

Environmental Flows, Political Dams

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Abstract

In 2005, a group of water resource experts issued a statement cajoling decision-makers to privilege the needs of nature in their water management strategies. In effect, their Brisbane Declaration popularized the idea of environmental flows, a concept that focuses attention on the quantity, quality and timing of water required to sustain a dependent ecosystem. In this essay I ask how well this concept has held up against the political pressures of popularity. To this end, I examine the various meanings inscribed on the concept of environmental flows as it has traveled across time and space. My findings uncover a few observations regarding the need for greater attentiveness to concept management. The findings also reveal a few surprising revelations about the forces at work behind conceptual alteration and the prospects of militating against these forces in our current global condition of heightened economic anxiety.

Keywords: Environmental; Political; Ecosystem

Introduction

The demands for finite freshwater resources grow more intense over time. Until recently, formal and informal responses to this historic process focused on the development of new supply options, often with little or no consideration for ecosystem health or well-being [1]. According to the World Water Assessment Programme, this governance strategy bestowed an “incomplete understanding of the impact of pollution and the resilience of ecosystems, inadequate monitoring of the negative impacts of water use on the environment, and institutionalized weaknesses that prevent effective implementation of the legal instruments in many developed countries [2]. In 2007, some 750 scholars, practitioners and policy-makers met at the International River symposium and International Environmental Flows Conference in Brisbane, Australia to develop a plan to address these problems. Their solution was to popularize the concept of environmental flows, which calls on resource managers to privilege the needs of nature in their decision-making processes. In this article I ask how this concept of environmental flows has withstood the pressures of popularity. Have the criticisms and reformulations that followed left us with an improved version of the original? Or, has the coherence and integrity of this concept instead succumbed to the stress of travelling across space and time?

Only the strongest, most compelling theories and ideas have the ability to transcend their origins. Every idea is made by someone and for some purpose [3]. There is always a point of origin, an initial set of circumstances that triggers the idea [4]. As the emergence of every theory and idea germinates in the context of a specific time and place, disparities will always appear between the inherent rigidity of our propositions about a problem or puzzle and the inherent dynamism of this reality [5]. Therefore, the first step in determining if a theory or idea has retained its coherence and integrity is to examine the environmental conditions in which it emerged.

In this article I argue that the concept of environmental flows gained currency at a moment when mounting evidence of resource scarcity and environmental degradation coincided with a pervasive sense that traditional governance systems were ill equipped to address these challenges. It is often the case that unmet political needs spark demands for improved or new forms of governance. I argue, however, that the popularization of the environmental flow concept occurred at a moment of relative economic and geopolitical stability. This stability therefore provided the occasion for elevating water-related

environmental concerns to a place of prominence on the international agenda.

As a theory or idea travels across space and time it is often applied to contexts that are markedly different from those for which it was intended. It would be a mistake, however, to think of this adaptation and adoption process as an inherent sign of conceptual or theoretical weakness. Provided that the core of an idea or theory remains intact, a certain degree of flexibility can signify the explanatory strength and durability of the original. However, there is a point at which the travelling process slips from adaptation to transformation. That is, when the central tenets of the original are tossed aside and the original term or formulation comes to take on an entirely different meaning. Once again, an understanding of the broader context is key to discerning the difference between adaptation and transformation. Thus, the second step in my research agenda involves an examination of the contexts in which actors have sought to use the idea of environmental flows. This description sets the stage for a critical analysis of these uses, the purpose of which is to determine if they constitute an adaptation (constructive) or transformation (deceptive) application of the original idea.

I argue that mainstream contemporary applications of the environmental flows concept hollows out the original. By subordinating the original emphasis on environmental sustainability in favor of social and economic objectives, these uses effectively obliterate the original emphasis on nature. I attribute this development to two causes. First, there was a failure on the part of those who initially popularized the concept to guard against the possibility of motivated misperceptions. Second, the emergence of new economic and geopolitical concerns crowded out the space previously reserved for environmental considerations. This context has allowed defenders of the status quo to redefine environmental concerns in the more traditional language of economic and humanitarian imperatives.

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The article progresses with an exploration of several key myths about the causes and solutions to the global water crisis. I argue that these myths are detrimental because they work to preserve existing systems of power and domination, thereby preventing the emergence of a more democratic and sustainable governance system. The argument concludes with suggestions for reinvigorating the concept of environmental flows, including the furthering of democratization processes as a necessary step forward on the path toward ecologically sustainable solutions to the deepening global water crisis.

The Modern History of Global Water Governance

There is no substitute for fresh water. To borrow a phrase from E.O. Wilson (2003), water is the deciding element of life on earth. Mounting evidence of rapid desertification, deforestation, and biodiversity loss make it painfully clear that water is an essential ingredient of life. This is just as true for a microorganism as it is for a grove of aspen. Less obvious is the fact that water holds everything together, which is to say that water is an essential element in the complex network of relationships that make up the biosphere. Until recently, variability in the water cycle determined the nature of these relations: cyclical droughts triggered annual mass migrations, just as seasonal floods replenished the soil and created new habitat for fish and other organisms. This natural variability is essential for ensuring the integrity, resilience, and beauty of the biotic community. However, this variability, while essential, is also fragile. It is the product of a complex global water system, the details of which are not entirely known. What is known, however, is that prolonged disruptions in this system can lead to catastrophic results. This was certainly the case for the Aral Sea, where the sustained diversion of feeder tributaries ultimately led to ecosystem collapse, devastating the local economy and causing significant health problems for local residents. Soviet agricultural planners used the water to increase cotton production in the deserts of present day Kazakhstan. These efforts were part of a larger import substitution program hatched in the 1920s. Vast unlined canals were built to divert water from the Amu Darya and Syr Darya rivers, transforming the Soviet Union from a net cotton importer to one of the world's leading cotton exporters in just thirty short years [6]. But in its haste to liberate the Soviet economy from the constraints of economic dependence, the architects of Soviet expansion inaugurated a mode of production that was economically, politically, and ecologically unsustainable. For the sake of immediate economic gains, the Soviets had unleashed an unnatural growth, one that pitted society against nature, a struggle structured so that neither society nor nature could prevail. Years later, Mikhail Gorbachev reflected on the Aral Sea catastrophe and the lessons learned. The most important lesson," Gorbachev said, "is that the developments in science and technology of the past century bring with them not only huge benefits, but also great responsibility, as human mistakes or mismanagement can now cause irreversible damage to the environment, immeasurable human suffering and threaten the very habitability of large parts of our precious planet [7].

It was only in the latter half of the 20th century that natural scientists, engineers, and policy experts developed the mechanisms and practices required to interrupt and reconfigure this irreplaceable, variable, and fragile global water system. These technological breakthroughs made it possible to greatly increase the scale and efficiency of dams, diversions, and wells [8].

Engineers and natural scientists also devised more efficient means of monitoring water flows and allocations, making it possible to trap and trace water with ever greater precision [9]. These technological

innovations coincided with political efforts to relocate primary authority over water resource governance from the immediate and local level to the proximate level of sovereign states [10].

In their totality, these developments provided the occasion for the economic, social and political transformations on the post-War era. Yet for all their contributions, this 20th century army of water scientists and technicians had only been trained to solve the *how* of water management: How can we augment surface flows? How can we increase the efficiency of water provision and allocation? How can we improve the effectiveness of water treatment processes? It fell then to the political class to answer *why* such interventions were necessary or even [11]. This transition began in 1895, when U.S. Attorney General Judson Harmon issued his famous Harmon Doctrine. For more on this see Wouters, Patricia. *Water law and transboundary watercourses*. London: IWA. desirable. The answer to this question first emerged in the U.S. Federal Water Power Act of 1920, which argued that the improvement or development of waterways was necessary to advance "the use or benefit of interstate or foreign commerce, or the improvement and utilization of water-power development, and for other beneficial public uses [12]. By thus reducing freshwater to little more than an industrial input, the Water Powers Act paved the way for the dramatic widening and deepening of global capitalism that followed.

Perhaps more than any other single thing, it was this instrumentalization of freshwater that made the contemporary form of globalization possible. These preparatory changes were manifest in the pace of water infrastructure development. For the period between 1950 and 2000, the number of large dams worldwide increased from 5,700 to more than 45,000. Large dam construction was particularly active between 1960 and 1990, when roughly 13 new dams were completed each and every day [13]. It is no coincidence then that global freshwater withdrawals also increased nearly six-fold between 1950 and 2000, which was more than twice the rate of global population growth for the same period. This water was used to fuel a four-fold increase in global gross domestic product [14].

But the modern history of global water governance is not just a story about human interventions in the quantity or timing of water. It is also a story about pollution and the degradation of freshwater resources. Pollution originates from point sources or non-point sources. Point sources include discernable and discrete origins, such as industrial wastewater and mining sites. Typically point source pollution involves the introduction of heavy metals and chemicals to freshwater supplies, some of which linger for prolonged periods of time in river sediments and wetlands and are often toxic when consumed. Nonpoint source pollution is much more diffuse and is often conveyed by heavy rains or spring runoff. This type typically includes agricultural inputs like fertilizer or domestic sewage. These pollutants lead to eutrophication, or the depletion of oxygen from the water column, acidification, and algae blooms, all of which stress or suffocate aquatic life and degrade the quality of freshwater resources [15,16]. Pollution also exerts a human toll. According to the U.N. Environmental Program, water resource contamination is now the single greatest cause of sickness and death worldwide [7]. This last point raises the additional question of distribution. For the technicians and water experts at the helm of global water governance, the focus of water resource management has been about making the size of the water resource pie larger. So they pumped and they diverted and they dammed, all in an effort to satisfy insatiable demands by augmenting existing resources with finite supplies. Agriculture is the single greatest beneficiary of these efforts, accounting for roughly 70%

of global freshwater withdrawals, business and other industries come in at a distant second with 20%, and withdrawals for people are in last place with only 10%. This clear bias toward agricultural and business interests means that it is the poor who suffer most when the water dries up. However, so far the answer to this problem has been to make the pie even bigger. For example, it is the position of the World Bank that “broad-based water resources interventions, usually including major infrastructure such as dams and interbasin transfers, provide national, regional and local benefits from which all people, including poor people, can gain [17]. However, no matter how well meaning, making a larger pie that is just as inequitably divided does not serve the interests of the poor. This was precisely the point made in the final report produced by the World Commission on Dams, which reads as follows:

“Dams have made an important and significant contribution to human development, and benefits derived from them have been considerable. [But] in too many cases an unacceptable, and often unnecessary and high price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers, and by the natural environment [7].

Sustainability for who, what?

By the early 1990s, the overconsumption, over pollution, and under distribution of freshwater had reached a tipping point. Peter Gleick and Meena Palaniappan refer to this point as “peak water.” By playing on the more popular but equally contentious concept of peak oil, their argument is that we have “run up against the natural limits to availability or human use of freshwater [17]. In a 2008 interview with *Wired*, Gleick explained, “the whole point of peak water is that we have to fundamentally rethink who gets to use water for what [18]. However, the difficulty consists in the fact that the rules, norms and decision-making procedures of global water governance were designed at a specific time to address a particular purpose—economic growth. This means that the established governance system is not necessarily able to deal with any unanticipated trouble or challenges, like peak water.

Like most governing systems, this global governance system is also resilient to change. Over time, this conservative streak triggered demands for modified or even new forms of water governance. Throughout the late 1980s, environmental and humanitarian organizations called on decision-makers to address the inequalities and negative externalities of the water governance model. However, the response was little more than an exaggerated form of the business-as-usual approach. This response first appeared in the 1992 Dublin Statement, which offered platitudes about the need to balance the economic, humanitarian, and environmental dimensions of water provision and allocation decisions. It went on, however, to breaking new ground by arguing that freshwater has an economic value in all its competing uses. The Statement made it clear that in the absence of win-win scenarios, economic considerations ought to prevail over social and ecological concerns. If the question of water management was a political one, then Dublin answered by privatizing political authority. This move set the stage for intense debates over the social purpose of water. Lines were drawn between those who viewed water as a public or private good, an economic good or a human right. Former concerns about ecological sustainability slipped into the background, only to be resurrected occasionally in support of some partisan claim about the ultimate superiority of privileging water for wealth or water for people. Why one position was deemed preferable

to the other? Because water for (fill in the blank) also extends some ancillary benefits to nature.

However, this recent attention paid to water resource problems has done little to substantively address the core challenges of overconsumption, over pollution, and under distribution. The most positive news to emerge in recent years is that the percentage of people worldwide with reliable access to safe drinking water increased from 78% in 1990 to 87% in 2008 (UN 2010, 58). However, in their analysis of global threats to human water security and river biodiversity, Vorosmarty et al. [17] argue that this progress might well prove temporary and even illusory. By studying high-resolution spatial analyses, these researchers [18], 555 determined that roughly 80% of people worldwide are exposed to high levels of threat to water security, while some 65% of the water supplies for habitats are either moderately or highly threatened. Threats to human water security were greatest in urban areas and near sites of intensive irrigation agriculture. Not surprisingly, these findings were spatially well correlated with instances of moderate to high habitat threats. The authors primarily attribute these threats to water resource developments and pollution. While rich countries rely on extensive and expensive investments in water infrastructure to mask these threats, similar strategies are not available to poor and middle-income countries. These masking strategies also offer little relief to the 10,000-20,000 freshwater species which are now either extinct or at risk [18]. With respect to this latter point, the authors conclude the following:

International goals for [biodiversity] protection lag well behind expectation and global investments are poorly enumerated but likely to be orders of magnitude lower than those for human water security, leaving at risk animal and plant populations, critical habitat and ecosystem services that directly underpin the livelihoods of many of the world’s poor [19].

Sacrificing nature does not solve the challenges of overconsumption, over pollution, and under distribution; it only makes these problems worse. Further sacrifices lock us into a destructive pattern of eternal recurrence, in which we continually repeat the mistakes of the past, all the while desiring a different outcome. To break this vicious cycle it is necessary to interrupt and reconfigure the governing logic at its core. But to take this project seriously means that we can no longer afford the old ancillary debates over when, how and under what conditions it is legitimate to engage in the further degradation of nature. We must begin to take the needs of nature seriously and we must start now.

This was precisely the message conveyed by the Brisbane Declaration. The Declaration was the product of the 10th International River *symposium*, a water resources conference organized by The Nature Conservancy and the International Water Forum. The purpose of the Conference was to discuss the management challenges associated with the implementation of environmental flows. This idea had been around since at least 1997, when Poff et al. published an article on the topic in the journal *Bioscience*. This article marked a preliminary effort to stimulate interest in environmental flows, which the article defined as the specific quality, timing and variability of water required to sustain dependent ecosystems. Following its publication, however, the global water discussion had nonetheless continued to privilege economic or humanitarian concerns over ecological interests. Brisbane promised to break through the din of these anthropocentric debates and reinvigorate global interest in the needs of nature.

The Brisbane Conference attempted to seize on a perceived breach in the global political opportunity structure. By 2005, international

security, which peaked in the months following 9-11, had abated. While the outcome of US military actions in Iraq and Afghanistan remained highly uncertain, it had become increasingly clear that these interventions had the effect of easing domestic security concerns for Western states. Coincidentally, the prospects for continued economic growth seemed bright in 2005. It seemed to many observers that 9/11 had demonstrated the resilience and durability of the global economic system. Moreover, because global GDP had continued to follow a steady rate of growth, the prospects for continued growth were bright. More to the point, 2005 also marked a watershed in global environmental politics.

This was the year Russia signed the Kyoto Protocol, generating renewed optimism that something would finally be done to mitigate the production of greenhouse gasses. For participants of the Brisbane Conference, it looked a window of opportunity had opened, making it possible to push their environmental concerns over water resources governance to the top of the international agenda.

To do so, the Brisbane Declaration offered observations about the condition of freshwater ecosystems and recommendations for restoring and maintaining environmental flows. In its observations, the Declaration highlighted the global dimensions of freshwater ecosystem degradation. It also attributed these outcomes to human disruptions in surface flow variability, which it identified as being essential to the integrity and stability of the ecosystems these surface flows sustain. Among its many recommendations, three really rise to the top. The first called for expanded use of environmental flow assessments and the subsequent integration of findings into water and land management strategies. The second called for the creation of formal institutional frameworks, presumably at the state and international levels, to ensure consistency and durability in water flow regimes. The last recommendation called for more robust stakeholder engagement in water management decision-making practices and further expansions in the army of trained environmental flow experts.

Over time, this Declaration has proved important for at least three reasons. First, because it marks the first international attempt to articulate a coherent assessment of and prescriptions for the global challenge of environmental flows, it proved highly influential in terms of framing the problem as well as the constellation of strategies available to solving it. Second, the Declaration is the product of global civil society. It was not produced in the halls of powerful state agencies or the meeting rooms of international institutions. This demonstrates both the demands for modified or improved forms of global environmental governance are manifest in an expansion of non-governmental activity on the world political stage, and that these non-governmental actors are playing an increasingly prominent role in the domain of global environmental governance. Finally, its failures or omissions have proved just as important as its successes or actions. While the Declaration calls for the creation of new institutions, the signatories did not take any concrete steps to make this prescription a reality. Nor did they make any coherent plan for educating the public or policy-makers about importance of preserving and maintaining environmental flows. More importantly, they failed to articulate an alternative to the business-as-usual development model outlined above.

Sadly, these failures and omissions in the domains of education, institutionalization, and the articulation of alternatives have proved the undoing of the Brisbane Declaration. To a large extent, they had made it possible for dominant institutions of global water governance to appropriate and thereby dilute the explanatory and prescriptive

force of the very concept of environmental flows. Although this process was complex, it unfolded along three dimensions. I call these the *myth of balance*, the *myth of no absolutes*, and the *myth of social choice*. In this context, myth is meant to convey the outcome of a naturalization process, a taken-for-granted historical account or cultural interpretation that works to circumscribe or preempt reality. These myths have now become part of a larger political strategy to reduce the diversity of values and cultural understandings regarding the human-nature relationship. To borrow from Negri and Hardt, they are now part of a discernable pattern of political domination involving the centralized production of norms and the far-reaching production of legitimacy spread out over world space [20,21].

Myth of Balance

Since Brisbane, the notion of imbalance has emerged as a fait accompli of environmental flows. For example, Hirji and Davis identify imbalance as the central issue animating global debates over water resources governance [22]. According to these authors, our current debates are about “(a) recognizing that there is a physical limit beyond which a water resource suffers irreversible damage to its ecosystem functions and (b) systematically balancing the multiple water needs of society in a transparent and informed manner.” This finding is also born out Renofalt et al. analysis of Swedish water management strategies [22]. These authors argue that attention to environmental flows is useful for solving this imbalance: “environmental flows can help balance ecosystem and human needs for water, both when constructing new dams and in re-licensing existing dams”. As Yang notes, Chinese central planners and water managers are also seeking “a rational balance among appropriate water allocation for wetlands, a healthy ecosystem, and optimum economic returns for the humans that use the wetlands to earn their livelihood”.

By presenting the concept of imbalance as the cause story of environmental degradation, we are led to believe that some type of rebalancing is both possible and desirable. Although there are several ways to square the scales, the narrative since Brisbane tends to privilege one above all others. This idea being that a win-win scenario is still available, that by paying greater attention to environmental flows it is still possible to optimize economic returns while also preserving ecosystem health. This gives rise to the hope that we might return to the heady days of guilt-free development, while in reality we merely postpone the day when we have to make hard choices about the inherent flaws in the contemporary development model. So long as no sacrifices are required, everyone and everything wins. And so it is that the concept of environmental flows has been appropriated and redeployed to defend the status quo.

There is indeed something out of balance here but it is not the relationship between humans and nature. To argue otherwise risks overstating the degree of separation between culture and nature. After all, “nature is the milieu of culture” [23]. To borrow from Shakespeare, the fault then is not in nature, but in ourselves. It was precisely this point that Vladimir Vernadsky made in the 1940s, when he argued that we are embarking on a new stage in the geological evolution of the planet. Whereas the laws of Darwinian evolution had governed the earlier biosphere stage, Vernadsky identified a nascent global human consciousness as the dominant evolutionary force of the emerging noosphere stage. For the first time, mankind has the ability to determine the course of geological and biological evolution. Vernadsky argued that it is now possible for mankind to reconstruct the “biosphere in the interests of freely thinking humanity as a single totality” [24]. This suggests that the most pressing imbalance we

face is within human nature itself. Striking a balance in this domain requires only that we privilege right reason over the more destructive tendencies of human nature. The important fact to remember, according to Vernadsky, “is that our democratic ideals are in tune with the elemental geological processes, with the law of nature, and with the noosphere. Therefore we may face the future with confidence. It is in our hands. We will not let it go” [24].

The Myth of No Absolutes

“The world is the totality of facts, not things.”

Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*

In their effort to more fully integrate the concept of environmental flows into the logic of global water governance, Hirji and Davis make the following claim:

Deciding on how much and at what time(s) water should be allocated to the environment at either the river basin or project level is a decision that can only be taken in the context of all the demands on the water resource. There is no absolute quantity and timing of flows that are required for the environment or for that matter for any other use. Instead, as social choice has to be made about what uses are important, to what degree they need to be addressed, and which ecosystem services need to be preserved (and to what degree) to meet society’s objectives for a particular water resource. This choice will then determine the flows that are needed to deliver those services [25].

This means that nature only bears instrumental value. That is, it has no value in and of itself but instead only has the value humans assign it. The problem then is that we either fail to assign a value to the services that ecosystems provide or we undervalue these services. To solve this problem, the authors encourage the more widespread application of environmental flow assessments (EFA): “The contribution of environmental flows is that the EFA makes explicit the consequences of different choices on aquatic ecosystems and communities that depend on these ecosystem services and so leads to a more informed decision-making process [25].

This philosophic approach is manifest in real-world applications. In Ecuador, The Nature Conservancy has applied this logic in the form of a payment for ecosystems services scheme for environmental conservation. Based on the findings of EFAs conducted by The Conservancy, it was determined that upstream development pressures and unsustainable agricultural practices threatened several of the river drainages flowing into Quito. On the basis of these findings, The Conservancy partnered with several large downstream stakeholders to create a Quito-based water conservation fund. This plan levies a fee on downstream water users, which then finance various incentives for upstream land conservation. The Conservancy credits the fund with significant reductions in the rate of upstream environmental degradation and the preservation of ecosystem services, both of which are essential to satisfy growing demands for clean water among downstream resources users.

Yet for all its obvious strengths, this philosophical approach and its manifestations contain a number of critical flaws. First, they rely on governments or non-governmental organizations to monitor and accurately assess ecosystem health. According to Stephen Carpenter, a limnologist at the University of Wisconsin-Madison, the problem is that for such a system to work, “intense and continuous monitoring of an ecosystem’s chemistry, physical properties and biota are required,” making the widespread diffusion of these strategies difficult at best [25]. Second, even when the will and means to conduct intensive

monitoring are available, the recommendations of EFAs are not always followed. In their analysis of the environmental flows concept, King and Brown argue, “The implementation of greed-upon EFs is the most difficult part of [all] . . . A culture needs to be developed that facilitates response to findings from monitoring programs, otherwise reports could be written and recommendations made no effect [26-28]. Third, the payment for ecosystems services model may prove too great a departure from established conceptions of justice. Effectively, The Nature Conservancy program turns the established “polluter pays” principle on its head by requiring the victims of pollution to buy off the producers of environmental harm. This practice raises important questions about viability of such programs over the medium to long-term, particularly since the program contains perverse incentives that may encourage upstream beneficiaries to leverage their position for ever greater pay-offs.

The most critical flaw, however, rests in the very instrumental logic that gives rise to such programs. To argue that there are no absolute requirements in the quantity and timing of freshwater flows is simply wrong headed. The Aral Sea case clearly demonstrates that absolute requirements of surface water flows exist. Indeed, it was the failure to acknowledge and respect these limits that triggered the chain of events that led to ecosystem collapse. The sooner we identify and respect these limits, the better off we are. According to Carpenter, once environmental regime shifts start, they tend to be hard to reverse. “It is like a runaway train once it gets going and the costs -- both ecological and economic -- are high [30]. Furthermore, the implication that nature contains instrumental value suggests that we should only act to save those species and ecosystems that we know provide some direct utility to society. Such a position necessarily seals the fate of those species that remain undetected, those whose services to the surrounding ecosystem or society are not yet fully known, or even those which, while known, are granted little value relative to the value ascribed to some competing economic or social good.

Thus, to accept this position is to ignore the inherent value that exists in the diversity of species, of ecosystems, and yes, even the cultural values attached to nature.

Myth of Social Choice

As authority over freshwater resources shifted from the local to the state level and ultimately to the global realm, the site of legitimate knowledge about freshwater resource management underwent a similar transformation. Whereas local water users, usually women, have historically served as the main repositories of knowledge about the water cycle, contemporary knowledge is now the increasingly concentrated in the exclusive domain of expert water technicians and agency bureaucrats.

In recent years, this growing army of water experts has paid great lip service to the concept of social choice. For example, Poff et al. underscore the need to balance “scientific information with societal values and goals [in order] to set environmental flow standards [20]. Richter et al. identify public participation in decision-making as essential to the protection of threatened freshwater ecosystems, arguing that *all* stakeholder interests must be considered in the effort to define the desired level of river health [20]. And Hirji and Davis argue, “A social choice has to be made about what uses are important, to what degree they are addressed, and which ecosystem services need to be preserved [23].

With so much attention being paid to the issue of social choice, it is worthwhile to ask what type of social choice they envision and who,

precisely, they include in the ranks of water resources stakeholders. After all, it seems obvious that water resource decision-making has implications for every person and every organism that falls under its jurisdiction. If this is true, who then is authorized to speak on behalf of nature? And who is empowered to establish the criteria for determining legitimate from illegitimate claims?

Richter et al. speak directly to this last question. The authors identify water managers and regulators as the ultimate authority over “balancing a variety of stakeholder interests in a world in which resource demands continue to intensify [17]. However, they leave the question of water manager selection unexplored. To be sure, there is no uniform rule for this selection process; such issues vary from one case to the next. Indeed, to the best of my knowledge there is no authoritative study of this issue. Nevertheless, it may be fair to assume that most water managers are not democratically elected, which, if true, might call these technocratic ideas of social choice and stakeholder participation into question [29].

Richter and colleagues can also be relied upon to shed light on the first question regarding social choice and participation. Given the inherent complexities of water management issues, the authors argue that it is important to include a diverse range of scientists in the policy recommendation processes. According to the authors, the group of core stakeholders includes experts in hydrology, hydraulics, fluvial geomorphology, water quality, fish biology, riparian ecology, and, where appropriate, estuary scientists. In addition, Richter et al. also include social scientists in their list, whose task would be to facilitate and integrate public input [30]. This could be read to mean that non-experts, including concerned citizens and community organizations, should be excluded from directly participating in the decision-making process, and should be made to rely instead on the social scientist as interlocutor.

These propositions raise important questions about what these “experts” actually know. If Wittgenstein was right, if the things in nature only acquire meaning through a process of inter subjective subjectivity, then the privileges of experts are vast. This may be a point of concern. After all, some of these same experts participated in the destructive environmental practices they are now charged with undoing. Tim Luke’s analysis of environmental studies programs seems to validate this concern. Luke argues, “the heterogeneous engineers behind fast capitalism’s environmentalizing regime must advance eco-knowledges to activate their command over geo-power as well as operationalize a measure of operational discipline over environmental resources, risks, and recreationists in their reconstruction of contemporary governmentality as environmentalism [22]

Still, there can be little doubt that creating a more inclusive participatory process would be difficult and time consuming. Hirji and Davis found this to be particularly true in the case of transboundary settings, where stakeholders commonly speak different languages and possess differing preferences regarding the value of participation in resource decision-making. These authors also found it difficult to promote stakeholder participation in a domestic setting, noting that some communities lack the institutional forums, and, in some instances, “lacked the capacity to engage fully in discussions [19]. For this reason, the authors conclude that the focus on participation should be realistic, meaning “it should be tailored to suit the capacities of the stakeholders and the policies of the country [19].

Yet as challenging as it may be to structure an inclusive and participatory decision-making process, we should nevertheless avoid

the temptation to shortcut and circumvent the democratic process. Indeed, this is the very point made by Daniel Connell in his analysis of Australia’s Murray-Darling Basin [20]. Connell’s book offers an institutional history of the current crisis there and provides important insights to the origins of recent local efforts to undermine aggressive national policies to deal with the crisis. Perhaps his most important contribution, however, is to highlight the institutional complexity of Australian water politics, which functions to bewilder and discourage robust public participation in water resource decision-making. This institutional barrier helps to explain the recent blowback against Australia’s recent effort to preserve environmental flows by buying back water rights from farmers and rural communities. The opaque nature of these institutions have led some farmers to conclude that the water program is merely a way for the government to help the electorally important environmental lobby [13]

Findings

In this essay I set out to discover how the Brisbane Declaration fared as it traveled across the dimensions of space and time. What I found was a nearly hollowed out shell of the original. What started out as an attempt to elevate the stature of environmental concerns in the global debate over water governance has since been almost entirely stripped of its original meaning. This change is powerfully reflected in the concluding remarks of Hirji and Davis regarding the current challenges to the integration of environmental flows:

While it would be helpful to adopt a new term, such as “social flows” or “environmental and social flows,” the reality is that “environmental flows” is so widely used that it would be very difficult to get acceptance for a new term. Retention of this terminology means that there is a need to stress, whenever the term is used, that environmental flows are intended to provide healthy river systems and that these bring benefits to many groups in society.

Absent any direct and measurable improvement for human populations, the concept of environmental flows was virtually pronounced dead on arrival. There are, I think, at least three lessons that students of global environmental politics can learn from this story.

First, to have any chance to succeed, the announcement of a new environmental initiative must also coincide with a robust strategic effort to advance and defend this initiative. The fault here rests with the signatories to the Declaration, who adopted a passive approach of norm formation and diffusion. There was no coherent strategy to institutionalize the norm, no attempt made to educate policy makers and the broader global public on the significance of the norm and its meaning, nor was there any effort to start so much as a pilot project to demonstrate the viability of this norm in action. Perhaps the signatories failed to adequately grasp the magnitude of the changes they proposed. Or perhaps they did not fully understand that a change in the fundamental logic of water governance also, by extension, required a transformation in the underlying logic of globalization. But given the talent in the room, neither scenario is likely.

This is a mystery falls outside the scope of this essay but is nevertheless worthy of further consideration.

Second, democratic processes matter. Meaningful participation, transparency and accountability are hard to achieve and the tendency is often to shortcut these steps by moving straight into policy formation. But if governance is about steering, people need to know where they are going, why they are going there, and, most

importantly, they have to want to go. To use Arendt's terms, the public needs to be made aware it is subject to necessity. This requires reeducating them on the nature of the problem and encouraging them to participate in the effort to address it. Inconvenience should not be made the scapegoat of exclusion. This holds in equal measure for decision-makers and resource experts. The contemporary challenges of global water governance are no longer substantially technical; they are political. Therefore, there are no longer any legitimate grounds for excluding or attempting to diffuse the voices of local populations.

Finally, the story of environmental flows makes it clear that we need a new way to talk about environmental governance. Our contemporary narrative rests on the assumption that governance solutions should strive for win-win outcomes. While this is laudable, such outcomes are proving more and more elusive. The perfect should not be made the enemy of the good. Our inability or willingness to address the problems of under distribution no longer holds up as available excuse for ignoring the needs of nature. We need to reconcile ourselves to the fact that we increasingly face the challenge of granting political and moral considerability to either people or nature, and that there are in fact some scenarios when nature should win and people must lose.

As a concluding point, a return of economic anxiety following the 2008 global financial crisis means that the window of opportunity for pressing environmental concerns may have already closed. Today, the rhetoric privileges economic growth above all other concerns, and there is a growing tendency to conflate environmental regulation with the other causal forces behind our current economic woes. All of this is tragic, not only because it portends the loss of additional species but also because this rhetoric tends to foreclose the opportunities for economic growth that a more robust system of environmental regulation can make possible. For example, there are clear opportunities here to restructure the agricultural and industrial sectors, bringing them into closer compliance with the environmental reality we face. Tragically, however, I see no way to alter the flawed habits of thought, which are now celebrated among so many of our decision-makers. For this cohort of the political class, wealth provides sufficient insulation against the environmental pressures that are mounting all around them.

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