* and the 1963 *Arizona v. California* as two Supreme Court decisions that expanded who is included within the circle of decision-makers, but he describes marginalization not so much from a social justice perspective, but one that has significant economic implications:

It [unquantified water rights] leaves the tribes, among the poorest communities in the nation, without the water they need to strengthen their communities and economies, and leave non-Native water users unsure about how much may eventually be diverted for Indian use (p. 169).

The fourth risk is the long-festering problem of Native American communities' rights to water. Unresolved, this uncertainty leaves these communities without the water they need to prosper, and it also leaves a cloud of uncertainty over other water users (p. 196).

Fleck also includes Mexico and environmentalists as constituencies that have been left out of CRB decision-making processes, but he frames the problem as the potential for destabilizing uncertainty:

All these cases raise questions of environmental justice and suggest that water managers need to find ways to make their efforts more inclusive.

But even if you ignore those moral questions, exclusion poses a risk.

Parties left out, who are harmed by decisions made by insular circles, can derail important efforts to solve the basin's problems (p. 174).

In short, "the network" must be broad enough to include those who have the power to destabilize the Law of the River but limited as much as possible to those who have a significant interest in sustaining it. Water managers are the ones who must decide what "inclusive" water management entails, not the public.

Sivas et al. (2017) emphasize that asking *why* a society manages water is a matter of values, vision, and ethics: "Just as we need reliable quantitative data to make solid decisions, we similarly need qualitative information about the motivations, habits, traditions, and ethics that drive our decisions, consciously or unconsciously" (p. 20). The authors explain that when the ethic of water as capital or of markets is at play, the interests of the environment and all of Californians are not considered while the court decisions favor investors (p. 20):

If California continues to act within its current ethical framework, we can expect only more of the same—more prioritization of existing, profit-driven uses over ecological needs and basic human rights, more pressure to

avoid data collection and public transparency, and more focus on immediate water gratification at the expense of future generations” (p. 21). Sivas et al. point to the injustice of California’s current water management practices that reward billionaires like Stewart and Lynda Resnick, who use more water for agricultural irrigation than every home in the city of Los Angeles combined (p. 15). This example also calls attention to the fact that markets exacerbate water wealth inequities because they tilt the playing field towards those who have the resources to participate in markets, and away from those cannot, like disadvantaged communities and the environment (p. 14). Sivas et al. argue that markets imposed on seniority rights-based allocation systems are particularly egregious because the most senior allocations are unreasonably large considering today’s circumstances, and the most senior and wealthy appropriators have the most to gain by gaming a water market, to which the Resnick’s can attest. A particularly despicable scheme of the Resnick’s concerns their involvement with the quasi-public Kern Water Bank. The Resnick’s bought cheap subsidized agricultural water for the Kern Water Bank and sold it to California’s Environmental Water Account at a profit of twenty cents to every taxpayer dollar spent (pp. 47-48). At the time the banked water was needed so that the Bay-Delta pumps could be shut off to prevent the native endangered Delta smelt from being sucked into the pumps, as drought had already severely reduced their numbers along with native Chinook salmon. Another way that San Joaquin Valley appropriators gamed the system in 2014 was to sell their surface allocations to other users and substitute those allocations with groundwater,

which caused aquifer overdrafts and the destruction of thousands of domestic and small community water system wells (p. 11).

The difference between the use of language in these two texts must be noted. Sivas et al. use language that is clear and concise; the reader does not need to interpret jargon or coded language to understand what the authors intend to communicate. The following paragraphs succinctly summarize their perspective:

In short, California's current water allocation system is inefficient, inequitable and injurious. It prioritizes current uses based on seniority, with little regard for the impacts of those uses. It places the most vulnerable populations and ecosystems at the back of the line when droughts occur, as they do regularly now and will do with more frequency. The impacts of those decisions on the health and well-being of Californians and California species and ecosystems are widespread and growing. Action is needed now to evolve our water governance system in a way that reflects the life-giving and public nature of water and our utter dependence on water for basic needs.

As reflected by numerous world leaders over the centuries, the moral test of government, and the measure of its strength, is how it treats its most vulnerable members. To ensure that California's most at-risk ecological and human populations receive the water that they need to survive now and in the future, we must reform California's water allocation

system to prioritize the protection of life over privatization and profit (p. 12).

The first three sentences in the first paragraph refer to examples that are not mentioned here but are described in detail in other parts of the text. One previously-mentioned example of how the state's water allocation system is "inefficient, inequitable and injurious" and enables appropriators to use water in ways that negatively impact vulnerable users, particularly during droughts was Resnick's Kern Water Bank paper shuffle. The Resnick's enriched their bank account at the expense of taxpayers and endangered species of native fish in the Bay-Delta, in addition to undermining the effectiveness of the state's Environmental Water Fund. The fourth sentence that claims that the impacts of Californians and California species and ecosystems are widespread and growing also refers to examples that are not mentioned here but are described elsewhere in the text, such as senior appropriators selling their surface water allocations and substituting those allocations with groundwater. These appropriators were never held to account for the damage they caused to aquifers and small community water systems and domestic wells that resulted from their actions. The evolution of the state's water governance structures that the authors refer to in the fourth sentence is described throughout the text, which begins with the public's recognition that water is a life-sustaining public and environmental good. The second paragraph alludes to the moral weakness of California water management practices, considering the millions of Californians that are denied access to safe, affordable and reliable sources of clean water, like Humberto

Lugo's household. The last sentence in the second paragraph refers to the possibility described elsewhere in the text regarding how socially and environmentally beneficial uses of water could be prioritized over seniority-based allocations.

Fleck's writing requires interpretation. Some of the mechanisms Fleck (2019) uses to manipulate language are apparent in the following paragraph:

If instead we recognize our ability to do more with less, and invest in institutions that facilitate water sharing, we can create systems for robust, flexible, and equitable water allocation. Only then can we preserve the West that we all have come to inhabit, know, and love (pp. 6-7).

First, Fleck tells stories in a folksy tone to appeal to the reader, unlike the clear declarative statements that Sivas et al. use. Fleck frequently refers to "we," which implies that the reader should share his perspective. Fleck refers to water markets as "water-sharing agreements," so this paragraph calls for investments in the institutions⁷ that support their development (These "institutions" include opportunities for members of the network to cultivate social capital, like the biannual Bishop's Lodge event that Ted Kowalski attends.) Fleck's reference to "robust, flexible, and equitable water allocation" partly reflects his perspective of how markets function: "robust" means that the system of seniority rights-based allocations and management can withstand shocks like periods of water shortages (pp. 51, 103, 120, 125), "flexible" refers mainly to the creation of "water-sharing agreements" along with water banking and various methods of conserving water (pp. 7, 101, 120), and "equitable" indicates the protection of

investments, not that any living being has an inherent right to water (p. 7, 19).

Fleck uses vague language to claim that his prescriptions for Western water management are the “only” way (pp. 7, 8) that we can preserve “the West that we have all come to inhabit, know, and love,” which translated means “the status quo.” Humberto Lugo and Ted Kowalski no doubt have very different opinions about whether they love the status quo.

Throughout his book, Fleck refers to “farmers” rather than senior appropriators. Regardless of why he made this choice, the image of the family farmer is much more appealing and identifiable than the affluent corporate agribusiness owner. Fleck also uses the word “fight” derisively as a substitute for politics. “Politics” is the struggle for power, but Fleck’s framing implies that that seniority rights-based Western water allocation is a settled issue that should not be challenged. An example of Fleck’s derisive use of “fighting” depicts the State of Arizona’s refusal to participate in negotiations over the 1922 Colorado River Compact as the actions of “the skinny kid,” “paranoid,” and “its own worst enemy” whose “behavior is driven by psychology,” as though political contestation indicates pathology (pp. 69, 190, 65). Contrast this characterization of Arizona with that of Mary Austin, author of *Land of Little Rain* and resident of California’s Owens Valley before the construction of the Los Angeles Aqueduct, as described by Worster:

Sympathizing with Arizona’s complaint was the writer Mary Austin, who saw in the compact a replay of the earlier Owens Valley—Los Angeles controversy, where the smaller, weaker party lost out to the more powerful

one while the federal government looked on and abetted. Now along the Colorado the government was once more throwing all its aid to the invading party, giving to the Californians residing in Los Angeles and Imperial Valley 4.4 million acre-feet a year of the basin's apportionment—the lion's share. Austin wrote of “the rape of the natural resources of one State *against that State's consent*, for the advantage of another State” (Worster, 1985, pp. 209-210).

If Fleck's perspective represented the interests of the public, he would not need to couch his arguments in the jargon of economics. According to Open Markets Institute fellow Matt Stoller, “The point of economics as a discipline... is to create a language and methodology for governing that hides political assumptions from the public... The current discipline of economics seeks to displace people who believe in democratic mechanisms for governing” (Siman, 2020). Fleck tries to persuade readers that the experts of “the network” are the most capable and worthy of creating the vision that guides Western water management practices. Sivas et al. use clear, concise language to educate and motivate the public to claim the power to determine California's water management priorities, as part of the larger project of creating a democratic society that reflects the public's ethics and values. Fleck only needs to convince the reader that the status quo must be maintained because democracy is scary and chaotic, so experts and market forces should determine society's goals.

Conclusion

What is the vision of water that guides Western water management, and who gets to determine the vision? These two texts present contesting visions of what water is that guides Western water management practices, who should enact their visions, and what defines injustice as it relates to water allocation. These contesting perspectives on Western water governance illustrate the ideological divide between the aspirations and the results of how water regulations like the HRTWA are enacted.

Fleck believes that the Law of the River can be maintained if institutions are created that facilitate "water-sharing agreements" that move water from agriculture to urban uses. These agreements must be negotiated by an informal network of water management professionals, farmers and urban water brokers who collaborate to achieve voluntary broad-based reductions of water use. Fleck calls on the inclusion of groups that have been marginalized in water negotiations in the past to be included in "the network," such as tribal governments, environmentalists, and diplomats representing the nation of Mexico. He couples the actions of the network with science-based methods of water conservation, and changes in the rules that govern water use as part of a comprehensive prescription for avoiding conditions of water scarcity on the Colorado River that could trigger the involvement of the courts.

Sivas et al. claim that California water governance is "inefficient, ineffective, and injurious" in large part due to the state's seniority rights-based systems of water allocation. They argue that because the state's waters are

managed as property and an economic good, water allocations are directed towards the most profitable uses and away from the most socially and environmentally beneficial uses. The authors believe that this explains the declining health of aquatic ecosystems, and why California has over 1 million residents do not have access to safe, affordable, reliable access to water for drinking and hygiene. Sivas et al. do not call for the elimination of seniority-based water allocations, but for the courts to broaden the application of the reasonable use and public trust doctrines, so that the public can prioritize specific socially and environmentally beneficial water uses over seniority-based allocations. They also compare how land-use laws have evolved from the title phase to current regulations that include nuisance laws and zoning restrictions and suggest that water laws can also evolve in a similar direction. Sivas et al. emphasize that the public needs to recognize what the current operating vision of water is and what they want it to be before major reforms of water management practices are possible.

Regarding the question of how each text defines what water is, Sivas et al. unequivocally claim that water is a life-sustaining public and environmental good. Fleck refers to the primary value of water as a form of property an economic good through most of the stories he tells in his book, which represents the status quo of Western water management.

The role of expertise in water management, according to Sivas et al., is that the value of water must be decided democratically by the broadest spectrum of citizens if water's life-sustaining nature is to be realized in water management

practices. The authors draw a clear distinction between *why* water is managed, which should be democratically determined by the public, and *how* water is managed, which involves expertise guided by explicit societal goals. Sivas et al. believe that this process of democratically involving the public in water management begins with educating the public on water issues through public forums. The authors pointed to two water commissions, one in 1912 and the other in 1978, that arose out of water crises and changed California water governance. In both cases the interests of waterways and water-poor communities were not represented, despite public hearings held throughout the state in 1978. Sivas et al. use the example of public involvement in the California Redistricting Commission as a potential template for how the public can be included in the management of the state's waters. The authors suggest that efforts to educate the public on water management issues will help to create the political will necessary to support broader interpretation and application of the reasonable use and public trust doctrines in California's Constitution.

Fleck is suspicious of democratic processes as too chaotic and uncertain, so he regards the question of why water is managed as the purview of an exclusive network of water experts, farmers, and urban water brokers, although he calls for broadening the informal decision-making circle to include underrepresented groups such as tribal governments, environmentalists, and diplomats representing Mexico. Fleck believes that the problems associated with maintaining the Law of the River well into the 21st century are so complex that decision-makers must have a certain level of expertise and be enough on the

same page to negotiate mutually acceptable goals. Fleck claims that broadening the network of decision-makers to include more diverse interests and groups beyond those he specifies would create “the risk of constant conflict.”

Water justice concerns who have decision-making power and access to resources and who does not. Sivas et al. want to eliminate “water wealth inequities” that threaten the health of living beings. The authors are not just referring to humans, but also ecosystems and the life forms associated with them as vulnerable populations whose interests must be represented in water management decision-making processes. These authors assert that the interests of the public will not be represented in water governance decision-making processes if there are no mechanisms for the public to democratically participate. It should be noted that Sivas et al. do not advocate for the elimination of water rights, and although they do not mention reserve rights in their policy paper, their emphasis on water justice implies that they do not intend to challenge the seniority of allocations for tribes.

Fleck defines injustice mainly as threats to investments that were made based on historic allocations of water, although he does mention that certain groups have been underrepresented in water governance processes that should be included, if not for moral reasons, to provide certainty for established water users regarding their allocations, particularly during times of water scarcity. Fleck does not acknowledge a human right to water, or a waterway’s inherent right to exist.

The comparison of these two texts demonstrates that two different ideologies are at play in Western water governance. Currently, Western waters are managed primarily as property and an economic good, but the public probably understands little of this, and identifies more with the vision of “water is life.” California’s HRTWA is an example of a regulation that aspires to do much more than it is able, given the state’s seniority rights-based systems of water allocation. Sivas et al. make a strong case that Western water management practices will not serve the public interest unless the public can democratically determine what that vision is and play a meaningful role in its implementation and oversight. Although California water governance has never been democratic, the authors point to the public’s involvement in the California Redistricting Commission as an initial template for how the public can become involved in the state’s water governance processes. If the public prefers to value water as an economic good, Fleck’s prescriptions for water management might make sense, but Fleck is not clear with his readers that the public’s interests take a back seat to profit. It is probably not possible to reconcile these two contesting visions of water governance.

Afterword

The most disconcerting aspect of Fleck's book is his omission of the Walton Family Foundation's unprecedented influence on Colorado River policymaking and management through funding, education, and the coordination of nonprofit groups that were present in examples Fleck provides of successful network governance, like the 2014 Colorado River Delta pulse flow. Fleck does not mention Ted Kowalski or the critical role WFF funding plays to enable collaborations that Fleck gushes about, including river rafting trips, WEF retreats at Bishop's Lodge and their advocacy of water markets.

All environmental organizations invited to participate in "the network" have received WFF funding. In the qualitative section of her Oxford dissertation, doctorate candidate Gina Gilson interviewed recipients of WFF grants, which included thirteen representatives of environmental organizations, one consultant, a couple of people affiliated with universities, a government employee, and one representing a foundation, all of whom remain anonymous (Gilson, 2018). One interviewee expressed "that signing on to a "Walton approach" is essential to be a "player" in the CRB" (p. 38). Many of the interviewees made statements echoing the claim that their organization would not have a "seat at the table without philanthropic funding to keep us over there" (p. 40), or have the ability to work collaboratively with other groups on Colorado River projects without WFF funding and assistance with developing their organization's technical expertise (p. 29). One interviewee admitted that "having philanthropic dollars allows conservation groups to try innovative solutions without the scrutiny of the

taxpayers” (p. 32). Although some of the interviewees objected to the idea that the Foundation had any influence on their work, one acknowledged that grantees are “more likely to respond to the needs of their funder to keep the relationship, and when a group on the outside disagrees or wishes to comment on the strategies, it’s difficult for that group to make a case” (p. 37). Similar critical comments included that a market-based approach upholds the status quo and avoids addressing the root causes of problems, the focus on water markets drowns out other approaches, and if their approach was wrong, alternatives were not being tested (p. 37).

Philanthrocapitalism, venture philanthropy, impact investment—whatever the label--is more pervasive and problematic than commonly recognized, and Western water management is only the tip of the iceberg. The \$100 million that the WFF dispersed over five years to influence Colorado River policymaking is small change when compared with the one billion that Michael Bloomberg spends on philanthropy every year, which has had considerable influence on elections, according to The Intercept journalist Lee Fang:

Here in the 21st century we have a different type of political machine. We have an interlocking network of big corporate foundations, corporate consultants, lobbyists and nonprofits run by a group of people who are friends, who have a similar kind of neoliberal ideology, that have incredible influence in the political process... Bloomberg has the same style as a 21st century political machine, but instead he has this billion dollar a year philanthropy that has trained hundreds of mayors... Go to any city in

America; the mayor there has likely attended a Bloomberg boot camp and has received a Bloomberg “innovation” grant... This type of money has not been seen in American politics before... If you actually show the entire list of Democratic lobbyists, consultants, and thinktank people who have worked for Bloomberg or received Bloomberg money, that’s a very long list (Useful Idiots, 2020).

This type of philanthropy is not new; it was common during the Gilded Age. These are political down payments that aim to undermine democratic processes in favor of plutocracy. New York Times writer Anand Giridhardas describes the purpose of philanthrocapitalism as “bribing society at large” and a strategy employed by oligarchs in their a “40-year war on the idea of government” to achieve “refeudalization” (Johnson, 2019). The subject of philanthrocapitalism broadly and its impact on policymaking, democracy, and democratic accountability is not well understood and requires further study.

References

AB 685, Cal. Water Code § 106.3 (2012).

Allaire, M., Wu, H., & Lall, U. (2018, February 27). National trends in drinking water quality violations. *Proceedings of The National Academy of Sciences of The United States of America*, 115(9), 2078–2083.
<https://doi.org/10.1073/pnas.1719805115>

Arax, M. (2019). *The dreamt land: Chasing water and dust across California* (First ed.). Alfred A. Knopf.

Bakker, K. (2013). Neoliberal Versus Postneoliberal Water: Geographies of Privatization and Resistance. *Annals of the Association of American Geographers*, 103(2), 253–260. <https://doi.org/10.1080/00045608.2013.756246>

Bakker, K. J. (2010). *Privatizing water: governance failure and the world's urban water crisis* (Vols. 1–1 online resource (xvi, 303 pages): illustrations, maps). Cornell University Press.
<http://public.eblib.com/choice/publicfullrecord.aspx?p=3138123>

California Office of Environmental Health Hazard Assessment. (2017). *What's in the Water? Unknown Water Quality in Border Communities*.
<https://oehha.ca.gov/media/downloads/environmental-justice/report/unknownwaterquality022318.pdf>

Callahan, D. (2017). *The Givers: Wealth, power, and philanthropy in a new gilded age* (First ed.). Alfred A. Knopf.

Castle, A. and Fleck, J. (2019, November 8). The Risk of Curtailment under the Colorado River Compact (November 8, 2019). SSRN.
<http://dx.doi.org/10.2139/ssrn.3483654>

Comite Civico Del Valle, Inc. (2018, August). *Imperial Valley Water Canal Study Community Workshop* [PowerPoint slides].
[https://www.ccvhealth.org/water/documents/Holtville%20Community%20Workshop%20\[ENGLISH\].pdf](https://www.ccvhealth.org/water/documents/Holtville%20Community%20Workshop%20[ENGLISH].pdf)

Dasgupta, P., & Serageldin, I. (Eds.). (1999). *Social capital: A multifaceted perspective*. <https://ebookcentral.proquest.com>

Dyer, J. (2018, May 31). *The new model for saving the Colorado River might just kill it*. Boulder Weekly. <https://www.boulderweekly.com/news/new-model-saving-colorado-river-might-just-kill/>

Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq (2002).
<https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf>

- FindLaw (n.d.). *Water Rights Law: Prior Appropriation*.
<https://corporate.findlaw.com/business-operations/water-rights-law-prior-appropriation.html>
- Fleck, J. (2019). *Water Is for Fighting Over: And Other Myths About Water in the West*. (2nd edition.) Island Press.
- Forbes (2020). *Best States for Business, 2019 Rankings: California*.
<https://www.forbes.com/places/ca/>
- Gilson, G. (2018). Funding flows for freshwater: the role of philanthropy in market-based freshwater conservation (Master's thesis). University of Oxford.
- Giridharadas, A. (2018). *Winners take all: the elite charade of changing the world*. Alfred A. Knopf, 2018.
<https://search.ebscohost.com/login.aspx?direct=true&db=cat05987a&AN=unm.1004981738&site=eds-live&scope=site>
- GovTrack.us. (2019). H.R. 2030 — 116th Congress: Colorado River Drought Contingency Plan Authorization Act.
<https://www.govtrack.us/congress/bills/116/hr2030>
- Harkinson, J. (2014, September 5). Hustle and Flow: Here's Who Really Controls California's Water. *Mother Jones*.
<https://www.motherjones.com/environment/2014/09/california-water-politics-drought-players/>
- Henry, L. (2017, July 1). *Is John Vidovich planning to sell off the valley's lifeblood? Or is he just the newest water baron on the block?* Bakerfield.com.
https://www.bakersfield.com/columnists/lois-henry-is-john-vidovich-planning-to-sell-off-the/article_994125e1-737b-5bba-acb1-255c8ee0ad21.html
- Human Right to Water Act, Cal. Water Code § 106.3. (2012).
<https://codes.findlaw.com/ca/water-code/wat-sect-106-3.html>
- ICWE. (1992). *The Dublin statement on water and sustainable development*. Dublin: International Conference on Water and the Environment. <http://cawater-info.net/library/eng/l/dublin.pdf>
- Jacobs, J.P. (2019a, April 17). Rollback River, Part 1: Colorado River's biggest champion: Walmart heirs. *E&E News*.
https://www.eenews.net/special_reports/rollback_river/stories/1060166213
- Jacobs, J.P. (2019b, April 18). Rollback River, Part 2: Secretive 'harbor master' steers Colorado River campaign. *E&E News*.
https://www.eenews.net/special_reports/rollback_river/stories/1060178099
- Johnson, E. (2019, May 22). Tech billionaires who donate millions are just "bribing society at large," Anand Giridharadas says. *Vox Recode*.
<https://www.vox.com/recode/2019/5/22/18634612/anand-giridharadas-billionaires-philanthropy-zuckerberg-bezos-kara-swisher-decode-podcast-interview>

- Julian, J. P., & Weaver, R. C. (2018). Demand for Stream Mitigation in Colorado, USA. *WATER*, 11(1). <https://doi.org/10.3390/w11010174>
- Kelleher, K. (2018, December 10). Harvard's \$39B Endowment Is Reportedly Buying Up California's Vineyards—and Their Water Rights. *Fortune*. <https://fortune.com/2018/12/10/harvards-endowment-reportedly-buying-californias-vineyards-water-rights/>
- Linton, J. (2010). *What is water? The history of a modern abstraction*. UBC Press.
- Lippert, J. (2015, November 4). A few California farmers have lots of water. Can they keep it? *Bloomberg*. <https://www.bloomberg.com/features/2015-imperial-valley-water-barons/>
- Lohan, T. (2017a, Sept. 14). *Why It's Legal to Pump Untreated Canal Water Into Californians' Homes*. Water Deeply. <https://www.newsdeeply.com/water/articles/2017/09/14/why-its-legal-to-pump-untreated-canal-water-into-californians-homes>
- Lohan, T. (2017b, July 5). *Systemic Failure: Why 1 Million Californians Lack Safe Drinking Water*. Water Deeply. <https://www.newsdeeply.com/water/articles/2017/07/05/systemic-failure-why-1-million-californians-lack-safe-drinking-water>
- Mack, E. A., & Wrase, S. (2017). A Burgeoning Crisis? A Nationwide Assessment of the Geography of Water Affordability in the United States. *PLoS ONE*, (1). <https://doi.org/10.1371/journal.pone.0169488>
- Mildenberger, M. (2019, April 23). The Tragedy of the Tragedy of the Commons: The man who wrote one of environmentalism's most-cited essays was a racist, eugenicist, nativist, and Islamaphobe—plus his argument was wrong. *Scientific American*. <https://blogs.scientificamerican.com/voices/the-tragedy-of-the-tragedy-of-the-commons/>
- Mitchell, T. (2002). *Rule of experts: Egypt, techno-politics, modernity*. Berkeley: University of California Press.
- Pitzer, G. (2019, December 13). Can a grand vision solve the Colorado River's challenges? Or will incremental change offer the best hope for success? *Western Water*. <https://www.watereducation.org/western-water/can-grand-vision-solve-colorado-rivers-challenges-or-will-incremental-change-offer>
- Reisner, M. (1986). *Cadillac Desert: The American West and its disappearing water*. New York, N.Y., U.S.A.: Viking.
- Robison, J., & Kenney, D. (2012). Equity and the Colorado River Compact. *Environmental Law*, 42(4), 1157-1209. www.jstor.org/stable/43267823
- Schmidt, J. J., & Mitchell, K. R. (2014). Property and the Right to Water: Toward a Non-Liberal Commons. *Review of Radical Political Economics*, 46(1), 54–69. <https://doi.org/10.1177/0486613413488069>

- Siman, J. (2020, January 21). The Lords and Ladies of Discipline: An Interview with Matt Stoller. *Naked Capitalism*.
<https://www.nakedcapitalism.com/2020/01/the-lords-and-ladies-of-discipline-an-interview-with-matt-stoller.html>
- Sivas, D. A., Melius, M. L., Sheehan, L., Ugai, J., & Kryczka, H. (2017, March). *California Water Governance for the 21st Century*.
<https://law.stanford.edu/publications/california-water-governance-for-the-21st-century/>
- State of California, State Water Resources Control Board (2018). *Annual Compliance Report 2018*.
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf
- Stoller, M. (2019). *Goliath* (First Simon & Schuster hardcover ed.). Simon & Schuster.
- United States Department of the Interior Bureau of Reclamation (2020). *The Law of the River*. <https://www.usbr.gov/lc/region/g1000/lawofrvr.html>
- Useful Idiots. (2020, February 7). *Lee Fang on Iowa Shadow App and Bloomberg's Political Machine, Plus the Whole World Sucks After Iowa* [Video]. YouTube. <https://www.youtube.com/watch?v=JQCnw5GaPQY>
- Vekshin, A. (2014, July 23). California Water Prices Soar for Farmers as Drought Grows. *Bloomberg*. <https://www.bloomberg.com/news/articles/2014-07-24/california-water-prices-soar-for-farmers-as-drought-grows>
- Walton, B. (2019). The Price of Water: Water Rates Dashboard. *Circle of Blue*.
<https://www.circleofblue.org/waterpricing/>
- Water Education Foundation. (2018). *2018 Annual Report*.
<https://www.watereducation.org/sites/main/files/file-attachments/2018annualreport.pdf?1559247950>
- Worster, D. (1985). *Rivers of Empire: Water, Aridity, and the Growth of the American West*. New York: Oxford University Press.

Endnotes

¹ The four tenets of the Walton Family Foundation’s work on the Colorado River:

First, it wanted to test whether water markets would work for agriculture, cities and the river. It even coined the term "conservationomics" for its environmental work, though it later abandoned it.... Second, it expanded financing for agricultural and urban water efficiency. Third, it worked to improve flows and riparian habitat. And fourth, it supported the development of drought plans and other water agreements (Jacobs, April 17, 2019).

² The Law of the River:

The Colorado River is managed and operated under numerous compacts, federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the “Law of the River.” This collection of documents apportions the water and regulates the use and management of the Colorado River among the seven basin states and Mexico (US Dept. of the Interior Bureau of Reclamation, 2020).

³ <https://libguides.usc.edu/writingguide/bookreview/multiple>

⁴ The “tragedy of the commons” was defined by Garrett Hardin in a 1968 essay, and is described in the title of an article in Scientific American as: “The man who wrote one of environmentalism’s most-cited essays was a racist, eugenicist, nativist and Islamaphobe—plus his argument was wrong” (Mildenberger, 2019). Harden’s theory describes humans as inherently selfish,

such that they will race each other to use up available (common-pool) environmental resources to the point of their destruction if they are not prevented from doing so. His theory is used to justify the privatization of common-pool resources.

⁵ Craig M. Wilson's list of five recommendations that "can comprehensively address the inefficient use of water in California":

1. Create a Reasonable Water Use Unit within the State Water Board's Division of Water Rights, which would enforce the prohibition against the waste or unreasonable use of water, with a focus on using doctrine to promote more efficient use of water in a wide variety of settings;
2. Streamline the procedures for enforcement actions against waste and unreasonable use, starting with the issuance of a Cease and Desist Order;
3. Conduct one or more adjudicatory proceeding(s) regarding inefficient agricultural water use;
4. Employ the reasonable use doctrine to promote more efficient agricultural water use or methods of use, including water delivery system/irrigation scheduling improvements and improved conservation practices; and
5. Revise state water plans to specifically incorporate the efficient use of water, pursuant to the doctrine.

⁶ Fleck's views on water management also align with Bakker's definition of neoliberal institutionalism:

Governments should leave as much scope for market mechanisms as reasonably possible and restrict their role to that of umpire, regulator, and

facilitator. Within this framework of government oversight, market mechanisms can achieve our desired environmental and economic goals. In order for this to occur, we need to “get the institutions right”: hence the focus of public-policy debate in recent years on concepts such as social capital, good governance, and institutional economics. We might term this set of ideas “neoliberal institutionalism” (Bakker 2014, 215-216).

Bakker’s more broad definition of market environmentalism is also relevant:

Strategy	Examples	Details (references)
Privatization/appropriation The transfer of ownership or management of resources to the private sector, often associated with the creation or reallocation of private property rights	Divestiture (also termed asset sale)	Sale of water supply infrastructure to private sector [e.g., England and Wales (178, 179)]
	Land/water grabbing	Corporate land/water rights acquisition [e.g., sub-Saharan Africa (96)]
	Private-sector participation or partnerships	Outsourcing of water supply system management to private companies (29)
Commercialization The incorporation of market institutions and models in resource management organizations	Corporatization	Conversion of the business model for municipal water supply from a local government department to a publicly owned corporation (114)
	New public management	Introduction of alternative service delivery in water supply management [e.g., Ontario, Canada (180)]
Environmental economic valuation The introduction of full-cost pricing and associated technologies for charging consumers	Full-cost pricing	Water pricing for irrigation water and associated private property rights (126)
	Environmental valuation/ecosystem service pricing	Environmental valuation of water incorporated into decision making (29)
Marketization The introduction of water markets as trading mechanisms, predicated on the existence of secure private property rights	Creation of water markets	Introduction of a water market [e.g., in Chile (145)]
Liberalization of governance The transfer of decision making and oversight from governments to nongovernmental actors via deregulation, devolution, decentralization, and delegation	Deregulation	Cessation of direct state oversight of water quality mechanisms [e.g., Ontario, Canada (181)]
	Delegation and decentralization of decision making authority	Delegation to nonstate actors, often combined with rescaling from national to provincial/state and/or local authorities (182)

(Bakker, 2014; p. 476)

⁷ Fleck quotes UNM economics instructor Bob Berrens’ definition of institutions: “Institutions are the rules, *both formal and informal*, that both liberate and constrain behaviors in repeated interactions” (Fleck, 2019; p. 206).