Why justice matters in water governance: some ideas for a ‘water justice framework’

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\section*{Abstract

This paper and Special Issue build a case for why justice matters in water governance and why it should be explicitly accounted for in water management and allocation. It describes four characteristics of water and their implications for social and environmental justice. These four characteristics – the spatial and temporal uneven distribution of water; the fact that water is essential for all life, with minimums needed for the survival of both the environment and humankind; water’s added benefits to human well-being through the goods and services it provides; and the ensuing political dimensions of power asymmetries affecting water governance – have resulted in a plethora of disciplinary interpretations of justice in an attempt to capture its relevance and importance. The collection of papers in this Special Issue provides a glimpse into the diverse range of issues that can emerge when justice considerations are taken or not taken into account in water governance. Water justice is particularly significant when societal change occurs because of altered allocations, institutional rules of the game or in the underlying hydrological regime. We summarise 10 steps that contribute to the continuing articulation of a ‘water justice framework’ by researchers interested in this field of research and practice.

\textit{Keywords: Environment; Equity; Governance; Social; Sustainability; Water justice

\section*{Introduction

Water policymakers and managers are often faced with conflict (at worst) or dilemma (at best) that arises when there is a change in water allocations or planning processes. Arguments relating to issues such as environmental water allocations and re-allocation between user groups are often premised on the claim of injustice or unfair treatment. Understanding how such justice arguments are stated both procedurally and in the context of distributive allocation is mostly tacit by decision-makers. This can sometimes lead to lack of specific thought as to where conflict can arise before it occurs. While many


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water agencies explicitly include the objective of creating equitable allocations or just policy there is little systematic knowledge in agencies as to how to define and operationalise equity and justice principles. The issue of social justice in water resources is a many-facetted one and there is no one way to precisely define the steps for ensuring that the most ‘just’ policies are arrived at. Nevertheless, there are some generalisations that can be made that can raise the awareness of justice concerns as policies are being formulated to avoid unintended consequences in terms of social and environmental impact. By bringing together a number of case studies in differing cultures and regions we believe this volume will be of use to water planning academics and planning practitioners alike as they address the justice issues involved with water.

This Special Issue provides a space to bring together some of the research and knowledge of water and justice issues which are often scattered in diverse journals because of its inherent multi-disciplinarity. The contributions to this Special Issue investigate how issues of justice influence water governance, management and allocation in a particular context or application. They highlight the ubiquitouness of justice in water by exploring ‘Why justice matters in water governance’. The aim of this paper and this Special Issue is to describe some guiding steps towards achieving ‘water justice’ by highlighting four aspects of water as a resource that, when viewed collectively, demonstrate the uniqueness and pervasiveness of water and its relationship to justice issues. We propose that research into the justice consequences arising out of these four aspects can contribute to the formation of a broad and interdisciplinary framework of ‘water justice’.

In this paper we first set the scene by briefly describing our use of the terms water governance and justice. The purpose of this section is not to provide an in-depth review on water governance nor on justice as it relates to resource allocation and management but rather to present a comprehensive enough description of both concepts to provide the reader with enough understanding on how the authors utilise these concepts in the context of this paper. The second section describes a rationale for why justice matters in water governance, what makes water a special case and draws on the contributing articles to illustrate the depth and breadth of this topic. We conclude with a proposed set of ‘water justice’ guiding steps that encapsulate the existing disparate understandings of justice with the intention that they contribute to the continuing articulation of a water justice framework by researchers interested in this field of research and practice.

**Water governance**

Water governance is a term that encompasses not only the political, social, economic and administrative systems that influence, develop and manage water resources, but also the delivery and implementation of water services to various users at different levels of society (Rogers & Hall, 2003). While there is no single, universally accepted definition of water governance, it can broadly be defined as a system for managing water according to objectives that reflect the goals of society. This system includes various organisations such as government departments, non-government organisations and civil society groups, and a range of institutions such as principles, policies, regulations, legislations and social norms that operate at a variety of levels (Ashton et al., 2005). As environmental

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1 Organisation and institution are defined according to North (1990) where institutions are considered ‘the rules of the game’ and organisations are considered the ‘players’.
discourses and water management paradigms have evolved, so too have the structure and mandate of water governance systems.

Approaches to water management have evolved considerably over the decades. For example, in Australia, prior to colonisation, the Australian Aboriginal and Torres Strait Islander peoples managed land and water resources through custodial obligations derived from the Dreaming, which bestowed individual rights and responsibilities as well as group or joint property rights (Tan, 2008). Following colonisation, water was used chiefly for domestic purposes. Generally speaking then came an economic development stage (‘the hydraulic mission’), where water was treated as a productive resource. Water supply was secured and controlled by building infrastructure, mostly in the form of dams (Turton et al., 2007). A belief that water could be controlled was held and was successful in many respects resulting in improved sanitation and water supply to urban environments. Similarly improvements in technology, farming practice and markets resulted in the increase of large, commercial irrigation schemes in the agricultural sector. This led to a form of water management now termed command and control (Holling & Meffe, 1996) which essentially strived to reduce any variability in the resource such as daily flows and seasonal fluctuations in order to improve the predictability of supply to humans. It is now recognised that this approach assumed that water management issues and problems were clearly bounded and comprised simple, linear cause and effect relationships that could be solved using engineering solutions (Holling & Meffe, 1996; Allan, 2005). Command and control approaches resulted in short term, necessary gains but precluded the central tenet of sustainable development where development should ‘meet the needs of the present without compromising the ability of future generations to meet their own needs’ (WCED, 1987). This approach resulted in many unforeseen consequences such as collapsing resources, social and economic strife, and losses of biological diversity (Holling & Meffe, 1996).

The recognition of these negative consequences led to a call for an alternative approach to water management – one that integrated the needs of society, economy and environment. Integrated Water Resource Management (IWRM) was hailed as a potential alternative to command and control water management approaches. The Global Water Partnership defines IWRM as ‘a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems’ (GWP, 2000: 22). Biswas (2008: 9), in his critique of IWRM, asks, ‘What is precisely meant by equitable? How will this be determined operationally? Who will decide what is equitable, for whom, and from what perspectives and under what conditions?’

Justice

The terms ‘equity’ and ‘equitable distribution’ are common parlance in water strategies, policies and laws but mostly they are used without clarification of their specific meaning or intended outcomes. The term justice is a more encompassing concept than equity and to add further confusion to the use of these terms, justice is often used interchangeably with fairness (Finkel et al., 2001). Equity is one facet of distributive justice and fairness talks primarily to procedural justice but is also sometimes used in reference to distributive justice as well. We explore some of the social psychological perspectives of justice that can provide some clarity of the definitions and use of these terms.

Social justice has been studied in social psychology since the early 1940s and initially focused on the distribution aspect of justice, with studies of equity theory and studies of relative deprivation (Skitka &
Equity is achieved, according to Adams (1963), when a person’s rewards or outputs are perceived to be in proportion to that person’s inputs or contributions. In other words, equity is affected by what is termed proportionality or the contributions rule (Leventhal, 1976) where a person whose contributions are greater should receive higher rewards or outputs. Deutsch (1975) introduced two additional rules that determine how rewards or outputs could be distributed: they are the needs rule, where a person who has a greater need should receive higher rewards or outputs; and the equality rule, where everyone should receive equal rewards, opportunity or outputs regardless of their needs or contributions. While these three are the most common identified distributive justice rules, Wilke (1991) expanded the study of distributive justice by adding greed or self-interest motivations – where each individual prefers allocations which are best for themselves (Sabbagh & Golden, 2007); and efficiency – where people who use the resource most efficiently are entitled to more – as additional nuances to the rules for allocating natural resources.

During the late 1970s and 1980s research shifted from distribution to procedural issues in what is recognised as a second phase of social justice research (Skitka, 2009). This is where the concepts of fairness and participation originate. Thibaut & Walker (1975) expanded the notion of justice to include not only distribution rules but also procedural rules. They contend that the manner or procedures in which the allocation of rewards or outputs are decided are also critical for determining what is just. The main premise of procedural justice is that the output or final distribution of resources is more likely to be accepted as just or fair, even by participants who get less than they expected, if the manner in which the decision was made is deemed to be just or fair by the affected parties.

A third phase of social justice research is identified as interactive (or interactional) justice, dealing with how stakeholders are treated by decision-makers (Cropanzano et al., 2002). Interactive justice is the least defined phase because it primarily deals with values such as trust and respect, which some researchers consider to fall under procedural justice. Contemporary research has moved on to explore the ideas of injustice, or how people react to unfairness (Skitka & Crosby, 2003), and there is a growing focus on how identity interacts with justice evaluations (Skitka, 2002). Research has also moved to how procedural and distributional justice interact, suggesting that ‘the effects of what you do depend on how you do it’ (Brockner & Wiesenfeld, 1996: 206).

Procedural and interactive justice were adopted by the political science, public policy administration and the environmental management fields in the form of public participation (involvement/consultation) in resource allocation decision-making (Smith & McDonough, 2001). Calls for procedural justice to be a more integral part of public participation programmes have illuminated the need to balance self-interest and group-value models of behaviour (Lawrence et al., 1997). This idea of self-interest or individualism versus the group as a whole poses a social dilemma situation that can be traced to Hardin’s Tragedy of the Commons (Hardin, 1968). The dilemma is deciding whether to sacrifice personal maximum benefit for the potential joint benefit of all members of the group. Schroeder et al. (2003) classify social dilemmas into two categories: one where individuals are extracting a resource from a common pool where the individual gains from all they can take and the costs are borne by the entire group; and the second where individuals make personal contributions to provide some desired benefit that will be enjoyed by the whole group, which opens the door to the possibility of free riders. The risk in both cases arises when there is an asymmetry in where the gains and burdens fall; and it is this asymmetry that challenges our notions of justice and fairness. The risk is heightened, we believe, when dealing with a resource such as water which is not substitutable and is required for life. The uniqueness of water sharpens the need for a focus on justice and just outcomes in the context of water governance.
Why justice matters in water governance: the uniqueness of water

We contend that water is a unique resource because of a number of characteristics, all of which have profound justice implications. While other natural resources may have a combination of some of these characteristics, we believe water is singular as it possesses all four. Much of the uniqueness of water can be described in terms of its ontology. Ontology deals with questions of reality (Crotty, 1998) and there is a continuum of understanding of reality, from Realism to Constructionism, with many understandings of reality in-between. Realism is where there is an underlying assumption of a singular objective reality that exists independently of individuals’ perceptions of it. Constructionism assumes that reality is neither objective nor singular, but that there are multiple realities that are socially constructed (Weed, 2009). Water can be described at many points along this continuum of reality in that water has objective chemical and physical properties—a realism perspective, as well as constructed meaning for many cultural and spiritual practices—a constructionism perspective. We have used this continuum to identify four characteristics, each of which describe water according to a different reality and then explore the implications of each for justice.

The physical properties of water

Water is found in the atmosphere and above and below the surface of the earth as a liquid, a solid and a gas. As a resource, water in its liquid phase is the most relevant and useful to humans in the form of rain, rivers and lakes, as soil or sub-surface water and as groundwater. Liquid water is, however, constantly changing both in phase as well as place. The interdependence and continuous movement of water provides the basis for the concept of the hydrological cycle (Ward, 1967). The assumption of a smooth and continuous hydrological cycle is naïve; rather it is constantly interrupted by natural events such as floods or droughts; and by direct and indirect human intervention, use and influence. In deserts rainfall is highly sporadic, often only falling once in many years. In cold climates precipitation takes the form of snow with long periods of time between snowfall and melt into surface water. In the tropics rainfall is confined to short periods of the year and falls as heavy seasonal rain often resulting in floods. Hence the global distribution of water is uneven in space and variable in time. In addition, water quality is also highly variable and dependent on underlying geology and soil properties. Water quality is often reliant on water quantity, where the volume of water affects the dilution or assimilation capacity of chemical elements and compounds.

Justice implications. The underlying water signature determined by the spatial and temporal uneven distribution of water provides a natural advantage of good quantity, quality and timeliness of water to some but not all. This advantage is not related to any claims humans might make (such as deservedness) but it does create better opportunities for some and not for others to survive and prosper. If we put aside human intervention in the hydrological cycle we would never be able to use or achieve equality as a justice principle or rationale for water allocation because of this natural uneven distribution of water globally. Therefore there will always be the need for distributive allocation of water based on ‘rules’ other than equal (and adequate to requirements) volumes of water for all parties. Human intervention to overcome the natural uneven distribution of water necessitates the technical manipulation of the hydrological cycle and the creation of organisations and institutions to manage this manipulation. These interventions have consequences resulting in trade-off decision-making; the rationale for these decisions can be based on a variety of justice principles.
Water essential for all life

For the environment. Due to the chemical and physical properties of water described above, water plays a fundamental role in biological processes and functions from the cellular to the landscape level. Falkenmark (1999) describes water as the bloodstream of the biosphere and cautions us against neglecting to recognise the dependent relationship between freshwater and the life support components of humanity. According to the Worldwide Fund for Nature (WWF), the Living Planet Index for the freshwater biome has declined more than for any other biome. The index includes 2,849 populations of 737 species of fish, birds, reptiles, amphibians and mammals found in temperate and tropical freshwater lakes, rivers and wetlands (WWF, 2012). In addition, of the world’s 177 large rivers (1,000 km and longer) only 64 remain free-flowing, unimpeded by dams or other barriers, while only 21 rivers longer than 1,000 km retain a direct connection with the sea (WWF, 2006).

The importance of freshwater ecosystems has been recognised through the development of minimum instream flow requirements or environmental flow requirements (Tharme, 2003). This science was born from the negative environmental consequences of large dam construction where resultant altered flows were the cause of major negative downstream ecological impacts (Bunn & Arthington, 2002). Today the need for minimum environmental flows to sustain water-based ecosystems is recognised and accepted; the challenge lies in their quantification, implementation and the political will not to reallocate environmental water to other consumers in water-scarce times.

For humans. The minimum amount of water required for a human being to survive is dependent on a number of physiological and environmental variables. A figure of 3 litres of good-quality water per person per day in a temperate climate at normal activity has been suggested for survival (Gleick, 1996). In 2010 the United Nations General Assembly included the right to water and sanitation as a universal human right (UN, 2010). The right to life and a standard of living adequate for health and well-being can only be achieved if access to water of a quantity and quality that supports these rights is secured. Although no specific volumes are mentioned in the new declaration, the challenges of implementation and the necessity to link this new right explicitly with the Millennium Development Goals were voiced. Various global organisations have made some recommendations of what should be the minimum basic human needs for water. Gleick (1998) suggested 50 litres, for daily usage as drinking water, sanitation, bathing and food preparation, but excludes water necessary to grow food at a subsistence level.

The importance of water for human health and well-being is indicated by the annual burden of disease from inadequate water, sanitation and hygiene totalling 1.7 million deaths. Approximately 1.1 billion people lack access to safe drinking water and 2.6 billion lack access to basic sanitation (Vorosmarty et al., 2005).

Justice implications. Few of the discussions of either social or environmental justice, or public policy more generally, consider the non-human environment as having a justice claim (see Driscoll & Starik, 2004). Much research is devoted to how people perceive and include environmental interests in justice debates (Opotow, 1993; Clayton, 2000; Lukasiewicz et al., 2013b). To what extent non-human species are seen as having a claim to justice depends on the values that humans hold towards their broader environment. Social justice constitutes an inherent part of the conception of sustainable development that the World Commission on Environment and Development outlined in Our Common Future.
The primary goal of the Commission was to reconcile physical sustainability, need satisfaction and equal opportunities, within and between generations (Langhelle, 2000). The importance of functioning freshwater ecosystems for future generations is a central tenet for achieving intergenerational justice.

Water for basic human needs draws on a human rights-based approach for water allocation decision-making. Human rights comprise negative rights which are rights to non-interference (for example people’s life, liberty, expression, religion or property) and positive rights which are rights to assistance (for example health, education and well-being) (Wenz, 1988). Water is considered a positive human right. Miller (2009) suggests that human rights should not be comparative, that is it is not about how one person is treated relative to others, but should be about how they are being treated without any caveats or comparisons. In all other circumstances justice is comparative and is about getting one’s fair share.

**Water’s benefits to human well-being**

Not only is water fundamental to basic human and environmental needs, it also provides numerous services or benefits that are intimately connected to human well-being. It is also important to note that the same body or volume of water can provide for a number of benefits, sometimes simultaneously (Syme *et al.*, 2008). For example, an irrigation lake also can provide for both active and passive recreation, aesthetic amenity and even elevated house value for those living on the perimeter. This means that justice in water allocation depends more on the multiple benefits available than merely the volume of water to be shared.

The Millennium Ecosystem Assessment describes five dimensions that constitute human well-being:

1. The necessary material for a good life (including secure and adequate livelihoods, income and assets, enough food at all times, shelter, furniture, clothing and access to goods).
2. Health (including being strong, feeling well and having a healthy physical environment).
3. Good social relations (including social cohesion, mutual respect, good gender and family relations, and the ability to help others and provide for children).
4. Security (including secure access to natural and other resources, safety of person and possessions, and living in a predictable and controllable environment with security from natural and human-made disasters).
5. Freedom and choice (including having control over what happens and being able to achieve what a person values doing or being).

These five dimensions have been linked to ecosystem services in general (Millennium Ecosystem Assessment, 2005) and water in particular (Brauman *et al.*, 2007). Brauman *et al.* (2007) group hydrologic ecosystem services that contribute to human well-being into five categories:

1. Diverted water supply (extractive water uses: subsistence, municipal, agricultural, commercial, industrial).
2. *In situ* water supply (subsistence use, hydropower generation, water recreation, transportation, food and fibre production).
3. Water damage mitigation (mitigation of flood damage, sedimentation of water bodies, of saltwater intrusion into groundwater and of dryland salinisation).
4. Provision of water-related cultural services (spiritual uses, customs and rituals, aesthetic appreciation and tourism).
5. Water-associated supporting services (of linked terrestrial, marine, ocean, atmospheric services).

The multiple uses of water, the fact that in some circumstances the same ‘stock’ or volume of water can be used over again for a different purpose and the numerous values humans place on water result in competing, conflicting and often incompatible demands on water. The social dilemma that this presents is how to prioritise water uses and users – whose uses and values are more important?

**Justice implications.** Allocation of water to basic human needs should in theory be ranked first on the list of priority uses. The distribution of the remaining water can be based on a number of criteria, each of which are rationalised by referring to particular justice philosophies, theories or principles. These represent the building blocks that can be reassembled in different combinations and used in different situations to define what might be considered just. Reddy & Syme (in press) provide a list of some of the justice philosophies that can be appealed to when deciding on prioritising water uses and values. They include:

- **Virtue Theory** – where people who already have resources should retain them because they are inherently good.
- **Prior Rights** – where people who have used the resource in the past first benefit as first in, first served.
- **Intergenerational Justice** – where the needs of future generations are considered.
- **Environmental Rights** – where the environment deserves its own allocation and underpins social and economic activities.
- **Property Rights** – where individuals should be given rights to amounts of water resources based on some contract.
- **Economic Good** – where water resources should be treated as economic goods with prices and markets.
- **Utilitarian Theories** – where water resources should be managed to maximise community welfare.
- **Moral Imperative** – where people in one location have a duty to ensure they do not negatively affect people in other locations.

Recognising that the social dilemma of water prioritisation is mainly distributive in nature and that there is no universally acceptable set of rules or justice principles that ensures that water is justly allocated, humans have created a governance system to try to make the process of prioritisation and allocation more just. In other words we have created a system that emphasises procedural justice as a means to deal with the difficulties of resolving the social dilemmas of distributive water allocation.

**Power asymmetries and water governance**

In order to accommodate both distributive and procedural elements of water governance, decision-makers have overlaid a socially constructed web of organisational borders and boundaries on top of a spatially and temporally variable resource. This has resulted in divisions of water resources between countries, administrations and cultures, all of which has necessitated the development of water sharing institutions. These institutions comprise the rules of the game and are best described by procedural justice rules which give legitimacy to distributive water allocation decisions. They include:
• Voice (all parties have the opportunity to be listened to and have some influence in decision-making processes).
• Participation (all parties and interests are able to participate in decision-making processes).
• Consistency (of the rules across jurisdictions and in time).
• Ethicality (lack of corruption, due process).
• Impartiality (lack of bias of the decision-maker).
• Accuracy (the information provided for discussion is correct and considered legitimate by all parties).
• Error Correctability (there is a chance to appeal decisions in terms of facts).
• Representativeness (inclusion of all relevant stakeholders and interests).

(Adapted from Reddy & Syme, in press; Lukasiewicz et al., 2013a.)

These ‘rules’ also underpin good water governance and are closely related to the principles of public participation advocated in the public policy arena.

In the effort to construct organisations and institutions that overcome the social dilemmas of distributive water allocation, we have also created a system that has the potential to create or exacerbate injustices. This is eloquently tackled in the literature that examines the concept of power. Power according to Nye (2004) comprises two faces: the first face of power is hard power which refers to economic and military capacity exercised through incentives or threats; the second face of power is soft power which is the ‘power to shape, influence or determine others’ beliefs and desires, thereby securing their compliance’ (Lukes, 2005: 486).

Justice implications. In the context of international rivers there are more instances of co-operation over shared water resources than armed conflict or the use of hard military power (Allan, 2005; Wolf, 2007; Zeitoun & Mirumachi, 2008; Zeitoun et al., 2011). The demonstration of economic hard power is more common than military power. Not only does economic strength provide a stable platform for negotiating water allocation, it also enables economically stronger parties to better recover from and resist water-related burdens such as scarcity (droughts) or water-related disasters (for example floods). The lack of economic capacity can result in the perpetuation of burdens on the same party (often marginalised interests or disempowered groups), which can result in social and/or environmental injustices. The use of soft power to achieve a desired outcome can be overt or covert in water allocation decision-making. Interest-based negotiation is considered the vehicle of choice for co-operation. However, there is now a growing recognition that successful co-operation does not necessarily translate into socially and environmentally just outcomes for water users and uses (Zeitoun, 2013; Patrick, 2014).

The concept of power also feeds into the debate on whether water should be regarded as a public good or a private commodity. It is argued that the privatisation of water will drive prices beyond some stakeholders’ ability to pay. The resulting exclusion of these stakeholders refers not only to exclusion from the actual resource but also exclusion from the capability to utilise the tools and knowledge necessary for effectively using water as a resource for all users; for example, the ability of a nation to build more efficient irrigation systems or develop an early warning system for flooding (see Zeitoun & Warner, 2008). In addition, privatisation of water often results in the exclusion of environmental interests. This externalising of the environment can result in the degradation and loss of ecosystem services which underpin livelihoods which in turn impacts negatively on human well-being. Water burdens are not limited to scarcity and over-abundance; water quality has been an important point in the development of the environmental justice movement that exposed how communities with little or no power were forced to endure poor
water quality and land degradation (Taylor, 2000; Washington et al., 2006). Miraftab (2004) examines the argument that public–private partnerships often claim to be formed with the interests of the poor in mind but that the outcomes of these partnerships often entrench inequities.

Another interesting context in which power emerges as an important concept is in the international trade of agricultural goods and produce. Sojamo et al. (2012) highlight the powerful ABCD agribusinesses that utilise large quantities of water to grow or manufacture foodstuffs. This group of players is described as a virtual water hegemon because it controls the movement of water at a global level through the embedded water in foodstuffs (Allan, 2011). The movement of embedded water in food makes sense if crops are grown in locations where water is not a limiting resource. However, in some cases, other factors such as cost of labour override water availability and have led to environmental and social injustice. The justice implications are captured in the question: What right do we have to eat someone else’s water?

An architecture of polycentric governance has been advocated in order to achieve strong and resilient institutions (Ostrom, 2010). Polycentric governance is an arrangement where organisations and institutions operate at various levels (for example local, regional, state, national, global) with multiple mandates and across different, but overlapping, areas. This network arrangement could distribute resources and capacities in such a way that any ‘perverse incentive and information problems at one level are offset to some extent by the positive incentives and information capabilities for actors at other levels’ (Andersson & Ostrom, 2008: 73) and could more likely achieve fair and just water management outcomes.

In conclusion, these four unique characteristics of water and their justice implications underpin our rationale for this Special Issue and contribute to our argument for why justice matters in water governance. To further build on this argument this Special Issue draws together a number of articles that illustrate various interpretations and disciplinary perspectives of justice to highlight a side of water governance that is recognised as vitally important yet is seldom explicitly discussed.

Why justice matters in water governance: summary of contributions

In this Special Issue, we seek to bring together multidisciplinary approaches to justice and differing water justice perspectives. While the contributions in this Special Issue focus mainly on the ‘power asymmetries and water governance’ characteristic, described in the previous section, their diversity demonstrates the multiple scales and dimensions of water justice. Many contributions also point either directly or indirectly to the ‘water’s benefits to human well-being’ characteristic, and are underpinned by its physical properties and essentiality for life. Indeed if water were not a source of multiple and diverse benefits, its governance would not be such a conflicted issue. Contributions highlight the spatial, temporal and political dimensions of water justice.

It is worth noting that the methodologies used by the contributors vary. They range from action research to document analysis (of legislation, treatises, newspapers and academic literature) as well as interviews and workshops. Through these diverse methods, the authors explore water dilemmas and conflicts through different justice perspectives, basing their analyses on procedural and distributive, restorative and transformational justice as well as a human rights approach. Actual conflicts described range from the legal access to use water, the rights to hydrometric data to guard against flooding, the

2 ABCD refers to the group of agri-companies ADM, Bunge, Cargill and (Louis) Dreyfus.
inclusion of ideas, values and worldviews on water usage in decision-making, and the structure of participation processes, as well as the geopolitical ability of a state to control and make use of water resources. All contributions tend to focus on marginalised groups (be they nation-states, indigenous or marginalised communities within countries). The wide geographical coverage (with every inhabited continent represented in this Special Issue) also demonstrates the ubiquity of water justice issues around the globe.

William Nikolakis and Quentin Grafton look at the power relations within the state, between the Australian Commonwealth (federal) Government and indigenous people, a historically disadvantaged stakeholder group. Their paper is an evaluation of top-down engagement processes for achieving restorative justice in water allocation, concentrating on procedural justice. The authors conducted action research workshops with two indigenous communities. They note that perceptions of fairness are critical to peoples’ evaluations of procedural fairness and, by extension, distributive justice. They also highlight the importance of trust and the consequences of its absence. While their paper focuses on the ‘power asymmetries and water governance’ characteristic of water, it also points to the ‘water benefits to human well-being’ characteristic.

Kelly Kibler, Robin Biswas and Andrea Juarez Lucas highlight that water governance includes in reality not just the resource (water) but the knowledge and infrastructure to use that resource to achieve well-being benefits. The authors look at power asymmetries at a transboundary scale (in the Ganges-Brahmaputra-Meghna River Basin), primarily through analysis of signed Treaties and Memorandums of Understanding (MoUs). They argue that a lack of sharing ‘transboundary hydrometeorological data’ between upstream and downstream states causes injustice to Bangladesh (the most downstream state in the Basin), which suffers ‘recurrent extreme hydrologic events’ and currently lacks the information necessary to address the water burdens suffered by its population through extreme flooding.

Barbara van Koppen and Barbara Schreiner investigate how changes in law could overcome historical injustice against marginalised groups in South Africa. Their legal analysis of water legislation revolves around transformative justice, arguing that the current operationalisation of water law infringes on constitutional human rights and explaining how proposed changes could address those problems. They argue that well-meaning existing laws perpetuate colonial dispossession and that the South African Government could use its power as a Public Trustee to allocate, to prioritise water for poverty eradication and the redress of historical inequities. This paper again focuses on the ‘power asymmetries and water governance’ characteristic of water justice but deals specifically with a temporal dimension by looking at how new laws can perpetuate historical injustices.

LaDawn Haglund examines water and sanitation issues from a legal perspective in the greater metropolitan region of São Paulo, Brazil. Haglund’s paper evaluates the justice principles underlying attempts to adjudicate water-related conflicts through courts. The findings are based on an analysis of water-related court cases, as well as key informant interviews with legal practitioners. Through a critique of the limitations of the legal system to address the challenges posed by unequal access to good quality water, Haglund emphasises the collective (as opposed to individual) nature of water rights and suggests that the law, by itself, cannot address the complexity of water justice. By highlighting the inherent politicisation of water distribution, Haglund illustrates the contemporary challenges for procedural and distributive justice ‘in a world of dramatic inequality and a deep reverence for markets as allocative mechanisms’.

Carolina Balazs and Mark Lubell point out that the marginalisation of the less powerful occurs not only through the denial of a resource or the capacity to use it but also from the dismissal and
marginalisation of ideas and worldviews that do not fit into mainstream thinking. Their case study in California looks specifically at the involvement of marginalised groups and how social learning can enable and legitimise different perspectives on water management. According to the authors, social learning promotes the representation of traditionally marginalised groups and thus helps address distributive justice issues by exploring the inequities of environmental harms suffered by those marginalised. Thus while the paper concentrates on procedural justice, it ultimately leads to distributive justice and the notion of water burdens, which is a less common theme in water justice literature than the notion of water benefits.

Crelis Rammelt, Zahed Masud, Jan Boes and Fariba Masud focus on the burden of arsenic poisoning from poor water quality in Bangladesh. Taking a human rights approach to the issue, they argue that the violation of human rights is not the existence of arsenic poisoning itself but the fact that efforts to mitigate against the effects of arsenic have little to zero impact on the most marginalised and that the benefits of better water quality accrue only to the elites. This paper looks at the power asymmetries between the poor and the well-off at a more local level but also considers the institutional structures that regulate the provision of services. The paper discusses both the ‘power asymmetries and water governance’ and the ‘benefits to human well-being’ characteristics of water by focusing on the management of water burdens, rather than benefits.

Flurina Schneider, Tobias Buser and Olivier Graefe focus on how to evaluate and frame different claims of justice and the decision of how these benefits could be distributed in a just manner. Their research used a newspaper analysis of benefit distribution of hydropower in Switzerland, focusing on the region of Valais, the largest individual hydropower producer in the country. The authors identify three main issues of debate: distribution of benefits related to the reversion of the hydropower concessions, the water interest rates and the distribution of the added value through the tax system. Consideration is given to spatial and temporal scales relevant to distributive justice with a focus on water benefits.

Brent Collett and Nicola Henry focus on the social consequences of changing technology to utilise water in Australian agriculture, highlighting again that governance is not just about governing the resource itself, but also the technology used to enable water benefits (in this case agriculture). They emphasise the social dimension of technology usage, highlighting the limitations of the engineering perspective that sees the insertion of a different/new technology in fairly technical terms with no consideration of the impact on existing practices of irrigation. This theme centres on the governance of ideas and values.

Mark Zeitoun and colleagues undertook a review and blending of two literatures (various formations of social justice and ‘critical transboundary water interaction analysis’). This is done through a review of some contributions of the London Water Research Group and focuses solely on the ‘power asymmetries and water governance’ characteristic of water justice. The paper is aimed at justice at an international level with a focus on the inequitable distribution of control over water usage between countries. It highlights the importance of distributive over procedural justice, arguing that seemingly fair processes can perpetuate unfair outcomes if power asymmetries between actors are not taken into account. The paper also focuses on injustice, rather than justice, highlighting that justice matters most when it is denied.

John Dore’s contribution is a deep reflection of international water management negotiations in the Mekong Region, advancing the author’s ‘aspirational vision of Deliberative Water Governance’. The paper summarises a considerable body of work on understanding international conflicts in the Mekong. Dore advocates deliberative processes that can lead to social learning and institutional
change. The paper in essence is a normative proposition of what governance ought to look like, described as ‘constructive engagement’, which enables governance that is both fairer and more effective.

Towards achieving water justice

The collection of papers in this Special Issue provides a glimpse into the diverse range of issues that can emerge when justice considerations are taken or not taken into account. While justice issues vary between the case studies, they also change within the case studies as they progress. What is clear from all articles is that justice needs to be explicitly included in water resources decision-making. This is particularly the case when significant societal change occurs because of changed allocations or institutional change. Procedural justice issues need to be specifically addressed when uncertainty is elevated by changed hydrologic regimes (be they natural or anthropogenic in nature). There is no one way to do this but with the examples in this volume and systematic attention to the justice principles relevant to the problem, justice can be integrated into applied research and policy formulation on a routine basis.

The case studies cover the gamut of issues. Problems with water quantity and quality at the basic needs level become a human right. How these needs are addressed in the face of power disparities between regions and nations provides perhaps the most fundamental challenge to decision-makers. Environmental water allocation is perhaps in the same category, although more contentious. For most other problems the justice principles involved are highly fluid and change according to the particular benefits that are to be provided. The property rights and markets movements will say that the certainty of individual rights and markets with appropriate rules to protect the sustainability of the water resource is the preferred way to go as it avoids the ‘messiness’ and transaction costs of arguments about what is just and unjust. The only other concept that claims to do this is perhaps that of Karma as practised in India where acceptance of water disadvantage is accepted as one’s lot in life.

In fact neither approach avoids justice arguments in reality. Property rights do not work well for cultural, aesthetics, spiritual and even recreational uses of water. Some of these goods cannot be described as market goods. In the end it is also worth noting that the water resource itself sometimes cannot be put on the market for physical reasons. Groundwater markets, for example, are fraught with problems in many areas because of the fragmented nature of aquifers.

Once dealing with the issue of (in)justice, equity and fairness is accepted as inevitable, its relationship with institutional trust needs to be considered. The institutional literature has shown that trust is the most powerful determinant of acceptance of policy. Perceived procedural fairness or justice is the most powerful predictor of trust. While justice is not the only consideration in a decision-making process, if left out of consideration it may dwarf the significance of other analyses in reaching long-term socially beneficial conclusions.

In much of the political science literature ‘power’ is often espoused as the explanatory variable of negotiated outcomes. There is, however, a recent (re-)emergence in the literature of the view that justice is a parameter that can explain not only how and why trade-offs in resource allocation proceed but also why they fail. Because justice and fairness are a central tenet in all human decision-making, using it as a heuristic lens according to Zartman et al. (1996) helps co-ordinate negotiators’ expectations of distributive outcomes and also aids in resolving impasse. Zartman et al. (1996: 83) go on to say that ‘unless only a single principle or set of principles is clearly applicable, each party tends to prefer the principle
that favours its own cause’. This is especially evident in international transboundary water sharing, where generally upstream riparians favour the principle of equitable use while downstream riparians favour the obligation of no significant harm to be written into water agreements and treaties (Wolf, 2007). These two principles are found in the UN Convention on the Law of the Non-navigational Uses of International Watercourses (UN, 1997) and The Helsinki Rules (ILA, 1967) on the uses of the waters of international rivers. Neither of these instruments lays down specific distributive rules nor indicates which justice principles should be appealed to over others when making water allocation decisions. Shades of the distributive justice rules of equity and need are present in the ‘equitable utilisation’ and ‘no significant harm’ principles.

There are different ways to establish common principles of justice that ensure continued agreeable decision-making (such as avoiding an impasse in the negotiation process): one can draw on a long-established principle or accepted standard or guideline (for example, one person cuts the cake; the other chooses their piece as a way to procedurally operationalise the equality rule). Another method is to exchange concessions, drawing on the notion of reciprocity either during the current decision-making process, or agreeing to ensure the concession is made in future decisions.

**Ten steps to consider for water justice**

We believe that this Special Issue makes a strong case for why justice matters in water governance and hence the need to incorporate justice overtly in water allocation decision-making. To achieve this, the following steps are offered as a guide for future water justice research and as a contribution to the further and hopefully continued articulation of a water justice framework:

1. Define the problem or issue – potential changes in the water cycle, availability and quality of water to differing user groups, and the determination of the appropriate scale of analysis required (how the issue is framed both geographically and socially).
2. Review the history of and current approach to water management for the issue at hand. This includes hydrology, land use, and formal and informal institutions and organisations.
3. Understand how the problem/issue and the water management approach play out in a multi-scale, multi-level system. This will ensure that the problem of scale does not ‘hide’ potential injustices within the system.
4. Identify those directly and indirectly affected by the change, identify the generic ‘public’ and ‘private’ good issues and those whom change is likely to affect positively or negatively.
5. Scope the justice issues after conversations with those identified above and obtain criteria and specific examples of just and unjust strategies. It is important to understand the conceptualisation of justice in stakeholders’ minds but also the specific concrete components of a policy or project that signify this. In this way the justice arguments can be linked to the decision-making process on an ongoing basis.
6. Review the history and concerns about future perceived injustices with respect to the various stakeholders as the temporal dimension of justice plays a significant role in how justice and injustice is conceptualised.
7. Incorporate the specific procedural justice elements into the decision-making, especially the inclusion of vulnerable/marginalised groups and the natural environment, as legitimate users of water.
8. Identify the ‘rights’ and ‘comparative’ components of the allocation issues and structure the decision-making process accordingly.

9. Identify current power imbalances that may negatively affect the delivery of procedurally or distributively just decision-making processes and outcomes. Address these at the beginning.

10. Ensure that specific and knowledgeable resources are assigned to dealing with justice issues.

In any final decision, documentation must clearly report and evaluate the justice analysis and outcomes as part of the final deliverable. This in itself may not resolve all unease or conflict arising from the final decision but makes issues such as compensation and cumulative impacts on specific issues transparent and thus ensures that one class of users does not become chronically disadvantaged. To achieve this there is a need for the input of all key interests.

Our goal in this Special Issue is to outline the unique relationship between water and justice. The development of a ‘water justice framework’ requires the intersection of ideas from varied conceptions and perspectives of what justice means for water governance. In modern justice studies, concerns over water present a growing research interest across multiple disciplines. While some endeavours have recognised and already made some progress in this regard (for example, Freyfogle, 1986; Syme et al., 1999; Gaard, 2001; Francis, 2005; Keinan & Bromberg, 2005; Davidson-Harden et al., 2007; McLean, 2007; Lacey, 2008; McDonald et al., 2011; Lukasiewicz et al., 2013a; Wade, 2013; Zeitoun, 2013; Joy et al., 2014; Patrick, 2014), we hope that this Special Issue will stimulate further integrated, transdisciplinary research that progresses water justice as a topic of interest and as a goal worthy of pursuing in water governance.

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