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Viewpoint: An Intersectional Approach to Water Equity in the US

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ABSTRACT: In the United States today, there is growing concern over what is being referred to as a 'water crisis', but which is, in fact, a crisis of equity in water access. This concern has been exacerbated and illuminated by the COVID-19 pandemic. This paper draws on reports from leading NGOs, activist groups and media sources, on commentary from high-profile water actors, and on emerging academic literature. In the process of these investigations, it uncovers a tendency to frame the water crisis primarily in terms of affordability; it also notes widespread concern over access and water quality issues. All of these are fundamentally related to equity principles. We argue here that seeing America's water crisis as being about equity of access provides an opportunity to foreground the historic inequities revealed by the pandemic and by the subsequent economic downturn. A broader, intersectional approach can open-up the problem framing of water equity in the US to include histories of racism and colonialism. An intersectional approach allows for a more integrated and holistic analysis of the ways in which social difference shapes access, quality and affordability of water. Underlying power structures can be revealed through a better understanding of how water inequities result from broader patterns of systemic racism and colonial relations. Ultimately, this improved understanding can result in interventions that disrupt familiar patterns of inequality. As the idea of a water crisis in the US comes into the mainstream, the paper offers a point from which academics can begin to frame their research and a base from which practitioners can consider how to better achieve equity in water governance.

KEYWORDS: Equity, water crisis, intersectionality, race, power, US

INTRODUCTION

Issues of water justice and equity are of deep interest to scholars, practitioners, and activists. Rich scholarship has analysed the meaning of water justice in diverse contexts (see, for example, Sultana, 2018; Wilder and Ingram, 2018; Meehan et al., 2020a); it has traced the ways in which social dynamics, politics and power play out through water governance, with highly unequal results and impacts across society (Boelens et al., 2018; Perreault, 2014; Roa-Garcia, 2014; Schmidt, 2017). We understand equity to mean fairness in the water-related decision-making process, that is, full access to information and the ability to participate; equity also means having access to the substance of water-related decisions and outcomes, which is to say being able to modify decisions and outcomes to address imbalances in power, access and distributive fairness.

Concerns over water injustice have gained traction in the US, catalysed by the 2014 catastrophe in Flint, Michigan, where a shift in municipal water supply resulted in widespread lead poisoning in low-income communities of colour (Campbell et al., 2016; Pauli, 2020). Links between systemic racism, poverty and water have given rise to a growing chorus of academics, practitioners and activists who are working to identify, analyse and address the perceived growing water crisis in the US (see Christian-Smith et al., 2017; Shafer and Fox, 2017; Food and Water Watch, 2018); this is an urgent situation which has been further exposed and exacerbated by the COVID-19 pandemic (Walton, 2020a). There is a long history of environmental justice activism and scholarship in the US (Bullard, 1990; Walker, 2012; Agyeman et al., 2016) which relates to, and presents an entry point for thinking about, water equity. The larger contemporary focus on race and maldistribution of wealth provides an opportunity to address water in a new way, one that is undergirded by non-mainstream research.

In this *Viewpoint*, we present and analyse the many emerging faces of water equity in the US and argue for an intersectional approach in future research, activism and practice. We ground our analysis in reports from leading NGOs, activist groups and media sources, and in commentary from high profile water actors and from emerging academic literature. Our analysis is intended to capture dominant, emerging framings of the water crisis in the US and to provoke future research, activism and practice rather than a comprehensive literature review. Our findings are connected to larger issues of scarcity, irrigation, water rights, and equity writ large; however, our primary focus is on domestic and municipal water supply as that is what emerged from our research process. We find the primary foothold for thinking about water equity in the US to be issues of affordability that are layered on top of declining federal funding and aging infrastructure; these are now exacerbated by the devastating impacts of COVID-19. We find the water crisis to also be framed in terms of access and quality, which are fundamental dimensions of equity.

Our *Viewpoint* aims to motivate future research and practice to address water equity more meaningfully on the basis of two key points. First, issues of water affordability, access and quality cannot be understood in isolation from one another. We argue that these multiple dimensions of water inequity cannot be understood or addressed if they are not analysed with respect to deeper histories of systemic racism, settler colonialism, and racial capitalism. This leads us to our second point, which is that multiple marginalised identities compound one another to shape experiences of water inequality and that they thus demand an intersectional approach. We want to help shape an agenda for both research and practice that brings together the question of water equity, and larger concerns about systemic racism and other manifestations of structural injustices. We argue that future research should draw from theories of intersectionality to unpack how multiple axes of marginality shape access, affordability and quality of water. We acknowledge that recent advancements from both academia (for example, Gasteyer et al., 2016) and from leading NGOs such as DigDeep and the US Water Alliance (Roller et al., 2019) move the needle in this direction. We argue that a fruitful future direction for related work is one that explicitly pursues an intersectional framework. Such an approach can help broaden our understanding of particular water crises and can direct research and action towards more robust social solutions.

The *Viewpoint* is organised as follows: first, we present key elements of affordability which emerged from our investigation We then illustrate the necessarily multidimensional nature of any examination of water injustice, touching on water access and quality as they are addressed in academic literature, NGO materials, and media sources. In the remainder of the paper, we make the link between these multiple dimensions of water injustice, and deeper structures of racism, colonialism and racial capitalism, highlighting work that situates equity challenges in longer arcs of history. We use these brief case examples to demonstrate the merits of an intersectional approach, suggesting ways in which it can lead to more meaningful analyses and to addressing issues of water equity in the US more effectively. Finally, we offer a new basis from which academic research can be reframed and from which practices can be reconsidered.

THE MANY FACES OF WATER (IN)EQUITY IN THE US

Leading NGOs and academics identify a burgeoning water affordability crisis in the US. In a recent report, for example, the Brookings Institute (Ajami and Kane, 2020) identifies water equity and affordability as key areas of intervention on which US leaders should be focusing. The Pacific Institute likewise identifies an affordability crisis, arguing for revised definitions of water affordability, more customer assistance programmes, and more data on affordability (Christian-Smith et al., 2017: 62). Food and Water Watch (2018: 1) identifies a "secret water crisis", citing statistics showing that household water bills have increased at three times the rate of inflation, while at the same time income has fallen in real terms. The report presents a nationwide assessment which found that 5% of households had experienced water shut-offs for non-payment in 2016 (Food and Water Watch, 2018). In the same vein, a 2017 report from the US Water Alliance reports that the lowest 20% of income earners spend nearly one-fifth of their income on water (Shafer and Fox, 2017). High profile case studies add texture to the issue. In Jackson, Mississippi, for example, a customer received a $4000 water bill, catalysing a lawsuit against the city (which has a 30% poverty rate) (Gates, 2020); in 2014, in Detroit, mass shut-offs occurred; and in Atlanta, water bills approached $400 (Mack and Wrase, 2017). Overall, the work of NGOs draws attention to water affordability as a widespread yet under-studied issue in the US.

Water affordability issues have been both exposed and exacerbated by the COVID-19 pandemic (Ajami and Kane, 2020). Walton (2020a), reporting for online water media hub Circle of Blue, and Holmes et al. (2020) of the Pacific Institute, detail how, since the beginning of the pandemic, more people have behind on water bills and there have been increased shut-offs due to non-payment. While the 2020 Coronavirus Aid, Relief, and Economic Security (CARES) Act provided some household water bill debt relief, commentators note that such temporary measures were only a starting point and that they defer, rather than address, the root problem of water affordability (Walton, 2021). While many state utilities temporarily suspended water shut-offs and eliminated late fees, these emergency measures have largely ended (ibid). Explaining one such measure in California, Governor Newsom outlines how, "[n]othing in this order eliminates the obligation of water customers to pay for water service, prevents a water system from charging a customer for such service, or reduces the amount a customer may already owe to a water system", (Walton, 2020a). Commentators have argued that lack of affordable access to water is all the more devastating given the extra sanitation needs during the pandemic (Dawson, 2020). In sum, the economic hardships brought by COVID-19, combined with increased need for proper sanitation, have brought the issue of water affordability to the fore.

One key challenge with the affordability framing is a lack of data and a lack of standards on affordability and shut-offs. The US Environmental Protection Agency (EPA) does have a standard for water service affordability, defining it as the expenditure of 2.5% or less of median income on water; however, little data has been collected on the issue and there is no legal framework regarding enforcement (Mack and Wrase, 2017). As there are no national – and few state-level – requirements for water utilities to report on disconnections, the extent of the problem is not clearly understood (Holmes et al., 2020; Food and Water Watch, 2018; Walton, 2020b). Although California recently conducted a survey on shut-offs (Walton, 2020b), there is no analogous data at the national level and no federal agency or research institution that collects comprehensive data on water affordability, access or shut-offs (Fedinick et al., 2020). A chorus of activists and scholars calls for more transparency around water disconnections and more research on affordability patterns.

Another key challenge with the framing around affordability is its combination with the financial crisis of utilities and their aging infrastructure (Food and Water Watch, 2017; Contorno et al., 2018). Declines in federal funding are seen as a key driver of rising household water bills. Food and Water Watch (2017) reports that federal funding for infrastructure has dropped by 74% in real dollars since 1977. In another recent report, Roller et al. (2019) of the US Water Alliance identify that in 1977, 63% of total capital spending by water utilities came from federal agencies, but that today it is less than 9%. Infrastructure is

in a double bind as it is both aging and receiving diminished federal support (Shafer and Fox, 2017). Lack of federal funding forces water systems to raise rates to cover costs, pushing the burden onto customers. The Public Policy Institute of California, for example, suggests that 80 to 90% of an agency's cost is fixed, meaning not dependent on water use, and that this puts pressure on utilities to collect enough revenue to cover costs (Chapelle, 2020). This phenomenon tends to be most extreme in small systems that are characterised by low tax bases, low-income communities, and small populations to bear the costs, particularly in rural areas (Christian-Smith et al., 2017; Walton, 2020c). Such systems are characteristically fragmented; of the 50,000 community water suppliers in the US, more than 80% serve fewer than 3300 people. This raises issues: there's no economy of scale, less access to private capital, and low technical, managerial and financial capacity (Mullin, 2020; Balazs and Ray, 2014). Small systems struggle to attract investment and thus have no option but to try to fund repairs and maintenance by raising rates (Shafer and Fox, 2017).

We found that the central framing of water equity issues in the US was around affordability; however, access and quality also emerged as focal areas. In a recent study on urban water access in the US, for example, Meehan et al. (2020b) found that some 471,000 households, or 1.1 million people, lacked a piped water connection; similarly, Roller et al. (2019) reported finding that some 2 million Americans live without running water and basic indoor plumbing. With respect to quality, a lack of enforcement of drinking water standards is seen as a key problem. A 2019 report by the Natural Resources Defense Council (NRDC) and the Environmental Justice Health Alliance (EJHA), for example, lists the violations of the Safe Drinking Water Act (SDWA) nationwide between 2016 and 2019 (Fedinick et al., 2020; in their analysis of 50,000 water systems across the US, there were 200,000 violations of the law. Allaire et al. (2018) found that in 2015, some 9% of community water suppliers violated SDWA standards, impacting 21 million people. These authors cite lack of data on violations and lack of federal support for enforcement as key drivers; furthermore, the US EPA still uses 1991 guidelines on key issues such as lead pipes (Walton, 2020d).

In summary, our look at reports on what is being referred to as an emerging water crisis in the US shows heightened attention and framings around water affordability. Coverage of water issues by NGOs and media and in academic literature shows wide concern about access and quality. Media coverage in particular highlights how COVID-19 has worsened water affordability challenges, compounding risks related to sanitation and public health. Much of this analysis is framed in the context of the larger problem of aging and deteriorating infrastructure, where community water suppliers are forced to push maintenance and operations costs onto water consumers. In the next section we complicate these three pillars of affordability, access and quality, illustrating how they are interconnected and mutually reinforcing. We emphasise how these interrelated dimensions must be understood in relation to deeper systems of marginalisation, and that this is best comprehended through an intersectional approach.

ENTANGLING THE MULTIPLE DIMENSIONS OF EQUITY

First coined by founding critical race theory scholar, Kimberlé Crenshaw, intersectionality is a robust approach for thinking about how multiple axes of marginality shape people's identities and lived experiences (Crenshaw, 1989). It was initially developed to understand the ways that Black women's experiences were often neglected by both feminist and antiracist frameworks that failed to account for the intersection of race and gender. The term has travelled far outside its origins in Crenshaw's work, however, and has sparked fierce debate in both academic and wider cultural spheres. Inspired by Crenshaw's efforts to put forth a framework that accommodates both patriarchy and anti-Black racism, we argue that an intersectional approach to understanding water inequity is necessary to reveal and grapple with the overlapping and intersecting systems of power that shape water equity issues in the US.

A growing number of scholars are calling for an intersectional approach to environmental justice. Ducre (2018), for example, specifically elaborates on the power of Black feminist spatial imaginaries to

merge interlocking issues of race, gender and environmental injustice; similarly, Malin and Ryder (2018) and Pellow (2016) argue for an intersectional approach to environmental justice which accommodates overlapping and interconnected injustices, all of which are grounded in embedded structures of racism, sexism, colonialism and classism. Pellow (2016) argues that, traditionally, environmental justice scholars tended to focus on one or two dimensions of inequality, neglecting the deeper interlinking systems that shape environmental injustice along multiple lines of social difference. While some work has taken an intersectional approach in other areas – for example, green infrastructure (Anguelovski et al., 2020) and climate change research (Kaijser and Kronsell, 2014) – we argue that research and practice that is specifically focused on water inequity could also benefit from an intersectional approach.

In this section, we draw from three commonly cited case examples found in academic literature, media and NGO materials; we use these to illustrate the value of, and necessity for, an intersectional approach. These case examples include: (1) Native American communities in the southwestern US; (2) *colonias,* or unincorporated residential areas along the US-Mexico border; and (3) water shut-offs in Detroit, Michigan.

The situation on Native American reservations in the southwestern US is commonly embraced as a primary example of water inequity in the US (Vanderslice, 2011; Shafer and Fox, 2017; Christian-Smith et al., 2017). Shafer and Fox (2017) of the US Water Alliance report that some 40% of residents of the Navajo Nation lack piped water access, a figure which resonates with Roller et al. (2019), who find that Native Americans are 19 times more likely to lack indoor plumbing that White Americans. Reporting for the *Arizona Republic* newspaper, James (2020) highlights a study from the early 2000s on the Hopi Nation, which found that 35% of homes had no sewer connection and 18% had no running water. As these statistics indicate, on one level the problem is about the lack of access that stems from lack of infrastructure and from historic disinvestment. Access, however, then triggers additional challenges in terms of affordability, as many households that lack access to proper piped water and sanitation are forced to rely on tanker truck deliveries or the purchase of bottled water (Shafer and Fox, 2017). Both the Navajo and Hopi Nations are also exposed to groundwater contamination. This takes the form of elevated levels of arsenic and radioactive industrial waste from uranium mining, raising issues of safety and quality of available well water; this, in turn, necessitates buying water from expensive and faraway sources. Furthermore, lack of access and infrastructure stems not just from recent declines in federal spending on infrastructure; it also originates in the historical and ongoing struggles between the Tribes and the US government to ratify tribal water rights (Curley, 2019; Perramond, 2019). While we see here the nexus of multiple dimensions of water inequity, in order to fully grasp the situation attention must be paid to the context of settler colonialism, persistent poverty and unequal power relations between the US government and tribal communities. Affordability, access and quality thus are interlinked and, importantly, are encountered through multiple marginalised identities.

A second case example that is often invoked in the modern discourse around water inequity in the US is that of the colonias*,* the unincorporated residential areas along the US-Mexico border in California, Arizona, New Mexico and Texas (Balazs and Ray, 2014; Christian-Smith et al., 2017; Vanderslice, 2011; Mullin, 2020). Mullin (2020) finds that irrigated agriculture dominates the water governance and decision-making institutions that provide limited and inconsistent water services to unincorporated colonias; Vanderslice (2011) recounts that, as of the early 2000s, some 60,000 people along the US-Mexico border lived without water or sewage infrastructure. More recent work by Christian-Smith et al. (2017) includes reports that many colonia communities are located on flood plains or otherwise inhabit substandard housing; their homes are often outside the jurisdiction of nearby municipalities or utility districts and thus lack basic water infrastructure. Compounding the issue, as noted above, rural municipalities are themselves often financially precarious and thus are without much incentive to extend services to small colonias with low tax bases. Colonias tend to be 96% Hispanic/Latinx and have an average poverty rate of 42% (Christian-Smith et al., 2017). Many residents use makeshift connections and improvised plumbing systems, often with little knowledge of possible contaminants, particularly

agricultural runoff; this, in turn, translates into a need to purchase water from tankers or other supplies. In this case example, we again see how water access, affordability and quality compound one another and, more importantly, how they are situated in broader patterns of US-Mexico labour relations whereby Latinx immigrants are exposed to living situations which are precarious and which lack basic services. In this context, the status of immigrant racialised 'otherness' and exploitative labour relations – to which an intersectional framework draws our attention – are essential to an understanding of water inequity.

A third example that has surfaced multiple times is that of Detroit, Michigan. Detroit's population is 80% African American, with high rates of unemployment and poverty and with complex water inequities. The city has faced an affordability crisis whereby aging infrastructure has given rise to increased rates for users (Contorno et al., 2018). A recent story from *The Guardian* reports that water rates have doubled since 2007, and that since 2018 some 100,000 households have experienced water shut-offs (Costley, 2020). Detroit is also home to polluting industries and is burdened with high levels of contaminants; a 2016 study, for example, found 10 zip codes where at least 10% of the children tested positive for lead contamination (Rochester, 2017). This is layered on top of years of deindustrialisation and shrinking populations (Shafer and Fox, 2017); this compounds poverty to the point where some 67% of all households in Detroit now live below the federal poverty line (Contorno et al., 2018). The Detroit Water Brigade is a coalition of local citizens and community groups that was formed in response to the shut-offs; they have protested these shut-offs, organised emergency water deliveries throughout the city, and helped craft public information and media appeals. They argued that shut-offs violate the United Nations' principle that water is a human right, and their case drew the attention of, and a visit from, the UN Special Rapporteur on the human rights to safe water and sanitation (*BBC News*, 2014; *UN News*, 2014). In their assessment of the Detroit water shut-offs, Wilder and Ingram (2018) argue that water was narrowly framed by the local water utility as an economic good, disregarding the health, sanitation and well-being of low-income communities. They point out that local authorities failed to appropriately engage local communities or to redress existing political and economic power imbalances. Again, issues of affordability, access and quality reinforce one another; they are exacerbated by declines in federal infrastructure funding and their impacts have been heightened in the context of COVID-19 (Meehan et al., 2020b). These issues, however, trace back to much longer-standing patterns of segregated zoning practices and racialised uneven urban development. Even with an understanding of the interlinked nature of its multiple dimensions, water inequality cannot be meaningfully analysed without engaging the deeper history of racism in America. An intersectional approach draws attention to the ways in which the current high rates of poverty are embedded in this history.

In these three examples, we see how affordability may be an entry point for understanding water inequity. Affordability, however, is often linked to limited access and issues of quality, which force people to buy water from more expensive sources. This phenomenon is also frequently layered on top of high rates of poverty, which further limits people's capacity to absorb increased water costs. These three illustrative and commonly cited examples of water inequity in the US reveal how race, poverty and social difference are crucial elements of understanding water inequity in the US. With regard to water access, quality and affordability, we see how inequalities typically fall along racial lines. With respect to shut-offs and affordability, for example, Holmes et al. (2020) find that Black, Native American and other non-White households are disproportionately impacted by utility disconnections and that Black households are twice as likely to be disconnected as those of Whites. Meehan et al. (2020b) found that, in urban settings, houses without plumbing are more likely to be headed by people of colour and to be poorer; hazardous industries are also more likely to be located near communities of colour, thus creating patterns of disproportionate exposure to contaminants (Shafer and Fox, 2017). Higher numbers of violations of national drinking water standards occur in communities of colour, where standards are less likely to be enforced (Switzer and Teodoro, 2017); in 2019, for example, the NRDC and the EJHA found that, "At the county level, as people of colour, low-income people, non-native English speakers and crowded conditions and/or sparse access to transportation increased, the rate of drinking water violations also

increased (Fedinick et al., 2020). Our analysis also revealed that of any sociodemographic characteristic that has been analysed, race, ethnicity and language had the strongest relationship to slow and inadequate enforcement of the SDWA. Recent work by Schaider et al. (2019) further reinforces the point; they found that low-income and minority communities often face heavy burdens of exposure to contaminants and that associations with race and ethnicity persist even after accounting for differences in income.

Importantly, our analysis shows that such patterns must be understood in the context of the long arc of history, rather than as a recent phenomenon. In 2020, for example, the NRDC and the EJHA highlight that lack of infrastructure for both rural and urban Black neighbourhoods is a historic legacy that can be traced back to New Deal era construction, and that this complicates the notion that federal disinvestment began in the 1970s (Fedinick et al., 2020). Christian-Smith et al. (2017) argue, similarly, that lack of adequate infrastructure is often a vestige of Jim Crow-era laws of discriminatory zoning and land use regulation which resulted in many rural African American communities lacking basic sewage systems and water supply. Researchers cite decades of racialised urban planning as a root cause of water inequalities whereby wealthier, Whiter neighbourhoods have, historically and to this day, attracted greater public and private investment, compounding historic injustice (Roller et al., 2019; Contorno et al., 2018). Balazs and Ray (2014) illustrate how this plays out in agricultural contexts as well. They discuss how communities that were initially founded as agricultural labour camps were deemed 'non-viable'; as such, they remained unincorporated and thus without services. City-level planning, meanwhile, has allowed for selective annexation of rich areas. Mullin (2020) argues that where water systems correspond to municipal boundaries, they tend to reproduce racial and economic segregation. Sources of insecurity are not only financial; they trace back to historic rights and allocations as well as to ongoing power inequalities and unequal capacities.

Surprisingly, our review discovered very little work that engaged explicitly with the gendered dimensions of water inequality. This may be due to a degree of bias in the material towards quantitative studies. While academic work has explored the intersection of gender and water inequity in international contexts (for example, Sultana, 2009), we argue that mainstreaming an intersectional approach to water in the US may open -up doors, guiding scholars and practitioners to further engage with the intersecting axes of race, gender and class. Furthermore, the themes we observe in our review should be considered in view of critical case study research outside of the US that highlights inequities based on gender (for example, Escóbar, 2020); however, it should also consider themes that include how issues of equity are framed and measured in different contexts (for example, Goff and Crow, 2014) and the role of economic forces in generating new water injustice in different parts of the world (for example, Cole, 2012; Romano and LaVanchy, 2021).

Our three brief case examples illustrate why an intersectional approach is essential to addressing water equity issues in the US. In Native American reservations in the US, ongoing injustices related to water cannot be understood without an eye to ongoing structures of settler colonialism (Wolfe, 2006; Perramond, 2019), the ways in which water infrastructures unevenly distribute water goods and ills to settler and Indigenous communities (Curley, 2021), and the reinforcing challenges of quality, access and affordability. Similarly, along the US-Mexico border, the water inequity experienced by colonia residents often traces back to communities that were formed out of informal labour settlements, in agricultural areas with high levels of groundwater contamination. This must be analysed in the context of the broader political economy of rural water supply, where agriculture is often subsidised by the US government while low-income workers are exposed to high levels of nitrogen and other agricultural chemicals (Christian-Smith et al., 2017). In Detroit, Michigan, we see an example of discriminatory zoning, increased costs imposed on an already poor area, and exposure to toxins produced by activities disproportionately located in communities of colour. Taken together, these three case examples show how research and redress must draw from history and must actively contend with the broader power asymmetries which shape water inequity. We furthermore see how the materiality of water also necessarily weaves together

the dimensions of access, affordability and quality, all of which are shaped by the broader topography of social power structures.

TOWARDS AN INTERSECTIONAL APPROACH TO WATER EQUITY IN THE US

While we laud the rising attention to water equity issues in the US, especially in light of the COVID-19 pandemic and the goals of the Biden Administration in terms of infrastructure (Parlapiano and Tankersley, 2021), we argue that solutions to water inequity will depend on how we frame the problem. Framing water equity first and foremost as an affordability issue misses the multiple imbrications of affordability, access and quality. Conceptualising 'water crisis' in the singular and as something entirely novel may lead to short-sighted and technocratic solutions that fail to disrupt the underlying power dynamics of water inequity in its many forms. Indeed, we echo Berry's (2009) assertion that water crises are 'made' and that they result from a constellation of socionatural factors that exist in a relative, rather than absolute, way. Water scholars have long recognised that different parties rarely wield equal amounts of political power in how water is managed and governed (Molle, 2008), and that narrow framings of water around scarcity can undercut equity and can bias decision-making processes (Allouche et al., 2011; Schmidt, 2017).

While a new national dialogue on infrastructural spending is certainly timely and important, these issues cannot be fully comprehended nor remediated without engaging in longer histories and patterns of systemic racism, capitalism, and colonial relations with Indigenous nations. The idea of intersectionality allows us to see how people's experiences of social inequality and vulnerability are shaped not by a single factor, but rather by "multiple and mutually reinforcing axes of social division buttressed by unequal relations of power and privilege" that "can be traced through a much longer genealogical path" (Di Chiro, 2021: 317). In short, we need to better understand the way social difference shapes access to, and quality and affordability of, water in the US.

To appreciate the complex and overlapping structures that shape inequality, we thus call for an intersectional approach to research and practice. We acknowledge that important work has already been done to entangle the multiple dimensions of water inequity (for example, Mueller and Gasteyer, 2021), and to link inequity to underlying forms of social oppression and racism (Gasteyer et al., 2016); we call for further work building on such efforts. An intersectional approach may be a start to accommodating this complexity and may aid in a more effective framing of solutions. It can help move beyond a narrow focus on distributional justice to seeing water justice as also participation in decision-making and recognition of cultural identities, rights and practices (Walker, 2012; Agyeman et al., 2016). Water injustice is about more than distribution; it is also about the knowledge, meanings and discourse that shape water control and management (Zwarteveen and Boelens, 2014). As Wilder and Ingram (2018: 10) articulate, "knowing equity when we see it means engaging in a process of critical inquiry that delves into the value bias of existing institutions and processes, the openness and accessibility of political arenas, an appraisal of what and who is being served by water related decisions, and what and who may be left out. "Understanding what tips the scales against fairness in water management and governance is a first step in designing equitable, just and appropriate institutions and processes" (Groenfeldt and Schmidt, 2013).

Empirically, we echo calls for further data and accountability on shut-offs, affordability and water quality violations (Christian-Smith et al., 2017; Walton, 2020b). Gaps in critical data obstruct our understanding of the scope and depth of water inequities in the US and hamper our ability to redress these inequities through infrastructure and regulation. Embracing a more intersectional approach means confronting the manifestations of such underlying systems, including redlining, disinvestment, the financial precarity of small community water suppliers, and wealth disparities in urban areas. If efforts at remediation do not consciously confront these dynamics, then solutions risk perpetuating familiar patterns.

Contemporary recognition of race and historic inequity combined with the current water crisis present an opportunity to adjust research priorities to foreground equity and historic injustice. Crisis creates opportunities for action, and action needs to be based on socio- ecological knowledge that is sensitivity to issues of equity. Water planning and regulation at all levels must consider the legacy of inequities that are costly to disadvantaged groups. The public right to affordable, sufficient and clean water must be enshrined in law. Water rates should be based as much, or more, on equity concerns as on cost of service (Ajami and Kane, 2020). Expansion outside of service areas, for instance, needs to consider its impact on inner city residents, and water rates need to be calculated in the context of historical development and discrimination (Fedinick et al., 2020). The rate structure of private tankers needs to be examined, and public regulation and subsidies imposed if necessary. In examining new groundwater wells for agriculture in rural areas, approvals must consider the impact on costs for adjacent residential pumpers, and negative impacts must be compensated for (Roller et al., 2019).

As research in this area grows, we see value in the engagement of water policy scholars with frameworks of, for example, settler colonialism, critical race theory, or Black Marxism, in order to situate current trends in critical theoretical thought and to expand the analytical lens to consider deep histories and drivers of inequity. For far too long, our main policy analysis frameworks have given short shrift to issues of equity (Gerlak and Ingram, 2018). We encourage more work like that of Meehan et al. (2020b), which accommodates the multiple vulnerabilities that come together to shape experiences of water insecurity. Similarly, the drinking water disparities framework put forth by Balazs and Ray (2014) illustrates how multilevel factors come to shape lack of access and elevated exposure to agricultural chemicals, and how they are sedimented on to the bedrock of labour relations within which inequality falls along racial lines. In a more theoretical vein, we call for more work that explicates the nexus between historic water governance and the naturalisation of White water citizenry (such as that of Berry and Jackson, 2018), or scholarship that addresses the new theoretical entanglements of Black diaspora and Indigenous studies (King, 2019). Work such as this, which accommodates complex and overlapping drivers of water inequity, serves as a good basis for future intersectional approaches. Further, following Di Chiro (2021), we encourage scholars to build diverse coalitions with frontline communities in order to make environmental justice scholarship truly transformative. Ultimately, both water justice theories and water justice movements will benefit from "bringing together a plurality of contexts, experiences, views, tools and strategies" (Boelens, 2021: 217).

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