Riverkin: seizing the moment to remake vital relations in the UK and beyond

Authors
Dr. Joshua B. Cohen (corresponding author)
J.b.Cohen@leeds.ac.uk, 07404056042
Work address: Office 9.157, School of Earth and Environment, Faculty of the Environment, University of Leeds, Leeds LS2 9JT

Dr. Charles Dannreuther
School of Politics and International Studies, University of Leeds
Dr. Markus Fraundorfer
School of Politics and International Studies, University of Leeds
Associate Professor Colin Mackie
School of Law, University of Leeds
Professor Julia Martin-Ortega
School of Earth and Environment, University of Leeds
Professor Anna Mdee
School of Politics and International Studies, University of Leeds
Dr. Nicolas Salazar Sutil
Independent trans-disciplinary creative practitioner, action researcher and author

Funding
The conceptual development and writing of this paper were made possible by the generous support of several funding sources at The University of Leeds. These were The Interdisciplinary Research and Impact Fund for Culture at Leeds Arts & Humanities Research Institute; water@leeds; and the School of Politics and International Studies' Strategic Research Investment Fund. This work was supported by the Integrated Catchment Solutions Programme (iCASP) funded by the UK Natural Environment Research Council's Regional Impact from Science of the Environment scheme (grant NE/P011160/1).

Acknowledgements
We would like to acknowledge the University of Leeds and our respective Schools for helping foster cross-disciplinary discussion and the formation of 'The Water Value Research Group', comprised of the current authors.

Conflict of interest
The authors are not aware of any conflict of interest associated with this article.

Abstract

1. We show how the dire state of the Earth's rivers entangles intimately with 'thingifying' processes at the heart of colonial modernity. Known in many precolonial and Indigenous contexts as person-like *kin*, we describe how rivers the world over have been re-done primarily as *thing* – amoral, controllable, a potential commodity like anything else.
2. We develop and work with a provisory concept of kin as *those constituents of environments that reciprocally nurture, and contribute to the substance of, one another's life and well-being.*
3. We show how kinship with rivers figures centrally in primarily Indigenous-led struggles in various regions of the globe for the recognition and enforcement of river personhood and rights. This is partly because people are motivated to fight passionately for their kin.
4. With some careful caveats, we argue that associating river kinship exclusively with Indigenous worlds undermines its potential for global impact. Thus, as an apposite case study, the latter part of the paper focuses on some of the social-ecological trends which we suggest are opening up the possibility for the re-establishment of 'riverkinship' in the United Kingdom.
5. We reflect on the potential for riverkinship to help cultivate political constellations fitting to the challenges of the Anthropocene.

Word Count

Including main body of text and endnotes, excluding abstract and references: 8495

Keywords

Kin; Rivers; Global North; Anthropocene; United Kingdom; Thingification.

Introduction

Rivers have been drawing media attention recently, mostly for all the wrong reasons (e.g. Barkham, 2021; Laville, 2021a; Laville, 2021b; Westfall, 2021; Begg, 2021; Austin, 2021; Monbiot, 2022; Bullough 2022; Laville and Horton, 2023). Pollution, damming, climate change and other pressures mean that only a third of the world's rivers remain free-flowing (Grill et al., 2019). Since 1970, global migratory fish populations have dropped 76%, freshwater vertebrate populations 83% (Deinet et al., 2020). Freshwater habitats are the worst affected over the last fifty years within a global mass extinction event where 68% of mammals, birds, fish and reptiles have been lost (Almond et al., 2020; IPBES 2019), along with over 85% of global wetland area (IPBES, 2019). According to one influential analysis, we have already crossed four of nine mutually interacting '*planetary boundaries*' (Lade et al., 2020). Once such boundaries are sufficiently transgressed, ecological systems may no longer maintain Earth within the relatively stable conditions of the Holocene –conditions which are linked to the development of large-scale, settled social-political forms (Lade et al., 2020: 119; O'Neill et al., 2018; Rockström et al., 2009).

Note: Given the plurality of ways of knowing and relating discussed below, we acknowledge that 'river' can never be *one* thing. It is nevertheless a powerful concept for focusing attention on what we are primarily interested in here – i.e., waters' confluent, flowing state as part of the freshwater cycles that all lives are part of.

Overview of our argument

Part of the reason for our precarious situation is the long history of transformations in human relationships to freshwater. This has been a process whereby overriding economic, technological and philosophical logics have privileged relating to waters as *things* over forms of *kin.* Understanding that history as processes whereby historically particular and local ways of knowing and doing became globally dominant, suggests other possibilities, including moving away from what we characterize as the *derangement of relationship* with our 'riverkin'[i] entailed by this history. Kinship with waters has figured centrally in the vital, primarily Indigenous-led struggles for the recognition of the life, agency, voice, and or personhood of rivers in New Zealand, Australia, Canada and elsewhere (Manikuakanishtiku et al 2021; Martuwarra RiverOfLife et al 2021; Nixon; 2021; Strang 2020b; Wooltorton 2021). This marks an important potential inflection point in how humanity relates to the nonhuman world, although its transformative potential will necessarily be curtailed if kinship with waters is associated *solely* with Indigenous worlds. Once again privileging relating to rivers as kin also in the very centres of colonial-modernity might allow a fuller, more radical seizing of this moment. Offering the example of the United Kingdom, the literature explored here suggests that this proposition might not be quite as strange and improbable as it could first appear. We do not suggest that simply recognizing this kinship as a 'nice idea' will be enough on its own to transform our treatment of rivers. We argue that it would constitute a step in the right direction towards the formulation of political constellations fitting to the challenges of the Anthropocene.

The Anthropocene concept

From the Greek for ‘man’ and ‘new’, the term ‘Anthropocene’ is widely used to describe the current geological epoch in which humans have come to significantly influence global ecosystems (Prillaman 2022). The term has been well critiqued, commonly for being too generalizing, as if all humans have played an equal role in creating our perilous situation (Hayman et al 2018). Hence, terms like ‘Capitalocene’ and ‘Plantationocene’ have been proposed (Haraway, 2015b; Moore, 2017). We stick with Anthropocene because it is a term most people will be familiar with, and because of the distinct lack of charm of the ‘Thingocene’.

From kin to thing

How we know, relate to and value water is deeply interwoven with human beings’ relationships with one another and the planet. Many scholars (e.g. Ingold, 2000; Strang, 2004, 2014b, 2015; Kohn, 2007, 2013; Bird-David, 1999, 2020; Viveiros De Castro, 1998), including those with family and other heritage ties to such ways of life (e.g. Salmón, 2000a, 2015; Donald, 2009; Kopenawa and Albert, 2013; Borrows, 2016; Watts, 2020, 2013; Little Bear, 2012), argue that for many hunters and gatherers and subsistence farmers, living through a world they depend on but cannot control to any significant degree, ‘nature’ often figures as differing forms of personhood to be engaged with in mutualistic terms. Because in such ontologies, personhood – as a relational phenomenon that speaks of agency and intention– is not limited to the human, neither are various kinds of relation which might be preserved for human beings in a typified ‘Western’ context. Enrique Salmón, Indigenous Tarahumara from Chihuahua Mexico, for example, argues that such worlds are founded on what he terms a ‘kincentric ecology,’ in ‘[which people are part] of an extended ecological family that shares ancestry and origins … an

awareness that life in any environment is viable only when humans view the life surrounding them as kin' (Salmón, 2000b: 1332). As in many of the examples cited above (e.g. Kopenawa and Albert, 2013; Bird-David, 2020), this conveys a diffuse, rhizomatic sense of kinship, constituted by the multifaceted, ongoing broad field of relations through which people, places, plants, waters, animals and various kinds of ancestor bring one another into being as social-physical entities. Such forms of kinship, those beyond immediate human relations, were long categorized by anthropologists and others as 'fictive' – i.e. not *really* real (Ingold, 2000: 109). Critiquing this assumed rational superiority of what he refers to as the 'genealogical model' of kinship, Ingold makes the point that in other kinship models, such as those of the hunting and gathering Nayaka of Tamil Naidu, India,

> the role of parents is not, as the genealogical model implies, to pass on to their offspring the essential specifications of personhood in advance of their entry into the lifeworld, but rather – by their presence, their activities and the nurturance they provide – to establish the necessary conditions in the environment for their children's growth and development. *This is what kinship is all about*.
>
> (Our emphasis, Ingold, 2000: 140-141).

There is no reason, therefore, for 'fictive' kinship relations to be any less real than those which exist between human parents and their children. In this perspective, *kin are those constituents of environments that reciprocally nurture, and contribute to the substance of, one another's life and well-being.* Importantly, kinship is not simply given in the singular acts of conception and birth; instead they derive their worth and meaning through an ongoing, embodied, practical kind of cultivation (Ingold 2000; 144).

With its associations with life of all kinds, water has commonly been central to such relational webs. Mirroring their shimmering movement-in-transformation, perhaps the most common figure such waters have taken has been the *snake*. From the shape-shifting *waterslang* in Southern Africa, to horned serpents in North America, Europe and Scandinavia, they speak of a living, agential world where water is less something to be possessed and subject to human will, and more someone with whom it is necessary to maintain a reciprocal relationship in order to thrive as biosocial persons (Strang, 2014b; Strang, 2015; Toussaint et al., 2005; Cohen, 2020; Green, 2020). 'Kin-making', Donna Haraway writes, 'is making persons, not necessarily as individuals or as humans' (Haraway, 2015a: 161).

At the same time, the capricious character of many water beings does not suggest a world free of danger or fear – neither in the human nor the nonhuman[ii] world. It does suggest a world where morality extends in an unbroken way beyond human relations. So while avoiding any undue romanticization, we suggest that it is very much worthwhile recognizing that such ways of relating to waters (and the rivers they take form as) are associated with ways of life that in many instances have persisted for millenia without destroying the ecological bases for human and nonhuman life (Green, 2020; Strang, 2015; Brightman and Lewis, 2017; Fitzhugh et al., 2019; Gowdy, 2020).

Strang argues that as hunting and small scale agricultural modes of egalitarian sociality have been progressively replaced by more hierarchical forms, and as waters have been increasingly controlled through canalization and so on, waters' character in social imaginaries has also tended to change (Strang, 2014b; Strang, 2015). Mutualistic relations with water beings have tended to be replaced by gods in human form in increasingly hierarchical relationship to humans, as the agency and personhood of water itself has diminished (Strang, 2014b; Strang, 2015). While

Graeber and Wengrow (2021) have convincingly challenged the equations *settled agriculture and city life (necessarily) = hierarchy* and *hunting and gathering (necessarily) = equality*, Strang's point that the perceived passivity of water reaches a kind of zenith through the scientific and industrial revolutions of the 17th to 19th centuries still holds (Strang, 2014a; Strang, 2014b; Strang, 2015).

The development of technologies and sciences during this period rendered humans and environments countable and knowable at increasingly large scales (Scott, 1998; Foucault, 2007; Foucault, 1970; Ball et al., 2012; Higgs, 2001; Bowler, 2000). Interwoven with such practical means, newly dominant mechanistic philosophies seemed to offer European elites the key to finally master nature, to turn it to human politics and industry – both in Europe and in rapidly expanding colonial networks (Gottschalk, 2013; Delbourgo, 2008; Reidy and Rozwadowski, 2014; Césaire, 1972; Grove, 1996).

In works of the likes of Descartes, Newton, and Galileo, the way to true knowledge was:

> … to look for what is evident ('present to eye's gaze'); reduce it to as many parts as possible; order and enumerate those parts; and then put them together again as a long chain of inference … [in this way] … the ideas of modernist thought which undergirded coloniality were of a world made of things connected only by their presence in space, from which they were extractable to whatever extent was humanly possible. *Life* and ecological *relations* were incidental and optional extras… (Our emphasis, Green, 2020: 40)

Succinctly put, this is what Aimé Césaire has referred to as the 'thing-ification' of the world at the heart of coloniality. Underpinning the absolute division between nature and culture in

Latour's 'Modern Constitution', here we note that colonizers construed kinship beyond the human as a cultural construct *projected* on to a world of pure matter (Latour, 1991; Césaire, 1972). This is also essentially the metaphysical parallel to the commodity form central to the development of our current global political economy; the foundational gesture underpinning neoclassical economics' notion of value (Screpanti and Zamagni, 2005; Gómez-Baggethun et al., 2010). That is, that every*thing* and any*thing* can in principle be exchanged for any*thing* else through the magical medium of money. All other social entanglements become (imagined to be) secondary or irrelevant (Marx, 2007; Harvey, 2017).

It was within these technological, philosophical, political and economic processes, that what Linton has referred to as 'modern water' emerged (Linton, 2010; Illich, 1985; Hamlin, 2000). Linton argues that while Euro-Greek philosophical currents have for millennia conceived of water in both local, animistic *and* generalizable, naturalistic terms, it is with the invention of 'modern water' that *exclusively* generalizable naturalistic accounts – culminating in 1811 in the formula H_20 - became considered as *proper* knowledge. Linton argues that reconceiving water as value free, disconnected from all human entanglements, achieved, in reality, the opposite. Modern water – mappable, eminently controllable, a potential commodity like any*thing* else – did not dissolve human relations from water. Rather it cultivated new forms of relation, articulated through new infrastructures, while (not coincidentally) corresponding with the aims of imperial European states: economic expansion and 'civilizing' missions at home and abroad (Linton, 2010).

When such ways of relating to the world met collectivities whose primary forms of knowledge and valuation lay in acknowledging and attempting to work synergistically with webs of relationship that sustain all lives, the former, time and again, destroyed the latter (Gordon, 1992;

Escobar, 1995; Penn, 2005; Luxemburg and Bukharin, 1972; McIntosh, 2004). Landscapes' *watery* constituents – rivers, lakes, streams – reckoned as pure matter, imagined only in terms of their physical relationships after their human relations had been removed, could, with little moral consideration, be turned to the satisfaction of exclusively human wants and needs, often to the interests of the market. As leisure landscape, canalized transport and repository of human and industrial waste (Green, 2020; MacDowall, 1994; Hartley, 1964; Gilmartin, 1994; Martin-Ortega et al., 2019).

As Moore (2015) and Collis (2016) might put it, rivers became part of the 'biotariat'; their life processes giving 'free' surplus value to capitalist processes, in the same way that the unpaid part of human labour does (Moore, 2017). So, while rivers provided a small percentage of the world's human population with the conditions for their own development and spectacular thriving, this became an increasingly one-way relationship. People's sense of kinship with water withered, deprived of the ongoing reciprocal efforts, considerations and practices that are any relationship's life-source. In this light, we might say that our ecological situation derives as much from a *derangement of relationship* as anything else (cf. Kessler, 2019; Ghosh, 2016). This began apace during the period of the industrial revolution in Europe and its colonies, but such thingified patterns of knowing, relating to and valuing water are today very much ongoing and powerful, intimately tied to rivers' dire ecological states. They are expressed in the fourth principle of the 1992 Dublin Statement on Water and Sustainable Development, which states that 'Managing water as an *economic good* is an important way of achieving efficient and equitable use' (Our emphasis, Theodore and Dupont, 2020: 402).

This principle is a core building block in Integrated Water Resource Management (IWRM) which has been has become the dominant concept of global water governance, guiding all major

action on water governance locally, regionally, nationally, and globally (Ofori and Mdee, 2020) – with IWRM codified as part of the Sustainable Development Goals, target 6.5 (United Nations, 2018: 75). Thingified patterns of knowing, relating to and valuing are expressed when mining companies bet the economic costs of maintaining tailings dams against the socio-ecological consequences of aging structures spilling heavily contaminated water into the Doce River watershed, Brazil (Carmo et al., 2017; Borges and Maso, 2017; Fernandes et al., 2016). Zooming out to the global scale, they are expressed in influential 'Ecosystem Services' (ES) frameworks that assume the purpose of the nonhuman world is to satisfy human need, ascribing a monetary price for services rendered (Comberti et al., 2015; Gómez-Baggethun et al., 2010).

Of course, it is possible to point to the positive obverse of such historical processes: food security, disease reduction and rising living standards for billions (Rosling, 2019; Pinker, 2018; Shahzad et al., 2017). While we in no way deny such potential and actual benefits, we would point out that aside from disastrous impacts on the nonhuman world, 1) Indigenous and other lives decimated across the planet are an impossibly high price to pay; 2) what 'living standards' actually means for human flourishing is highly contested (Graeber and Wengrow, 2021; Mathews and Izquierdo, 2008; McGregor, 2018); and 3) the political economic context within which science and technology have advanced means that, without profound change in that context, such (unequally shared gains) are likely to be very short lived for many. In most cases, this is likely to be a matter of one or two generations before they are undone by climate change, pandemics, war, and economic volatility (World Bank Group, 2022; Olaberria and Reinhart, 2022; Oxfam International, 2022).

Colonial-modernity's nightmare scenario as an opening to other possibilities

If, through the means of thingification, colonial-modernity's ultimate dream has been total mastery over 'nature', coupled with a future-oriented trajectory of development and progress, then it seems fair to say that we are entering into its nightmare scenario. Apocalyptic ecological devastations and planetary boundaries transgressed threaten to undermine the ability of the planet to sustain the very kinds of settled, hierarchical human social forms that colonial-modernity exists as (Lade et al., 2020; O'Neill et al., 2018; Gowdy, 2020; Mattison et al., 2016; Hussain and Riede, 2020). In response, in the form of increasingly extreme weather, flooding and droughts, water asserts its uncontrollable agency. Worse still, there is no place left in that thin sliver of Earth we call home that can even be imagined to be free from human presence and influence.

How can culture exert control over nature when the condition required for the latter to exist can no longer be found? One response has been a doubling down on methods of measurement and control at ever greater scales and complexity within the same, expanding political economy (Espinoza and Aronczyk, 2021; Milojevic-Dupont and Creutzig, 2021; Liu, 2020; Iberdrola, 2021). This is part of a broader agenda to datarize and render every*thing* predictable and profitable, from the workings of our esophagi to 'the whole planet' (Zuboff, 2019 208). Data can always be a powerful ally, and we need rigorous, engaged research of many kinds to understand the task in front of us. We also recognize that systems thinking, Science and Technology Studies and pushes toward transdisciplinary research, among other shifts, have in many important ways transformed 20th and 21st century environmental scientific practice and theory (Kuhn, 2012; Capra and Luisi 2014; Latour 1993a; Kelly et al 2018). Yet, if we are being forced to accept that mastery of nature, of water, is an illusion, and a fundamental part of the

problem, then a breaking of the spell is required, asking of us much more radical forms of thinking and action (cf. Stengers and Pignarre, 2011). What might modes of relating to, knowing, and valuing water look like in a 21st century that does not destroy the biosphere upon which we all depend?

In several regions of the globe, one possible answer to this question is being formed by movements largely spearheaded by formerly colonized peoples whose worlds have been undone by processes of thingification outlined above (Reid et al., 2014; Gentry, 2015; Kahui and Richards, 2014; Kirmayer et al., 2011). After sketching out some of the important dimensions of these movements, we go on to discuss possible lessons and resonances for the United Kingdom.

Kin over thing once more?

On February 16th 2021, Quebec's Muteshekau-shipu ('Magpie River') became the latest in a series of rivers to be granted legal personhood – including, in 2017, the Wanghanui River in Aotearoa (New Zealand) (Nixon, 2021; Strang, 2020a), in 2016, the Atrato River in Colombia, and in 2019, *all* rivers in Bangladesh (Eckstein et al., 2019). With rights of nature initiatives currently in place in at least 39 countries (Putzer et al 2022), campaigns for river personhood are part of a wider global trend – often related to Indigenous struggles - to recognize and grant rights to 'nature' in general (Eckstein et al., 2019; Hall, 2011; O'Donnell, 2017). The overall conception is that just as, over recent centuries, inalienable rights have been extended to an increasingly inclusive range of human kinds, there is no reason, apart from cultural prejudice, that comparable rights should not be extended to nonhumans (Stone [1972] 2010; Boyd, 2017). The hope is that valuing plants, rivers, animals, mountains and so on not because of their use as resources for the servicing of human needs and wants, but because of their inherent sovereign existence, might render them less vulnerable to the depredations of human society – a task that

existing legal frameworks which typically treat the natural world as forms of human property, have very often proved themselves incapable of achieving (Boyd, 2017).

Such moves have been read as a potentially productive way that 'modern' legal structures might speak to and uphold Indigenous worldviews in which rivers and the constituents of 'nature' more generally, are literal living persons (Strang, 2020a).

Werry writes:

> The Bill recognizes in law the genealogy that makes Whanganui *iwi* [Māori kin collectives] and river kin, and affirms a concept of well-being in which the spiritual and physical health of people and river are interdependent. (2019: 2)

Of course, conferring rights on the world is no guarantee that such rights will be upheld. Reading the UN's (1948) Universal Declaration of Human Rights' 30 articles in light of the last 70 years of world history, is not a cheering experience (un.org, 2021). The implementation and enforcement of rivers' legal rights has often produced, overall, fairly ambiguous results. In the Whanganui case, some signs are emerging of the potentially positive value of legally considering the river as kin, 'an indivisible whole … from the mountains to the sea' (Ngā Tāngata Tiaki, 2021). This includes the river, through its human *iwi*, having more say in the redevelopment of the Whanganui Port (Ellis, 2022). On the other hand, conferring rights of nature can also risk sidestepping structural power questions such as human access to and ownership of land (Coombes 2020, 2021). Considering that control over land in one way or the other runs to the basic heart of so many issues of inequality, poverty, and ecosystem destruction across the formerly colonized world (e.g. Francis and Webster 2019; Crow 2021), this is something any

Rights of Nature advocate should keep in mind. Also, legal personhood was conferred on Ganges and Yamuna rivers, India, with seemingly little thought for the practicable means through which this status might actually affect how these polluted rivers are treated (Eckstein et al., 2019; Bowes et al., 2020). All in all, such realities echo more longstanding human rights-based approaches to addressing injustice – effective for building legal grounds against powerful interests, but not for challenging wider political economic structures (e.g. Fassbender and Traisbach, 2019; Meissner, 2021).

Not discounting the gains to be made from a rights-based approach, another, more radical potential of this trend might lie in a wider shift in relationship between human beings and planet that it cultivates and provokes. This is because it constitutes the most serious and widespread attempt since the constitution of colonial modernity to incorporate Indigenous ecological ways of knowing, relating and valuing into national and international environmental governance; and because it does so on a conceptual basis that if taken to its logical conclusion undermines a central tenet upon which our global political economy is constructed – that the world is fundamentally thing, not kin.

Rivers as kin in the United Kingdom

It may perhaps be easier to imagine a shift to something like a 'kincentric river ecology' in contexts with more immediate connections to pre-colonial worlds with active, locally rooted Indigenous movements. We argue, however, that the need for such radical changes is perhaps even more pressing in the industrialized Global North where notions of kinship with rivers might seem abstract, 'exotic':

1) Because of the dire socio-ecological state of many rivers in such places (Deinet et al., 2020).

2) Because it is the rich nations that have a determining say in global water policy.

3) Because it is precisely the naturalization of 'thingified' understandings of water, and the estrangement of water kinship, that we believe needs to be unsettled.

Acting as means of transport, power source, and drainage for *the* global imperial, industrializing power of the 18th to 19th centuries, the rivers of the UK were particularly adversely affected by industrialization (Gomersall, 2000; McTominey, 2020; McTominey, 2017; Allen, 2009; Clapp, 1994; Rosenthal, 2014; Mathias, 2013). While localized deindustrialization and regulation have since improved water quality, especially in previously industrialized rivers, serious problems remain. 97% of the UK's river network is fragmented by human interventions (Jones et al., 2019). This undermines biodiversity, and especially under conditions of climate change, raises the risks of flooding (Adger et al., 2016; Berry, 2017; Alam, 2020). Recent Environment Agency (EA) figures show that just 14% of English rivers are of 'good ecological standard' [or close to their natural state]. For the first time, all English rivers failed to meet pollution limits, in large measure due to industrial, agricultural and domestic wastes pouring into them (Laville, 2020), related to government having slashed two thirds of financial support for pollution measures since 2010 (Laville, 2021a, Bullough 2022). Unfortunately, the situation could easily get worse as the post-Brexit government appears unwilling to guarantee EU-linked water pollution standards (Laville 2023).

Within a national water governance context where water is treated primarily as a commodity (Loftus et al., 2019; Bayliss et al., 2020), all of this makes the UK an apposite illustrative example of a Global North country that might benefit from learning to again recognise and cultivate kinship with its rivers. Fortunately, existing literatures do point to long-standing

counter-currents in the ways people relate to, know and value 'nature' within the UK. This suggests that foundations for a push toward something like this may already exist. While other taxonomies could be drawn up, other literatures included, we tease out four, very much interconnected strands that we see as significant in relation to this proposal. These involve: 1) studies of 'water beings' in the history of water-human relationships; 2) explorations of people's engagements with waters and wellbeing; 3) various aspects of Nature Based Solutions; and 4) rights of nature campaigns.

Water beings

Recent interpretations of prehistoric archaeological materials found in the UK suggest that people inhabited animist worlds - not entirely dissimilar to extant Indigenous ontologies - where human beings recognized an inherent kinship with the world (e.g. Johnston, 2020; Jones, 2020). The large number of British Neolithic rock art sites with sinuous, concentric circle or zig zag forms have been interpreted as rocky reflections of watery ripples and movement. These are often spatially associated with rivers, (Haughey, 2009; Beckensall, 2002), as are stone circles (Strang, 2004), possibly suggesting modes of interacting with and propitiating these worldly riverine agencies (Fowler, 2021). Collections of food vessels and quartz at certain sites have been interpreted as part of the maintenance of mutualistic relations with nonhuman personhoods (Wallis, 2009). We cannot know the degree to which such interpretations reflect the projection of contemporary concerns on to the past. What is clearer is that when Romans began arriving in the sixth decade BC,

> 'Britannia' was still inhabited by Celtic tribes who combined hunting and gathering with low-key agricultural trade and … worshipped water beings and

> conducted propitiatory rituals at thousands of sacred water sites across the British landscape. (Strang, 2015: 12)

As Romans sought to control water on a large scale as a key part of their occupying control over the landscape, so did modes of relating to water necessarily change. In time, sites associated with water beings were appropriated and named after Christian saints, with 'pagan' practices explicitly banned in 391 (Strang, 2015: 12). When Christianity became increasingly hegemonic after the Norman conquest in 1066, the country faced a plague of monstrous water 'worms', old English for snake or dragon, needing to be slain by Christian warriors - the new order demonizing and destroying the natives' water kin along with their worlds. Despite a thousand years of Christianity and later the dominance of mechanistic versions of science, folklorists and others who scoured the countryside in the 19th and early 20th centuries encountered stories of all kinds of personhoods associated with waters, some of which persist in living memory. These include fairies and banshees (McDonough, 2019), 'Jenny Greenteeth' (Simpson and Roud, 2000), sea-spirits (Teit, 1918), water worms (Strang, 2015), and 'knowing' waters (Ditchfield, 1896: 105). Today, echoes of pre-Roman animist water beings persist in place names, including 'Holywells' all over the country – which Strang argues point to the Christian appropriation of sites connected to Celtic water serpents (Strang, 2015); Old Father Thames, (Wood, 2020; Bord and Bord, 1986); the river Dee, named after the goddess Deva, (Knight, 1998); and the Trent Bore linked to an Old Norse deity (Wood, 2020). There are also rituals like well-dressing, traced by some scholars to pre-Roman propitiation of water deities. Well-dressing is a community event where water wells are celebrated and decorated in flowers and other colourful materials (Shirley, 2017).

Such phenomena mix in complex ways with rehabilitations of pagan ritual and nature consciousness that began in the early 19th century, largely in response to the socio-ecological deprivations of the industrial revolution (Hutton, 2019). Accurate estimates of numbers of Pagans, Wiccans and other nature-spiritualities in the UK are hard to come by, but can range from 95,000 up to 200,000, and are normally accepted as growing in number, as reflected in the 2021 census (Strang, 2015; Statistics, 2011; Booth et al 2022). There is a large academic literature on their origins, practices and conceptual worlds (e.g. Greenwood, 2020b; Greenwood, 2020a; Hutton, 2019; Hutton, 2013; Cusack, 2012), as well as any number of popular how-to guides and online resources (e.g. #Pagan, paganfed.org, MacEowen, 2002; Forest, 2020; Eason, 2013; Aldag, 2020; Conway, 2019). Rivers and other waters feature centrally in both of these literatures as places where watery personhoods can be encountered as the embodiment of a universal flow constituting the radical interconnection of all things within animate ecologies. Indeed, as Rountree writes 'Love for and kinship with nature' is the first principle of the Pagan Federation (Rountree, 2012: 305). The long-running magazine *Quest* 'contains material on magic, witchcraft and practical occultism'. In a 2020 issue, Wood[iii] asks, in reference to the UK, 'Can we decolonize and re-indigenize ourselves, and re-establish a respectful, responsible relationship with our river kin?'

Nature-spiritualities overlap with various environmental movements, many of which are animist in outlook (Taylor, 2009; Cianchi, 2015). Water often plays a foundational role as concept and phenomenon in many religions practiced in the UK (Russo and Smith 2013; Serafino 2020). There are, for example, contemporary Christian groups influenced by the 13th century mystic philosophy of Francis of Assisi who preached of the fellowship of all things, of 'Mother Earth' and of 'sister water' (stg-stj.org.uk 2020; franciscancompanionsofthecross.co.uk). Spirituality

449 and riverkinship will likely be associated in many more ways than we have space to articulate
450 here – including, perhaps, in the work of scientists (Sheldrake 2017).

451 Before moving on, we want to note that at a time when populist politics in the UK and many
452 other places are recapitulating the kinds of ancestral, exclusivist place-belonging once promoted
453 by colonial and fascist political orders, we are very much alive to the risks of describing in a
454 positive light these kinds of kinship relations to waters. While there may be those in Pagan or
455 other nature spiritual movements in the UK that hold to landscape kinship as expressing some
456 kind of national (white?) belonging, we would emphasize the notion of kinship described by
457 Ingold, above. Fundamentally antithetical to genealogical models of being that undergird
458 nationalism and racism, these are, to quote ourselves above, 'diffuse, rhizomatic senses of
459 kinship, constituted by the multifaceted, ongoing broad field of relations through which people,
460 places, plants, waters, animals and various kinds of ancestor bring one another into being as
461 social-physical entities.' If we mention water beings, practices, and philosophies with long
462 associations with 'the UK' these are as potential, possibly locally resonant filaments that might
463 be woven by the full diversity of ways people know, relate to and value waters into ongoing,
464 plural, changing tapestries of kinship. Such tapestries must make sense in a 21st century world
465 whose nonhuman agencies in some ways recall pre-modern eras, but whose social-economic-
466 political-ecological conditions are very different.
467
468 **2. Watery practices and wellbeing**
469 As part of a wider research trend in nature-based health (Kellert and Wilson, 1993; Djohari et al.,
470 2018; Louv, 2008; Lackey et al., 2019), disciplines as diverse as anthropology and planning
471 have become increasingly interested in how urban and rural 'bluespace' – or visible surface

waters - intersects with, and might better cultivate, human wellbeing (Foley et al., 2019). Although dealing with generally more secular contexts and framings than nature spiritualities, there is certainly some blurring and overlap here, where kin or kin-like relations emerge in 'even' the most seemingly prosaic of people's interactions with water. Recent studies have looked at ways in which angling (Djohari et al., 2018; Mordue and Wilson 2022), kayaking (Thompson and Wilkie, 2020), swimming (Denton and Aranda 2020; Thompson and Wilkie, 2020; Foley, 2015, 2017; England, 2017), holy wells (Foley, 2011; Foley, 2013), scuba diving (Straughan, 2012), the beach (Ashbullby et al., 2013), and living closer to the coast (Garrett et al., 2019) are positively associated with greater senses of positive self-identity and wellbeing – albeit that such benefits are often unequally shared across the UK's class and race hierarchies (Pitt, 2018). In some of these studies, practitioners actively express feelings of kinship, such as when an angler expresses sadness upon the death of a favourite, aged fish named 'Quasimodo' (Mordue and Wilson 2022, 6). We would contend that where rivers end and fish start is not a simple or settled question. Such everyday, practical ways of relating to waters make of people who they are, and vice versa. It is really almost no step at all from here to the claim, that water bodies are kin in the sense, proposed above, of being '*those constituents of environments that reciprocally nurture, and contribute to the substance of, one another's life and well-being'*.

This kind of work generates an important evidence-based counterpoint to government and private utilities' treatment of the UK's waterways (Bullough 2022). As others have touched on, a concern to (at least be being seen to) care for people's wellbeing can be a good way to garner local governmental support and bring expanded human-nonhuman socialities into political arenas (Mordue and Wilson 2022). Such work also lends support to campaigns for safe water access

such as the high profile Ilkley Clean River Campaign which in 2020 won bathing water status for the Wharfe River in Yorkshire. This was the first UK river to be granted this status, followed in early 2022 by Wolvercote Mill Stream, Oxfordshire (Thames Water, 2022). More may follow in the near future (Vaughan and Yeomans, 2023; Laville, 2021c).

Some studies, particularly in anthropology, cultural geography, and related disciplines draw on forms of non-representational theory to think through the processes that engender the vital affective relations that people feel for the waters that make life worth living (e.g. Dhohari et al , Watson 2019a, 2019b). Watson (2019a, 2019b), for example, shows how the 'vital materiality' of the ponds and lido of Hampstead Heath stir up passionate bonds in those who regularly immerse their bodies in them, playing an active role in the constitution of social and political constellations. When local authorities plan to dam and privatize these waters, swimmers are moved to take action. One of Watson's interlocutors explains that

> You can't recreate it … it will always make me feel better. So for that reason it is personal so when somebody says we want to do something to the lido or there's anything that they might want to change …, then I react because I want to save it (Watson, 2019b: 969)

Working with the Water and Integrated Local Delivery (WILD) project on the river Churn, Phillips and Lyon explore how volunteering to practically care for rivers is key in cultivating what they term 'eco-social healing' (Phillips and Lyons, 2019). Across the UK, such volunteer organizations, often couched in the language of kinship (e.g. 'Friends of the River …', 'Adopt a …') play a core role in river care and advocacy, especially as the state increasingly cuts funds to the EA (Friends of the River Dean, 2022; Friends of the River Frome, 2022; UK Rivers

Network, 2013, Clinch 2021). Thinking with Felix Guattari's ([1989] 2000) concept of the 'three ecologies', Philips and Lyons show how such work, physically exercising with purpose in sensorial environments with others engaged in similar activity, can generate wellbeing on individual, social, and environmental registers (Phillips and Lyons 2019; see their website hydocitizenship.com).

3. Nature based solutions

While definitions of 'NBS' vary across the literature (Barciela-Rial et al., 2020), and can blur with concepts like close-to-river techniques (Woo, 2020), a core idea is that instead of seeking to artificially *control* nature, we should be working *with* its processes as much as possible. Recent years have seen increased interest from governments, conservation organizations and other agencies in 'NBS's as ways of responding to socio-ecological challenges (Bark et al., 2021). This very often relates to fresh-water biodiversity loss, pollution, flooding, and drought (Acreman et al., 2021; Anderson et al., 2021; Giordano et al., 2021; Giordano et al., 2020; Turkelboom et al., 2021; Kiedrzyńska et al., 2021). NBS is a concept developed and promoted by two influential European-based organizations - the International Union for Conservation of Nature (IUCN) and the European Commission (Bridgewater, 2018). In the UK, NBSs are built into the 25 Year Environment Plan (HM Government, 2018), and seem to have, at least in the case of Natural Flood Management, some popular support – if not sufficient allocated funds (Bark et al., 2021). NBS approaches this might mean: 'renaturalizing' rivers as a way to generate multiple social-ecological benefits such as biodiversity and leisure and reconnecting people affectively with riverscapes (Bell et al., 2021), or reconnecting rivers to floodplains and other landscape features as a way of mitigating flood risk in place of hard infrastructures (Wilkinson et

al., 2019). Taking the approach further, Gary Brierley proposes 'a more-than-human approach to living with living rivers … applying a river rights framework that conceptualizes rivers as sentient entities' (Brierley, 2019: viii).

Overall, NBS and related approaches present a rich body of evidence and experience of relevant, practical ways of working with rivers, which in important ways move away from water as a thing to be controlled, to water as a kind of agential ally. This can point to what can work, and where serious challenges may lie, such as deeply engrained private property regimes (Bark et al., 2021) and the inherent unpredictabilities of working with natural processes (Seddon et al., 2020). However, it is common in NBS literature to think in terms of NBS' *benefits to* society (e.g. Di Grazia et al., 2021; Gómez Martín et al., 2020; Lin et al., 2020; Midgley et al., 2021; Rizzo et al., 2020; Symmank et al., 2020). This is also apparent in NBS policy, being defined for example by the European Commission as 'solutions for addressing societal challenges… that … simultaneously provide environmental, social and economic benefits and help build resilience' (Giordano et al., 2020: 2). In such framings, nature and rivers are not a *part of* society but are there for human benefit in an instrumental ES mode – and indeed these two concepts very often go together (e.g. Albert et al., 2019; Di Grazia et al., 2021; Gkiatas et al., 2021; Jakubínský et al., 2021; Kaiser et al., 2021; Symmank et al., 2020; Terêncio et al., 2021; Rizzo et al., 2020; Turkelboom et al., 2021; Wilkinson et al., 2019).

Recent years have seen attempts to nuance what 'Ecosystem Service' might mean. For example, The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, also a strong proponent of NBS, includes relational values as a core component in its Conceptual Framework (IPBES CF) (Díaz et al., 2015a; Díaz et al., 2015b; IPBES, 2019). This reflects a

563 growing interest in relational values in environmental management literature (Admiraal et al.,
564 2017; Arias-Arévalo et al., 2017; Gould et al., 2015; Gould and Lincoln, 2017; Himes and
565 Muraca, 2018; Kaiser et al., 2021).

566 In the IPBES CF, the incorporation of relational values marks a conscious effort to depart from
567 the dominance of instrumental, economic and monetary forms of valuation in ES towards more
568 pluralistic models where, for example, 'living in harmony with … Mother Earth' can in itself be
569 understood as part of what makes a good life (Díaz et al., 2015a: 13). This is part of a
570 commitment within IPBES to recognize and work with Indigenous and other ways of relating
571 and knowing 'in which', for example, 'certain places, water bodies, forests … are imbued with
572 ancestral and divine … significance' (Díaz et al., 2015a: 9). In all but word this means kinship
573 with the nonhuman world, and indeed elsewhere in the literature, such kinship is explicitly
574 referenced as a subset of relational values (Gould et al., 2015: 580).

575 Our position, however, deviates from IPBES in at least three ways. Firstly, where it renders
576 Indigenous knowledge, and the relational values associated with it, as by definition 'context
577 specific perspective[s]' rather than being more widely and generally applicable (IPBES, 2019:
578 3). This, despite the fact that Indigenous ideas underpin many of the key tools now used in the
579 humanities and social sciences for understanding the precarious, interconnected 'non-modern'
580 world we live in (e.g. Latour [1991] 1993, Morton 2016, Haraway 2015b, Ingold 2000, Tsing
581 2016). Our problem here is not that we believe there should be an Indigenous knowledge free-
582 for-all where elites from the Global North can take and do with it what they will. We recognize
583 with Watts (2013) and Todd (2016) the centrality and *specificity* of *place* often associated with
584 such ways of knowing and relating. Rather, we are uneasy with the sense that something such as
585 kinship with the nonhuman world necessarily derives from and somehow belongs in the

586 periphery, the traditional – precisely the ideological and geographical spaces ascribed to
587 indigeneity by the leading edges of colonial-modernity (Weaver, 2000; Fanon, 2007; Latour and
588 Porter, 2010; Shepherd and Robins, 2008; Boonzaier and Sharp, 1988). Secondly, in the IPBES
589 CF, 'ancestral significance' is framed as just one legitimate way among others of valuing the
590 nonhuman world – appropriate in one situation, just as ascribing monetary value to it might be in
591 another (Díaz et al., 2015a: 11). Given the devastating histories associated with the thingification
592 of the world, and the vast flows of capital and established political and legal structures that this
593 form of valuation can tap in to the moment it comes into being, this is not an equivocation we are
594 prepared to make. On the other hand, fundamentally undoing established nature-as-human-
595 property legal structures might go some way to shifting the terms of this debate (cf. Brierley
596 2020, above). Thirdly, if water really is our kin, then we cannot not support any idea that
597 humanity, like some spoilt child, should be served up benefits without recognizing and nurturing
598 water in return in appropriate and caring ways.

599 **4. Rights of nature**

600 Although, as seen above, rights movements have been more visible and successful in places with
601 strong Indigenous movements, this has started to change in Europe (e.g. Kalantzakos
602 2017Pentinat, 2020; Schoukens, 2020 Schimmöller 2020). On July 13th 2022, campaigners
603 secured legal personhood for Spain's Mar Menor lagoon – the first ecosystem in Europe to be
604 granted such status (McLaren-Kennedy 2022). In the UK, where Rights of Nature sentiment is
605 certainly growing, it looks like the combination of citizen protest and a determined local
606 councillor's frustration with water company inaction will soon lead to legal rights being
607 conferred on the River Ouse (Kaminsski 2023; on other similar campaigns see Lampkin and
608 Wyatt, 2020; Kaminsky, 2021; Lawyers for Nature, 2021, Stockwell, 2022). Such success can

only encourage further campaigns. Whether or not new legal frameworks will be enough to undo capitalist entanglements which have regularly unraveled the aims of rights of nature legislation in places like Ecuador, Bolivia, and India, is of course extremely hard to say. Indeed, considering its history of internal colonization by way of land enclosures, especially in the 18th and 19th centuries (Foster et al. 2021, Olwig 2016, Thompson 1991), concerns raised above in regards to other formerly colonized regions have much relevance here. Any rights conferred on nature could, for example, run the risk of sidestepping crucial structural power issues of who controls and has a say over and access to lands and their waters. This is perhaps especially relevant in England where landownership is shrouded in particularly thick legal and financial fog (Shrubsole 2019).

Water governance in the UK is overall defined by privatization and property regimes, where human beings figure as owners of the nonhuman world around them. If we want to introduce into such contexts new ways of water 'governance' (recognizing that this is an inadequate word), where something like riverkinship is taken seriously, we will need to learn from Indigenous, Afro-Colombian and other struggles that have achieved some successes in moving toward a world less defined by this derangement of relationship. We note that, despite obvious historical and cultural differences, we might want to listen especially closely to Aotearoa New Zealand. Here there has accumulated more collective experience of subverting British-derived water law and policy (and comparable attendant social, cultural and ecological degradations) than maybe anywhere else (Hikuroa et al 2021, Salmond et al 2019, Salmond et al 2022). For example: how kin relations might be a more powerful, meaningful and sustainable way of proscribing certain river related behaviours than legalistic injunctions; or how to be alive to the risks of river rights

becoming just another law rather than a linchpin for transformative human-river relationships (Hikuroa et al 2021). On the latter point, "decision-making structures based on strong values with specific mandates" seem to be key (ibid, 80). While there are many lessons to learn, one that seems especially apposite to the foregoing arguments and examples, and which is a constant across historical and cultural differences from Aotearoa to Colombia, is the basic importance of the presence of human populations for whom *waters are kin*. It is through them that waters enter into political terrains in deeply felt and urgent forms.

Concluding thoughts

Making of the world an infinite collection of things 'connected only by their presence in space' has proven to be spectacularly, terrifyingly successful (Green, 2020: 40). As humanity confronts the devastating consequences of that success, we search for ways of valuing, knowing, and relating to the nonhuman world which might not destroy the biosphere upon which we all depend. Much inspiration has come from people and places where memory and practice live on of worlds not defined by the derangement of relationship that thingification represents. In the work of Indigenous scholars, anthropologists and others, these ways of knowing, valuing, and relating are often expressed in the language of kin. Such 'kinship relations' drive passionate campaigns that in some ways have been successful in redefining how nation states relate to their nonhuman constituents. And yet, those complex assemblages of places, people, philosophies, and technologies that have led the charge in thingifying the world, that have benefited most from it, are also those that bear the highest debts to people and planet. This means that at least as much as anywhere else, there is a pressing need for the assemblage called 'the UK' - to reimagine, and to cultivate anew, its relationships to its nonhuman constituents.

We find ourselves in a complex moment where quite different ways of responding to, understanding and treating 'nature' are in tension. On the one hand, insights from Indigenous worlds, and evidence in many disciplines, especially the ecological ones, has pushed us toward the recognition of the interdependence of processes from the geological to the atmospheric, to the (human) social. On the other hand, there are countervailing tendencies, supporting powerful interests, which tend to increasing abstraction and fragmentation, as in the datafication of the world, where data, and the elements of the world it stands in for, is now one of the most important global currencies (Zuboff 2019). Things could go quite different ways – more thingification, more commodification, or less, towards more genuinely sustainable relations - depending on our collective thoughts and actions at this moment. Hence the role for interventions like ours (as modest as it might be) in discursive spaces like this.

We do not pretend to possess any knowledge of what *exactly should* happen for a longer-term, genuinely sustainable alternative to be realized in the UK and elsewhere – this can only be worked out through ongoing campaigns which would no doubt gain more passionate impetus the more people feel and actively engage in riverkinship. However, it does seem that struggles need to aim beyond policy and law and strategize on the terrain of capital itself – that which has been core to the undoing of kinship with waters and the world. If we adopt Moore's/Collis' concept of the 'biotariat,' then we suggest that opposing the logics of capital requires committed forms of human-nonhuman solidarity between those whose 'free gifts' of life force are the basis for capital accumulation. Here, the partial successes of movements for the personhood of rivers, where kinship plays a key role in struggles as embodied vitalization, motivation and meaning,

678 suggest that riverkin can be *active allies* in cultivating such new (old?) political-ecological
679 constellations suited to the challenges of the Anthropocene. As Anna Krzywoszynska points out
680 in relation to farming and soil care in the UK, 'it is only when caring is more than the obligation
681 of particular individuals, and becomes a systemic project, that the radical potential of
682 attentiveness can be fulfilled' (Krzywoszynska 2019, 672). Such constellations could force the
683 creation and *enforcement* of legislation and regulation as a good place to start - although clearly
684 more radical transformations, including but not limited to water governance, are needed if capital
685 isn't to reassert itself at every opportunity. In this regard, we see a pressing need to creatively
686 combine ecological solidarities with the resistive power that labour-based politics in the UK is
687 cultivating once again (Booth, Elgot and Duncan 2022; Middleton et al 2023). After all,
688 thingification involved social, political, economic, and ontological redoings that stretched from
689 minuscule atomic interactions, to water on Earth, to the far reaches of the universe.
690
691 **References**

692 Acreman M, Smith A, Charters L, et al. (2021) Evidence for the effectiveness of nature-based solutions to
693 water issues in Africa. *Environmental Research Letters* 16(6).
694 Adger WN, Quinn T, Lorenzoni I, et al. (2016) Sharing the Pain: Perceptions of Fairness Affect Private
695 and Public Response to Hazards. *Annals of the American Association of Geographers* 106(5):
696 1079-1096.
697 Admiraal JF, Van Den Born RJG, Beringer A, et al. (2017) Motivations for committed nature
698 conservation action in Europe. *Environmental Conservation* 44(2): 148-157.
699 Alam B (2020) *Improving the regulatory framework of floodplain development and management in the*
700 *United Kingdom*. University of Salford.

Albert C, Schröter B, Haase D, et al. (2019) Addressing societal challenges through nature-based solutions: How can landscape planning and governance research contribute? *Landscape and Urban Planning* 182: 12-21.

Aldag AF (2020) *Common Magick: Origins and Practices of British Folk Magick.* Llewellyn Worldwide.

Allen RC (2009) *The British industrial revolution in global perspective.* Cambridge University Press.

Almond R, Grooten M and Peterson T (2020) *Living Planet Report 2020-Bending the curve of biodiversity loss.* World Wildlife Fund.

Anderson CC, Renaud FG, Hanscomb S, et al. (2021) Public Acceptance of Nature-Based Solutions for Natural Hazard Risk Reduction: Survey Findings From Three Study Sites in Europe. *Frontiers in Environmental Science* 9.

Arias-Arévalo P, Martín-López B and Gómez-Baggethun E (2017) Exploring intrinsic, instrumental, and relational values for sustainable management of social-ecological systems. *Ecology and Society* 22(4).

Ashbullby KJ, Pahl S, Webley P, et al. (2013) The beach as a setting for families' health promotion: A qualitative study with parents and children living in coastal regions in Southwest England. *Health & Place* 23: 138-147.

Attala L (2019) *How Water Makes Us Human: Engagements with the Materiality of Water.* University of Wales Press.

Austin M (2021) COP26: Sewage and informal settlements are choking Brazil's Amazonian waterways. *Sky News*, November 2nd 2021.

Ball K, Haggerty K and Lyon D (2012) *Routledge Handbook of Surveillance Studies.* London: Taylor and Francis.

Barciela-Rial M, den Heijer F and Rijke J (2020) A way forward for Building with Nature in river areas. In: Uijttewaal W, Franca MJ, Valero D, et al. (eds). CRC Press/Balkema, 1797-1804.

Bark RH, Martin-Ortega J and Waylen KA (2021) Stakeholders' views on natural flood management: Implications for the nature-based solutions paradigm shift? *Environmental Science and Policy* 115: 91-98.

Barkham P (2021) Pollution is damaging UK rivers more than public thinks, report says. *The Guardian*, September 15th

Barnes J and Alatout S (2012) Water worlds: Introduction to the special issue of Social Studies of Science. *Social Studies of Science* 42(4): 483-488.

Bayliss K, Mattioli G and Steinberger J (2020) Inequality, poverty and the privatization of essential services: A 'systems of provision' study of water, energy and local buses in the UK. *Competition & Change* 25(3-4): 478-500.

Beckensall S (2002) British prehistoric rock-art in the landscape. In: Nash G and Chippindale C (eds) *European Landscapes of Rock-art*. London: Routledge, pp.39-70.

Begg A (2021) Declare South Africa's wastewater treatment a national disaster, urges SAHRC. *The Daily Maverick*, November 18th

Bell S, Fleming LE, Grellier J, et al. (2021) *Urban blue spaces: Planning and design for water, health and well-Being.* Taylor and Francis.

Bentham J (2000) *An Introduction to the Principles of Morals and Legislation.* Batoche Books.

Bergmann M, Tekman MB and Gutow L (2017) Sea change for plastic pollution. *Nature* 544(7650): 297-297.

Berry H (2017) The great Tyne flood of 1771: community responses to an environmental crisis in the early Anthropocene.

Bird-David N (2020) A peer-to-peer connected cosmos: Beyond egalitarian/hierarchical hunter-gatherer societies. *L'Homme* 236(3): 77-106.

Bird-David N (1999) "Animism" Revisited: Personhood, Environment, and Relational Epistemology. *Current Anthropology* 40(S1): S67-S91.

Booth R, Elgot J and Dugan E (2022) Unions issue threat of UK general strike as rail crisis grows. The Guardian, July 27th https://www.theguardian.com/uk-news/2022/jul/27/train-drivers-vote-for-fresh-strikes-as-disruptions-hit-britains-rail-network

Boonzaier E and Sharp J (1988) *South African Keywords: The Uses and Abuses of Political Concepts.* Cape Town: David Philip

Booth, R, C A García and P Duncan (2022) Shamanism, pagans and wiccans: trends from the England and Wales census. *The Guardian*, November 29. https://www.theguardian.com/uk-news/2022/nov/29/ten-things-weve-learned-from-the-england-and-wales-census

Bord J and Bord C (1986) *Sacred Waters: Holy Wells and Water Lore in Britain and Ireland.* HarperCollins

Borges C and Maso TF (2017) The Collapse of the River Doce Dam. *SUR-Int'l J. on Hum Rts.* 25: 71.

Borrows J (2016) Heroes, Tricksters, Monsters, and Caretakers: Indigenous Law and Legal Education. *McGill Law Journal / Revue de droit de McGill* 61(4): 795-846.

Bowes MJ, Read DS, Joshi H, et al. (2020) Nutrient and microbial water quality of the upper Ganga River, India: identification of pollution sources. *Environmental Monitoring and Assessment* 192(8): 533.

Bowler PJ (2000) *The earth encompassed: A history of the environmental sciences.* WW Norton & Company.

Boyd DR (2017) *The rights of nature: A legal revolution that could save the world.* ECW Press.

Bridgewater P (2018) Whose nature? What solutions? Linking Ecohydrology to Nature-based solutions. *Ecohydrology and Hydrobiology* 18(4): 311-316.

Brierley GJ (2019) *Finding the Voice of the River: Beyond Restoration and Management.* Springer Nature.

Brightman M and Lewis J (2017) *The anthropology of sustainability: beyond development and progress.* Springer.

Bullough O (2022) Sewage sleuths: the men who revealed the slow, dirty death of Welsh and English rivers. *The Guardian,* August 4th 2022. https://www.theguardian.com/environment/2022/aug/04/sewage-sleuths-river-pollution-slow-dirty-death-of-welsh-and-english-rivers

Capra, F., and Luisi, P. L. (2014). *The systems view of life: A unifying vision.* Cambridge University Press.

Carmo FFd, Kamino LHY, Junior RT, et al. (2017) Fundão tailings dam failures: the environment tragedy of the largest technological disaster of Brazilian mining in global context. *Perspectives in Ecology and Conservation* 15(3): 145-151.

Césaire A (1972) *Discourse on Colonialism.* New York: Monthly Review Press.

Chen C, MacLeod J and Neimanis A (2013) *Thinking with water.* McGill-Queen's Press-MQUP.

Cianchi J (2015) *Radical environmentalism: Nature, identity and nonhuman agency.* Springer.

Clapp BW (1994) *An environmental history of Britain since the Industrial Revolution.* London: Longman.

Clinch, M (2021) Environmental stewardship in austere times: nurturing sustainable socio-ecological relations, *Critical Public Health*, 31(3): 245-254, DOI:10.1080/09581596.2020.1853057

Cohen JB (2020) Water, justice, and wellbeing in the Kamiesberg, Namaqualand: Reflecting on local histories in the context of the Anthropocene. *Wiley Interdisciplinary Reviews: Water* 7(6): e1484.

Collis S (2016) *Once in Blockadia.* Talon Books.

Comaroff JL and Comaroff J (2001) On Personhood: An Anthropological Perspective from Africa. *Social Identities* 7(2): 267-283.

Comberti C, Thornton TF, Wyllie de Echeverria V, et al. (2015) Ecosystem services or services to ecosystems? Valuing cultivation and reciprocal relationships between humans and ecosystems. *Global Environmental Change* 34: 247-262.

Conneller C (2004) Becoming deer ... *Archaeological dialogues* 11(1): 37.

Conway DJ (2019) *Magickal Mermaids and Water Creatures.* Weiser Books.

800 Coombes, B. (2020). Nature's rights as Indigenous rights? Mis/recognition through personhood for
801 Te Urewera. *Espace populations sociétés. Space populations societies*, (2020/1-2).
802 Coombes B. (2021) Personifying indigenous rights in nature? Treaty settlement and co-
803 management in Te Urewera. In: Andersson R-H, Cothran B, Kekki S, editors. *Bridging*
804 *Cultural Concepts of Nature: Indigenous People and Protected Spaces of Nature*. Helsinki
805 University Press. pp 29–60.
806 Crow, J. (2022). Indigeneity, Land and Property. In *Itinerant Ideas: Race, Indigeneity and Cross-Border*
807 *Intellectual Encounters in Latin America (1900-1950)* (pp. 69-100). Cham: Springer International
808 Publishing.
809 Crutzen, P. J., & Stormer, E. F (2000) The 'Anthropocene'. IGBP Newsletter, 41: 17-18.
810 Cusack CM (2012) Charmed Circle: Stonehenge, Contemporary Paganism, and Alternative Archaeology.
811 *Numen* 59(2-3): 138-155.
812 de Coninck H, Revi A, Babiker M, et al. (2018) Strengthening and Implementing the Global Response. .
813 In: Masson-Delmotte V, P. Zhai, H.-O. Pörtner, et al. (eds) *Global Warming of 1.5°C. An IPCC*
814 *Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related*
815 *global greenhouse gas emission pathways, in the context of strengthening the global response to*
816 *the threat of climate change, sustainable development, and efforts to eradicate poverty*.
817 de Rijke K (2018) Produced water, money water, living water: Anthropological perspectives on water and
818 fracking. *WIREs Water* 5(2): e1272.
819 Deinet S, Scott-Gatty K, Rotton H, et al. (2020) The Living Planet Index (LPI) for migratory freshwater
820 fish: Technical Report.
821 Delbourgo J (2008) *Science and empire in the Atlantic world.* Routledge.
822 Deleuze G and Guattari F 1988 *A Thousand Plateaus: Capitalism and Schizophrenia*. Athlone Press.

Denton H and Aranda K (2020) The wellbeing benefits of sea swimming. Is it time to revisit the sea cure?, *Qualitative Research in Sport, Exercise and Health*, 12 (5): 647-663, DOI: 10.1080/2159676X.2019.1649714

Di Grazia F, Gumiero B, Galgani L, et al. (2021) Ecosystem services evaluation of nature-based solutions with the help of citizen scientists. *Sustainability (Switzerland)* 13(19).

Díaz S, Demissew S, Carabias J, et al. (2015a) The IPBES Conceptual Framework — connecting nature and people. *Current Opinion in Environmental Sustainability* 14: 1-16.

Díaz S, Demissew S, Joly C, et al. (2015b) A Rosetta Stone for Nature's Benefits to People. *PLoS Biology* 13(1).

Ditchfield PH (1896) *Old English Customs, Extant at the Present Time: An Account of Local Observances, Festival Customs, and Ancient Ceremonies Yet Surviving in Great Britain.* London, Methuen.

Djohari N, Brown A and Stolk P (2018) The comfort of the river: understanding the affective geographies of angling waterscapes in young people's coping practices. *Children's Geographies* 16(4): 356-367.

Donald D (2009) Forts, curriculum, and Indigenous Métissage: Imagining decolonization of Aboriginal-Canadian relations in educational contexts. *First Nations Perspectives* 2(1): 1-24.

Eason C (2013) *The Magick of Faeries: Working with the Spirits of Nature.* Llewellyn Worldwide.

Eckstein G, D'Andrea A, Marshall V, et al. (2019) Conferring legal personality on the world's rivers: A brief intellectual assessment. *Water International* 44(6-7): 804-829.

Ellis M (2022) 'Quite an eye-opener': Workers absorb iwi values guiding $50m port upgrade. *manawatū standard*, April 12th.

England S (2017) The Health and Wellbeing Benefits of Swimming: individually, economically, nationally Reportno. Report Number|, Date. Place Published|: Institution|.

Escobar A (1995) Encountering development: the making and unmaking of the third world. *Princeton Studies in Culture/Power/History. Princeton University Press. Princeton. New Jersey*.

Espinoza MI and Aronczyk M (2021) Big data for climate action or climate action for big data? *Big Data & Society* 8(1): 2053951720982032.

Fanon F (2007) *The wretched of the earth.* Grove/Atlantic, Inc.

Fassbender B and Traisbach K (2019) *The Limits of Human Rights.* Oxford University Press.

Fernandes GW, Goulart FF, Ranieri BD, et al. (2016) Deep into the mud: ecological and socio-economic impacts of the dam breach in Mariana, Brazil. *Natureza & Conservação* 14(2): 35-45.

Fischer J, Riechers M, Loos J, et al. (2021) Making the UN Decade on Ecosystem Restoration a Social-Ecological Endeavour. *Trends in Ecology and Evolution* 36(1): 20-28.

Fitzhugh B, Butler VL, Bovy KM, et al. (2019) Human ecodynamics: A perspective for the study of long-term change in socioecological systems. *Journal of Archaeological Science: Reports* 23: 1077-1094.

Folch C (2019) *Hydropolitics: The Itaipú Dam, sovereignty, and the engineering of modern South America.* Princeton University Press.

Foley R (2011) Performing health in place: The holy well as a therapeutic assemblage. *Health & Place* 17(2): 470-479.

Foley R (2013) Small health pilgrimages: Place and practice at the holy well. *Culture and Religion* 14(1): 44-62.

Foley R (2015) Swimming in Ireland ... *Health & Place* 35: 218-225.

Foley R (2017) Swimming as an accretive practice in healthy blue space. *Emotion, Space and Society* 22: 43-51.

Foley R, Kearns R, Kistemann T, et al. (2019) *Blue space, health and wellbeing: Hydrophilia unbounded.* Routledge.

Forest D (2020) *Wild Magic: Celtic Folk Traditions for the Solitary Practitioner.* Llewellyn Worldwide.

Foster, J. B., Clark, B., & Holleman, H. (2021). Marx and the Commons. *Social Research: An International Quarterly, 88*(1), 1–30.

Foucault M (1970) *The Order of Things.* New York: Pantheon.

875 Foucault M (2007) *Security, Territory, Population: Lectures at the College de France 1977-1978.*
876 Basingstoke: Palgrave.
877 Fowler C (2021) Ontology in Neolithic Britain and Ireland: Beyond Animism. *Religions* 12(4).
878 franciscancompanionsofthecross.co.uk (N.D.) The Franciscan Companions of the Cross.
879 https://franciscancompanionsofthecross.co.uk/ (Accessed 6th July 2023)
880 Francis, D and Webster, E (2019) Poverty and inequality in South Africa: critical reflections.
881 *Development Southern Africa*, (36) 6: 788-802
882 Fraundorfer M (2018) The Rediscovery of Indigenous Thought in the Modern Legal System: The Case of
883 the Great Apes. *Global Policy* 9(1): 17-25.
884 Friends of the River Dean (2022).
885 Friends of the River Frome (2022) *About Us.* Available at: https://friendsoftheriverfrome.co.uk/about-us/
886 (accessed June 15th).
887 Garrett JK, Clitherow TJ, White MP, et al. (2019) Coastal proximity and mental health among urban
888 adults in England: The moderating effect of household income. *Health & Place* 59: 102200.
889 Gentry K (2015) *History, heritage, and colonialism: Historical consciousness, britishness, and cultural*
890 *identity in New Zealand, 1870–1940.* Manchester, England: Manchester University Press.
891 Ghosh A (2016) *The great derangement: Climate change and the unthinkable.* University of Chicago
892 Press.
893 Gilmartin D (1994) Scientific Empire and Imperial Science: Colonialism and Irrigation Technology in the
894 Indus Basin. *The Journal of Asian Studies* 53(4): 1127-1149.
895 Giordano R, Manez-Costa M, Pagano A, et al. (2021) Combining social network analysis and agent-based
896 model for enabling nature-based solution implementation: The case of Medina del Campo
897 (Spain). *Science of The Total Environment* 801.
898 Giordano R, Pluchinotta I, Pagano A, et al. (2020) Enhancing nature-based solutions acceptance through
899 stakeholders' engagement in co-benefits identification and trade-offs analysis. *Science of The*
900 *Total Environment* 713.

Gkiatas G, Kasapidis I, Koutalakis P, et al. (2021) Enhancing urban and sub-urban riparian areas through ecosystem services and ecotourism activities. *Water Supply* 21(6): 2974-2988.

Gomersall HM (2000) Departed Glory: the archaeology of the Leeds tanning industry 1780 to 1914. *Industrial Archaeology Review* 22(2): 133-144.

Gómez-Baggethun E, de Groot R, Lomas PL, et al. (2010) The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes. *Ecological Economics* 69(6): 1209-1218.

Gómez Martín E, Giordano R, Pagano A, et al. (2020) Using a system thinking approach to assess the contribution of nature based solutions to sustainable development goals. *Science of The Total Environment* 738.

Gordon R (1992) *The Bushman myth: the making of a Namibian underclass.* Westview Press.

Gottschalk P (2013) *Religion, science, and empire: classifying Hinduism and Islam in British India.* . Oxford: Oxford University Press.

Gould RK, Klain SC, Ardoin NM, et al. (2015) A protocol for eliciting nonmaterial values through a cultural ecosystem services frame. *Conservation Biology* 29(2): 575-586.

Gould RK and Lincoln NK (2017) Expanding the suite of Cultural Ecosystem Services to include ingenuity, perspective, and life teaching. *Ecosystem Services* 25: 117-127.

Gowdy J (2020) Our hunter-gatherer future: Climate change, agriculture and uncivilization. *Futures* 115: 102488.

Graeber D and Wengrow D (2018) How to change the course of human history. *Eurozine. Retrieved from https://www. eurozine. com/change-course-human-history*.

Graeber D and Wengrow D (2021) *The dawn of everything: A new history of humanity.* Penguin UK.

Green L (2020) *Rock| Water| Life.* Duke University Press.

Greenwood S (2020a) *The anthropology of magic.* Routledge.

Greenwood S (2020b) *Magic, witchcraft and the otherworld: An anthropology.* Routledge.

926 Grill G, Lehner B, Thieme M, et al. (2019) Mapping the world's free-flowing rivers. *Nature* 569(7755):
927 215-221.
928 Grove R, and Richard H. Grove (1996) *Green imperialism: colonial expansoion, tropical island Edens*
929 *and the rogins of environmentalism, 1600-1860*. Cambridge University Press.
930 Guattari F (2000) The Three Ecologies, trans. by Ian Pindar & Paul Sutton (New York. *Continuum*.
931 Hall CM and Ram Y (2016) Heritage in the intergovernmental panel on climate change assessment
932 reports: a lexical assessment. *Journal of Heritage Tourism* 11(1): 96-104.
933 Hall M (2011) *Plants as persons: A philosophical botany.* Suny Press.
934 Hamlin C (2000) 'Waters' or 'Water'?—master narratives in water history and their implications for
935 contemporary water policy. *Water Policy* 2(4-5): 313-325.
936 Haraway D (2015a) Anthropocene ... . *Environmental Humanities* 6(1): 159-165.
937 Haraway D (2015b) Anthropocene, capitalocene, plantationocene, chthulucene: Making kin.
938 *Environmental Humanities* 6(1): 159-165.
939 Harrington C (2017) The political ontology of collaborative water governance. *Water International* 42(3):
940 254-270.
941 Hartley D (1964) *Water in England.* London: Macdonald.
942 Harvey D (2017) *Marx, capital, and the madness of economic reason.* Oxford University Press.
943 Haughey FM (2009) *People and water: A study of the relationship between humans and rivers in the*
944 *Mesolithic and Neolithic with particular reference to that within the Thames Basin*. University of
945 London.
946 Hayman, E., James, C., & Wedge, M (2018) Future rivers of the Anthropocene or whose Anthropocene is
947 it? Decolonising the Anthropocene!. *Decolonization: Indigeneity, Education & Society*, *7*(1), 77-
948 92.
949 Helmreich S (2011) Nature/Culture/Seawater. *American Anthropologist* 113(1): 132-144.
950 Higgs E (2001) The Rise of the Information State: the Development of Central State Surveillance of the
951 Citizen in England, 1500–2000. *Journal of Historical Sociology* 14(2): 175-197.

Hikuroa, D., Brierley, G., Tadaki, M., Blue, B., & Salmond, A. (2021). Restoring sociocultural relationships with rivers: Experiments in fluvial pluralism. In Morandi, B., Cottet, M., & Piégay, H. (Eds.). *River restoration: Political, social, and economic perspectives*, 66-88. John Wiley & Sons.

Himes A and Muraca B (2018) Relational values: the key to pluralistic valuation of ecosystem services. *Current Opinion in Environmental Sustainability* 35: 1-7.

HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment. .

Hoag C (2019) "Water is a gift that destroys": Making a national natural resource in Lesotho. *Economic Anthropology* 6(2): 183-194.

Hussain ST and Riede F (2020) Paleoenvironmental humanities: Challenges and prospects of writing deep environmental histories. *WIREs Climate Change* 11(5): e667.

Hutton R (2013) *Pagan Britain.* Yale University Press.

Hutton R (2019) *The triumph of the moon: A history of modern pagan witchcraft.* Oxford University Press.

Iberdrola SA (2021) *Green data: Can statistics help the environment?* Available at: https://www.iberdrola.com/environment/big-data-and-environment (accessed November 23rd 2021).

Illich I (1985) *Water and the waters of forgetfulness.* Dallas: Dallas Institute of Humanities and Culture.

Ingold T (2000) *The perception of the environment: essays on livelihood, dwelling and skill.* routledge.

IPBES (2019) Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Reportno. Report Number|, Date. Place Published|: Institution|.

Jakubínský J, Prokopová M, Raška P, et al. (2021) Managing floodplains using nature-based solutions to support multiple ecosystem functions and services. *Wiley Interdisciplinary Reviews: Water* 8(5).

Jamieson AJ, Brooks LSR, Reid WDK, et al. (2019) Microplastics and synthetic particles ingested by deep-sea amphipods in six of the deepest marine ecosystems on Earth. *Royal Society Open Science* 6(2): 180667.

Johnston R (2020) *Bronze Age worlds: a social prehistory of Britain and Ireland.* Routledge.

Jones AM (2020) An Archaeology of Affect ... . *Journal of Archaeological Method and Theory* 27(3): 545-560.

Jones J, Börger L, Tummers J, et al. (2019) A comprehensive assessment of stream fragmentation in Great Britain. *Science of The Total Environment* 673: 756-762.

Kahui V and Richards AC (2014) Lessons from resource management by indigenous Maori in New Zealand: Governing the ecosystems as a commons. *Ecological Economics* 102: 1-7.

Kaiser NN, Ghermandi A, Feld CK, et al. (2021) Societal benefits of river restoration – Implications from social media analysis. *Ecosystem Services* 50.

Kalantzakos S (2017) River Rights and the Rights of Rivers: The Case of Acheloos. *RCC Perspectives*, 6: 45–52. http://www.jstor.org/stable/26268375

Kaminsky I (2021) Laws of nature: could UK rivers be given the same rights as people? *The Guardian*, July 17th

Kaminsky I (2023) The River Ouse may become first in England to gain legal rights. The Guardian, March 1st https://www.theguardian.com/environment/2023/mar/01/sussex-river-ouse-first-in-england-legal-rights-aoe

Kauffman CM and Martin PL (2017) Can Rights of Nature Make Development More Sustainable? Why Some Ecuadorian lawsuits Succeed and Others Fail. *World Development* 92: 130-142.

Kellert SR and Wilson EO (1993) *The biophilia hypothesis.* Island Press.

Kelly, J. M., V. Scarpino, H. Berry, J. P. Syvitski, and M. Meybeck, eds. (2018) *Rivers of the Anthropocene.* Oakland: University of California Press.

Kessler NH (2019) *Ontology and closeness in human-nature relationships.* Springer.

1001 Kiedrzyńska E, Belka K, Jarosiewicz P, et al. (2021) The enhancement of valley water retentiveness in
1002 climate change conditions. *Science of The Total Environment* 799.
1003 Kirmayer LJ, Dandeneau S, Marshall E, et al. (2011) Rethinking Resilience from Indigenous
1004 Perspectives. *The Canadian Journal of Psychiatry* 56(2): 84-91.
1005 Knight P (1998) *Sacred Dorset: on the path of the dragon.* Capall Bann.
1006 Kohn E (2007) How dogs dream: Amazonian natures and the politics of transspecies engagement.
1007 *American Ethnologist* 34(1): 3-24.
1008 Kohn E (2013) *How Forests Think: Toward an Anthropology Beyond the Human.* University of
1009 California Press.
1010 Kopenawa D and Albert B (2013) *The falling sky.* Harvard University Press.
1011 Kuhn, T.S. (1996). *The structure of scientific revolutions* Third edition. Chicago: University of Chicago
1012 Press.
1013 Krause F (2016) "One Man's Flood Defense Is Another Man's Flood": Relating Through Water Flows in
1014 Gloucestershire, England. *Society & Natural Resources* 29(6): 681-695.
1015 Krause F (2017) Rhythms of wet and dry: Temporalising the land-water nexus. *Geoforum.* DOI:
1016 https://doi.org/10.1016/j.geoforum.2017.12.001.
1017 Krause F (2019) Hydro-perspectivism: Terrestrial life from a watery angle. *Anthropological Notebooks*
1018 25(2).
1019 Lackey NQ, Tysor DA, McNay GD, et al. (2019) Mental health benefits of nature-based recreation: a
1020 systematic review. *Annals of Leisure Research*. DOI: 10.1080/11745398.2019.1655459. 1-15.
1021 Lade SJ, Steffen W, de Vries W, et al. (2020) Human impacts on planetary boundaries amplified by Earth
1022 system interactions. *Nature Sustainability* 3(2): 119-128.
1023 Lampkin JA and Wyatt T (2020) Utilising Principles of Earth Jurisprudence to Prevent Environmental
1024 Harm: Applying a Case Study of Unconventional Hydraulic Fracturing for Shale Gas in the
1025 United Kingdom. *Critical Criminology* 28(3): 501-516.

1026 Latour B (1993a). *We have never been modern*. Trans. C. Porter. Cambridge, MA: Harvard University
1027 Press. 1st French ed., published by La Découverte, Paris.
1028 Latour B (1993b) *The Pasteurization of France*. Harvard University Press.
1029 Latour B and Porter C (2010) *On the modern cult of the factish gods.* Duke University Press.
1030 Laville S (2020) Shocking state of English rivers revealed as all of them fail pollution tests. *The*
1031 *Guardian*, 17.09.2020.
1032 Laville S (2021a) Cutbacks stopping vital work on river pollution and floods in England. *The Guardian*,
1033 22.06.2021.
1034 Laville S (2021b) Environment Agency lauches major investigation into sewage. *The Guardian*,
1035 18.11.2021
1036 Laville S (2021c) Water in UK's first official bathing river to be designated poor-quality. *The Guardian*,
1037 06.04.2021
1038 Laville S (2023) UK urged to protect environmental standards when EU laws scrapped. *The Guardian*,
1039 19.06.23
1040 Laville, S and Horton, H (2023) Water firms discharged raw sewage 300,000 times last year, court hears.
1041 *The Guardian*, July 4th. https://www.theguardian.com/environment/2023/jul/04/thames-water-
1042 fined-33m-for-pumping-sewage-into-rivers (Accessed July 6th 2023)
1043 Lawyers for Nature (2021) *Representing the natural world and all those who seek to defend it*. Available
1044 at: https://www.lawyersfornature.com/.
1045 Lin Y, Wang Z, Jim CY, et al. (2020) Water as an urban heat sink: Blue infrastructure alleviates urban
1046 heat island effect in mega-city agglomeration. *Journal of Cleaner Production* 262.
1047 Linton J (2010) *What is water?: The history of a modern abstraction.* UBC press.
1048 Linton J (2014) Modern water and its discontents: a history of hydrosocial renewal. *WIREs Water* 1(1):
1049 111-120.
1050 Little Bear L (2012) Traditional Knowledge and Humanities: A Perspective by a Blackfoot. *Journal of*
1051 *Chinese Philosophy* 39(4): 518-527.

Liu H (2020) *Smart Cities: Big Data Prediction Methods and Applications.* Springer Nature.

Loftus A, March H and Purcell TF (2019) The political economy of water infrastructure: An introduction to financialization. *WIREs Water* 6(1): e1326.

Louv R (2008) *Last child in the woods: Saving our children from nature-deficit disorder.* Algonquin books.

Luxemburg R and Bukharin N (1972) Imperialism and the Accumulation of Capital. London: Allen Lane. Penguin Press.

MacDowall RM (1994) *Gamekeepers for the Nation: The Story of New Zealand's Acclimatisation Societies, 1861-1990.* Canterbury University Press.

MacEowen FH (2002) *The mist-filled path: Celtic wisdom for exiles, wanderers, and seekers.* New World Library.

Manikuakanishtiku, J Gagnon, C Desbiens, E Kanapé 2021 A River of names: the multiple voices of Innu Riverscape. *River Research and Applications*, 38: 412-421

Martin-Ortega J, Mesa-Jurado MA, Pineda-Vazquez M, et al. (2019) Nature commodification: 'a necessary evil'? An analysis of the views of environmental professionals on ecosystem services-based approaches. *Ecosystem Services* 37: 100926.

Marx K (2007) *Capital: A critique of political economy.* Duke University Press.

Mathews G and Izquierdo C (2008) *Pursuits of happiness: Well-being in anthropological perspective.* Berghahn books.

Mathias P (2013) *The first industrial nation: The economic history of Britain 1700–1914.* Routledge.

Mattison SM, Smith EA, Shenk MK, et al. (2016) The evolution of inequality. *Evolutionary Anthropology: Issues, News, and Reviews* 25(4): 184-199.

Martuwarra RiverOfLife, Unamen Shipu Romaine River, A Poelina, S Wooltorton, L Guimond, G S (2021) Hearing, voicing and healing: Rivers as culturally located and connected. *River Research and Applications*, 38: 422-434.

McLaren-Kennedy P (2022) European first as Mar Menor ecosystem recognised as legal entity with rights. *Euro Weekly News*, July 13th https://euroweeklynews.com/2022/07/13/european-first-as-mar-menor-ecosystem-recognised-as-legal-entity-with-rights/

McDonough C (2019) Folk belief and landscape in Connacht: accounts from the Ordnance Survey letters. *Folk Life* 57(1): 56-69.

McEwen L, Gorell Barnes L, Phillips K, et al. (2020) Reweaving urban water-community relations: Creative, participatory river "daylighting" and local hydrocitizenship. *Transactions of the Institute of British Geographers* 45(4): 779-801.

McGregor JA (2018) Reconciling Universal Frameworks and Local Realities in Understanding and Measuring Wellbeing. In: Bache I and Scott K (eds) *The Politics of Wellbeing : Theory, Policy and Practice*. Cham: Springer International Publishing, pp.197-224.

McIntosh A (2004) *Soil and soul: People versus corporate power.* Aurum Press Limited.

McTominey A (2017) Bad Neighbours? Water Supply and the Civic Rivalry of Leeds and Bradford, c.1850–1887. *International Journal of Regional and Local History* 12(1): 24-41.

McTominey A (2020) A Tale of Two Yorkshire Villages: The Local Environmental Impact of British Reservoir Development, c.1866-1966. *Environment and History* 26(3): 331-358.

Meissner R (2021) State capture's impact on South African water sector reform. In: Water alternatives. Available at: https://www.water-alternatives.org/index.php/blog/sa.

Midgley SJE, Esler KJ, Holden PB, et al. (2021) Typologies of collaborative governance for scaling nature-based solutions in two strategic South African river systems. *Ambio* 50(8): 1587-1609.

Middleton, J, M Banfied-Nwachi, A Leach, G Blight and C Hughes (2023) UK strike calendar – service stoppages planned for March and April. *The Guardian*, March 6th 2023. https://www.theguardian.com/uk-news/2023/feb/02/uk-strike-days-calendar-public-service-when-planned-february-march

Milojevic-Dupont N and Creutzig F (2021) Machine learning for geographically differentiated climate change mitigation in urban areas. *Sustainable Cities and Society* 64: 102526.

Monbiot G (2022) Factory farming is turning this beautiful British river into an open sewer. *The Guardian*, June 10th

Moore JW (2015) *Capitalism in the Web of Life: Ecology and the Accumulation of Capital.* Verso Books.

Moore JW (2017) The Capitalocene, Part I: on the nature and origins of our ecological crisis. *The Journal of Peasant Studies* 44(3): 594-630.

Mordue, T and S Wilson (2022) Nonhuman encounters with fish in the City: from careful angling practice to deadly indifference. *Leisure Studies* DOI: 10.1080/02614367.2022.2134440

Morton T (2016) *Dark Ecology: For a Logic of Future Coexistence*. Columbia University Press

Murphy TR, Hanley ME, Ellis JS, et al. (2021) Native woodland establishment improves soil hydrological functioning in UK upland pastoral catchments. *Land Degradation and Development* 32(2): 1034-1045.

Napper IE, Davies BFR, Clifford H, et al. (2020) Reaching New Heights in Plastic Pollution—Preliminary Findings of Microplastics on Mount Everest. *One Earth* 3(5): 621-630.

Nash RF (1989) *The rights of nature: a history of environmental ethics.* Univ of Wisconsin press.

Neimanis A (2018) Posthuman phenomenologies for planetary bodies of water. *A feminist companion to the posthumanities*. Springer, pp.55-66.

Ngā Tāngata Tiaki (2021) *Tupua te Kawa*. Available at: https://www.ngatangatatiaki.co.nz/our-story/tupua-te-kawa/ (accessed June 15th 2022).

Nixon S (2021) A Quebec river now has legal personhood – what that means for granting nature rights. In: ecojustice. Available at: https://ecojustice.ca/quebec-river-legal-personhood-rights-of-nature/.

Norbury M, Phillips H, Macdonald N, et al. (2021) Quantifying the hydrological implications of pre- and post-installation willowed engineered log jams in the Pennine Uplands, NW England. *Journal of Hydrology* 603.

Olwig, K. R. (2016) Virtual enclosure, ecosystem services, landscape's character and the 'rewilding'of the commons: the 'Lake District'case. *Landscape Research*, *41*(2), 253-264.

O'Donnell EL (2017) At the Intersection of the Sacred and the Legal: Rights for Nature in Uttarakhand, India. *Journal of Environmental Law* 30(1): 135-144.

O'Neill DW, Fanning AL, Lamb WF, et al. (2018) A good life for all within planetary boundaries. *Nature Sustainability* 1(2): 88-95.

Ofori AD and Mdee A (2020) Integrated Water Resource Management. *Clean Water and Sanitation*. 1-13.

Olaberria E and Reinhart C (2022) The Reversal Problem: Development Going Backwards. In: World Bank Blogs. Available at: https://blogs.worldbank.org/developmenttalk/reversal-problem-development-going-backwards (accessed 2022).

Oxfam International (2022) *"Terrifying prospect" of over a quarter of a billion more people crashing into extreme levels of poverty and suffering this year*. Available at: https://www.oxfam.org/en/press-releases/terrifying-prospect-over-quarter-billion-more-people-crashing-extreme-levels-poverty (accessed June 14th 2022).

Panelli, R. (2010). Nonhuman social geographies: Posthuman and other possibilities. *Progress in human geography*, *34*(1), 79-87.

Penn N (2005) *The forgotten frontier: colonist and Khoisan on the Cape's northern frontier in the 18th century*. Juta and Company Ltd.

Pentinat SB (2020) The rights of nature in europe: Towards new transformative approaches of the environmental protection. *Revista de Derecho Comunitario Europeo* 2020(65): 79-120.

Phillips K and Lyons A (2019) To the waters and the wild: Reflections on eco-social healing in the WILD project. *Blue Space, Health and Wellbeing*. Routledge, pp.65-76.

Pinker S (2018) *Enlightenment now: The case for reason, science, humanism, and progress.* Penguin UK.

Pitt H (2018) Muddying the waters. *Geoforum* 92: 161-170.

Pouso S, Borja Á, Fleming LE, et al. (2021) Contact with blue-green spaces during the COVID-19 pandemic lockdown beneficial for mental health. *Science of The Total Environment* 756: 143984.

Prillaman, M (2022) Are we in the Anthropocene? Geologists could define new epoch for Earth. *Nature*¸December 13. https://www.nature.com/articles/d41586-022-04428-3

Pryor F (2014) *Home: A Time Traveller's Tales from Britain's Prehistory.* Penguin UK.

Putzer A, Lambooy T, Jeurissen R, and Eunsu K (2022) Putting the rights of nature on the map. A quantitative analysis of rights of nature initiatives across the world. *Journal of Maps,* DOI: 10.1080/17445647.2022.2079432

Ragusa A, Svelato A, Santacroce C, et al. (2021) Plasticenta: First evidence of microplastics in human placenta. *Environment International* 146: 106274.

Reid J, Taylor-Moore K and Varona G (2014) Towards a Social-Structural Model for Understanding Current Disparities in Maori Health and Well-Being. *Journal of Loss and Trauma* 19(6): 514-536.

Reidy MS and Rozwadowski HM (2014) The Spaces In Between: Science, Ocean, Empire. *Isis* 105(2): 338-351.

Rizzo A, Tondera K, Pálfy TG, et al. (2020) Constructed wetlands for combined sewer overflow treatment: A state-of-the-art review. *Science of The Total Environment* 727.

Roberts L and Phillips K (2018) *Water, Creativity and Meaning: Multidisciplinary understandings of human-water relationships.* Routledge.

Rockström J, Steffen W, Noone K, et al. (2009) A safe operating space for humanity. *Nature* 461(7263): 472-475.

Rosenthal L (2014) *The river pollution dilemma in Victorian England: Nuisance law versus economic efficiency.* Ashgate Publishing, Ltd.

Rosling H (2019) *Factfulness.* Flammarion.

Rountree K (2012) Neo-Paganism, Animism, and Kinship with Nature. *Journal of Contemporary Religion* 27(2): 305-320.

1177 Russo K.A and Smith ZA (2013) Non-conventional community values of water. In: *What water is worth:*
1178 *Overlooked non-economic value in water resource*s. Palgrave New York.
1179 https://doi.org/10.1057/9781137062499_4
1180 Salmón E (2000a) Kincentric ecology: Indigenous perceptions of the human-nature relationship.
1181 *Ecological Applications* 10(5): 1327-1332.
1182 Salmón E (2000b) KINCENTRIC ECOLOGY: INDIGENOUS PERCEPTIONS OF THE HUMAN–
1183 NATURE RELATIONSHIP. *Ecological Applications* 10(5): 1327-1332.
1184 Salmón E (2015) Teaching kincentric ecology in an urban environment. *The Journal of Sustainability*
1185 *Education*.
1186 Salmond, A., Brierley, G., & Hikuroa, D. (2019). Let the rivers speak: thinking about waterways in
1187 Aotearoa New Zealand. *Policy Quarterly*, 15(3).
1188 Salmond, A., Brierley, G., Hikuroa, D., & Lythberg, B. (2022). Tai Timu, Tai Pari, the ebb and flow of
1189 the tides: working with the Waimatā from the Mountains to the Sea. *New Zealand Journal of*
1190 *Marine and Freshwater Research*, 56(3), 430-446.
1191 Schimmöller L (2020) Paving the Way for Rights of Nature in Germany: Lessons Learnt from Legal
1192 Reform in New Zealand and Ecuador. *Transnational Environmental Law* 9(3): 569-592.
1193 Schoukens H (2020) Rights of Nature in the European Union: Contemplating the Operationalization of an
1194 Eco-Centric Concept in an Anthropocentric Environment? In: Pereira JC and Saramago A (eds)
1195 *Non-Human Nature in World Politics: Theory and Practice*. Cham: Springer International
1196 Publishing, pp.205-234.
1197 Scott-Bottoms S (2019) The Rise and Fall of Modern Water: From Staging Abstraction to Performing
1198 Place. *Theatre Journal* 71(4): 415-435.
1199 Scott JC (1998) *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have*
1200 *Failed.* New Haven and London: Yale University Press.
1201 Screpanti E and Zamagni S (2005) *An outline of the history of economic thought.* OUP Oxford.

Searle, A., & Turnbull, J. (2020). Resurgent natures? Nonhuman perspectives on COVID-19. *Dialogues in Human Geography*, *10*(2), 291-295.

Seddon N, Chausson A, Berry P, et al. (2020) Understanding the value and limits of nature-based solutions to climate change and other global challenges. *Philosophical Transactions of the Royal Society B: Biological Sciences* 375(1794).

Serafino P (2020) Exploring religion in England and Wales: February 2020. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/religion/articles/exploringreligioninenglandandwales/february2020 (accessed August 5th 2022)

Shahzad MW, Burhan M, Ang L, et al. (2017) Energy-water-environment nexus underpinning future desalination sustainability. *Desalination* 413: 52-64.

Sheldrake R (2017) *Science and Spiritual Practices: Reconnecting through direct experience*. UK Hachette

Shepherd N and Robins SL (2008) *New South African Keywords.* Ohio University Press.

Shirley R (2017) Festive landscapes: the contemporary practice of well-dressing in Tissington. *Landscape Research* 42(6): 650-662.

Shrubsole, G (2019) *Who owns England? How we lost our land and how to take it back.* London: William Collins.

Simpson J and Roud S (2000) *A dictionary of English folklore.* Oxford University Press.

Statistics OfN (2011) QS210EW - Religion (detailed).

stg-stj.org.uk (2020) The Canticle of the Sun. St Francis. https://stg-stj.org.uk/2020/10/02/the-canticle-of-the-sun-st-francis/ (Accessed July 6th 2023)

Stengers I and Pignarre P (2011) *Capitalist sorcery: breaking the spell.* Palgrave.

Stieger S, Lewetz D and Swami V (2021) Emotional Well-Being Under Conditions of Lockdown: An Experience Sampling Study in Austria During the COVID-19 Pandemic. *Journal of Happiness Studies* 22(6): 2703-2720.

Stockwell B (2022) The rights of rivers. *The Ecologist* August 9. https://theecologist.org/2022/aug/09/rights-rivers

Stone CD (2010) *Should trees have standing? Law, morality and the environment.* New York: Oxford University Press

Strang V (2004) The meaning of water. Berg. *New York*.

Strang V (2014a) Fluid consistencies. Material relationality in human engagements with water. *Archaeological dialogues*. 21(02): 133-150.

Strang V (2014b) Lording It over the Goddess: Water, Gender, and Human-Environmental Relations. *Journal of Feminist Studies in Religion* 30(1): 85-109.

Strang V (2015) Reflecting nature: water beings in history and imagination. Berghahn Books.

Strang V (2020a) Envisioning ... *Journal of Water Supply: Research and Technology-Aqua*.

Strang V (2020b) Envisioning a sustainable future for water. *Journal of Water Supply: Research and Technology-Aqua* 70(4): 404-419.

Straughan ER (2012) Touched by water: The body in scuba diving. *Emotion, Space and Society* 5(1): 19-26.

Symmank L, Natho S, Scholz M, et al. (2020) The impact of bioengineering techniques for riverbank protection on ecosystem services of riparian zones. *Ecological Engineering* 158.

Taylor B (2009) *Dark Green Religion: Nature Spirituality and the Planetary Future* University of California Press.

Teit JA (1918) Water-Beings in Shetlandic Folk-Lore, as Remembered by Shetlanders in British Columbia. *The Journal of American Folklore* 31(120): 180-201.

Terêncio DPS, Varandas SGP, Fonseca AR, et al. (2021) Integrating ecosystem services into sustainable landscape management: A collaborative approach. *Science of The Total Environment* 794.

Thames Water (2022) Oxford granted bathing water status at Wolvercote Mill Stream. https://www.thameswater.co.uk/about-us/newsroom/latest-news/2022/apr/oxford-granted-bathing-water-status

Theodore L and Dupont RR (2020) *Water Resource Management Issues: Basic Principles and Applications.* Boca Raton: CRC Press.

Thompson, E. P. (1991) *The Making of the English Working Class [1963]*. Penguin Books, Nueva York.

Thompson N and Wilkie S (2020) 'I'm just lost in the world': the impact of blue exercise on participant well-being. *Qualitative Research in Sport, Exercise and Health*. DOI: 10.1080/2159676X.2020.1761433. 1-15.

Todd Z (2016) An Indigenous Feminist's Take On The Ontological Turn: 'Ontology' Is Just Another Word For Colonialism. *Journal of Historical Sociology* 29(1): 4-22.

Toussaint S, Sullivan P and Yu S (2005) Water Ways in Aboriginal Australia: An Interconnected Analysis. *Anthropological Forum* 15(1): 61-74.

Tsing, A. (2013). Nonhuman sociality: a call for critical description. In *Anthropology and nature* (pp. 27-42). Routledge.

Tsing A (2015) *The Mushroom at the End of the World. On the Possibility of Life in Capitalist Ruins.* Princeton: Princeton University Press

Turkelboom F, Demeyer R, Vranken L, et al. (2021) How does a nature-based solution for flood control compare to a technical solution? Case study evidence from Belgium. *Ambio* 50(8): 1431-1445.

UK Rivers Network (2013) *UK and Ireland: local community river groups*. Available at: https://www.ukrivers.net/network.html (accessed June 15th).

un.org (2021) *Universal Declaration of Human Rights*. Available at: https://www.un.org/en/about-us/universal-declaration-of-human-rights (accessed 04.07.2021).

United Nations (2018) Sustainable Development Goal 6. Synthesis Report on Water and Sanitation. Reportno. Report Number|, Date. Place Published|: Institution|.

Vaughan, A and Yeomans, E (2023) Swimming spot in Thérèse Coffey's back yard fails to win bathing water status. *The Times*, March 10 2023. https://www.thetimes.co.uk/article/river-in-therese-coffey-s-back-yard-fails-bid-to-win-bathing-water-status-clean-it-up-

9blmgjrtz#:~:text=There%20are%20just%20two%20stretches,Wolvercote%20Mill%20Stream%20in%20Oxfordshire.

Villavicencio Calzadilla P and Kotzé LJ (2018) Living in Harmony with Nature? A Critical Appraisal of the Rights of Mother Earth in Bolivia. *Transnational Environmental Law* 7(3): 397-424.

Viveiros De Castro E (1998) Cosmological deixis and Amerindian perspectivism. *Journal of the Royal anthropological Institute*. 469-488.

Wallis RJ (2009) Re-enchanting Rock Art Landscapes ... . *Time and Mind* 2(1): 47-69.

Watson S (2019a) *City water matters: Cultures, practices and entanglements of urban water.* Springer.

Watson S (2019b) Liquid passions: bodies, publics and city waters. *Social & Cultural Geography* 20(7): 960-980.

Watts V (2013) Indigenous place-thought and agency amongst humans and non humans (First Woman and Sky Woman go on a European world tour!). *Decolonization: Indigeneity, Education & Society* 2(1).

Watts V (2020) Growling ontologies Indigeneity, becoming-souls and settler colonial inaccessibility. In: Montford KS and Taylor C (eds) *Colonialism and Animality*. Abingdon: Routledge, pp.115-129.

Weaver J (2000) Indigenousness and indigeneity. *A companion to postcolonial studies*. 221-235.

Werry M (2019) What's Left of Rights? Arendt and political ontology in the anthropocene. *Performance Philosophy* 5(1): 8-24.

Westfall S (2021) River in India sacred to Hindus blanketed in toxic white foam. *The Washington Post*, November 11th.

Weston, P (2022) Environment Agency tells staff to ignore pollution complaints, says ex-employee. *The Guardian*, August 29. https://www.theguardian.com/environment/2022/aug/29/environment-agency-tells-staff-to-ignore-river-pollution-complaints-age-of-extinction

Wickersham A, Carr E, Hunt R, et al. (2021) Changes in Physical Activity among United Kingdom University Students Following the Implementation of Coronavirus Lockdown Measures. *International Journal of Environmental Research and Public Health* 18(6).

Wilkinson ME, Addy S, Quinn PF, et al. (2019) Natural flood management: small-scale progress and larger-scale challenges. *Scottish Geographical Journal* 135(1-2): 23-32.

Woo H (2020) Nature-based solutions and similar concepts on water management. 1 ed.: IOP Publishing Ltd.

Wood C (2020) A River Runs Through Me. *Quest* 201: 11-17.

Wooltorton S (2021) River relationships: For the love of rivers. *River Research and Applications*, 38: 393-402.

World Bank Group (2022) Four decades of poverty reduction in China: Drivers, insights for the world, and the way ahead. Reportno. Report Number|, Date. Place Published|: Institution|.

Yates JS, Harris LM and Wilson NJ (2017) Multiple ontologies of water: Politics, conflict and implications for governance. *Environment and Planning D: Society and Space* 35(5): 797-815.

Zuboff S (2019) *The Age of Surveillance Capitalism.* London: Profile Books.

[i] As far as we are aware this is a neologism, although see Wood (2020), discussed below.

[ii] We are in agreement with much of the literature on the nonhuman where it argues that what we might typically delineate as 'human' is always *more* in the sense that 'I' at any moment includes bacteria, air, food, DNA which is 'not me', as well as ongoing mutually constituting relations with animals, plants, waters (e.g. Tsing 2013, Panelli 2010, Searle et al 2020). Such a sense of deep, inextricable hybridity should be taken as read in this article. At the same time, we do think that there is something particular about humanity and that is it sometimes necessary to be able to point to such ways of being and doing in contradistinction to other aspects of the world which are not not human but which are also not human entirely.

[iii] An article we found when searching for the term 'Riverkin'.