

Water UCI Working Paper

Valuing California's Water: A Social Science Perspective

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Abstract

In California, policy makers, practitioners, and researchers have contributed to a rising conversation on how best to value water, particularly in response to environmental and economic stresses. At stake in this conversation is not only how to value water, but how to understand, model, and communicate those values between groups. A retrospective review of the scholarly literature on California water as a natural, social, and political system shows that water has been valued primarily through economic or ecological categories. This dominant valuation is evident in water management practices, in the language and implementation of water policies and regulations, and in the research that is conducted on California's water. While economic and ecological values of water are important, research and practice has also shown that water has a more diverse value profile. Practitioners and members of the public alike attach a wide spectrum of values and categories of value to water, and to the processes of managing water.

This paper defines historical, systemic values of growth, conservation, efficiency, and sustainability as they emerged at different points in California's history of water management, and it considers how researchers and practitioners today share and balance contemporary understandings of these values alongside emergent values like equity and environmental justice. Building on this historical foundation, we explore some of the values and categories of value that policies, practices, and research on California water assume, perpetuate, marginalize, or exclude. We conclude by drawing on the broader social scientific literature on values and stakeholder engagement to suggest a broader perspective on values, which might enable water managers to engage a more diverse and inclusive valuation of water as part of their planning and policymaking processes.

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Problem

Values, as we use the term here, refer to our socially and culturally mediated understanding of what is important and meaningful for different individuals and groups, as well as the more colloquial definition of the economic value we attach to commodities or labor (Graeber, 2001; Moore, 1995; Munn, 1992). We also draw from policy and management scholarship that distinguishes public (social) value and private (economic) value (see Moore, 1995).¹ Orienting to value in this way allows for a greater appreciation of how values shape and are shaped by broader social, political, and economic structures, and who is (or is not) included as part of the public in “public values.” Values (and the categories we use to represent, assess, and analyze them) matter because they shape the design and priorities of policy and public outreach programs, as well as how those programs are received, interpreted, and acted upon by both practitioners and the general public (Espeland, 1998; Grafton & Hussey, 2011; Linton, 2010).

In California, as elsewhere, “water provision is partly determined by deeply held values that shape approaches viewed as legitimate for governing its quality and availability” (Swyngedouw, 2007; Linton, 2010; Phillips et al, 2011 cited in Feldman, 2017, p. 4). While Western water has traditionally been valued on a cost or price basis, Bajer and Martin (1990) argue that price provides only a *partial* perspective on water’s “true” value to communities, and realistically, humans or decision makers rarely act upon solely one value framework, but instead engage or blend multiple values (Feldman, 2017). “Water 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” (Grafton & Hussey, 2011; Linton, 2010). Recent decades have seen a significant increase in studies of how to design water markets to best honor particular values (Gray, 1994; Green and Hamilton, 2000; Haddad, 2000; Nylén et al, 2017), and of how to use value-based processes like ecosystem services to bring together different voices, reduce conflict, and develop shared understanding (see Kenter et al, 2016). Despite these attempts to incorporate diversity and flexibility into how water is valued, it’s also important to note that water planning and policy in California has become an intensely technocratic process; one that often requires (and prioritizes) expertise in economics, engineering, and similar disciplines from its participants over other ways of relating to water. Thus, practices of scientific observation and assessment shape what is documentable, seeable, and actionable to policymakers, which influences the value of the product and for whom it is valuable (Feldman, 2017, p. 5; Oakes, Townley, & Cooper, 1998, p. 272).

¹ Moore (1995) found that the creation of public value made public agencies fundamentally different than private organizations, which were oriented to generating private - or economic- value. Public value includes social values such as democracy, transparency, and participation, while private value is focused on economic viability and refers to the ability of an organization to generate profit. This distinction is useful in theory, but it is often blurred in practice particularly as organizations hybridize to solve social and environmental problems. Yet, there remain some fundamental differences between how value operates in the public and private sector, which also raises questions about who counts as the public (Nabatchi, 2010).

In California, water's value is divisive. Scientists, stakeholders, practitioners, and the public alike "have conflicting beliefs about the value of water and how it should be used" (Davis, 2002, p. 539). These conflicting beliefs elicit questions about the fundamental nature of value creation, such as: how categories like economic or environmental are created (and thus prioritized) in the first place, whether values can or should be made commensurable or comparable, and how values and valuation should be incorporated into planning and policymaking processes. For example, stakeholders may prefer broadly defined public values that can be interpreted in multiple ways to facilitate greater flexibility and public engagement. Practitioners, on the other hand, may prioritize narrowly defined values that are less open to interpretation, but can be more easily written into legal documents or financial plans. The perspective that "whiskey is for drinking and water is for fighting" has become so powerful that it is often taken as objective fact, written into both contemporary and historical studies via the assumption that these multiple points of view automatically entail irreconcilable conflict (Adams et al, 2008; Baggett et al 2006; Baggett et al, 2008). Yet, the diversity and potentially conflicting nature of water's use and its value does not necessarily presume irreconcilable problems or inaction.

Historic trends of California's water management reveal an implicit valuation of urban systems over rural ones. Concerns arise also between north and south, in that decision makers located in Sacramento are thought to be out of touch with water needs of Southern California. At the same time, decision makers in Southern California may also be unaware of the realities facing state water managers and Northern California. Public perception of water management is often divided along geographic, cultural, and political lines as well. Small rural communities are suspicious of regional and state-level water priorities that don't seem to include them, and urban centers question the necessity of large-scale agricultural water use as California's urban population continues to rise. Water reallocation from rural to urban and shifting water from agriculture to municipalities and industry has been the primary strategy to manage access and achieve equity for over-allocated water supplies (Ingram & Oggins, 1992). These patterns raise important questions about how to protect ecological and public values for all (Ingram & Oggins, 1992), and about the unequal stakes and consequences posed by the mismatch between lifestyle and use of water by California's urban and rural communities.

Discussion and decision making around water values often assumes values are broadly translatable, and can be made commensurate or comparable according to a common scale. This is most obvious in ecosystem services valuation and other processes where participants rank or prioritize values such as ecosystem health and public health, either explicitly or implicitly. In scholarly research as well, diverse values may be operationalized as comparable or commensurable options from which rational actors choose. While these processes do engage the public, they often result in participants refusing to separate particular values; adding, dropping, or changing them based on different configurations of the problem; or refusing to assign a relative value to things thought to be incommensurable or intrinsically valuable (Espeland, 1998). Thus, working productively and equitably with water values requires both an appreciation of the full diversity of locally meaningful values, and an understanding of how categories of value are compared, measured, and evaluated in practice.

It may seem that the solution is to simply manage water at the local level. However, Feldman (2017) points to recent scholarship in geography (see Norman et al, 2012) to illustrate that, the most important factors determining the power of water institutions and practices are not linked to [geographic] scale at all. Instead, they are based on long- established beliefs and political practices. These include water rights systems and assigned bureaucratic responsibility for managing water infrastructure.

Therefore, the question of how to value California water does not end at “locally” or “regionally”, nor “efficiently” or “equitably”, nor “economically” or “ecologically.”

Methods

This working paper is based on analysis of the scholarly literature on California water, with a focus on water policy². We define California water as a natural, social, and political system. Research was conducted over a two-year period terminating in April 2017. Data collection began in August of 2015, with preliminary coding and analysis beginning in January of 2016, and primary analysis terminating in April 2017. We also situate the scholarly research in Water UCI’s current engagement with water managers. For example, the question about “how we value water and water uses in California” was important as per the literature review, but also is a part of the current practitioner conversations³. Both researchers are social scientists.

The Multiple Values of California Water

Historically, water systems in California have been managed according to **growth, conservation, efficiency, and sustainability**, which emerged at different points in California’s history of water management. There are traces of these values today, as water practitioners largely share and balance contemporary understandings of how to value **growth, conservation, efficiency, and sustainability**, according to broadly dominant **economic and ecological values**.

Growth

1930 – 1970 is known as the peak of California’s “hydraulic society” (Hundley, 2009); this was a time of massive growth and expansion of urban populations, irrigated agriculture, land development, built infrastructure, and water agency power and resources. A rise of environmentalism and environmental awareness in the 1960s led to critiques of this large-scale water infrastructure growth. Simultaneously, there was a nascent but growing interest in the value of resource efficiency and conservation over expanded consumption.

Conservation

Resource efficiency and conservation grew during the national economic recession and energy crises of the 1970s. The 1976-1977 drought inspired conservation measures at local, regional, and national levels. The statewide population boom and land values crash of the 1980s also contributed to the trend toward efficiency and conservation (Berk et al, 1980). By the late 1970s, most existing water supplies had been committed, ushering in the conditions of perpetual

² For a similar methodology, policy value analysis, see Rein 1983.

³ For example, at the most recent CA Water Resources Control Board meeting on November 15, 2016, a panelist attested to the need to look critically at the ways in which we value water in California (CA EPA November 23, 2016).

overcommitment and scarcity that have since become normalized in California water (Berk et al, 1993). Water agencies began receiving pressure to explore greater conservation measures from both the state and their constituents. Voters drew on concerns from the rise of environmentalism (and its emphasis on the unanticipated costs of large infrastructure development) to critique values like growth for the sake of growth, reject new large-scale projects, and pressure agencies to better manage existing resources (Bakker, 2014; Baumann, 1983; Hundley, 2009). As these shifts gained traction, so did the value of individual water resource conservation. While most agencies still viewed water conservation as a voluntary, secondary goal, individuals were nonetheless encouraged to practice conservation as “a measure of good citizenship” (Gottlieb & FitzSimmons, 1991, p. 193).

Efficiency

By the late 1980s, and particularly following the 1988-1992 drought, water agencies shifted to values of efficiency - perhaps due to fears that conservation implied stopping growth, which was still perceived as a negative outcome. At the same time, water agencies discovered that more efficient water management effectively “freed up” surplus water supplies (Gottlieb & FitzSimmons, 1991). In effect, efficiency also preserved the value of growth: it was conservation without the need to cut back on the expansion of water services and population growth. Researchers continue to note that water policy makers, managers, and developers still operate on the assumption that water conservation requires a loss of services or growth (and loss of income), and is therefore generally undesirable.

Sustainability

Sustainability refers to balance and compromise, an outgrowth of environmentalism’s focus on cooperation and assessing the value of different water uses. Recent thinking decouples economic growth and conservation - in other words, one is not at the expense of the other (Cohen, 2016).

Economic Value

Economic terminology and explanatory models prevail in the California water literature. Most research values water economically according to pricing and demand (Biggs et al, 2012; McGinnis et al, 1999). Water economization, in particular, is central, with studies taking the form of analyses of water markets (Chong and Sunding, 2006; Dellapenna, 2000; Gaffney, 1997), water transfers (Israel & Lund, 1995), water demand (Olmsted et al, 2007; Renwick & Archibald, 1998; Worthington & Hoffman, 2008), water rates (Baerenklau et al, 2014; Gleick et al, 2003; Pint, 1999) and game theory modeling (Madani, 2010). Most studies test and implement a set of economic logics related to water demand and consumption such as: (1) California’s inexpensive water hides its “true” cost and encourages wastefulness; (2) individual stakeholders and groups of water users are financially motivated, and will respond to water pricing strategies in predictable ways (e.g. Farmers can be incentivized to fallow land by raising the price of water for irrigation); and (3) water transfers and water markets are logical next steps to intervene in California’s complex water system by serving the public good and assigning water to its best use. For example, a review of water management in Los Angeles and the Imperial Valley concluded that existing water markets work poorly because sellers are under motivated, surface water prices are subverted by “free”

groundwater, many uses aren't charged, there is a surplus of obsolete subsidies and entitlements, and some water trades are not in the public's interest (Gaffney, 1997).

Even interdisciplinary studies often privilege economic value, pairing economics alone (and as a stand in for all social science) with another discipline such as engineering (Newlin et al, 2002), hydrology, or agricultural science (Jackson et al, 2011). This scholarship evaluates and optimizes economic-engineering models for efficient long-term, large-scale California water management (Draper et al, 2003; Jenkins et al, 2004; Medellin-Azuara et al, 2013; Newlin et al, 2002; Tanaka et al, 2006). These models reduce consumers/water users to secondary economic data and predictions of willingness to pay based on manipulation of water price, absent other broader social or economic variables. When a study involves surveying, interviewing, or other qualitative social science methods, for example, participants are most often selected according to: 1) their economic value, i.e. categories of water consumer (residential, commercial, agricultural, etc.), 2) by stakeholder status (water practitioner/professional, government agency official, non-government agency official, etc.), or 3) least commonly, by income level, race, ethnicity, or geographic location. This sampling inaccurately represents or masks disenfranchised or underrepresented groups, which is an affront to equitable and sustainable management of water resources, as well as widens sociopolitical and economic inequities. Moreover, income level or socioeconomic status, in particular, are not static nor reliable indicators of lifestyle with regard to environmental behaviors (Berk et al, 1993).

Ecological Value

Following environmentalist critiques of growth, water valuation came to be understood as a process of balancing economic and environmental values, although still privileging economic language and categories of analysis. This kind of “market environmentalism” succeeded the hydraulic society, and aimed “to achieve positive environmental outcomes through the introduction of markets and market-derived institutions and organizations” (Bakker, 2014, p. 475).

The rapid increase of market environmentalism over the past few decades has incited controversy. Drawing on a broad-ranging critique of the shortcomings of governments (state failures), proponents argue that markets and private actors will outperform governments in resource management, creating a virtuous feedback loop between economic growth and environmental protection. By contrast, opponents point to the shortcomings of markets (market failures), arguing that private actors—particularly those motivated by profit—will fail to conserve resources and will cause negative environmental impacts over the long term. (Bakker, 2014, p. 475).⁴

Despite the critique, stakeholders continue to demand large water projects as solutions to water scarcity. This can be seen in the signs of Central Valley farmers (see Figure 1) as well as heard in public demand for a sea-to-sea pipeline to maintain water levels at the Salton Sea.

⁴ The tension between private and public value is well articulated in the public management literature. Moore (1995) argues for attention to public value (see also Nabatchi, 2010).

Expanding Values

Equity and Environmental Justice

The value of California water continues to expand and shift through a growing **focus on environmental justice and social equity**. In the Pacific Institute's 1999 report on the Salton Sea, Cohen et al, bridge the ecological and environmental with equity, giving ample attention to both ecological concerns and to the demographics and vulnerabilities of communities surrounding the Salton Sea. The rise of environmental justice coincides with national and statewide trends, which aim to achieve environmental regulations and laws that are fair to all communities regardless of race, color, national origin or income (calepa.ca.gov). Environmental justice and equity brings the public back into focus as more than water consumers and rather than large landowners. "Leaders in the environmental justice movement work to include those individuals disproportionately impacted by pollution in decision making processes. The aim is to lift the unfair burden of pollution from those most vulnerable to its effects" (<http://www.calepa.ca.gov/EnvJustice>).

In watershed planning, agreement and disagreement between stakeholders involves interconnected and overlapping sets of values, such as "ecocentrism (respect for nature), local control (deference to vested interests), preservationism (irreversible loss of nature), and faith in science" (McGinnis et al, 1999, p. 9).^[ii]⁵ Other important values include "community values" (see Brown & Ingram, 1987) and "sacred" or "spiritual values" (Espeland, 1998). The latter includes religious value, which is often omitted from mainstream political debates of decision making (albeit until recently, perhaps episodically, with the fight over the Dakota Access Pipeline, see Figure 2). These values remain undetectable to state authorities because of inadequate complementary observational and assessment practices that are unable to capture or hold space for multiple and co-existing values. Essentially, these assessment practices generally assume that if you can't or won't create a dollar amount the value is zero. While Spanish water law, from which much of the present Western water law is derived, went to great lengths to protect the public interest and to place it above private parties' claims, and even above claimants invoking the doctrine of prior appropriation (see Brown & Ingram, 1987), this placement of public over private interest reiterates regulation and valuation of water be hierarchical, rather than multiple and pluralistic.

Engaged and Participatory

Recent research and practice proposes creating values through stakeholder engagement. Engagement is a value of the process that has consequences for the legitimacy of water management. This value resonates with Moore's definition of public values as those that espouse democracy, transparency, and participation (1995).

OneWater, for example, is an approach to water management focused on creating sustainable, reliable and resilient water systems. While efficiency dominates the objectives of OneWater, stakeholder engagement is central to its principles. Value creation occurs explicitly through consensus-based value propositions, which then shape the objectives and communication with stakeholders and service users writ large. Currently, the OneWater approach can be seen in Los Angeles with OneWaterLA, in the Santa Ana Watershed with One Water One Watershed

⁵ For more on value pluralism see Berlin, 1982; Galston, 2002; Molina & Spicer, 2004.

(OWOW), and in Northern California – with OneWaterSF. Engagement in OneWater is more than a box to check; it is a consistent feature of its water management approach.

Identifying Violations Affecting Neighborhoods network (IVAN) is another example of natural resource managers and regulatory agencies engaging local stakeholders, and creating values in-vivo that are both locally meaningful and broadly translatable. IVAN is an Environmental Monitoring System used by communities across California to enforce and address environmental violations in partnership with local authorities (ivanonline.org). The IVAN network has explicit environmental justice and equity foci. It also operates as a citizen science platform, allowing community members to upload data and create a network tailored their specific natural resources needs. The IVAN platform is one that arguably creates a mechanism to lift up community values through the use of “locally appropriate” technology (Fortun, 2004).

Studies of water as a “common pool” resource often incorporate considerations of both individual and group identity (value for oneself vs. value for one’s community)(Rudestam et al, 2015). Common pool resource is an economic term. But, Rudestam et al’s study of groundwater in Pajaro Valley, California notes that what people think of as the “commons” in a “common pool resource” is highly relational and dynamic rather than having an intrinsic value, suggesting the need for a sampling methodology that includes diverse participants, multiple time points, and perhaps varied combinations of participants in a focus group setting (2015).

Conclusions and Recommendations

Review of the scholarly literature on California water reveals that economic and ecological values of water dominate water policy, management, and research. Dominance of these values does not accurately portray the multiple values and potential emergent value frames for water that exist, and that may hold the potential for more efficient, effective, and equitable water management in California.

Viewing the scholarly literature on California water in the context of social scientific literature on values and stakeholder engagement more broadly, we suggest that it is not enough to understand economic and ecological values in water management. Through our research and analysis, we also conclude that values are plural, engage conflict, are dynamic (not static) phenomena, and require a continuous consideration of what constitutes “the public.” In closing, we offer a brief elaboration on each of these points as implications for future research and recommendations for practice.

Embrace Value Pluralism

Water managers can identify public values using their intuition, through a variety of public input processes (e.g. voting, polling), and through the scholarly literature (as we provide here) (Bozeman, 2007, p. 133 - 141). While these sources help managers identify values, they still exclude the public and their values. Moreover, they do not help managers understand the values and what is missing (Nabatchi, 2010). Plural values are best understood if values are created in the “public sphere” – a democratic space which includes, but is not co-terminus with, the state within which citizens address their collective concerns, and where individual liberties have to be

protected” (Benington, 2009, p. 233). Value pluralism is essential for legitimizing the processes of water management in the eyes of the public. Embracing public values means considering ways to capture these multiple values, and planning for their inclusion through measurement and evaluation from the start not tacked on at the end in the category of outreach.

Engage Conflict and Conflicting Values

The perspective that “water is for fighting” has been written into both contemporary and historical studies and discourse, so much so that it is often taken as objective fact. This perspective assumes that the multiple points of view involved in managing California water automatically entail irreconcilable conflict (e.g. Adams et al, 2008; Baggett et al, 2006; Baggett et al, 2008), and moreover, that this conflict is “bad” or “good.” We see the implications of this normative view of conflict play out in practices that potentially exclude, disallow, or simply engineer out productive conflict from planning and policymaking processes. Contrary to popular belief, research demonstrates that conflict is an inherent, necessary, and often productive component in natural resource management (Buckles, 1999). In fact, “[r]esolving value conflict is an intrinsic part of administrative life” (Wagenaar, 1999, p. 444), and, as noted above, the obligation to make different values commensurable (and thus displace conflict into disagreements over ranking or prioritization) can be actively harmful to the integrity of the respective process. Engaging the conflict between values and categories of value should be treated as a useful, productive, and necessary part of planning and policymaking processes that provides an opportunity to iterate the values and categories of value in play.

View Values as Processual

Related to the points above about value pluralism and the importance of conflict and conflicting values, is that values are dynamic concepts created through a continuous process (Benington, 2009, p. 235). Values - when discussed in the literature or in practice - are often described as fixed, static entities that people subscribe or attach themselves to. While many values may seem persistent, even immutable, by drawing on the social science literature, we can see that values are actually dynamic concepts created and recreated through practice. In fact, Successful agreements across or reconciliation of multiple values is processual and often based on conversation, translation, and framing of the problem rather than the accommodation of static values (Lejano & Ingram, 2009; McGinnis et al, 1999). A values-as-process perspective suggests that small actions (such as a public comment at a water board meeting) or large actions (such as those that allocate funding to certain priorities) construct, engage, and marginalize certain values.

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