

Chapter 2

A Political-Economic Analysis of Water, Indigeneity, and Capitalism in the Face of Climate Change



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Abstract Technocratic dominance in the water sector imposes a substantial threat to the possibility of participation of indigenous communities in decision-making. Current decision-making is heavily dependent on expert engineers, who present technical language and knowledge as rational, stable, and objective. Indigenous claims to water are dynamic and context-specific but generally adopt a holistic, intuitive, and harmonious perspective, and communities' interaction with water is often central to their identity and wellbeing. Neoliberal solutions to climate-water crises largely fail to benefit indigenous communities, having been evidenced to exacerbate social, political, and economic vulnerabilities of marginalised populations. The knowledge held in indigenous communities is currently underappreciated and underutilised. Learning from indigenous communities will be an essential part for the successful transition in the postcolonial socialist world. An expansion of institutional capacity is needed to meaningfully acknowledge indigenous water cultures and enable the political autonomy of marginalised groups. Knowledge sharing between indigenous and currently dominant institutions must be encouraged to formulate climate strategies with efforts to transform the hierarchy of the institutional structure.

Keywords Indigenous people · Water politics · Water rights · Climate crisis · Political economy

2.1 Introduction

The extent to which indigenous groups have been accounted for in global water policy is inextricably linked to colonial histories of exclusion, power asymmetries, and social oppression that have served centuries of elitist capital accumulation. Several authors have articulated that indigenous water struggles are colonially rooted, since water allocation systems during this era privileged the demands of

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white settlers and other non-indigenous groups over the needs of native communities (Franco et al., 2013; Phare, 2009; Strang, 2014; Tarlock, 2010; Jackson, 2018a, 2018b; Grajales, 2011). Such marginalisation entailed destroying indigenous institutions, silencing their political voice, and the invisibilisation and illegitimisation of indigenous traditions surrounding water management and use (Aho, 2009; Berry, 2000; Weir, 2009; Matsui, 2009; Jackson, 2018a). It placed water knowledge within a wider modernisation project, in which context and history are ignored (Zwarteveen, 2010).

Capitalism rests upon a series of social dichotomies (the most relevant to the current topic being nature/society and coloniser/colonised) that promote a simplified and disassociated view of reality. These were advanced by philosophers of the Enlightenment, who sculpted justifications for colonial intervention by introducing a linear vision of development (McEwan, 2018). At one end of this path existed inferior, savage beings, whilst at the other was the rational, civilised Western male (Strang, 2018). Said's (1978) *Orientalism* is an influential discussion on the origins of systemic "othering", a notion that discursively promotes those in poor countries as lacking autonomy or voice (McEwan, 2018). These perspectives set the precedent for global water policy of the late modern era; today, it remains common that water laws are imposed by foreign actors. Policy is legitimised by Westernised understandings that see water not for its social uses but as one of the many inputs into efficient agricultural production, ultimately leading to private economic benefit (Gelles, 2010; Roth et al., 2015). This dominance has undermined native knowledge surrounding community-managed, small-scale, or subsistence irrigation (Harrison & Mdee, 2017). This is demonstrative of ongoing social oppression and territorial dispossession, in which indigenous groups are marginalised through elitist attempts to modernise their ways of being (Boelens et al., 2010; Vélez Torres, 2012). In parallel with colonial times, liberalist ideology and rhetoric are used in the water sector to justify this coercion.

Throughout the twentieth century, there have been distinctive shifts in international water governance. The colonial and early postcolonial era (circa 1960s) saw a preference for mono-judicial, state-led water allocation, imposed by a white-elite minority that aimed to eradicate local systems in favour of imported Westernised models (Mdee & Harrison, 2019; Boelens, 2009). This period preceded the re-emergence of neoliberal thought in the 1970s, in which water became subject to laissez-faire logic, essentially viewed as a tradable and profitable private resource (Gupta, 2013). The earlier days of the twentieth-century neoliberalism coincided with surfacing concerns for climate outcomes, which ultimately furthered the project of water privatisation, through the propagation of a "façade of free-market environmentalism" (McMichael, 2009; Garrick & Svensson, 2018; Miroso & Harris, 2012). The 1980s was somewhat of a turning point in the proliferation of neoliberal ideology, largely led by the Thatcher and Reagan administrations of the UK and the USA, respectively. This corresponded with the United Nation's (UN) declaration of the "International Decade for Drinking Water Supply and Sanitation", which saw an unprecedented advance in water infrastructure investment. Following this, the

Dublin Principles of 1992 came to be a definitive declaration in which water was infamously labelled an economic good.

Since the 1990s, the Integrated Water Resources Management (IWRM) as a framework has remained prominent. IWRM encourages the diversification of stakeholders, promotes transboundary relationships, and is perceived to be a holistic pursuit of water management, encompassing economic, social, and environmental concerns (Conca, 2006; Klaver, 2012; Mdee, 2017). Today, IWRM remains hegemonic and institutionalised – it is advocated by a majority of national governments, international organisations (IOs), and donors and is written into the UN's Sustainable Development Goals (SDGs) (Mdee & Harrison, 2019). There are, however, many critics of IWRM. Whilst touted as a holistic model, it is heavily influenced by the neoliberal environment of its time, remaining within the confines of the dominant paradigm and thus unable to meaningfully recognise symbolic and spiritual uses (Wilder & Ingram, 2018; Mdee, 2017). Further to this, IWRM leaves intact asymmetrical power structures, and the framework's vagueness allows it to be easily co-opted by groups to legitimise privatisation agendas (Klaver, 2012; Franco et al., 2013). Conca (2006) concurs with this stance, providing substantial insights into the workings of IWRM, exposing its neoliberal underpinnings and technocratic assumptions vis-à-vis participation and knowledge.

2.2 Rights to Water and Power Struggles

2.2.1 *The Rise of Privatisation*

Hegemonic Western governments, the Washington consensus, the International Monetary Fund, and the World Bank have all played forceful and integral roles in embedding the monetisation of water globally (Conca, 2006). This process was one component in a wider project to consolidate neoliberal ideals into the international political economic landscape, generally understood as a mission to shrink state power in favour of an omnipotent market system (Franco et al., 2013). The consolidation of neoliberal ideas has been theorised as indicative of a systemic avoidance of answerability, causing states to be labelled complicit (Bakker, 2018; Lynch, 2012; Vélez Torres, 2012). As the notion of economically valued water became dominant, it closed the opportunity for debate on alternative governance ideas). This privileging of the neoliberal approach to water thus directly impeded the possibility of indigenous collective management systems to be considered at decision-making levels (Boelens et al., 2012). Conca (2006) provides an overview of specific global policies that institutionalised water as a marketable commodity, including the liberalisation of investment regulation and the decentralisation of essential water supplies, amongst others.

Orthodox neoliberal approaches gained legitimacy by pushing a narrative that played down state ability to effectively handle water markets, presenting the private sector as the only viable solution. States and aid agencies were framed as cash-poor

and incompetent, whilst large-scale capitalist providers were hailed as innovative and efficient (Baer, 2017; Wilder & Ingram, 2018; Bakker, 2007; Vélez Torres, 2012). It was claimed that to *not* leave the water management to the private sector would be unethical (Bakker, 2018). Such accounts, however, overlook the existence of commonplace state-corporate collusion (e.g. Tombs & Whyte, 2009; 2010; Tombs 2011) and that private, risk-taking entrepreneurs often count on governments to create an enabling environment (Harrison & Mdee, 2018). In addition, it has been evidenced that many local water users would sacrifice efficiency and other economic gains if it meant their cultural system and autonomy was protected (Maass & Anderson, 1978). These and other demands are easily overlooked by private water suppliers, whose accountability lies with overseas shareholders rather than local communities (Franco et al., 2013).

Water sector privatisation represents a clear supremacy of the needs of capital accumulation over the integrity of local indigenous systems dating back thousands of years. Elitist models of development legitimise the formal establishment of water bureaucracies and markets that serve a dominant minority whilst paternalistically constructing the knowledge of native actors as anachronistic, irrational, and against the national interest (Sosa et al., 2017; Cornellier & Griffiths, 2016; Boelens, 2009; Boelens et al., 2012; Conca, 2006; Vélez Torres, 2012; Franco et al., 2013). This technocratic dominance constitutes a substantial threat to the possibility of participation in decision-making (Ingram et al., 2008; Wilder & Ingram, 2018). Evidence presented by Vélez Torres (2012), of the strikingly disproportionate involvement in political processes of indigenous communities, too supports this view. This arrangement becomes self-perpetuating: as excluded communities are marginalised from political conversations, regional elites and foreign investors plan projects that further undermine local cultures and livelihoods (Boelens et al., 2012).

2.2.2 The Neutralisation of Scientific Knowledge

The modernisation of water systems is underpinned by a paradigmatic preponderance for the depoliticisation and neutralisation power of science and technology. Current decision-making is heavily informed by expert engineers trained in Western institutions, who present technical language and knowledge as rational, stable, and objective (Boelens et al., 2010, 2012). Conca (2006) classifies these taken-for-granted assumptions as “embedded meta-narratives” that fail to be questioned or regarded as variable. Yet, water expertise is not neutral – it represents a privileged identity and is reflective of historic authoritative dominance (Zwarteveen, 2010). Certain values and assumptions uphold much scientific and economic knowledge. These perspectives constitute political decisions and judgement calls that are inevitably informed by actor’s contexts (Mdee, 2017; Harrison & Mdee, 2018). Van Koppen (2018) highlights how many technological solutions have a staunch elite-male influence, resulting in a perpetuation of gender inequality in access to, and control of, water systems.

It should be recognised that expert knowledge does not exist a priori, but is inspired by specific political ideologies and relies upon debatable ontological positions (Achterhuis et al., 2010; Allouche et al., 2015). The political nature of water management is demonstrated by Ingram et al. (2008), who explain that even if funding to the sector increased abundantly, water would remain polluted and misallocated. The context of scientific thought described above is not a mere analytical quandary but has detrimental implications on the ground. This homogenising narrative has social, cultural, and economic ramifications that directly contribute to the harm and eradication of indigenous and other rural water user collectives (Boelens et al., 2010, 2012). Only when mainstream knowledge producers are removed from a transcendental pedestal, and “common sense” is critically examined, will “democratic, inter-cultural and potentially emancipating dialogue” be attainable (Boelens et al., 2010, p. 330).

The framing of expert knowledge as objective and rational essentially justifies the universalisation of solutions to a complex myriad of issues felt by water users globally. This serves vested interests of transnational corporations and elites whose desired waterscape is uniformly constructed, so as to be conducive to the needs of the free market (Roth et al., 2015; Boelens, 2008, 2009). Justice-oriented narratives such as equality, unity, and impartiality are adopted (or appropriated) and used as discursive tools to create a “level playing field” that ultimately denies rights to cultural distinctiveness (Jackson & Barber, 2013; Achterhuis et al., 2010; Cornellier & Griffiths, 2016). Although the liberal state is seen to “include” subjugated groups in its restructuring of the waterscape, there are multiple indigenous forms of water management and uses not accounted for in the homogeneous and modernised model (Boelens, 2008). These range from elementary claims, such as recognition of the spiritual values of water, to deeper concerns surrounding political autonomy and self-determination, which question the legitimacy of the state altogether (Cornellier & Griffiths, 2016). Thus, indigenous claims to water are acknowledged only as far as capitalist hegemony is unharmed. This constitutes what Boelens (2009) labels an institutionalised domination: a simultaneous acceptance and rejection of rights in a manner that leaves intact the overarching power hierarchy.

The inadequacy of enforcing a formalised, one-size-fits-all model to thousands of uniquely complex water systems does not require explanation, but for the purpose of the current argument, some key reasons will be addressed. Firstly, it poses inclusivity limitations to groups that are ill-equipped to engage in administrative processes, negotiate their positions, and gain recognition for unrecognised water repertoires (Jackson, 2018b; Harrison & Mdee, 2017). Secondly, universal prescriptions do not account for crucial context-specific physical (climatic) and social (institutional, historic, customary) differences (Wilder & Ingram, 2018; Sosa et al., 2017; Baer, 2017). As explained above, homogenisations of solutions to water issues are ultimately tied to implicit Westernised norms that aptly serve interests of the dominant class (Boelens, 2008). Even if one moves aside the indigenous pursuit of fair social recognition, standardised policy overlooks the delicate ecological diversity across regions that point to the need to replace industrial, economies-of-scale solutions with agro-ecological development models (Boelens et al., 2010; Rosset & Altieri, 2017).

It has been advocated that mainstream actors must recognise the limits of their knowledge and instead adopt an “open-ended” approach, particularly in the realm of environmental science where current insights are hugely dynamic and unpredictable (Conca, 2006; Levy et al., 1993).

A third problem associated with homogenisation of technical solutions is the generation of capability traps and isomorphic mimicry, well-articulated by Mdee and Harrison (2019). These theories dictate that imported “best practices” fail to function as such, since recipient countries do not possess the required institutional capacity to purposefully implement and uphold these models. Once again, this comes down to failure to account for context and complexity, instead attempting to imitate idealised examples, in turn inhibiting the generation of workable, relevant local resolutions (ibid).

2.2.3 Indigeneity and Neoliberalism: Epistemological Disparities, Inexorable Differences?

A key reason that neoliberal capitalism has been so harmful to the recognition and inclusion of indigenous groups in water contexts globally is due to the inexorable differences between indigeneity and neoliberalism. This is exacerbated by the fact that the dominant paradigm extends far beyond its remit of an economic system. Neoliberalism has proliferated into a cultural programme, prescribing norms and relationships between the state, the market, and the society at large—it has become the “normal” way in which to view the world (Achterhuis et al., 2010; Boelens et al., 2010, 2012).

The differences between these two (broadly defined) systems in relation to the management of water can be partially explained by contrasting the notions of efficiency and equity. Efficiency has modern and Westernised political roots, rests upon formulaic principles, and is individualistic and reductionist (Conca, 2006; Ingram et al., 2008). When equity is discussed from a neoliberal perspective (that prioritises efficiency), authenticity is limited by the extreme asymmetries the paradigm upholds. “Equitable” policies in the water sector today rarely have truly equally dispersed costs and benefits across classes and geographies, but rather exacerbate disparities between the ruling minority and the rest of society, particularly marginalised rural groups (Wilder & Ingram, 2018). This can be contrasted with systems that place equity at their centre. Such approaches are culturally and contextually sensitive, grounded in reciprocity and community wellbeing – a notion that is not a mere tallying up of individual welfare, but is a collective concept that recognises the potential need for subordination of self for communal gain (Ingram et al., 2008). From this starting point, the presence of water represents the history, attachments, and obligations of the community, and it defines their identity and dictates their role in sustainable and equitable resource management (Wilder &

Ingram, 2018). Crucially, such an ontology too acknowledges and respects the needs of future generations and non-human water users.

It therefore becomes apparent that neoliberal and indigenous water systems have fundamental incompatibilities that cause their merging and/or co-existence to be problematic. An equitable approach to water aspires to remedy, not reproduce, political and economic inequalities of power (Wilder & Ingram, 2018). Klein (2007) describes neoliberalism as a “fundamentalist doctrine” that refuses to peacefully coincide with alternative ideologies. Similarly, Achterhuis et al. (2010) explain that the modernising objective of neoliberalism has an inherent tendency to destroy plurality. This is a vital point to consider when attempting to locate a strategy that consolidates, incorporates, or even recognises these two opposing systems in the same political space.

Another key disparity is the ecological disassociation that characterises the orthodox capitalist perspective. Through a neoliberal approach, complex, multifaceted natural resources such as water and land are seen as external, exploitable bodies. Volumetric measurements adopted in corporate environmental impact initiatives are one-dimensional and inadequate (Nikolakis et al., 2013; Mdee, 2017). Even truly well-intentioned neoliberal water projects are unable to meaningfully recognise and respect the true myriad of pluralistic values that exist. Strang (2018) highlights the instrumentalist rhetoric that typifies development discourse. In their most ambitious attempts, neoliberals see cultural and spiritual value as beneficial for the individual perceiving it, rather than embracing nature’s intrinsic right to exist, regardless of human affirmation. This unrecognised ontology has its roots in the capitalist dichotomies that were briefly introduced at the start of this chapter, in this case originating from René Descartes’ supposition of a distinction between nature and society.

2.2.4 Indigeneity in the Contemporary Political Context

Through distinguishing between political recognition and economic redistribution, we can gain useful insights into the nature by which indigenous groups are included in global water policy decisions. The importance and relevance of this distinction has been articulated in a penetrating piece by Fraser (1995). Here, she articulates that solutions to *socio-economic injustices*, as theorised by influential writers including Karl Marx and John Rawls, will involve redistribution of income and reorganisation of labour arrangements (ibid). Contrastingly, *cultural injustices*, including symbolic domination and oppression, can only be solved through a genuine recognition and respect for alternative ways of living, which would require a societal transformation and necessarily entail all individuals (including the non-marginalised) to reassess their own identities (ibid).

Through this lens, it becomes visible that the neoliberal approach orients justice initiatives around redistribution to indigenous groups whilst framing these efforts as political or cultural recognition. Indigeneity is homogenised, simplified, and subsequently incorporated into dominant water governance institutions grounded in alien

concepts and de facto hierarchies (Sosa et al., 2017; Boelens, 2008, 2009; Boelens et al., 2010). Commonly evidenced policies of “recognition” cluster around a foreseeable set of issues, such as granting of customary rights and constitutional acknowledgement, but underpinning such legislation is a restrictive liberal ideology that seeks to reproduce the status quo (Conca, 2006; Jackson, 2018b). Thus, more significant political claims surrounding territory and authority are silenced and ignored. As touched upon above, many indigenous groups question the authority of the nation state altogether, and so to participate in state-granted water allocation systems means recognising the states’ advantageous hierarchical position as legitimate (Jackson, 2018b).

A central concern at hand is how to create space in the international political economy of water for diverse and alternative natural resource management institutions. However, as explained, inclusion in its current form reinforces indigenous subordination through subjection to external processes and unequal power structures (Boelens, 2008, 2009). Thus, contemporary recognition often materialises as attempts to suppress cultural distinctiveness, correlating with the aforementioned debate surrounding scientific objectification narratives. In keeping with calls from Roth et al. (2015) and Jackson (2018b), it is argued here that in future, decision-makers and academics alike must consider avenues by which recognition and integration can be meaningfully consolidated with self-determination and political autonomy in the face of powerful external players.

Whilst it is reasonable to assume certain common aspects of indigenous populations, such as shared ancestry and heritage, distinct language, unique relationship with nature, and commitment to reproduce cultures from precolonial civilisations (Jackson, 2018a, b), there is a Western tendency to romanticise and homogenise indigenous ways of being. These idealisms are perpetuated from both ends of the political spectrum. From the right, racist indigenous stereotypes of “backwardness” persist in many modernising bureaucratic circles (Ingram et al., 2008). From the left, hopeful radicals defend sentimentalised and exaggerated traits of indigeneity (Guerrero, 1994; Boelens, 2009; Boelens et al., 2010). Utopian expectations can overshadow the existence of hierarchical or discriminatory injustices within alternative institutions (Roth et al., 2015). To avoid the same universalisation and simplification criticised earlier in this chapter, critical examinations of power should too be applied to native systems, instructed by “empathetic objectivity” rather than longing for return to tradition (ibid).

Indigenous claims to water are dynamic and context-specific but generally adopt a holistic, intuitive, and harmonious perspective. Communities’ interaction with water is often central to their identity and wellbeing; the health of the water is inextricably linked to their sense of self, for it provides not only health in a recognisably Western sense (drinking supplies, hygiene concerns), but it also has ritualistic and spiritual significance. The essence and centrality of water in indigenous mythology is well-documented (e.g. Armstrong, 2008; Toussaint et al., 2005; Jackson, 2018a, b). Many communities view rivers, sea, and other natural resources as living beings, gods, or places that ancestral spirits reside. Territory is also of fundamental importance, being intrinsically linked to a community’s right to water,

and sculpting collective identity through a sense of place and connection to the land (Aho, 2009; Barber & Jackson, 2011; Boelens et al., 2012). Legitimacy and respect are also gained by control over waterscapes (Wilder & Ingram, 2018). Thus, the significance of water to multiple vital tenets of indigenous life means that retraction of rights constitutes an onslaught to their social reproduction according to fundamental belief systems.

In contemporary political and social contexts, indigenous communities possess nuanced and multifaceted demands when it comes to water. These include equal access and treatment, environmental protection, autonomy and space for political organisation, democratic and regional decision-making, and fair participation and representation (Corpuz, 2006; Jackson, 2018a, b; Jackson & Barber, 2013; Fraser, 2009). Demands take place within a structure of rampant inequities of power that characterises indigenous existence internationally (Boelens et al., 2010). A key tension in the indigenous struggle for recognition, as demonstrated earlier in this piece, is that “successful” recognition under the dominant paradigm inevitably entails formalisation and thus integration into a fundamentally contradicting bureaucratic system (Harrison & Mdee, 2017). There is a need for academic understanding as to how alternative institutions can begin to exist in their own space, without needing to be legitimised by foreign or imported values and processes.

Indigenous recognition and participation are currently limited by the overarching political economic structure under which the water sector operates. One actor having the authority to include another itself constitutes a political choice rooted in power asymmetries (Bloomquist & Schlager, 2005), and so these processes of determination must also be examined. At the most woeful level, governments and businesses symbolically incorporate marginalised groups as part of a tick-box process so as to justify expansion of interventions and improve their image as development actors (Powęska, 2017; Ingram et al., 2008). Even if powerful actors invite marginalised groups to the decision-making table with a genuine openness to their input, contributions are often only considered as long as they fit within the paradigmatic restrictions of capitalist thought (Assies, 2010; Brugnach & Ingram, 2012). In this sense, indigenous groups are viewed as undifferentiated stakeholders (Jackson, 2018b) within a particular frame, rather than respected for their ability to generate alternative strategies. Gaining formal recognition also often entails arduous and expensive processes that many communities do not possess the human or financial resources to undergo (Sosa et al., 2017).

An expansion of institutional capacity is needed to meaningfully acknowledge indigenous water cultures and enable the political autonomy of marginalised groups. This will require a long-term shift away from positivist hierarchical management and anthropocentric perceptions of reality and towards the creation of normative frameworks that tolerate legal pluralism (Strang, 2018; Achterhuis et al., 2010; Boelens et al., 2010). Intercultural learning exchanges and indigenous participation in data collection, water allocation, and monitoring processes have been suggested as starting points in such a transition (Jackson & Barber, 2013). Path dependency dictates that transformative processes will be especially challenging in regions where water management systems are rooted in indigenous eradication and

dispossession, since these sectors have been built to have an inherent rigidity and resistance to switch course (Garrick & Svensson, 2018; Jackson, 2018a, b).

2.2.5 Post-Capitalist Considerations

Insights from the work of Conca (2006) are invaluable when considering how to bring indigeneity to the fore. Conca fundamentally questions the legitimacy of state authority and technocratic knowledge and believes that viewing these notions as variable (rather than static and given) will open up flexibility and space for heterogeneity in problem-solving. Democratisation of the politics of water will not occur from a decision-maker having a benevolent epiphany, but from consistent, cumulative, widespread, and passionate grassroots movements forming intersectional alliances and creating alternative strategies from the bottom up (Conca, 2006; Boelens et al., 2010). Crucially, and in contrast to many developmental narratives of both the political left and right, nonstate actors will play a vital and central role in the realisation of this new landscape. This means civilians assuming authoritative roles themselves, rather than engaging in negotiations with powerful actors (Conca, 2006).

As global capitalism persists in its failure to provide a basic standard of living for millions, the inevitability of it as a paradigm is wearing thin. Contradictions increasingly generated by the prevailing economic order are giving birth to space in the political landscape for historically marginalised institutional forms (Conca, 2006). The challenge is learning how to embed these emerging forms into today's "tightly woven fabric" of institutionalised "trade liberalisation, development assistance and capital mobility" (Conca, 2006, p. 20). Whilst the scale, geographies, and cultures of most populations around the world mean that indigeneity does not provide a replicable form of water governance (Strang, 2018), the Global North nonetheless has much to gain from the knowledge, perspectives, and values that characterise the indigenous worldview.

Indigenous water management institutions can be understood as a decolonised, contextualised, participatory model. They defy the profit-seeking individualism of many corporate- and state-led models. Whilst indigenous systems have also been referred to as "water as the commons" and "ecological democracy", they often take the form of water user collectives. Such associations will comprise of several families, with individual rights and roles being derived from collective responsibility (Boelens, 2008). These groups actively contest the status quo, by resisting externally imposed, undemocratic water governance and conspiring to undermine mainstream "equalising" attempts that leave disproportionate local burdens (Boelens et al., 2012). Since collectives operate at grassroots level, they have unique capabilities and powerful impacts on social networks and norms that bureaucracies and top-down legislation struggles to reach (Boelens, 2009). Water user collectives are predicated on a set of values that will differ between localities according to culture, religion, community, and hierarchical structures, amongst others. Broadly, though,

they are underpinned by a belief in shared ownership and obligation, centrality of nature to group identity and social reproduction, respect of the spiritual dimension of water, and a non-substitutability for ecosystem wellbeing (Hendricks, 2010; Bakker, 2007). Boelens et al. (2012, 2010), using the analysis outlined earlier by Fraser (1995), highlight that these alternative models creatively blend class struggles of economic redistribution with identity struggles of cultural recognition and representation.

We must move past the dominant ontologically dualist worldview and make way for relational perspectives and the materialisation of a pluriverse – a world where multiple ways of being can flourish (Escobar, 2011). In allowing alternative water management systems to exist, through genuine cultural and political recognition, costly formalisation processes will be avoided (Hendricks, 2010). Care should be taken to ensure notions of empathetic objectivity remain central when dealing with intra-community (gender, class, ability, sexual orientation, etc.) power imbalances (Wilder & Ingram, 2018; Roth et al., 2015). Grassroots organisations inspired by alternative ideologies should make arrangements to coordinate actions either regionally or globally (Getches, 2010). The Internet will be vital for these movements to form coalitions and share best practice, potentially representing a new, inexpensive organisational tool to replace existing cumbersome bureaucratic institutions (Conca, 2006; Tarrow, 2012).

2.3 Access to Water in the Face of Climate Change

2.3.1 *Impacts of Climate Change*

Despite a widespread analytical disassociation of these issues, climate change *is* water change. Competition for water is growing, with actors employing increasingly contentious tactics to shield water supplies (Öjendal & Rudd, 2018; Lynch, 2012). Shifting temporal and spatial distribution of water is causing many regions to experience heightened and extended periods of scarcity. Mehta (2014) has created a framework that categorises water scarcity into four components – physical, economic, adaptive, and socio-political – highlighting, in accordance with Garrick and Svensson (2018), the interconnectedness of institutional aspects with geographical volumetric changes. It is widely accepted that the planet is experiencing extreme weather events at increasing rates, threatening and displacing thousands of communities, creating a generation of climate refugees, increasing the risk of waterborne disease, and positing additional pressures on existing water infrastructures (Hess et al., 2008). Scandalous levels of chemicals, plastic, and sewage choke our rivers and oceans, substantially compromising the quality of resources that remain available. The pursuit for “green” energy has led to water-intensive quests for alternatives (Weinthal et al., 2018; Gilron, 2014; Siddiqi & Anadon, 2011). These difficult conditions are accompanied by unprecedented population growth and urbanisation in recent decades (Buurman & Babovic, 2016).

Ironically and tragically, indigenous communities who have played little-to-no part in industrialisation are often impacted the most. They feel the wrath of climate change on far deeper levels, by virtue of emotional connections with the natural world and cultural ties to ancestral territories (Green & Raygorodetsky, 2010; Alexander et al., 2011). The impact of climate change on indigeneity has been articulated by Whyte (2017) as an “intensified colonialism”. The era of primitive accumulation laid the contours for modern-day industrial activity, the primary cause of widespread ecological deterioration, in many regions now beyond the point of rejuvenation. For centuries, indigenous communities have been subject to externally induced environmental changes, including pollution, deforestation, and alteration of soils, that have served commercial capitalist expansion to the detriment of indigenous systems and culture (ibid). Wildcat (2009) concurs with the position offered by Whyte (2017), describing indigenous displacement from climate change as a *déjà vu*, referring to previous waves of colonially induced territorial dispossession.

As aforementioned, indigenous peoples are affected by climate change on multiple levels. Ecological changes, such as flora and fauna species decline, are poignantly felt by communities; an indigenous participant in a study by Petheram et al. (2010) expressed that “mother nature is now weeping”, whilst another explained “we can sense something . . . there is a strange roaring in the water . . . spirits are visiting people in dreams more often”. Forced relocation due to changes in ecological conditions has deeply troubling implications for the integrity and survival of each community’s unique culture and intricate knowledge, which typically centres around the specific ecosystem of their ancestral land (Alexander et al., 2011). Indigenous scholar Whyte (2017) powerfully describes the current state of the natural world “post-apocalyptic” from an indigenous viewpoint, pronouncing that if ancestral generations were to hear about the obstacles native communities are faced with today, they would think it was a farcical dystopian tale.

2.3.2 Prevailing Climate Approaches: Mitigation and Adaptation

The dominant approach to solve climatic change-induced water crises grounds itself in narratives of conservation and efficiency, upheld by interconnected scientific and political ideologies. Under the guidance of IOs, the majority of governments in the Global South have adopted large-scale projects that aim to advance efficiency through water allocation mechanisms (e.g. World Bank, 2016b; IFC, 2019). Other widely promoted solutions to climate-water threats by actors with institutional power include establishing disaster planning initiatives such as early warning systems, developing metering and rationing processes, encouraging complementarity in water use, and utilisation of unconventional or wastewater resources (IFC, 2019; World Bank, 2016a; Sowers et al., 2011; De Graaf et al., 2009).

In many regions, actually existing and politically constructed scarcity is used to justify external intervention and market approaches. Narratives of scarcity and environmental degradation are sometimes co-opted and used as political tools, portraying water markets as inescapable and legitimising action against “perpetrators” (Mdee, 2017; Wisner et al., 2012). Many have commented on synergies between scarcity/conservation rhetoric and neoliberal governance models (Bakker, 2018; Argyrou & Hummels, 2019; Grafton et al., 2013). This inevitability is implied by the World Bank (2016a) who state that providing a resource for free is destructive, whilst gains from a market approach would be “immediate”. Redirecting water from lower- to higher-value uses is a basic premise of this analysis, since economic theory indicates that high prices will inspire water-saving techniques (Ingram et al., 2008; Garrick & Svensson, 2018; Grafton et al., 2013). Underlying assumptions of supply and demand models that uphold such claims (such as the existence of willing and all-knowing participants on either side of the transaction) go unexamined.

In line with the earlier discussion regarding the neutralisation of Western scientific approaches, dominant solutions to climate-water problems are founded upon technical expertise that carry significant political and social implications. Reid et al. (2014) and Petheram et al. (2010) demonstrate that insights from biological and physical sciences prevail in climate adaptation strategies, striving for concrete predictions and technological solutions. Experts who operate in this realm tend to conceptualise climate issues within a specific frame, predetermining a range of problems and solutions (Buurman & Babovic, 2016; Lemos & Kirchhoff, 2018; Dewulf et al., 2005). This circumscribes many climate conversations in the water sector to narrow parameters that only recognise other viewpoints through a Western lens whilst passively accepting the political status quo. These processes fail to contextualise climate impacts or recognise the institutional backdrop against which they occur (Tennekes et al., 2014; Reid et al., 2014). Such oversight leads to a dissociation between expert knowledge and on-the-ground water management, since many insights are unable to be effectively adopted or implemented. This is linked to the isomorphic mimicry debate touched upon in Sect. 2.2.2 of this chapter but has a further dimension in that it perpetuates structural imbalances. Although technical advice can improve decision-making quality, this is to the detriment of inequalities of power and access to information (Lemos & Kirchhoff, 2018). Whilst it is theorised by some that peer-reviewed science is favoured because of the extreme public scrutiny climate strategies are subjected to (Alexander et al., 2011), Harrison and Mdee (2017) argue instead that such reoccurring inclinations have colonial roots.

Neoliberal solutions to climate-water crises largely fail to benefit indigenous communities, having been evidenced to exacerbate social, political, and economic vulnerabilities of marginalised populations. Scientifically delineated need to implement efficiency mechanisms through allocation and monitoring systems inevitably entails creating a culturally insensitive hierarchy of water users, establishing a set of accepted social norms and privileging some needs over others (Sowers et al., 2011; Miller et al., 1997). It is unsurprising that indigenous claims to water for spiritual and cultural rituals are omitted from such models, whilst large-scale commercial

redirection is repeatedly consistently prioritised. This can result in a perpetuation of the rural-urban divide and contribute to local and regional conflict (Öjendal & Rudd, 2018; Lynch, 2012; Bakker, 2018). Orthodox responses to climate change give little room to indigenous groups to contribute to the formulation of adaptation strategies (Petheram et al., 2010). This one-dimensional approach means that climate initiatives focus on a foreseeable, generic set of issues, aiming to resolve a narrowly defined conception of ecological harm (Conca, 2006). Climate strategies required to tackle the currently deplorable state of the natural world transcend the technical realm that contemporary thought predominantly operates within (Öjendal & Rudd, 2018). A paradigmatic shift must be enabled – solutions that promote change without critical examination of currently prevailing international ideals of mass consumerism and incessant capital accumulation will necessarily fall short of what is needed to save our planets' delicate ecology.

2.3.3 Alternative Climate Approaches

Traditional ecological knowledge, a component of indigenous knowledge, refers to native communities' cumulative, evolving, and intricate knowledge of the local ecosystem upon which their culture has its foundations (Kihila, 2018; Berkes, 2012). Information is passed through generations via word of mouth, and ecological insights are embedded within stories, song, and other cultural practices (Whyte, 2017; Ajani et al., 2013; Alexander et al., 2011; Nyong et al., 2007). In addition to ancestral transmission, knowledge can too be received directly from the spiritual realm through dreams or communications with the natural world (Williams & Hardison, 2013). To these communities, adaptation in the face of harsh and changing ecological conditions is not a new phenomenon. Aboriginal Australian heritage can be traced back 50,000 years (Green et al., 2010). Severe climatic variations, not dissimilar to contemporary concerns of drought and irregular precipitation, have been recorded in the African Sahel since the mid-1600s (Nyong et al., 2007). For millennia, rural populations have developed coping mechanisms and techniques necessary for their survival, withstanding conditions marked by extremity that has exceeded predictions of modern climate change models (Johnston, 2012; Kihila, 2018; Stigter et al., 2005; Nyong et al., 2007).

The knowledge held in indigenous communities is currently underappreciated and underutilised in climate bureaucracies. The mammoth task of adapting to climatic fluctuations should be harnessed to revive cultural practices and traditional remedies which have been discarded as backward since colonial times. Whilst some contend that indigenous knowledge should be incorporated into mainstream approaches to allow for equity and fairness (Sakona & Denton, 2001), the reasons that powerful actors should pay attention to alternative insights extend far beyond this. Approximately 80% of the globe's surviving regions of ecological diversity lay within indigenous territories (UN, 2020), where local people are the primary knowledge bearers of site-specific intricacies dating back centuries (Green &

Raygorodetsky, 2010). Current efforts overlook the ability of native groups to meaningfully contribute to plans surrounding best-practice resource management in the face of uncertainty and extremity (Sosa et al., 2017).

Indigenous climate knowledge and adaptation mechanisms are highly varied and context-specific; particular local examples have been identified in numerous academic studies. Crop diversification and adoption of agro-ecology and agroforestry in farming practices are recurring themes (Kihila, 2018; Rosset & Altieri, 2017; Ajani et al., 2013; Nyong et al., 2007). This is often combined with switching to shade- or drought-tolerant produce, harvesting water within trees, shifting planting patterns to avoid extreme dry weather, or switching to livestock with fewer nutrition requirements (Ajani et al., 2013; Kihila, 2018; Petheram et al., 2010; Nyong et al., 2007). Other interesting place-based climate and weather indicators used by local people include the observation of specific plant and animal behaviours, such as leaves shedding of particular tree species, early flowering or fruit production, premature ripening, date of bird migration, date of reproduction season for certain animals, levels of intrusion by ants or termites, and a particular sound produced by male goats (Nkomwa et al., 2014; Green et al., 2010). Occasionally, indigenous groups and farmers considered either temporary or permanent relocation/migration and livelihood diversification (Ishaya and Abaje, 2008; Petheram et al., 2010; Kihila, 2018; Ajani et al., 2013).

There are, however, some limitations of indigenous knowledge that demonstrate the need to carefully evaluate it against intended climate outcomes, to avoid succumbing to simplified and romanticised notions of indigeneity. This is in keeping with Kihila (2018) and Ajani et al. (2013), who point out the need to scrutinise indigenous practices and knowledge in the same way an academic might examine the aptness of a new technology. Limitations of traditional ecological knowledge include existence of climate change misconceptions within communities, de-contextualisation rendering knowledge irrelevant, elders not recalling weather events that did not impact them specifically, and the epistemologies of collective knowledge and rights to this information that mean it is not easily transferable into a Western system (Nkomwa et al., 2014; Green et al., 2010; Petheram et al., 2010).

2.3.4 Knowledge Sharing

Absorption of indigenous insight into international climate approaches will require long-term processes of cross-sectoral knowledge sharing and formulation of indigenous-Western alliances. Sharing knowledge between these systems can assist in the creation of culturally appropriate climate adaptation plans, since grassroots indigenous actors can advise on realistic, implementable, and affordable strategies that are in line with local values that will be easily disseminated and employed throughout their particular community (Egeru, 2012; Subrahmanyeswari & Chander, 2013; Reid et al., 2014; Green et al., 2010; Ajani et al., 2013; Nyong et al., 2007; Kihila, 2018; Petheram et al., 2010; Pelling et al., 2008). Combining

indigenous knowledge with contemporary Western insights also has the potential to constitute substantial modern scientific gain and complement dynamic indigenous cultural processes. Traditional ecological insights can inform baseline measurements for regions with less recorded data or to track historical trends and weather patterns (Alexander et al., 2011; Thornton & Scheer, 2012; Green et al., 2010; Green & Raygorodetsky, 2010; Williams & Hardison, 2013). Other scientific gains, including identification of new adaptation tactics and prioritisation of climate mitigation impacts, have also been noted (Kihila, 2018; Williams & Hardison, 2013).

In an extensive literature review, Lemos et al. (2012) summarise a disparity between what climate scientists portray as necessary and what is actually achievable on the ground. Issues that constitute this “fit gap” include tailoring information to local need; integrating external knowledge with local values, practice, and institutions; and a disassociation between knowledge producers and knowledge users (ibid). It is suggested here that these shortcomings could be remedied through respectful, organised collaboration with indigenous communities. Crucially, though, indigenous groups should not be expected to voluntarily hand over knowledge accumulated over hundreds of generations whilst accepting the unequal power structures underpinning such a transaction. Decision-making processes should be re-examined, with indigenous groups steering co-governance arrangements: a setup found to result in better prospects for societal benefit (Hill et al., 2012), assumedly due to the former actively pushing institutional boundaries by rejecting the status quo.

To integrate indigenous systems into mainstream policy contexts, avenues by which to generate accommodating and fair knowledge sharing spaces must be considered. The most cited element for creating productive indigenous-Northern coalitions is that relationships must be long-term, in order to build trust, closeness, and mutual understanding (Campbell and Christie, 2009; Kirchhoff, 2013; Lemos & Morehouse, 2005; McNie, 2013; Engle, 2010; Pagano et al., 2001; Rayner et al., 2005). Successful knowledge sharing channels included forums, alliances, and resource centres – all of which give space for indigenous independence and autonomy, innovatively utilising traditional insight without subjecting it to suffocating bureaucratic requirements (Nkomwa et al., 2014; Petheram et al., 2010). Countries where indigenous knowledge has been already begun to be integrated into climate strategies include Fiji, Tanzania, Australia, Malawi, Kenya, India, Peru, Colombia, and Canada (Painemilla et al., 2010; Nkomwa et al., 2014). Green and Raygorodetsky (2010) advocate for establishing “intergenerational programmes” to formalise indigenous ancestral knowledge. Whilst their intention to preserve traditional ecological knowledge is commendable, there are several logistical and philosophical barriers to creating such a scheme, some of which will be discussed below.

When speculating how indigenous groups might share knowledge to assist in the revival of natural systems, there is a tendency to overlook the depth of connection that these communities have with this knowledge. Groups are being asked to contribute to solving profoundly emotional issues, of which few indigenous peoples have contributed to or felt much benefit from (Williams & Hardison, 2013).

Collaboration or knowledge sharing without acknowledgement of the wider political setting will not guarantee to improve the wellbeing of local communities – these efforts must necessarily be paired with changes in the institutional structure to be more inclusive of alternative ways of being (Hill et al., 2012; Alexander et al., 2011; Williams & Hardison, 2013). Historically, collaborations between indigenous groups and the Western world have been marked by extreme power asymmetries. Smith (1998) explains that this is no different in the realm of research – cynicism is rife in many indigenous communities, who have come to feel over-researched and concerned that researchers will exploit information they hand to them (Green et al., 2010; Whyte, 2017). The difficulty of sharing knowledge between different epistemologies and cultures should also not be underestimated. Indigenous knowledge is often embedded within a set of traditions, customs, and relationships that define who may use particular knowledge, under what circumstances, and through which rituals or processes (Thom & Bain, 2004). This poses substantial challenges when it comes to being translated into an entirely alien legal system, predicated on fundamentally different values, and subject to intellectual property rights and the like.

2.3.5 Political Constraints

A fundamental limitation of the current global political-economic context is that it grants priority to certain actors and ways of thinking and being. Water scarcity in the face of climate change is not a mere availability issue, but a far deeper political dilemma regarding power and representation (Lynch, 2012). Path dependency has stark relevance with regard to global, national, and local climate adaptation and mitigation strategies. Structures are built to withstand and resist change or external interference. So, when posed with alternative climate strategies that question some of the central principles of the existing system, powerful entities in the neoliberal sphere are likely to reject such information and label it as illegitimate, simply because it is unrecognisable to the political and economic framework that they operate within.

There is a need to break down political boundaries and develop institutional capacities to give space to alternative approaches in tackling the burdens posed by climate change that are set to worsen in the near future. Discursive political pledges will no longer suffice. We must move towards more radical discussions surrounding the legitimacy of prevailing bureaucracies and begin to map the formulation of fundamentally different societal relationships and hierarchies (Uittenbroek et al., 2014; Tennekes et al., 2014). Decision-makers must be pushed beyond their comfort zone and have their authority questioned (Conca, 2006; Tennekes et al., 2014). The once-hailed durability and rigidity of water management treaties can now be understood as a major impediment to effective climate action (Öjendal & Rudd, 2018). Flexibility and allowing for uncertainty and complexity will be essential in the construction of a political framework that can aptly deal with the reality of climate change (de Graaf et al., 2009; Buurman & Babovic, 2016; Quay, 2010; Lemos &

Kirchhoff, 2018; Pagano et al., 2001; Snover et al., 2003; Tang & Dessai, 2012). Several authors have contributed ideas on how flexibility can be incorporated into decision-making, including methodologies such as scenario planning, adaptation pathways approach, anticipation analysis, additional monitoring and action measures, multi-layer decision analysis, and safety margin strategies (Buurman & Babovic, 2016; Swart et al., 2004; Harvey et al., 2012; Hallegatte, 2009; Quay, 2010). Unprecedented and unforeseeable climate challenges, described as “unknown unknowns” (Buurman & Babovic, 2016), point to abandonment of the current institutional fixation on appearing as “all-knowing”, a characteristic derived from the inherent assumptions of the dominant economic model.

2.4 Conclusion

This chapter has shown how the capitalist global paradigm has invisibilised and delegitimised the political demands of indigenous groups. Indigenous recognition and inclusion is often shallow and tokenistic, reinforcing indigenous subordination through their subjection to external processes and asymmetric power hierarchies. The colonially inherited political economy within which the water sector functions limits the water rights and autonomy of indigenous groups. Current efforts by dominant institutional actors in the WASH sector, including constitutional recognition, scientific objectification, and human rights-equality narratives, bolster the domination and suppression of cultural distinctiveness. The development sector at large must move from counter-neoliberal remedies to post-neoliberal transformations in order to authentically manifest positive change for indigenous and other marginalised rural communities. This will entail acknowledging the inherent politicisation of current water decisions by water professionals and politicians at decision-making levels.

The destruction created by capitalist logic is fuelling an emerging social force metamorphosing insurgency and fury into a political revolution (Esteva & Escobar, 2017). Meaningful democratisation of the politics of water will be generated through cumulative, bottom-up grassroots movements, supporting, and learning from one another to strengthen and proliferate alternative water governance systems. These alternative systems, based on collective participation, ecological harmony, and spiritual enhancement, will not be subject to bureaucratic interference or evaluated against a set of irrelevant and external modernist criteria.

As climate change carries us towards an era in which our very existence is threatened and questionable, we cannot allow its magnitude to be strategically harnessed to further neoliberal agendas of efficiency, homogenisation, and technical objectivity. We must use the climate crisis to answer passionate calls by indigenous communities and activists, who have longed for abandonment of anthropocentrism, individualism, and commercialism towards an ecologically balanced way of being. Indigenous systems of social reproduction must no longer be seen as an anachronous utopia, but as a sustainable and viable paradigmatic alternative. Learning from

indigeneity will be an essential part of undergoing the necessary post-capitalist societal transition. In making this transition, we must be aware of the intricate emotional involvement that indigenous groups have with the tragedy of widespread natural degradation. Knowledge sharing between indigenous and currently dominant capitalist institutions to formulate climate strategies must be paired with efforts to transform the hierarchy of the institutional structure.

If the political underpinnings of water decisions are not owned and addressed by those operating in this realm and continue to be presented as objective and unquestionable, the marginalisation of indigenous perspectives will persist. It is these very groups who have lived in tune with the Earth for millennia and who live amongst and protect the vast majority of the planet's remaining biodiversity. The reprehensible poverty and inequality in accessing water, the central resource dictating survival and social and spiritual expression, is not a problem that relates only to "them" but one that burdens us all. It is therefore the duty of those with influence and resource in the WASH sector to begin listening to indigenous voices.

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