

A hydro-socio-legal conception of rights *for* water: addressing jurisprudential tensions to foster responsive legal regimes.

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Contents

Abstract	4
Introduction	5
The problem of water	5
Chapter 1. Methods and approaches	9
A critical approach to environmental law	9
Hydro-socio-legal critique	12
Chapter 2. The evolution of Rights for Nature	16
The function of rights	18
Chapter 3. Environmental Constitutionalism in action	24
The Vilcabamba River case	24
Conceptual evaluation: Environmental Constitutionalism	29
Regulatory failure	33
Chapter 4. Representing hydrological persons	37
4.1 Whanganui River, New Zealand	37
Conceptual evaluation: Legal Personhood	40
4.2 Lake Erie, United States	44
Conceptual Evaluation: Legal Personhood	55
Chapter 5. The institutional and the conceptual	59
Environmental water: A conceptual via media	62
Chapter 6. Responsive water law	69
Hydro-socio-legal regimes for “living” water entities	71
Representation through informational enhancement	74
Conclusion	82
References	87

Abstract

In the space of ten years, a number of novel and unique legal developments have arisen in different jurisdictions around the world with one element in common: a declaration of the Rights of Nature, and a direct attribution of this jurisprudence to watercourses in their respective contexts. This thesis uses a hydro-socio-legal approach to analysing three of these developments as case-studies, identifying why they have occurred, the tensions involved, and the institutional and governance issues that they seek to address or are responding to. This work frames the analysis around an evaluation of environmental constitutionalism, and legal personhood, which informed their selection. This evaluation is prefaced by a prior discussion of key ideas in the theoretical discourse pertaining to the appropriate form of a right for non-human entities, and whether natural objects can have identifiable, and representable, interests. This work concludes that sufficient sophisticated recognition and processing of information about socio-hydrologies in respective contexts can innovate water law to enable responsive governance regimes, and the achievement of this depends on whether jurisdictions are prepared to open themselves to new approaches, legitimate stakeholder relationships with watercourses, and technological solutions that can enrich empirical understandings of fair resource allocation and utilisation for both nature and society.

Introduction

The problem of water

Water as a subject of legal principles and regimes faces numerous modern governance challenges as an environmental resource and a feature of ecosystems. Pollution and over-extraction are prominent issues in the legal and regulatory space for health of hydro-ecosystem, and is the cause of a number of secondary issues, including damage to cultural practices, and bio-ecological health. Previous work in the field of social policy has explored how welfare considerations in policy can lead to a deeper appreciation for water need and water risk in society (Wescombe, 2019). This was particularly human-focused and did not consider more fundamental questions about the nature of water law as it pertains to the value and welfare of hydrological entities. This value assignment issue has in fact been identified as a core issue in water welfare from early on in the 21st Century.

The water crisis that humankind is facing today...has resulted chiefly not from the natural limitations of the water supply or the lack of financing and appropriate technologies (though these are serious constraints), but rather from profound failures in water governance, i.e., the ways in which individuals and societies have assigned value to, made decisions about, and managed the water resources available to them (UNDP, 2004, p.2).

The way law operates in the governance nexus is interrelated to policy developments, but real-world contestations of jurisprudence also cause new developments of the law, as well as new frontiers in environmental law. This thesis seeks to evaluate the theoretical issues surrounding legal concepts arising from these perceived developments and frontiers in socio-hydrological contexts, that can be identified from real-world examples. This will aim to find the sources of these concepts where they arise and as such build understanding as to how

rights for nature can be used to address water governance issues. To achieve this, a hydro-socio-legal approach will be utilised to explore water law in context. A hydro-socio-legal approach does not consider interactions between place, law, and society in abstract, but suggests that we should understand these interactions with reference to how those who engage in certain water practices perceive them. As such, an engagement with key conceptual formulations of water must be informed by key social contexts. This is undergirded by the assumption that water laws, like all other laws, have to be understood as embedded in and thereby shaped by the society from which they arise, and upon which they are imposed. Inherent to this critical approach is the question of what water law *is*, and what it should do/ how it should operate given the rise of Rights for Nature. The way water enters the legal domain in the included examples will identify and demonstrate the issue of rights representation in environmental law that need resolving at the level of jurisprudence and practice. Exploring law in this way subsequently raises an important critical question; do new rights conceptions in water law challenge the course of the discipline's development to require new responsiveness in water governance contexts?

The overarching inquiry this thesis seeks to make is how contextual dynamics of water law have been challenged by rights for nature discourses, and how they have responded to it. This thesis seeks to contribute relevant discussion of water value-formulations in law, which is responsible for the current status of water. (Ioris, 2012) This will be achieved by looking at three key case-studies that have recently arisen in very different contexts. Then, there will be an evaluation of tensions that arise due to theoretical differences between conceptions of water, as new values attempt to enter the legal domain. To address these tensions, further exploration of innovative and integrated solutions will be undertaken to address the intersection between law/regulation and empirical hydrology in the modern socio-

legal context. Much work has recently been done highlighting the theoretical challenges and legal difficulties with personhood as applied in context (Kurki, 2019; O'Donnell, 2018).

These perspectives will be noted in the theoretical discussion. However, there have been no proposals for integration of the conceptions of rights for water with information technology and data-driven water governance frontiers, such that new approaches to representing nature's rights can be functionally enabled and legitimised. Subsequently, the theoretical challenges and implications of increased legal responsiveness will be evaluated, which will include discussion of potential hydro-socio-legal informatics integration to undergird new status attributions for water systems and entities as they are found in context. This may pave the way for further research, both quantitative and qualitative, on opportunities for the social governance of water.

The research herein will be structured as follows: first, a preliminary identification and framing of methodology to justify the approach taken. This will introduce a number of key critical perspectives on emergent eco-socio-legal phenomena such as these cases. Secondly, the background of rights for nature will be discussed to provide a theoretical context for the following examination and evaluation of the case-studies. In the following third chapter, The Vilcabamba River case will be conceptually evaluated based on important hydro-socio-legal features of environmental constitutionalism in action (as the first rights of nature legal concept) and the Whanganui River and Lake Erie will be likewise evaluated, but with specific focus on legal personhood (as the second rights of nature concept). The institutional tensions will then be discussed, drawing in all identified issues of relevance from the case-studies together for evaluation. This will creatively and analytically draw together key insights from the institutional contexts from the case-studies. Based on this, the next chapter will seek to apply new governance strategies to these contexts that can facilitate the

application of hydro-centric jurisprudence. In particular, the combination of informatics integration with polycentric water governance has the potential to solve many background issues. A conclusion shall ultimately be made, reflecting on the significant links that have been made, and the problems that have been identified, in this thesis; with the aim of offering some suggestions about how environmental law matters concerning water will have to adapt to stay relevant in light of jurisprudential pressures tied to social-hydrological realities.

Chapter 1. Methods and approaches

To examine the research question of how contextual dynamics of water law have been challenged by 'rights for nature' discourses and how they have responded to it, it is important to consider how issues should be approached. This preliminary evaluation informs and constructs the critical methodology taken by this thesis such that an eco-socio-legal approach has been identified as necessary for building a deeper, more applied understanding of rights for water and why the discourse is important for governance.

A critical approach to environmental law

The approach of this thesis can certainly be categorised as “critical”, and this is deemed appropriate not only in light of the research material, but also in response to existing debates in how environmental law is approached. This thesis seeks to avoid academic discursive pitfalls in the field: Fisher et al (2009) identify a number of key issues to be aware of in presenting one’s critical lens to environmental law. Scholarship that is purely descriptive in nature and aimed at practitioners is declared poor quality, in part because it does not seek to engage with critical approaches required by the nature of issues inherent in the subject. This refers to matters of the nature and function of environmental systems and how well law applies to them. If the matter of how environmental law operates in political, social, and economic contexts is neglected, in favour of evaluating why certain legal mechanisms are better, or its status in precedent, then little is achieved that is specifically environmental law critique. At the same time, there is the rather opposite issue of ‘polemic’ discussion in scholarship, justified by the desire to respond to environmental crisis and/or present a politically-charged critical lens (pp. 224). A common feature of this scholarship is a complete

failure of the scholar to engage with legal or socio-legal issues a decision-maker is forced to reckon with. In analysing the law as a product of its place, time, ideology, and economy, and thus viewing it in light of its jurisprudential reality, is essential for meaningful critique. Its essence is caught up in the formulation of social practices and standards that inform legal principles, and thus looking toward dynamic social and cultural life and practices is a necessity for useful conclusions in environmental scholarship.

In being aware of these issues, Flournoy (2003) suggests that it is time we ask ourselves some frequently neglected questions that can first open this critical lens. Does environmental law have its legal meaning in the ethical extension of tort, property and criminal law, designed to protect person and property from certain insults that need to specifically be categorised as environmentally grounded? Or does environmental law do something more literal, in that the laws embody a special valuing of the environment, a different ethical stance toward the environment absent in other kinds of laws? Based on how recent cases have played out that concern for “rights for nature”, there seems to be a disjunct in legal discourse between the principles of value derived from a more ecocentric approach to resource systems, and the market-integrated regulatory approach. There is a highly critical view at work in these cases that challenge the very function of environmental law itself: what it should do and for what, and what it means in social context.

Law traditionally concerns the relationship between human and non-human entities insofar as the non-human is deemed instrumental to the existential reality of the human. They are referred to as objects to be owned and utilised for human ontology; law does not concern itself with the protection of the non-human outside of this human paradigm. Kotzé and Calzedilla (2017, p.9) opine that ‘because non-human entities as a general rule are not granted independent and intrinsic worth, they are wide-open to exploitation and destruction.’

This is reasoned from the fact that economic value undergirds property claims, and thus exploitation is sanctioned, legitimised and actively promoted by the function of the law and its theory of rights.

The intimately predatory attitude of law concerning nature – an attitude of which even subjective rights bear a reflection, since they have their own paradigm in property – is certainly not a reassuring premise for the defence of the environment: the epistemological assumptions of law seem too compromised with anthropocentrism (Tallacchini, 1997, p.127).

This more radical jurisprudential perspective, as will be seen, is useful for critiquing the legal status quo as a water problem paradigm. Where current legal approaches can be found to be insufficient for the governance of water resources, new concepts and legal activism arise that seek to express values and narratives that are conducive to a new approaches; a cry for something new (Rideout, 2008). Evaluating the legal tools and mechanisms by which water is granted to the environment, as the fundamental resource for life, may be highly useful as an indicator of how nature is valued.

Indeed, the work to uncover the ethics embedded in water law relies not just on attention to the content of values and plausible justifications for them but also on a careful study of how our laws operate in practice (Flournoy, 2003). As such, the nature of environmental jurisprudence is of core importance for understanding how values are embedded in theoretical discourses such that they lead to the subsequent application value frameworks in real-world legal contexts. The ethical nature of these concepts, as such, cannot be evaluated without meeting them in their social and organisational context. For water, this involves contending with the numerous legal concepts used as tools to categorise it phenomenologically. A critical environmental law analysis therefore involves reaching across areas of law, from trusts, to public interest, to administrative. The cases evaluated in this thesis show how these concepts can emerge out of existing legal frameworks. This

corresponds to an exploration of the theoretical nature of conceptions such as personhood, constitutional rights of nature, and environmental water as ways to “position” water in modern jurisprudence.

Hydro-socio-legal critique

In relation to the hydro-social aspect of the approach developed and applied herein, the contextual appreciation for legal developments can be aided by integrating concepts that have proven useful in framing the complex social dynamics of water. The concept of “Water Worlds” is sourced from the water anthropology literature, specifically from Hastrup (2013) who introduced the concept as part of a theory of localised places and spaces within which water is a distinct social fact integral to the human-habited nature of that place. Hastrup judges the water anthropology discourse as being too concerned with climate as a general level of analysis dichotomised with the local. He also argues that either they look backwards in a (theoretically) nostalgic mode, insisting on the need to bound and protect local ‘cultures’; or they go forward with relevant needs, acknowledging that even the remotest of populations are already embedded within a global imaginary, and might even suffer from being isolated. As Guillet (1998) indicates, water law is perpetually stuck in tension between earlier regional customary law and nationalist reform, and as such its governance systems suffer from lasting awkwardness and irresolution. Many anthropologists look to see how different groups insert themselves in the larger debates over water sustainability to resolve these systems in their geographical context. This question leads researchers to examine the strategies of water sustainability, emergent water discourses, and to compare the framings that consider practical challenges with solutions and the framings that address broader relations among states, societies, and environments. Water anthropologists Orlove and Caton (2010) present water

worlds as comprised of three aspects: watersheds, water regimes, and waterscapes. This can be seen to conveniently divide the legal relativity of water into hydrology, governance, and geography. Each of these three concepts can be unpacked into constitutive ecological, social, and legal aspects. In total then, there are nine different aspects to be aware of with any water context if sufficient framing of issues is sought. In engaging with the real-world multidimensionality of water through the selected cases, and through bringing an understanding of the relevant theory, a deeper appreciation may be achieved for why and how certain concepts have arisen and been applied. The case studies used to “discover” these instances will be viewed through this water worlds lens, considering the particular watersheds, water regimes, and waterscapes in each case where relevant to water’s position in the legal domain.

In understanding the position of this research, it is important to draw attention to the research already undertaken on this topic. This thesis takes a broadly similar approach to O'Donnell and Talbot-Jones (2018) in dealing with the concept of rights for nature for analysis of rights for rivers, where three case-studies are used to illustrate how the legal space has developed.

Each example includes not only the creation of legal rights for nature, but some provision for the implementation and enforcement of these new legal rights. Together, the three cases offer insights into how legal rights for nature is being used in the water governance context (para. 3).

This thesis includes the case-study of Lake Erie, which has not as of yet been examined due to it being so recent (with judgement published during the research process). Each case-study has been selected for its varied hydrological and social/anthropological context, and they are utilised in the analysis herein to provide the means to evaluate, at the very least, interesting

features of these cases and their hydro-socio-legal contexts in dealing with rights for watercourses.

Cloatre (2017) gives that society is not fixed and cannot be directly understood and manipulated by lawmakers, and the social dimension of action is not a predefined set of activities utilisable as categories of other phenomena that lead to explanation. Instead, social relations are dynamic, in which any interaction between actors, or between events, reshape these very actors in an emergent fashion (Tamanaha, 2018). In turn, this means that any particular object of inquiry needs to be understood through the many events, the many interactions and the various meanings that construct it. It also means that as matters are being displaced, categorised, and ordered, they get transformed and re-emerge in new forms, and as new ‘things’. This emphasis on fluidity and entanglement has specific implications for, understandings of materiality for socio-legal scholars, but is of course also based on the conceptual framings these scholars use to view law. For example, classic sociological divides between humans and non-humans, and between nature and society, have been judged as constructions of modernity rather than objective value-categorisations (Latour, 1993). They are not necessarily relevant for understanding the way environmental practices work in different social systems. Instead, accepting that environmental practices are heterogeneous, messy, complex, and unstable, is important for scholarship to engage with for it to achieve its purpose, even as practices of ordering (including through law) often continue to rest on much more structured imaginaries of the world. Ultimately this entanglement, and subsequent indeterminacy, is a result of human action stemming from natural roots, and this in turn feeding back into what can be considered human, constantly shifting the humanness or naturalness of an action. Importantly, this provides a complex basis for a larger question in environmental studies between ecology and anthropology, and the difference between the

two. This has been a long-standing tension (which environmental law has been largely silent on, and hence conventional jurisprudence has no response to challenges brought in the form of new declarations of rights for water. In ordering the phenomenal world as a dynamic complex systems of relative parts, all variables must be taken into consideration that can be used to frame such changes. In the context of the selected case-studies, there are issues that present dynamic situations by virtue of their status as emergent socio-legal phenomena. This will be seen in the nexus between conceptions of law, society, and nature. Mapping dynamic fluctuations to human activities is difficult, but with substantive warning-systems action can be taken before thresholds are reached and such cases arise.

Chapter 2. The evolution of Rights for Nature

To frame the new development and legal scholarship around environmental interests, an up-to-date review of the “Rights for Nature” discourse is necessary. As a concept, rights for nature has a fairly short and recent history in conventional Western jurisprudence, with its roots in an intellectual discourse that conceives of nature as a subject under law. It is also a natural result of the highly critical approach to environmental law previously mentioned in the Methods chapter: coming as a reaction to the legal status quo which sees nature as instrumental; without value except that which is placed on it by human habitants and utilisers. The outcome of this status quo, is that the environment, and its features, are not adequately protected or represented as systems.

A few key theoretical details are important to consider in using the discourse on rights to frame an evaluation of the three case-studies. This is due to the symbolic nature of a right definitively in jurisprudence: it seeks to offer a declarative application of status or agency upon the subject. Rights are only conferred to protect and recognise (reserve) status or interest under law, and these interests are defined and sourced from fundamental value-judgements about agency (Raz, 1984). The right to life, for example, applied to the human race, is a foundational valuation for the basis of all further reservations, which are layered on top of this assumption. This is important to point out in the evolution of the rights discourse because the increased layering expands the value circle out to incorporate the status of additional phenomena. The reason for the emergence of rights for nature can be attributed to a radical shift in the axiological basis for human perception of the environment. The Global Alliance for the Rights of Nature declares that ‘rather than treating nature as property under the law, rights of nature acknowledges that nature in all its life forms has the *right to exist*,

persist, maintain and regenerate its vital cycles.’ (Global Alliance for the Rights of Nature, 2019, para.2). How such a right is to operate is a matter of discussion in this thesis with reference to real-world case-studies, but discussing the potential for it alone stands in stark contrast to the traditional legal inheritance of hard anthropocentrism. Blackstone, in his 18th Century Commentaries on the Law of England, declared that “The Earth, and all things herein, are the general property of mankind, exclusive of other beings, from the immediate gift of the Creator” (Blackstone, 1753, para 4). Law has for much of its history referred to and conceptualised the environment in an economic sense — as the source of resources and a dimension to be materially possessed and harnessed. The notion that this domain should in any way be seen as an object deserving of, and compatible with, conceptions of rights, was long alien to jurisprudence. Repositioning the environment as an entity has required coming to terms with the need for and the importance of legal realism in making legal judgements concerning natural resources, natural spaces, and ecological features of the environment. Less economically, but still anthropologically focused is the concept of *environmental rights*, which stand in tension with rights for nature (Bruckerhoff, 2008). Giving nature constitutional protection: less anthropocentric interpretation of environmental rights. According to the United Nations Environment Programme (UNEP), environmental rights means ‘any proclamation of a human right to environmental conditions of a specified quality’ (2019, para.1). This approach is empirically concerned as it seeks objective facts about the environment that can be integrated into legal reasoning as a logical approach to human-centred decision making. As such, at most the current status-quo of the courts in certain jurisdictions, such as the United States, recognise certain limited environmental rights in relation to public interest doctrine interpretations and private rights to the enjoyment of landscapes by citizens. Environmental value is solely instrumental, rather than intrinsic to its

natural processes, and therefore environmental rights are definitively anthropocentric (Ghosh, 2012). The case could be made that jurisprudence took a turn toward protection of environmental aesthetics for this reason in the notorious *Sierra Club v. Morton* dissent, where Justice Douglas's call for legal personhood for natural entities was influenced by Stone's (1972) *Should Trees have Standing?* which famously proposed legal standing for natural entities under the law. However, even where this occurs in rare instances in case-law, judges still wish to see the environment through an evidentiary lens that is jurisprudentially limited to the anthropocentric impacts of ecosystem health on humans, and not the other way around (Treves et al. 2019). Environmental rights reinforce this perspective where they are enshrined. This dynamic will be discussed in relation to the social/human element of each of the examined cases.

The function of rights

The issue of life value raises a disconcerting moral quandary in the language of the good, as the value of life is seen as controversial. This can be seen in the competition for rights as power. As O'Donnell (2018) identifies, competition of rights to resources, between nature and human beings, can be generated and exacerbated over time. This is because suddenly natural objects achieve a legal position that acts as a limitation to exercised power in the business-as-usual economic and social system. The question that arises from this is what kind of right this limitation is in context. From the Hohfeldian perspective, which is a dominant theoretical approach in rights jurisprudence, such rights are categorised as power and immunity; for the former, *A* has a power *if and only if* *A* has the ability to affect her own or another's Hohfeldian incidents. For the latter, *B* has an immunity *if and only if* *A* lacks the ability to affect *B*'s Hohfeldian incidents (Kurki, 2019). Through this differentiation, there is

an important implication to the granting of rights to nature: that of necessarily limiting the claims of other parties such as human individuals, corporations, and states. The power attribution can be said to imply personhood conceptions of a right: the river is endowed with the ability to limit the rights of others insofar as the phenomenology of interaction can be adequately defined/categorised. Abstraction rights for example may have new limitations imposed upon them in response to environmental water jurisprudence, where the hydrological requirements of concerned ecosystems, and possibly also the balancing requirements of the physical system (recharge rates, downstream flow extents etc), are an active status incorporated into such rights. For example:

Recovering and setting aside water for the environment is a key feature of the reforms instituted across Australian jurisdictions, but most intensively in the Murray–Darling Basin (MDB), where protection and formal legal status for environmental water accords it equivalence with consumptive rights (Jackson and Nias, 2019, p.287).

Immunities on the other hand, would be a passive status of rights-holding, where they cannot be exercised but exist via negativa (by virtue of power limitation). This can be seen to offer a contrast with a thing's ability to *have* a right, under the Raz (1984) conception. In spite of these extensive conceptions of interests, neither Raz nor Kramer ascribes rights to plants. Raz claims simply that X can hold rights only if it has the capacity to hold them, and defines this capacity thus: '[a]n individual is capable of having rights if and only if either his well-being is of ultimate value or he is an "artificial person" (e.g. a corporation).' (p.195). Raz distinguishes three categories of value: instrumental, intrinsic, and ultimate value. The instrumental value of something derives from 'the value of its consequences, or from the value of the consequences it is likely to have, or from the value of the consequences it can be used to produce'. Intrinsic value is non-instrumental but justified by ultimate value. The

ultimate value of something, on the other hand, ‘does not derive from its contribution to the value of something else’ (Kurki, 2019, 63).

The interest theory of rights from Raz and others assumes that things that have interests, by virtue of capacity to have interests, necessarily qualify as rights-holders — in other words, the interest represents itself and demands a right, even if that interest cannot be represented. Kramer (2001) defines interests as follows:

[T]o say that some interest(s) of X will be advanced through the occurrence of an event or the emergence of a state of affairs is to say that X will benefit in some way(s) from the specified event or state of affairs. That is, the event or state of affairs will improve X’s condition or will avert a deterioration therein (p.33).

Kramer acknowledges that trees, rivers, and certain aesthetic buildings can have interests because their situation can be made measurably better or worse by human actions. As such, the interests, and not the ability to act on them, are considered the qualification. This contrasts with the view from other theorists that it is competencies that are necessary conditions for the holding of a right, and also introduces measurability (key for the intersection of water science and law/regulation). Immunity in this framing is an instance that does not necessarily require the corresponding ability to *claim/counter-claim*. Indeed, the *Rights-or-Duties* position defines a (legal) person as any entity that holds at least one right *or* bears at least one duty (Kurki, 2019). The status of an environmental entity can be assessed in relation to objective facts about its ecological or hydrological health, and interests can be ascertained. In response, at least one right would consist of an *immunity* to some right exerted upon it by an agent with Hohfeldian *power*.

The resulting question for this matter is how such limitation rights should be scaled. There is much discussion in the literature on what a right implies when pushed to the ends of

its moral logic. For instance, Francione (1995) discusses Hohfeldian rights as a matter of scaling duties so as not to violate them. In his example of regulations that require that researchers not inflict pain on animals unless the infliction is scientifically ‘necessary’, it could be said that the ambiguous “necessity” threshold must increase in its limitation capacity in proportion to the animal’s felt pain.

a laboratory rat may be said to be ‘wronged’ when the researcher fails to make the ‘necessity’ determination in a particular case. However, this would be like saying that a woman was wronged—and her right violated—when her husband beat her with a rod that exceeded the width of his thumb (Francione, 1995, p.97).

This is relevant to environmental harms in that the “necessity” level of harm to an environmental system is assessed under an assumption that harming it at all is permissible. At the system-level; the distributed detriment that a certain amount of agricultural run-off has for a watercourse is an empirical question that is difficult to answer. Additionally, phenomenologically, there is no easy way to discern say, a river or lake, from its integrated place in a system of environmental flows. It also falls prey to the issue of accurately assessing thresholds of harm in a different sense to measuring pain in any nociceptive animal. Nonetheless, this does not prevent the power of this moral intuition changing the nature of this right. What Francione identifies is that a Hohfeldian lens is insufficient when it comes to the human intuition to prevent harm out of acknowledgement that harm is a moral wrong. Overriding the need for a corresponding claim-instance may mean that these rights are actually non-Hohfeldian immunities which only certain entities that have recognised *value*, but not *agency*, are qualified to be endowed with. Indeed, MacCormick (2007), in contrast to Raz and Kramer, posits what he calls *passive transactional capacity*: an entity may be capable of sustaining legally relevant injury by breach of a legal duty from a Hohfeldian

subject (e.g. a human or human corporation), and thus acquires a remedial right, albeit one that it cannot exercise. As such, the entity in question may be capable of being the beneficiary of a guardian's or a trustee's duties, even though it is incapable of enforcing 'in one's own right' any breaches of duty. As a *special right*, it may be essentially distinct from conventional philosophical approaches which may cause difficulties in legal positioning, without a major paradigm shift.

This framing is highly important for an applied theory of legal personhood, given that the question over representation of interests and action "on behalf of" an environmental entity challenges standalone immunity of that object. If states, communities, or legal clinics and funds decide to represent these natural objects in a court of law, the status/interests of the object may not merely be a matter of immunity maintenance and protection, but may also generate a claim (and thus counter-claim from the opposing party). This specifically refers to the jurisprudential ramifications of being *able* to sue *on behalf of* a natural entity (O'Donnell and Talbot-Jones, 2018). This movement from passive to active legal status immediately changes the position of the object in law, activating a power-dynamic between active agents with claims that conflict. This represents a core paradox in greater rights-recognition for natural objects and systems: they have more status, but are also less likely to be seen as needing protection, as well as generating interest contests (O'Donnell, 2018). Conventionally, private law jurisprudence was meant to provide a means by which parties could neutralise such tensions. For better or worse however, the environment has no prior basis in law as a recognised legal person, and as such, unlike a corporation, is not granted this private law standing of its own accord. This is due in part to the academic development of jurisprudence in this area. Kurki (2019) attributes to Friedrich Carl von Savigny the conception of private law as relationships between persons, which corresponds to Hohfeld's correlativity axiom for

agency. Wise (1998), for instance, claims that legal things, such as animals, cannot participate in Hohfeldian legal relations. Indeed, how this rights jurisprudence conventionally developed has been dependent upon an axiological recognition of such Hohfeldian instances through an anthropocentric lens. In other words, it could be argued that a certain degrees of agency have always been assumed based on the rational superiority of humans to maintain the rights-responsibilities nexus, and all other entities that could not maintain this nexus were de facto categorised as below them. By shifting the accepted status of environmental entities and systems, new rights could be accepted into the private law realm that dramatically change the scope of liability and the introduction of civil wrongs into environmental jurisprudence. As a recognised private person that can be harmed in a way legally analogous to a human or animal person, this status is thus immensely significant for the shaping of environmental interactions.

This chapter has introduced the theoretical background that justifies the philosophical move toward recognising the rights of nature, and has noted some key arguments in the formulation of rights that pose a challenge to the representation of nature's interests. This is important to provide, as making clear the typology of the right being applied to natural objects assists in the clarity of later conceptual and analytical discussion that will arise in the next two chapters, which explore how rights for nature enter into the selected case-studies as hydro-socio-legal phenomena. These case-studies will first have their relevant developments and features analysed, and then evaluated relative to their two conceptual underpinnings (environmental constitutionalism and legal personhood) that seek to challenge the above theoretical discussion. Three case-studies will be reviewed and evaluated to explore how rights for nature have arisen, and the hydrological, social, and legal features of these contexts will be evaluated in tandem.

Chapter 3. Environmental Constitutionalism in action

The Republic of Ecuador in 2008 was the first country to enshrine rights for nature constitutionally. The new constitution enacted several laws specifically referring to the rights of nature to flourish, and as such actions that violate the natural, optimal continuation of these systems are seen as violations of nature's immunity. In particular, the recognition of water as a vital element for nature (Art. 318) is an important enshrinement because it makes the connection directly in law that there must be sufficient water resources set aside for nature, to maintain ecosystems and also support natural hydrological processes where they otherwise occur outside of human interventions. However, the operational viability of this was quickly tested, and evaluating the prominent case will enable an evaluation of how the constitution performed, and how regulatory frameworks and jurisprudence are interwoven.

The Vilcabamba River case

The first rights for nature case to fall under the new unique constitution concerned the Vilcabamba River: *R. F. Wheeler & E.G. Huddle v. Attorney General of the State of Loja* (2011) Judgement No. 11121-2011-0010, and it presents some real-world practical issues in applying these rights as constitutional principles. The river is located in the far south east of the country. In 2008, the Provincial Government of Loja (PGL), through the Southern Public Highways Company, commenced the project to expand the Vilcabamba-Quinara highway such that the road be widened to improve vehicular access. This was done without conducting a prior environmental impact study, and without the prerequisite environmental license issued by the Ministry of the Environment (MoE). The construction company responsible for the highway widening work began to deposit rocks and excavated material on the banks of the

Figure 1:

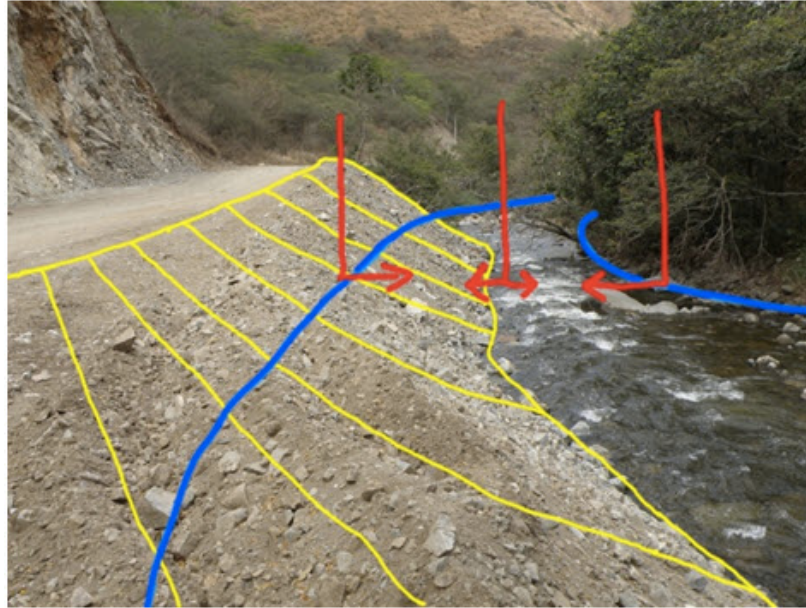


Figure 1: (Greene, 2019) Photo of a stretch of the Vilcabamba River, showing extent of the impact of the lateral displacement and material deposits attributable to the PGL works (shown in yellow) on the original width of the river (shown in red and blue).

Vilcabamba River. This caused serious damage to the river bed and surrounding natural area of the watercourse, and also resulted in serious flooding in the winter. The river's banks disintegrated and the flooding affected properties. The plaintiffs in the case were two white foreigners, Eleanor Geer Huddle and Richard Frederick Wheeler, who owned land heavily affected by the flooding. They requested a judicial inspection in September 2009 through the First Civil Court of Loja. As a result of the inspection, which showed clearly that there were damages, a report was prepared which determined that the work done by the PGL in opening up the road had caused environmental damage to the lower part of the River, primarily from lateral displacement and material deposits. This caused rises and flooding in the river, particularly the following year, when 5,000 meters of the plaintiffs' land flooded, including a piece of highly valued agricultural land that the plaintiffs apparently planned to turn into an eco-tourism retreat centre. The work to widen the road, which included the extraction and utilisation of sterile material, did not plan for the proper, eco-system sensitive disposal.

In addition, the MoE called on the PGL to present a Remediation and Rehabilitation Plan for the areas affected along the River, and the properties of the affected residents, within thirty days. Similarly, the MoE requested that the PGL produce the environmental permits issued by the environmental authority in advance of the construction of the Vilcabamba-Quinara highway. From this examination, the MoE concluded that the PGL should take corrective actions, including relocating fuel tanks and machinery, installing security basins in these tanks to prevent spills, cleaning the contaminated soil, implementing an adequate signage system, and an appropriate plan for depositing and accumulating construction material. A letter of commitment was signed between the plaintiffs and the chief of the road-widening project, the intent of which was to comply with the MoE recommendations. In the letter, Huddle agreed to allow part of the debris to be deposited on part of her land that was not in danger of affecting the river, while the PGL agreed to remove the debris and to observe the road construction and river embankment called for by current regulations. At that time, a serious flood occurred which caused a great deal of damage to the property of the plaintiffs. It was argued that no floods of that magnitude had occurred in the past fifty years, and therefore it could only be explained by the dumping of materials from the highway widening project in the river. In summary, before the protective action was presented, two activities were carried out: i) the judicial inspection request, which determined that the effects on the river were not the result of the widening of the road; ii) a complaint filed with the MoE, who conducted a site inspection and issued a report with recommendations on proper project execution.

The plaintiffs submitted the protective action on December 7, 2010, claiming a violation of the rights of nature, against the PGL. The action was based on the Preamble to the Constitution, where the Pachamama and Buen Vivir concepts are declared. These principles require citizens of Ecuador to exercise their responsibilities and enjoy their rights

within the framework of harmony with nature (Art. 175, third paragraph). This involves respect for ecological existence, maintenance and regeneration of life cycles, structure, functions and evolutionary processes; as well as restoration (Art. 10, 71-73). Of specific importance however is the recognition of water as a vital element for nature (Art. 318). On December 13, a public hearing was held at which the plaintiffs and the defendant were present. Two days later a judgment was issued which rejected the protective action because of a lack of passive legitimacy, due to a failure to adequately notify the defendants, thereby making it impossible for them to adequately defend themselves. In this judgement the court limited itself to addressing procedural issues rather than addressing the substance of the case.

The plaintiffs appealed on these grounds to the Provincial Court (as the court of second instance), reviewing the case again before presenting all the constitutional arguments. The appeal was filed on December 20, 2010, and passed on to the Court on January 5, 2011 when the case was assigned to the Criminal Division of the Provincial Court of Loja. The court of the second instance took from January 5 to March 30 to hear the appeal, due to the fact that two judges recused themselves, saying they could not participate in hearing this appeal. Once the court had been formed with the three judges, they resolved the case on that same day and issued their sentence; in the process of doing so, they conducted a more detailed and comprehensive analysis to determine whether or not the constitutional rights of nature had been violated. The judges determined (Constitutional Injunction 11121-2011-0010) that there was in fact a violation of the rights of nature, and they based their decision on a number of aspects: unlike the judgment from the first instance, this ruling found that the defendant had indeed been adequately notified, and that furthermore they had appeared in the first instance through their defence lawyer. They also found that the

protective action was the only appropriate and effective vehicle for protecting the rights of nature, especially since there was a specific damage that could be discerned as an outcome.

It is significant that the judges stated that, in the case of activities that involve a likelihood or risk of causing environmental pollution or damages, precautionary measures must be taken to prevent those damages, even when there was a lack of certainty over whether or not they would occur. This is an example of pre-emptive regulatory thinking consistent with the precautionary principle (Kriebel et al. 2001). The principle is pushed further in this doctrine however, as there is a reference to the principle of the reversal of the burden of proof, recognised in the Constitution; as a result, the judges find that the plaintiffs did not have to prove the damages, but rather the PGL was obligated to provide evidence that the highway widening work was harmless to the environment. Simultaneously, the Court felt it was unacceptable to reject a protective action of nature solely because of a lack of evidence. In cases where contaminatory environmental damage is a probability, in line with a precautionary principle the non-existence of said damages must be proved by any party with the capability to do so in the case context, and who claims therein that no damage has occurred. The Court deemed it unacceptable that the PGL had failed to obtain the obligatory environmental license from the MoE to commence widening the road, given that the PGL itself issues such licenses in projects that it does not directly implement. Within the Unified Environmental Management System, through which the environmental impact assessments are done on projects that need an environmental license, the PGL was an accredited authority (Responsible Environmental Enforcement Authority) appointed by the Ministry of the Environment to issue environmental licenses to the promoters of projects within its jurisdiction. With these considerations, the appeal was admitted, and it was declared that the

PGL had violated the rights of nature, in this case specifically concerning the right of water to be uncontaminated and remain as it is in its natural cycles (Suarez, 2013).

This first sentence regarding the rights of nature constitutes a strong precedent for future cases involving the violation of constitutional rights of nature. This case has also garnered criticism for potentially taking advantage of a Rights of Nature framework in order to protect property value of two respectively wealthy foreigners at the expense of construction of a road that may have benefited or been in the interest of local communities (Fish, 2013). In addition, no locals testified in the case, which causes problems for the integration of constitutional interests with rights of nature. However, the Provincial Court of Justice of Loja ruled that, despite the allegation of the provincial government that the local population would benefit greatly from enhanced roads, there was no collision of constitutional rights in this case between human citizens and nature as it did not rule that the Vilcabamba-Quinara road could not be widened. Indeed, the requirement was only that they must respect the rights of the Vilcabamba river while such work was undertaken. With regard to the plaintiffs being white foreigners, there was no comment, but it is important to note in context that the plaintiffs had moved to the area to found a sustainable living project to demonstrate that it is possible to create a good life within a non-urban setting (Suarez, 2013; Garden of Paradise).

Conceptual evaluation: Environmental Constitutionalism

Ecuador's 2008 Constitution was the first constitution in the world to recognise enforceable environmental rights in constitutional law. The importance of aforementioned environmental ontologies can be seen reemphasised in this institutionalised development of the law toward ecocentric jurisprudence. The theoretical notion of rights of nature and indigenous

‘cosmovisions’, which recognise the inextricable links between human beings and nature, converge in the 2008 Constitution. This is significant for the ontological background to the sociopolitical transformation of constitutional law in this context.

The right of the population to live in a healthy and ecologically balanced environment that guarantees sustainability and the good way of living ... is recognised. Environmental conservation, the protection of ecosystems, biodiversity and the integrity of the country’s genetic assets, the prevention of environmental damage, and the recovery of degraded natural spaces are declared matters of public interest (2008 Constitution of Ecuador, Art.14).

The concepts enshrined therein is intended to reconstitute the political, economic, social and ecological foundations of Ecuadorian society by prioritising and constitutionally solidifying key concerns of solidarity and equity between humans and between humans and nature, as well as propagating a new understanding of nature as a legal subject. Ultimately, the new constitutional dispensation was meant to confront, among other things, the prevailing anthropocentric socio-politico-economic order in Ecuador, exploited for hundreds of years for its valuable natural resources, especially oil, which caused large-scale environmental destruction of the natural landscape (Galeano, 1973). In the last 60 years, indigenous rights have also been threatened by oil ventures, presenting the social precariousness aspect to the exploitation of nature for certain communities that depend on it traditionally (Kimerling, 2006). Through the constitutional entrenchment of the rights of nature, the new order

not only intends to mitigate the consequences of the anthropocentric predatory system, but also lays the foundation for a radical change of the current development and well-being paradigm that is solely based on production (Ortiz, 2009, pp.130).

This context has given rise to the politicisation of environmental law through “Earth jurisprudence”, which has its foundation in ecocentrism as a legal philosophy oriented around

the integrated Earth system. The approach to this in the physical sciences was manifested in the Gaia Hypothesis (Lovelock, 2003) where the personification of the Earth system is based upon the recognition of organic and non-organic intrinsic value. This intrinsic value is symbolised in the “Mother Earth” concept. However, in relation to this case, it is also specific to the Americas, being entwined in the concept of “Buen Vivir” or “Sumak Kawsay”, which in turn is rooted in an indigenous perspective to “the good way of living” in harmony with natural processes. Both Ecuador and Bolivia have enshrined the rights of Pachamama into national legislation, such that there is a cultural/spiritual element to the law grounded in their historical, economic, and ecological contexts.

[T]he underlying principle of *buen vivir* is that wellbeing can only occur in a community, which is social but also encompasses nature . . . man is part of and not contrary to nature. *Buen vivir* thus goes beyond Western dualism where nature opposes society, and the individual opposes the community (Gudynas 2012, para.3).

This culminated in the call for the Universal Declaration of the Rights of Mother Earth (UDRME) at UN Rio+20 in 2012. Such a jurisprudential approach, entwined with a reactive political element driven by the response of traditionally excluded groups to development discourses, is the reason for the exclusivity of Ecuador and Bolivia; rights enchainments in constitutional law at national levels have not embraced the notion of ecocentrism — as a philosophical requirement for intrinsic valuing of nature — in any meaningful way (Cryer et al, 2017). The link between legal systems’ deep anthropocentric ideological commitments and the production ontology of a neoliberal economic growth agenda can be seen to have the effect of excluding alternative ecocentric loci for law. Indeed, the lack of universalised respect for nature across other jurisdictions means that national and international markets are

still operating under anthropocentric assumptions, and do not converge in value judgements (Hoekema, 2017). As such, it could be argued that the commitments of constitutional law, which declare cosmovisions without solving for this tension, are not fit for purpose, and thus irrelevant for real environmental protection and remedy, despite successes such as the Vilcabamba case.

Environmental constitutionalism, especially insofar as it manifests environmental rights as fundamental jurisprudential axioms, has been described *passim* as being vague, absolute, redundant, ineffective, and merely an exercise in window dressing that generates false hopes (Kotze, 2012, pp.210).

In the context of the legal action taken by Huddle and Wheeler, it could be interpreted that at the level of advocacy, representation of nature is being corrupted in the private law context by the land interests of these two foreign entrepreneurs. While the constitutional injunction granted was reasserting the rights of nature, ultimately the case was tied closely to the damages to the plaintiffs' private land. It was merely coincidental and contextual that the plaintiffs happened to be seeking a livelihood that was nature-oriented and tied to the integrity of the surrounding landscape. As such, nature's rights were represented and protected by the grace of human existential utility. Despite this however, espousing environmental constitutionalism could be thought to hold out various benefits not offered by 'ordinary', non-constitutional statutory protection, for several reasons. These include, among others, the provision of means and opportunities for reforming governance, the state, laws and society with respect to the environment; prioritising ecological care by equating it at the constitutional level to fundamental rights and ethics recognised between fellow human entities, expanding the moral circle (Singer, 2011), and provides a legitimate foundation and mechanism for formulating and enforcing environmental values, rights, and other sources of ecological obligation; it provides the means to dictate the content of laws; and it establishes

moral and ethical obligations with respect to the environment and a justificatory basis for, and authority to require, proper performance of these obligations (Kotzé, 2018).

Regulatory failure

Be this as it may, the process did not resolve matters in practice within a sufficiently short time-span. Rather, plaintiffs Huddle and Wheeler were forced to maintain their own protections, and as such increasing the damages to themselves to cater for nature's rights.

By 2011 we had paid for some works to protect the riverbank which served as protection for our property and that of our neighbours, because we knew that the PGL was not going to do it (Eleanor Huddle, in Suarez, 2013, p.9).

The matter of tension in applying constitutional principle in this manner is thus one of remedy rather than of jurisprudence. Whether the outcome of the legal process actually works, socio-legally, to apply justice depends on the process being integrated fully into post-case regulatory action. The disadvantage, therefore, of having to rely on judicial processes to mete out environmental/water justice is that it is an instance-based process that requires lengths of time insufficient for responsive governance in society. Indeed, Bosselmann (2013) accordingly pleads for an ecologically centred regulatory reality alongside the principle of the ecological constitution. The environmental/ecological constitutional state is one in which rights for humans and the rights of nature have equal status under the law, and any assessment of potential conflict between these rights must consider the dialectic socio-ecological system where both depend on each-other and are inextricably intertwined; intrinsically valuing nature demands that ecological interests be represented by people in all decision making in the same way that human interests would be (Kotzé, 2018). This is particularly important for constructing interaction norms and standards in social and business

practice, such that hard pre-emptive regulations are not solely relied upon, nor are proactive plaintiffs like Huddle and Wheeler. By strengthening the idea that such entities in the natural environment are not to be exploited, the law elevates the positioning of nature.

Before we were saying how many times we can hit the slave. That is like environmental legislation. We were saying “ok don’t hit it so many times because you are damaging that object”, because [this] is how we were treating slaves, as objects. That is the same we have right now when we say nature is not a subject of rights (Greene, 2012, p.n/a).

This point from Greene is reminiscent of the earlier quotation in Chapter 2 from Francione (1995) where the discussion of harms is relevant to rights for non-human entities, and indeed rights for nature can be seen as a proposed way of theoretically avoiding this “harm of degrees” moral problem. The implications of this for critical approaches to political economy are significant: according to the interpretation of UDRME advocates, the market is positioned as the villain, or oppressor in reference to eco-apartheid. The commodification of nature is the fault of the market and the capitalist, neoliberal approach to economics. As an extension of this approach, these advocates also reject the concept of green economy. For example, they considered the agenda of the much anticipated Rio+20 conference “the latest attempt to justify privatising nature in new and obscene ways” (Adrangi & Pickard, 2012). For this argument to have clout however, the inherent value of nature must depend on knowledge about the interaction between ecosystems and their relationship with socio-human systems, while rights as legal principles must fortify the purpose of such interaction. In this way, rights for nature may be putting the cart before the horse under this view, though may be better than having constitutional law that does not incorporate such values symbolically. Indeed, contrary to Boyd (2011), constitutions may be conduits for systemic legal change. UDRME advocates may benefit from narrative-building driven by symbolic constitutionalism, which in turn has been influenced by larger international discourses and networks. Kauffman and Martin

(2014) highlight that local Ecuadorians have expanded their participation and leadership in transnational environmental networks, learning from their interactions with global colleagues, and sharing their ideas and values.

Over time, many international environmental organisations incorporated into their discourse and programs the socio-environmental norms of their local civil society partners, most significantly of Ecuador's well-organised indigenous movement (pp.45).

As these Ecuadorean rights have the rank of constitutional rights, it is possible to demand their fulfilment through constitutional actions that guarantee them. Thus, in this case, it is possible to bring forward a “protective action” on behalf of nature. The objective of this is to directly and effectively protect the rights recognised in the Constitution; it can be brought when constitutional rights are violated due to actions or omissions by any non-judicial public authority, against public policies when they deprive any other person of their constitutional rights, or when the violation is committed by an individual person with the causing of serious damage, improperly providing public services, or when acting by delegation or concession; if the person affected is in a position of subordination, defencelessness or discrimination (Constitution of Ecuador, 2008, Art. 88; Art. 41). Actions to protect constitutional rights can be heard by any judge in the place where the act or omission is committed, or where its effects are felt. Consequently, the action can be heard by civil, criminal, labor, tenancy or other judges, since in the current judicial system, there are no environmental judges. This despite the fact that the Organic Code of the Judicial Function calls for the creation of special environmental courts to hear these claims in first instance, which may prevent having to appeal for the appropriate substantive constitutional consideration and save plaintiffs time and resources. Furthermore, the intersection between environmental constitutionalism and public administration is of key relevance to understanding the way this case developed.

Suarez (2013) has noted in analysis of the judgement that civil participation and publicisation of the case was limited due to the fear of taking on a public authority in a judicial proceeding. This exposes an interesting socio-legal case of judicial process that highlights disparity between those who interact with the natural environment in Ecuador, and the governmental and judicial institutions whose constitutional role it is to uphold rights for nature. There is tension between the social and the institutional, due to the construction of legal regimes based on state power, that limits both visibility and inclusivity within governance regimes that could be highly relevant to the judicial process; for jurisprudential prioritisation and normalisation of rights for nature in Ecuador, and for assessment of stakeholder rights-violations and damages.

This chapter has used the example of Ecuador to identify key case-specific applications of the jurisprudence that has been introduced in Chapter 2, but in the context of environmental constitutionalism. The Ecuadorian context, and its conceptual heritage rooted in South American culture, clearly demonstrate the hydro-socio-legal nature of these legal principles; recognising the value of natural processes, and attempting to guarantee their stability and prevalence by enshrining their constitutional rights, has been a political and a cultural process. It has also been highlighted that there are details in the Vilcabamba River case that expose institutional issues with enacting the rights of nature principles in the 2008 Constitution. Both the context specificity and the institutional aspects of how rights of nature (and particularly the rights of water through Art. 318) is brought into action is highly useful for this thesis, as it clearly shows the hydro-socio-legal dynamics of this development in environmental jurisprudence. In the next chapter, other contexts, and institutional aspects therein, will be discussed in a similar manner.

Chapter 4. Representing hydrological persons

4.1 Whanganui River, New Zealand

The Whanganui River is a major watercourse that flows from Mount Tongariro in the centre of North Island of New Zealand, and is the country's third-longest river. It is home to Te Āti Haunui-a-Pāpārangī, a confederation of three ancestral groups: Hinengākau of the upper river, Tama Ūpoko of the middle reaches and Tūpoho of the lower Whanganui. The river is of huge importance to the iwi: it is their ancestral river, their arterial highway, and a source of physical and spiritual sustenance (Encyclopedia of New Zealand, p.5). Through a discussion of the river's recent achievement of a jurisdictionally specific form of legal personhood, this case-study is particularly useful for highlighting a number of key social-political and water anthropology elements that have been centrally relevant to the conceptual application of legal rights and representation for this watercourse.

Te Awa Tupua

A recent prominent case of the manifestation of rights for water arose in that the Whanganui River in New Zealand was given legal personhood and named *Te Awa Tupua*, 'an indivisible and living whole, comprising the Whanganui River from the mountains to the sea, incorporating all its physical and metaphysical elements.' (Te Awa Tupua Act, 2017, Art.12). The Whanganui River has become the first river in the world to be recognised as a living entity with its own rights and values and given the legal status of a person. Pursuant to the Act, this wellbeing of the river can be understood as the economic well-being of the indivisible Whanganui River community of natural and human elements based on the Māori

tradition, religion, culture and identity. That the river is “living” should therefore be understood in context of Maori integration of society and water metaphysically; the two are not distinct and cannot be separated in customary law. It has long been considered that ‘protecting the River is equivalent to protecting the people, and in this case, protecting the (Māori) people could also lead to better protection of the River’ (Hsiao, 2012, p. 371). There is thus a potent historical background to this decision based on post-colonial sentiments, giving this conception a unique political aspect that generated this legal tension in the outset. Arguably, Te Awa Tupua was socio-legally inevitable, since in 1999, the Waitangi Tribunal settled Claim 167, recognising Maori ownership of the Whanganui River. This was intended to resolve the longstanding dispute between Maori and English legal interpretations of the 1840 Treaty of Waitangi, which had previously caused tensions over sovereignty and land acquisition in New Zealand. As such, the Act is also called the Whanganui River Claims Settlement.

The Crown, from the 1880s to 1920s, conducted works to establish a steamer service and extract minerals from the Whanganui riverbed. This exploitation of the watercourse eroded its ecological quality, destroyed eel weirs and fisheries, and degraded the river’s cultural and spiritual value to the Maori. Whanganui iwi first petitioned Parliament in the 1870s, continuing for decades to seek compensation and justice through several courts and the Waitangi Tribunal, which is a New Zealand permanent commission of inquiry established under the Treaty of Waitangi Act 1975. It is charged with investigating and making recommendations on claims brought by Māori relating to actions or omissions of the Crown, in the period largely since 1840, that breach the promises made in the Treaty of Waitangi. The Tribunal’s recommendations and findings are definitively non-binding. Even so, the outcome of these negotiations resulted in declaration of the river’s legal personhood and the passing of

the Te Awa Tupua Bill into legislation on 20 March 2017. The active Settlement element of the Act will provide a settlement of eighty million dollars to redress the Crown's past actions. It recognises *Te Awa Tupua* as an indivisible and living whole, comprising the Whanganui River from the mountains to the sea, and all its physical and metaphysical elements. An additional contribution of one million dollars will establish a legal framework to support the Whanganui River. Two people, a representative of the Crown and a representative of Whanganui iwi, will be appointed to *Te Pou Tupua* (the human voice of the river), which will act on the river's behalf and protect its interest. A thirty-million-dollar contestable fund will also be created to advance the river's health and restoration. The characteristics of the river as a hydrological object are defined by its geophysical and hydrophysical features: the Legal Framework of *Te Awa Tupua* declares the river "an indivisible and living whole, incorporating all its physical and meta-physical elements. Section 7 of the Act defines the bed of the river as (a) 'the space of land that the waters of the Whanganui River cover at its fullest flow without overtopping its banks' and (b) 'the subsoil, the plants attached to the bed, the space occupied by the water, and the airspace above the water.' This bed, along with 'all tributaries, streams, and other natural watercourses and hydrological objects such as 'all lakes and wetlands' are incorporated into the definition of Wanganui River, and thus are all included in the legal personhood attribution.

Legal personhood has precedent as attributed to natural entities: in 2014 Te Urewera Mountain Range was granted legal personhood. This personhood is constructed, theoretically, from the *Tupua te Kawa* intrinsic values, which are outlined in Subpart 2, Section 13 of the Te Awa Tupua Act, which include spiritual as well as physical sustenance value, the indivisibility of the integrated *Te Awa Tupua* hydrological system, and the *iwi* (tribe) and *hapū* (clan) interests within that system. Personhood, here defined, is in line with the

interest theory of personhood, where indigenous cultures seek representative mechanisms akin to an organisational body under public law and trusts law (Section 17). The watershed of Whanganui is conceptualised as corresponding to particular cultural memory of traditional interactions and use-customs of the ecosystem. As Taylor et al (2017) note, in contrast with the utilitarian concept of water as a resource, First Nations' policies are grounded in the concept of *living waters*. Water, land and tribal people are intrinsically entwined in New Zealand, and deeply rooted in cultural water anthropology. "*Ko au te awa. Ko te awa ko au*" (I am the river. The river is me) is a potent psycho-cultural commitment existentially and emotionally, and reflects a different approach to landscape than modern Western water jurisprudence (Anderson, 2016). The watershed, as a hydrological object, is here defined specifically in relation to *Ko Te Kawa Tuawhā*: the symbolic foundation as literal and metaphorical; "*Ngā manga iti, ngā manga nui e honohono kau ana, ka tupu hei Awa Tupua*: the small and large streams that flow into one another form one River." (§13 (d) 129—2). In essence, environmental flows in the watershed are presented as allowing for the emergence of the culture itself from the Te Awa Tapua as more than just a hydroecological system; a common ancestor, leading to the forms of social self-organisation as a direct outcome of environmental interactions. As such the watercourse can be seen as a cultural feature and not merely a physical Earth-system phenomenon.

Conceptual evaluation: Legal Personhood

As mentioned, the Te Urewera Act in 2014 helped establish the concept of legal personhood to be applied to an environmental entity in the country. Even though the Bill is not technically recognised as precedent under New Zealand law, the significance of it hydro-socio-legally should not be underestimated. Indeed, like the Te Urewera Act, Charpleix (2017) considers

the Te Awa Tupua Act as contributing to the development of legal geography in the context of legal pluralism, which post-colonially supplants the current dominant legal paradigm and offers a less anthropocentric approach to environmental resources. This corresponds to an ecocentric or deep ecological approach (Naess, 2005) in the legal geography of the Maori where the surrounding landscape, as a feature of the Earth, is a living, breathing entity and a connection to their ancestors.

The significance of the personhood granted for Te Awa Tupua was made more pronounced by the post-colonial attitudes that fed into tribal memory; the legacy of the Treaty of Waitangi and pollution of the watercourse over time. As such, the Te Awa Tupua Act's conception of personhood can be seen quite clearly as a "living" feature of water law. A reality of the Whanganui as based on tribal conceptual frameworks necessarily depends on the prevalence of community memory. This point is of great importance, theoretically speaking, for legal paradigm change and empirically-backed hydro-socio-legal approaches to personhood, specifically relating to issues of stewardship and property. The Maori have an intuitive and deep understanding of this particular watercourse, such that there is no appropriate place for the independent individual agent: The Western model of a legal individual is not comparable to an individual in the Maori tradition, where the interests of a relational human/non-human whole override the rights of any autonomous individual (Pollis & Schwab, 2006). Under Maori conceptions 'use rights, personal identity, and executive functions ... [arising] from ancestral devolution' (Waitangi Tribunal, 1999, p.28) give structure to every aspect of life that include humans, anthropologically, as part of the ecosystem. As such, abstraction rights, emissions/pollution trading schemes, and other conventional features of private water law are not compatible with this jurisprudence. It is

clear that in this instance, there is a tension in the political economy of water law that requires an innovative environmental law toolbox to address.

Maori postcolonial assertiveness

While the element of post-colonial restorative justice is clearly strong in the case of Te Awa Tupua, legislating that a river's legal status include "metaphysical elements" is highly unique as a meta-ethical foundation of personhood, a result of social and cultural ideas being positioned in law. The question is whether these cultural features, which constitute a Maori water world, can be integrated into hydrological empiricism. Discernment of socio-ecological fact is required, so as to evaluate the logical causal chain of actions upon the legal person. This issue here is that if a certain party (i.e. iwi leaders) represent the river, then they may select the conditions and thresholds, and means of assessment, by which the water-in-person has its status evaluated. Fostering a consensus-based approach, to particular standards of status, could serve to dramatically strengthen the ethical reasoning undergirding current personhood conceptions. This also avoids the slippery slope to ad infinitum features of personhood defined by anyone based on subjective, arbitrary experience, which is an epistemic problem of objectivism: the consistent reference to environmental science prevents a 'shallow ecology' (Næss, 2005) arising from more socially isolated responses to ecological concerns. The integration of social sensitivity maintains relevance to human life in practice, where value systems may differ across time, space, and place.

Relevant to this is the matter of legal empiricism for hydro-socio-legality. How the Maori water world corresponds to a practical legal approach is central to the viable development of environmental jurisprudence that undergirds movements to personhood

attributions. Tomas (2011) notes that the vitality of the river is of core stewardship importance for Maori culture, and assessment of appropriate management is based on maintaining balance. What this balancing means in the context of ecological valuation is a complex issue, given that incremental changes in water quality and/or flow would have to be understood in the context of modernisation in countenance to traditional Maori practices, which have been verified intergenerationally but not through modern empirical means. The implications for hydro-socio-legal construction is more significant in practice than it is in theory. While the conclusions reached by both deeper ecological understandings of hydrological connectedness, and that of the Maori tradition, may be value-correspondent, the time taken to reach such conclusions, and the resolution of the information contributing to such, may be insufficient to enable truly empowered community stakeholder management. Indeed, as O'Donnell judges, the declaration of Te Awa Tupua 'definitely has power to drive long-term change. How it holds people to account...is going to be the tricky part.' (The Guardian, 29 Nov, 2019). As such, what tradition means in the context of Maori-Whanganui water ontology should be discerned from the potential of increased integration into innovative, inclusive governance mechanisms that guarantee a level of accuracy which has as of yet not been seen. Te Awa Tupua is not only an important legal decision, but also an innovative policy measure to increase power equity in the watercourse's management. It requires by statutory law that the state and the iwi work together, through requiring the selected guardians to review all relevant information on the river and make decisions based upon it. Indeed, Kang (2019) highlights that rights for nature cannot be adequately operationalised if too much of a 'who best knows' approach is applied to legitimising governance. This is not to say that new governance methods cannot be community-based and distributed, but rather that care must be taken not to lose resolution or the understanding that

it is the river that comes first, not the Maori. This point will be returned to in later discussion of potential Maori-led legal innovation and Maori-centred/place-centred legal regimes.

4.2 Lake Erie, United States

The Lake Erie Bill of Rights

A unique case of rights recognition occurred very recently elsewhere in the United States. In 2019, residents of Toledo, Ohio, adopted the Lake Erie Bill of Rights (LEBOR), after fighting for three years for the right to vote on the measure. The Bill was formulated by Toledoans for Safe Water, with assistance from the Community Environmental Legal Defence Fund. Significantly, this was in response to increasing quantities of toxic green algae on the lake's surface, which is an outcome of nitrate pollution from agricultural run-offs. It is the first law in the U.S. to secure legal rights of an ecosystem as a distinct natural object. The Bill of Rights specified the right of the ecosystem to have standing, such that damage claims could be brought by Toledoans in its defence. More significantly however, the basis for trusteeship was declared specifically:

The Lake Erie Ecosystem may enforce its rights, and this law's prohibitions, through an action prosecuted either by the City of Toledo or a resident or residents of the City in the Lucas County Court of Common Pleas, General Division. Such court action shall be brought in the name of the Lake Erie Ecosystem as the real party in interest (§3(d)).

As such, Lake Erie would stand as an object with distinct interests, which can be eco-socio-legally reasoned from the community level: biological death in certain zones, as well as how the population is being affected. The Bill leaves unclear whether the interests will be more weighted to the social impact of lake damage, or whether the justification may be eco-

centrically enriched. Even with this ambiguity however, the damages are to be paid to the object, not the affected human community.

Damages shall be measured by the cost of restoring the Lake Erie Ecosystem and its constituent parts at least to their status immediately before the commencement of the acts resulting in injury, and shall be paid to the City of Toledo to be used exclusively for the full and complete restoration of the Lake Erie Ecosystem and its constituent parts to that status (ibid).

Of particular conceptual importance was also the declaration that corporations that violate LEBOR as law would lose their legal personhood and all rights, powers and privileges granted to corporate activity (§4(a)). It also generated a preemptive limitation clause on future legislation adopted by the state of Ohio, which effectively distinguished Toledo from the rest of the state on any matter that could be interpreted as contravening LEBOR (§4(b)). Notable context of the Bill was that the distribution of risk was disproportionate for Toledo and the western-half of the lake due to the direct pollutant inflow from the Maumee River and subsequent hydrodynamic movement and conglomeration of algae blooms (Soontiens et al. 2019). Toledoans for Safe Water organised a city-wide vote on their drafted Bill via the Lucas County ballot on 26th February 2019, which passed with 61% of the vote. The turnout for the Bill was 8.99 percent, or 16402 votes cast out of 182,451 registered voters. It is also important to note that LEBOR was placed on the County ballot, so the proportion of voters who endorsed the Bill from the City of Toledo itself was smaller than this figure.

The *Drewes* case

The case of *Drewes Farms Partnership v. City of Toledo, Ohio* [3:19-cv-00434] in February 2019 was a key case in the development of the Bill's status as it presents the key challenges that this new personhood jurisprudence faces from current law. It is significant not only as a

concerted constitutional law challenge in context, but perhaps more importantly as a battle between personhoods in dramatic tension. The plaintiff, Drewes Farms, argued that LEBOR violated the first, fifth, and fourteenth amendment of the United States in limiting the rights of the corporation through liability. This includes the inability to access to constitutional rights available to all other persons under US law, namely; to petition the government, to have equal protection of the laws, non-vagueness of liability, and procedural and due process. The plaintiff also invoked declarative judgement on potential legal preemption on the part of the defendant. The case was heard in the Northern District Court of Ohio on January 28th 2020, resulting in one of the first discussion and debate in a U.S. court on rights for nature. LEBOR was initially advertised as conferring personhood upon the Lake, but this was irrelevant to the issues of the case brought against it: neither the District Court nor Drewes Farm had any particular challenges to so-called personhood attributions, but were rather concerned with substantive problems with the charter in current Ohio law. This could in fact be seen to make a mockery of current personhood conceptions as applied, for they appear to hinge on a new approach to liability that demands a radical shift in how humans interact with the environment. LEBOR generates additional difficulties for itself in this sense, concerning the evidentiary basis for liability, in declaring damages to be injuries that can be relatively measured and counteracted through compensatory mechanism.

Damages shall be measured by the cost of restoring the Lake Erie Ecosystem and its constituent parts at least to their status immediately before the commencement of the acts resulting in injury (§3 (d)).

The objection from Drewes Farm is correct in that there remains sufficient vagueness, both theoretically and operationally, thus generating large amounts of risks/threats of litigation from current licensed business practices. In the hearing, the defendant's council responded

that LEBOR is a strict liability statute that indicates, in Section 2 (b), that those permits would not automatically be some type of defence to any conduct that results in harm within the City of Toledo. This was also at the locus of risk for Drewes Farm as a justification for standing (i.e. an Article III harm under the U.S. Constitution) based on uncertainty of business practice compliance. This point was, as such, also used to argue by the plaintiff that strict scrutiny should be applied to the interpretation of the charter's wording. On 28th February, this case, and the status of LEBOR, was decided. Judge Zouhary of the North West District Court wrote that LEBOR would "injure" the two plaintiffs — State of Ohio and Drewes Farms. He gave that the liability issue was excessively vague for the purposes of future interpretation and judgement: "What conduct infringes the right of Lake Erie and its watershed to 'exist, flourish, and naturally evolve? ...How would a prosecutor, judge, or jury decide?" [Decision, Case No. 3:19 CV 434 (2020)] Hoffman was also cited in support of the need for strict scrutiny based on this vagueness, but the judgement also refers to three Federal Court decisions that have invalidated municipal ordinances on vagueness grounds. Zouhary notably drew attention to the good intentions of the charter, but nonetheless held it to be inappropriately written, and in particular that it was a prime example of municipal ordinance overreach and the concerns of the plaintiff were reasonable.

LEBOR's authors failed to make hard choices regarding the appropriate balance between environmental protection and economic activity. Instead, they employed language that sounds powerful but has no practical meaning. Under even the most forgiving standard, the environmental rights identified in LEBOR are void for vagueness (p.6).

Thus, LEBOR has been invalidated, based on the design of the charter itself and the principles expressed therein which have been deemed inoperable. It is important to note in the context of this decision that the more general jurisprudential paradigm within which Judge Zouhary is judging LEBOR is not challenged. Arguably therefore, the point of LEBOR

has been missed entirely, its substance ignored. While the bill, as a charter, was not declaring Lake Erie a legal person, it required that the standing of the Lake itself be placed at the same legal level as private persons (i.e. private economic actors such as farmers and agricultural corporations) for the lake to be represented in law as LEBOR proposed. This invalidation then is not relevant to the separate debate within environmental law as to the appropriate new ways water can be protected and/or sustainably exploited as a hydrological resource system and ecological entity. The language used by Zouhary is also worth noting: pointing out that Lake Erie is “not a pond in Toledo. It is one of the five Great Lakes and one of the largest lakes on Earth” (p.7) could be interpreted as demeaning to the City, and trivialising the real distribution of risk from algae blooms on the lake. It, among other features of the decision, such as the appeal to vagueness on “lake health”, implies that the defendant does not understand the scale and magnitude legally, politically, and environmentally that they are dealing with. On the contrary, a single read of the bill, as well as the other campaigns of the Community Environmental Legal Defence Fund, makes clear that the activists are very much aware of the context of LEBOR and what they seek to challenge legally.

Constitutional Contention

LEBOR arose, and is currently a matter of contestation, due to its status as an act of legal and judicial activism; a piece of radical civil regulation backed by the leveraging of liability and public representation. Its radical status is due to the jurisprudence behind LEBOR being a substantive departure from U.S. legal norms, finding itself at odds with the institutional and constitutional arrangements that undergird a particular conception of action within the U.S. jurisdiction in which it finds itself. These arrangements shall be outlined here, with reference to *Drewes* where relevant.

The tension of corporate personhood as a mechanism of access to the constitution demonstrates the prevailing ability for corporations to leverage a long history of largely ambiguous jurisprudence on corporate recognition.

Legal scholars have long found the Supreme Court's lack of a coherent approach or engagement with theoretical questions concerning the nature of the firm deeply disturbing, calling the Court's rulings 'ad hoc,' 'right-by-right,' 'arbitrary,' 'sporadic,' inconsistent, and incoherent (Garrett, 2014, p.99).

The First Amendment in particular generates a quandary for the courts. LEBOR could in fact be interpreted as not levelling a systemic constitutional challenge at the courts, but rather seeking to shift the jurisprudence, from an organisation-neutral interpretation to one that provides a greater weighting to natural objects. From the position of the City of Toledo, there is a limited applicability of the public interest doctrine under Ohio municipality law, given the scale of the Lake Erie ecosystem in terms of political and legal geography. Therefore, the implications of LEBOR, in terms of the constraints it seeks to place on private businesses, meant that the charter was also framed as raising a municipal ordinance issue. In *Hoffman Estates v. The Flipside* [455 U.S. 489, (1982)] the question before the court concerned whether the Village of Hoffman Estates ordinance relative vagueness of ordinance pertaining to drug sales. Toledo attempted to use Hoffman and the strict scrutiny argument against the plaintiffs by suggesting that scrutiny should be applied to their business actions.

The issues in Hoffman were related to regulations that breached commercial conduct, and also to conduct that isn't Constitutionally protected. LEBOR is a response, and it is a law that is there to address protecting water quality and to protect and avoid and address pollution. You do not have a Constitutional right to fertilize. You do not have a Constitutional right to pollute, so to get to some type of stricter level of scrutiny, it would have to be Constitutionally protected conduct (Sarah Skow, City of Toledo Counsel, January 28, 2020).

The Court of Appeals for the Seventh Circuit judged the ordinance as void for vagueness as it was unclear in some applications to the conduct of Flipside and of other hypothetical parties [639 F.2d 373 (1981)]. Under a more in-depth analysis, however, the Supreme Court judged that the ordinance is not facially invalid, and passes sufficient interpretation tests to be reasonable. They judged that the ordinance referred to concepts that, under sufficient expert and judicial scrutiny, could be deemed an admissible criterion for compliance. The doctrinal import of the case however, with respect to legal process, was that strict scrutiny does apply to laws that impose criminal penalties, burden the exercise of constitutional rights, or apply a strict-liability standard. This is highly significant to how Section 4 of LEBOR was to be inevitably judged.

As a separate point of constitutional contention, with regard to the Ohio Constitution and U.S constitutional law, the objection from Drewes Farm and the State of Ohio was that the powers of the statute itself as proposed would violate Article XVIII on the status of Municipal Corporations. By overreaching in this way, the City of Toledo was subverting state constitutional law, and therefore also the U.S. Constitution more generally based on the extent. The Ohio Supreme Court has drawn a distinction, in the interpretation of Section 3 of Article XVIII, between a municipality's general powers of local self-government and its power "to adopt and enforce local police, sanitary and other similar regulations." that is, its power to protect the public's health, safety, and morals (*Cleveland Telephone Co. v. City of Cleveland*, [98 Ohio St. 358 (1918)]). A conflict between a municipal ordinance and a general law exists when an ordinance forbids that which the state law permits and licenses. (*Struthers v. Sokol*, 1923) Any such ordinance, established through a legitimate charter or through other means, must not contravene this constitutional principle, or else it will be found void as a municipal overreach.

Section 7 of Article XVIII Ohio Constitution gives powers to adopt a charter for the purposes of creating or changing its form of government. LEBOR, as an environmental rights statute with scope of liability incorporating areas outside Toledo, cannot be argued for under Section 7. This is perhaps the biggest contributor to LEBOR being rejected, given that it essentially enabled the issue in *Sierra Club v. Morton* to be realised by any citizen of Toledo under sufficient consideration of special interest. Through standing precedent, there was therefore certainly a case for the spirit of LEBOR, but the charter lacked constitutional compatibility. These interests, as noted back in *Sierra Club*, 'may reflect aesthetic, conservational, and recreational,' as well as economic, values." [405 U.S. 727 1972)] But broadening the categories of injury that may be alleged in support of standing is a different matter from abandoning the requirement that the party seeking review must himself have suffered an injury. This was the general point of contention in *Sierra Club*, where an organisation or individual was framing themselves as representing the "public interest", which did not fit to the interpretation of standing.

Regulatory failure

Erie's rights are an important landmark, and eco-socio-legal case-study, in the very recent developments of natural object personhood, given that it is an example of civil law and regulation being generated in a non-tribal community context. Calling for the recognition of specific ecosystems, is arguably far easier, and more compatible with regulatory capture, than nature as a whole, which as a concept is unbounded and value-hazy. This kind of action stands in opposition to current US constitutional jurisprudence and administrative law, given that personhood of Erie would pressurise other communities within the lake's ecosystem, and every actor in the socio-ecological network, toward activities that would comply with its

rights to hydro-ecological integrity. Thus the issue of scalar governance returns as a classic challenge for self-organisation to solve in the jurisprudence of environmental law.

(Schumacher, 1973) The decision can be seen as an opportunity to re-theorise about transboundary/interstate water governance: a chance to propose new integrated mechanisms to meet this new challenge. Clearly however, and of interest to this thesis specifically, there are two distinct aspects to what LEBOR represents. There is the hydro-legal, or the current manner in which Ohio regulation pertains to the issues of pollution, and there is also the localised issue of Toledo as an eco-socio-legal entity, and the way it as a municipal locality experiences pollution. The Obama Administration's final recommendations for the Great Lakes Regional Collaboration Strategy (GLRC) was a 'national priority'. The then-president proposed \$475 million for a Great Lakes Restoration Initiative, an 'unprecedented investment in the nation's largest fresh surface water ecosystem.' (EPA, 2009) This involved the target-setting for forty-three areas of concern that were classified as impaired by the 1987 Great Lakes Water Quality Agreement. These impairments were identified as being caused by contaminated sediments, sewage treatment plant discharges and combined sewer overflows, non-point source runoff, hazardous waste site runoff, and habitat degradation and destruction. However, the ultimate goal of the GLRC was to reduce hundreds of thousands of tons of sediment, pounds of phosphorous loading, and pounds of nitrogen loading, focusing on the land development and agricultural sectors. The management and governance regimes upon which these federal strategies depended for operation were not designed to handle such policy. Instead, large-scale industrial animal agriculture generated a continual problem that has generated LEBOR as a response.

As Kogan (2019) notes, the distinction between the *ex ante* and *ex post* approaches to regulation has led to the different functionings of empirical governance frameworks, and

adopting *ex ante* would be alien and threatening to the current state of U.S. jurisprudence. In proposing that the rights of the lake can be represented by the community in a court of law, Toledo can in fact be seen to assert the personality of the water course, and in-so-doing force the issue of *ex ante* to the fore. Once an entity has negative rights attributions, it is no longer permissible to subject that entity to risks on the basis that a harm is uncertain, and also poorly traceable. Be that as it may, the impacts of this legal approach in the practice of contextual water governance are pronounced. While the Great Lakes Initiative is highly data-rich in its monitoring and recording of the hydrological status of the Great Lakes (NOAA, 2020), the data on Erie's health demonstrates that it has failed to promote the outcomes the GLCR was aiming for. On the contrary, the context of recent algae blooms and corresponding hydro ecological dead-zones proves that Certified Nutrient Management Plans did not sufficiently serve to curtail nitrate and phosphorous loading from agricultural run-offs through the Maumee River. The action taken by Toledoans for Safe Water is in response to the damages, the causes of which were well-known and allowed to continue due to a lack of corporate incentives built into the governance framework. It is clear however, based upon the development of the LEBOR case, that new rights attributions to water flows are not compatible with this present legal status quo that allows for private action first, and dealing with consequences/harms *ex post*. Such an incompatibility is of particular starkness with regard to the agricultural sector of Ohio, which is responsible for the high concentrations of phosphorous and nitrates loading into the Maumee River watershed, and thus into the Western Lake. Under-regulation of fertiliser use, which contains high levels of phosphorus and nitrates, as industry standard, has led to run-offs into the Maumee River, and these chemicals which are normally scarce in nature due to their role in supporting biological life,

Figure 2:

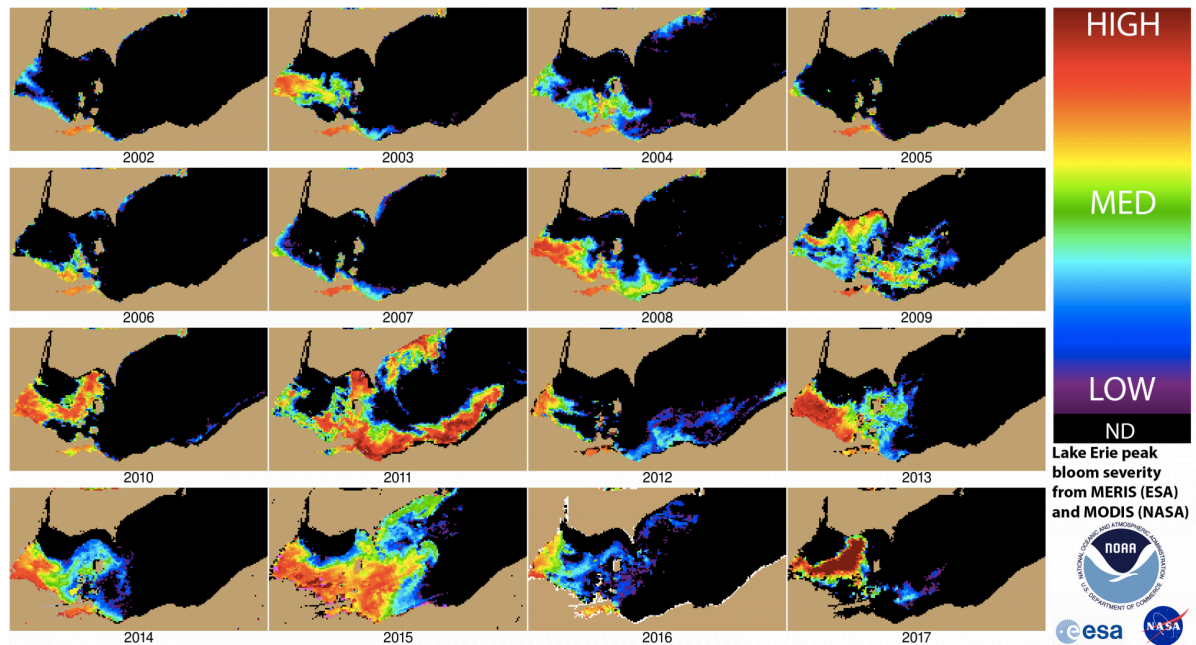


Figure 2: (NOAA, 2019) Satellite images over 15 years clearly show not only the prevailing presence of algae blooms on Lake Erie, but also the unpredictability of their impacts due to distribution dynamics. No image is quite alike in its spread of concentrations, though all share the Western Lake and the Maumee River mouth as their source. For example: blooms in 2011 and 2015 had a particularly strong impact on the Northern-Mid shoreline, whereas others remain concentrated to the Western and South-western shorelines. Toledo, as the city situated directly on the mouth of the Maumee River, has clearly been the epicentre of algae outbreaks for years.

promote the thriving of simple lifeforms which can quickly generate and multiply to take advantage of the concentrated soluble nutrients.

Thus far, the nutrient-loading of the watercourse has been addressed through farmer incentive-based policies, through the H2Ohio Program (Patton et al. 2019). The H2Ohio clean water fund will provide \$172 million in farmer support to reduce pollution of Ohio's hydrology over the next two years. This has been in the interest of preserving constitutional rights to do business for private entities, and also to prevent the high-cost of regulation upon the agricultural industry. However, as has been made clear even simply by reviewing the Ohio Farm Bureau response to LEBOR, there is significant established resistance by the agricultural lobby to LEBOR (Bush, 2019). As such, the system of water governance functioning in Ohio could be seen as mutually exclusive. Independent economic actors are

empowered by policy to pursue their own priorities that fit with their market agenda, this including the proliferation of large-scale run-offs that (particularly from the animal agriculture industry), are extremely contaminatory (Wilson et al. 2019). Thus the stakes are high if the legal status quo is to continue.

Conceptual Evaluation: Legal Personhood

As can be seen from this case-study, it has seemingly been decided that legal personality is the most appropriate tool for changing the status of this distinct environmental system in law and governance. The legal representation of the lake's hydrological system has been eco-socio-legally sourced from a recognition of what such representation means in the context of the present jurisprudential paradigm (hence the eventual use of legal personhood for the lake, despite it not being declared in LEBOR).

This sourcing is important to evaluate against philosophical details. As has been mentioned briefly in Chapter 2, the conceptual foundation of standing for natural objects, such that their rights could be represented in a court of law, comes from Stone's (1972) seminal article:

It is not inevitable, nor is it wise, that natural objects should have no rights to seek redress in their own behalf. It is no answer to say that streams and forests cannot have standing because streams and forests cannot speak. Corporations cannot speak either; nor can states, estates, infants, incompetents, municipalities or universities. Lawyers speak for them, as they customarily do for the ordinary citizen with legal problems (p.464).

Stone claims that legal personhood could enable non-human entities to participate in legal relationships and to seek redress in its own right, represented by guardians. Hence, nature could be represented judicially by guardians who are concerned with nature's well-being and who can initiate legal actions and claim restitution on behalf of nature's non-human objects if

nature's interests are violated. In that case, Stone contemplates that courts will be able to assess the actual harm and rehabilitation of nature's non-human objects rather than the individual interests of the guardians (Hogan, 2007; Morris & Ruru, 2010). Even so, the practical function of this kind of conception in legal reality can be contested. Legal personality provides 'formal capacity to bear a legal right and so to participate in legal relations' to anyone or anything, without considering the moral significance of the bearer of legal personhood (Naffine, 2003, pp.350). Humans decide what is to be treated as a subject of rights and duties, based on the dynamics of legal relationships between humans and things, and on human objectives. Indeed Shelton (2015) defines a legal person as an 'artificial' entity 'that is not a human being, but one on which society has decided to confer specific rights and obligations' (para.22).

In common law, the nature of the firm has been the fundamental, ongoing point of tension in private jurisprudence, leading to different perspectives being applied to legal decisions. In relation to LEBOR, Ohio Constitutional law, the role of Charters, and Drewes Farm, 'this tension between rival conceptions of the firm has permeated the Court's corporate-rights jurisprudence for 200 years' (Buccola, 2016, para.16). A corporate "right" can be defined as a power to object to government regulation, including indirect regulation through the creation of private rights of action, on constitutional or statutory grounds. The rights that corporations are deemed to possess can in fact be conceived of as contingent of their status as actors in an Actor-Network. The constructed norms of appropriate economic activity undergird a contextual legal reality and thus predefine regulatory jurisprudence.

Environmentalism and socio-legal activism

Tarlock (2004) argues that environmental law is revolutionary in that it is designed to challenge the settled expectations that remain traditional common law's primary objective.

‘Adaptation to changed social conditions are often subordinated to the twin values of stability and predictability’ (pp.235). The revolutionary project of redefining harm as long term risk of future illness of ecosystem malfunction rather than immediate effects has proven slow to permeate institutions outside those explicitly subject to the demands of legislation. As for the Toledoans for Safe Water, and the backing they received from the Community Environmental Legal Defence Fund (CELDF), the declaration may have served a legal activism purpose, challenging the Ohioan status quo that protects the rights of corporate actors to pollute. A perusal of the press reporting on the Lake Erie Bill of Rights (LEBOR) also reveals a misunderstanding as to the meaning of legal personhood, with many outlets dramatically reporting that the lake now has the same legal rights as a human person (Daley, 2019). This was not accurate, nor was legal personhood the explicit subject of LEBOR. Thus the question remains as to whether legal personhood is meaningful in these instances, and based on this evaluation the concept seems embedded not in legal logic, but in the nexus between identities and intelligibilities. These are manifested in a particular environmentalist approach to the legal status quo. Espinosa (2017) examines the emergence and development of the place-based rights for nature approach in the context of such recent cases. She reviews the Democracy Schools run by the CELDF as a method of community-building and collective legal critique. These schools are programmes run by the organisation that act as lessons, seminars, workshops and training sessions to build community awareness and share knowledge stocks on environmental management and justice. The notion is propagated in these programmes that communities or municipalities find themselves without the governing authority to decide what happens within their boundaries when it comes to environmental policy. CELDF challenge this by developing localised alternatives to this governance regime, based on an ecocentric approach.

By de-centring the human in social relations, new frameworks of social thinking can be engaged that can serve to displace the conceptual power of human-arbitrary systems that are contested, volatile, and processual (Featherstone et al., 2007: p.386).

This also links directly to the scale of the water issues tackled in this approach. The role of political geographies in shaping the governance of the environment is to be challenged for the assertion of ecological-systems value beyond their categorisation as resource systems, and this is an environmental justice issue. CELDF defines environmental justice as consisting of a state of optimal socio-environmental equity, whereby the interests of communities are directly informed by the realities of their environmental contexts, and these interests are fully represented and integrated into the governance of human-nature interactions. (Espinoza, 2017) Though this conceptualisation is socio-culturally inclusive, it is empirically centred, where personal and community interests must be aligned with ecosystem health goals and maintenance. Ultimately, it seems that the primary outcome of CELDF sponsorship and support of particular initiatives in the United States and elsewhere is to promote the reactive dynamics of social action at local scales: changing the thresholds for action and activism as a response to environmental injustice. In the context of the discussed case-study herein, this has a great deal of relevance for the hydro-socio-legal nature of LEBOR as a symptom of failed water governance.

Through the exploration of the Lake Erie context, as a very recent attribution of rights to a watercourse, this chapter has identified some important legal and institutional elements that are relevant to how the issues of contention have arisen, and been processed hydrologically (Lake dynamics of pollution), socially (LEBOR), and legally (the *Drewes* challenge). An approach that seeks to use law to rectify the problems in this case-study must

address each of these processes. To lay the groundwork for certain methods of governance that enable this, the next chapter will draw together the conceptual details in a discussion of the institutional aspects identified so far in the jurisprudence of water entities. This shall further develop the critical socio-legal lens used thus far, to explore environmental water as a theoretical and practical result of resolving the dichotomy of nature and society.

Chapter 5. The institutional and the conceptual

From an analysis of the case-studies, it is clear that there are common aspects of institutional critique involved in how these cases have arisen, and how they have been handled. This chapter will draw upon these findings to examine what their legal details indicate about the nexus between institutional dynamics and the applied rights of nature concepts. Each case concerns a different institutional framework, and is found at particular scales of governance. These will be briefly discussed, and contrasted with the key legal phenomenon that is environmental water.

A view of selected cases has shown that instances of legal personhood and environmental constitutionalism arise out of certain hydro-socio-legal contexts where rights for nature have been asserted to solve the problem of environmental degradation, and each correspond to a different style of legal development for the placement of rights for water. It is

clear from the cases of legal personhood that there are a number of key themes that are present in both contextual developments: the social/communitarian valuing of a particular hydrological system feature, leading to the demand for a new conceptual framing that would alter the legal status of that feature. In New Zealand it succeeded in actualising, because the institutional arrangements were aligned with the substance of the hydro-socio-legal claim. As Talbot-Jones (2017) notes, the creation of Te Awa Tupua in New Zealand was a pragmatic way to alter ownership arrangements for the bed of the Whanganui River through legislation, without causing too much disruption to existing management structures. For Lake Erie, the demand failed to actualise because the claims contravened institutional norms and principles, and therefore found no place of valid positioning in the jurisprudence. This is perhaps the main legal lesson from these recent cases that should be learned about using, and indeed weaponising, legal personhood in context to reach certain desired governance outcomes. This is a matter of appropriate interaction dynamics: when a community makes a socio-legal challenge a hydrological regime, the motivation may be a political cry for representation of a minority interest (here the needs of Toledoans, as well as Lake Erie). It is also significant that LEBOR did not even reach the stage of being a legal standing issue, meaning that the matter of representation was not deemed institutionally relevant.

As the Ecuadorian case makes clear, environmental constitutionalism ceases to be effective in achieving its intended influence on real-world social practice if it is not accompanied with corresponding policies that encourage compliance, while also supporting the process of making environmental claims. Joining up institutional values with social will is where the legal can challenge the hydro-social, causing governance tensions. This emphasises the importance of taking a view on environmental jurisprudence that is seen through a hydro-socio-legal lens. Socio-ecological policies are in abstract justified, but in practice they must

also endeavour to be legally living: they are policies that are enacted by social institutions.

‘This ties into the socio-political nature of constitutional law itself, where a constitution can be seen as activity—as political struggle’ (Lawrence, 1987, pp.943).

As per the argument of Vines et al (2013), the solution may be tackling both requirements: allowing for the diagnosis of an environmental entity based on *health aspects* that the *community* has a hand in evaluating and/or testifying to. Indeed, if the object in question becomes a legal entity in and of itself, public interest cannot be claimed. Instead, the welfare of the entity becomes akin to a law and social policy issue: as natural ecosystem features are now socio-ecologically positioned, they have degrees of welfare applied to them as socio-ecological interests. This concept is the outcome of attempted rights for nature integration in the cases discussed herein, but is one that generates significant jurisprudential tension. The true tension that lies between the institutional and the conceptual here is the prevailing issue between public and private law manifestations of water status, where welfare considerations are directed either to ecosystems or water users/consumers/communities. In evaluating the significant role of this relationship between institutional settings and conceptual frameworks in affecting how law operates in governance regimes, the tension between public and private law arrangements for water governance should be addressed. O’Donnell (2018) has pointed out — in her comparison of personhood applications as a private law mechanism, and public approaches to environmental protection such as environmental policies — that while stronger rights status is achieved, there are sociopolitical tensions that can arise in the private realm. Members of a society can suddenly see the claims of an environmental entity as competition to their own, and thus suddenly a legal threat to their wellbeing. O’Donnell takes note of the supporting example of the Ganges and the Yamuna rivers and the attempts by private individuals to sue them for damages, resulting in

the Indian Supreme Court revoking the rights of the river. In contrast, societies may be more sympathetic to the plight of watercourses as resource systems when it is seen as something vulnerable and in need of protection. As such, the argument is that the weaponisation of private law for the protection of watercourses may backfire and cause legal problems to replace value problems. Indeed, the attribution of legal personhood on watercourses are only necessary as radical political actions to force the institutional recognition of socially-aligned values. This is why the recent uses of legal personhood should be seen as significant hydro-socio-legal phenomena that are indicative of a failure of the contextual legal status quo to sufficiently value these hydrological system features. In this context, O'Donnell discusses the significance of Environmental Water Managers (EWMs) in Australia being recognised as legal persons, acting as both definers and representatives of the environment's interests. Theoretically, environmental rights managed in this way come the closest to representing environmental interests as distinct from direct human interests, though there remains implicit the issue of how the thresholds are judged for ecosystem health. There is an understanding of the need to balance ecosystems to protect present and future users, but the methods by which this is achieved risk over-engineering the approach and separating themselves from social practices and cultures, leading to the same disconnect that has caused power disparities and legal failure in the context of the three case-studies.

Environmental water: A conceptual via media

Environmental water as a concept is an important development in modern water law and administration, as it arguable practically combines the best features of both previously evaluated conceptualisations: the institutionalisation and jurisprudential strength of environmental constitutionalism, and the socio-legal value strength of personhood, while not

fully committing to either. This can be explained through the Australian context, and by explaining the significance of EWMs in granting such legal status through their institutionalised operation. The Australian water context is a key example of how regulatory intervention by public authorities for the interests of hydrological sustainability to manage water markets, and EWMs have arisen out of this. Since 1997, in South Australia, unregulated water sources in danger of overuse could be prescribed and brought within the water rights system. Once a water source is prescribed, use becomes subject to possession of a water right and the level of extraction is regulated (Natural Resource Management Act 2004). Admittedly, environmental water has had some inconsistent definition in the past. Hamstead (2007) importantly notes in the New South Wales (NSW) context for example that the Macquarie Valley Water Balance Report defines ‘environmental water’ as ‘water which leaves the system for a purpose deemed to be environmental.’ This was actually substantially different to the legal definition in NSW, which is that ‘environmental water is any water that arises from environmental commitments either via rules in plans or from licensed water rights.’ (para.8). It was even contradictory for the Valley, given that the ‘Macquarie regulated river plan (NSW Government, 2003), makes provision first for environmental water to be all water in excess of that allowed to be extracted.’ Be that as it may, more recent definitions are ascertained through the direct objectives of EWMs. O’Donnell (2013) defines an EWM as ‘an *identifiable* organisation or agency (not wholly subsumed within a water regulator such as a government department, so that decision-makers are clearly identifiable);’ and (significantly for actually defining environmental water, one that ‘has *specific objectives* relating to the achievement of defined aquatic environmental outcomes; and has the *capacity and requirement to acquire and/or manage* water rights for the environment’ to achieve them (pp. 323). Importantly, these water rights must have the same legal protections and capacities as

the rights of other users in the management regime, or else the environmental allocation will risk being displaced by superior private interests of human persons. More recently, legislation has clarified that water flows managed to meet officially agreed environmental and other public benefit outcomes, as defined by relevant water plans, are broadly defined as “environmental water”: the NSW Water Sharing Plan for the Snowy Genoa Unregulated and Alluvial Water Sources (2016) for example requires that it be defined as the water management arrangements required to meet the outcomes sought [by the Water Access Entitlements and Planning Framework in the Intergovernmental Agreement on a National Water Initiative (2004), including water provided on a rules basis or held as a water access entitlement’ (§11(j)(b)).

A key example that is significant for legal personhood is to be found in Victoria, Australia. In 2010, ownership and decision-making responsibility for the water entitlements component of the EWR was granted to the newly established Victorian Environmental Water Holder (VEWH), a body corporate with the capacity and responsibility to hold and manage water rights for the purpose of maintaining and improving the health of the aquatic environment (O’Donnell, 2012). By endowing them with legal personhood, and not nature itself, the phenomenological issues with water *having* rights as a fluid are avoided, and instead nature *benefits from* its own water rights. EWMs are neutral actors that have no stake in the allocation/re-allocation of water to the environment, albeit acting under the assumption that human water demands must also be met. Their role as balancers of public, private, and environmental needs means they enter an interesting intermediary role between nature and society. As such, theoretically the concept of environmental water can be seen to defy the ecocentrism-anthropocentrism boundary. Though Australia is a pertinent example, the concept of environmental water itself is applicable to all jurisdictions from an Earth-systems

perspective. It is important to note that, in theory, environmental water is not definitively bound to the way water is managed, and policy operates, in the Australian context, but rather is a socio-ecological conception of water that brings the brings empirical analysis to respective needs. One of the advantages of combining water rights for nature with water markets is that once within the rights system, the amount of rights to be possessed and their design can be balanced with the evaluation of environmental needs. In this sense, in theory at least, the private water rights framework effectively recognises rights for nature and actively operationalises these rights into water economics and governance. This is significant to note, since it has been noted by O'Donnell (2018) that private rights of citizens and nature can come into conflict and competition. This problem does not simply dissolve because the public authority is involved, but rather because the rights of nature are no longer private rights at all. The question here becomes whether this form of rights representation and evaluation is comparable or contrasting with the concept of legal personhood granted to the Whanganui River and Lake Erie, given that both have their personality represented by a community that sees itself as politically legitimate. The main difference is the level of control and validation afforded to the watercourses in question, and how they are positioned in political economy and ecology.

Environmental water as a concept is institutionally significant in such positioning because of its framing of water law, at least theoretically, as a force for both environmental and social sustainability, not solely one of the other. However, the status of the environment is contingent upon the value given to it by its de facto guardians and trustees, whoever this might be. What becomes clear by attempting to achieve this balance through administrative law and policy is that the State itself endows its management bodies with a kind of trusteeship. As such, the flow regime is represented in the economic power dynamic, and thus

does not suffer from a need to be reasserted by communities in the same manner that has been the crux of cases like LEBOR. However, the process of balancing environmental allocations with existing and generated entitlements in the water economy is a complex affair. Godoy and Barton (2011) evaluate the allocation mechanisms in pre and post-Wimmera Mallee Pipeline Project (WMPP), and note the impacts of climate-related uncertainty on the modelling of entitlements. Significantly, they note that ‘entitlement holders will need to consider the trade-offs between large entitlements of low reliability and small entitlements of high reliability in an uncertain climate future.’ (pp.164). As such, highly empirical approaches to allocations are required by EWMs to maintain fairness while addressing market context and resource system realities. ‘To be efficient, water rights have to reflect different environmental sensitivities, hydrological conditions, consumer needs and community standards.’ (Australian Productivity Commission, 2003, p.95).

When confronted with an opposing discourse however, which incorporates a form of spiritualistic stewardship that gives a flow regime not only legal personhood, but also literal ancestral personhood, the socio-hydrological nature of the resource system requires a deeper integration with, and understanding of, social values. Tribal water worlds in the Maori context view watercourses as living entities that feed into their ecological-social-cultural nexus. While this might intuitively seem difficult to reconcile with legal empiricism, there may be a way to synthesise the metaphysical and the physical. This is particularly a possibility given that the sourcing of this personhood is of an eco-social nature. Responsiveness is a fundamental philosophical attribute to livingness, and the extent to which the dynamic nature of these systems is represented is contingent on how much of it is modelled through holistic data that can be utilised in context. As well as hydrological data, insufficient social data can cause a governance framework to inadequately respond to water

worlds in context, leading to misalignment with community standards and the kinds of civil regulation actions such as the two case-studies of the Whanganui River and Lake Erie. For the former in particular, the jurisprudence of environmental water management could align well with the concept of *kaitiakitanga*, a highly influential Maori resource management principle that is rooted in a strongly cultural and ecocentric socio-environmental ethic. It means active guardianship and so demands practical management, and is interwoven intimately with the concepts of *tape* (set apart/sacred), *rahui* (conservation), and *tutu* (transfer/gift/release) (Kawharu, 2000, pp.349). Such concepts, combined with the place-based Maori *mana* (power/authority) may have the nuance and data richness from situational knowledge (embeddedness) to generate a similar management regime to Environmental Water Managers in Australia.

If the informatic capacity of water managers is to be leveraged within a jurisprudence of health, as per Vines et al. (2013), EWMs and environmental water holders in particular ought to aim to better match the way their entitlement is configured so that the reliability of supply, under varying levels of water availability, is better suited to meet priority river health objectives. Describing environmental requirements as a function of different flow levels may allow the marginal value (or value of each additional megalitre of water) to be better understood. Horne et al (2008) described this process as developing environmental response curves, which could in turn better integrate the natural environment into environmental economics — fully becoming the subject of its own subject. If policymakers and water managers can better understand this, there may be greater opportunity for representation of the specific watercourse as an entity represented by data. In other words, hydroinformatics could be leveraged to legally represent the entity and its ecological interests as part of an integrated ecosystem. There is a lack of literature on this proposition so far. Nonetheless, for

the theoretics of the issue, it is clear that there is some buttressing advantage of defining and recognising the interests of distinct environmental systems, in context, within public law. By shifting the legal personhood to organisations instead of nature, the rights of nature may be more powerful and less vulnerable to private law standing and representation issues.

This can also be seen, in theory, to address the question raised by Kurki (2019) as highlighted in Chapter 2 of whether duties in the Hohfeldian sense, in response to a ‘claim-right’ of a river, are ‘duties *to* the river—rather than, say, to the general public?’ (para.22). The answer with respect to EWMs, and the administrative framework within and around which they operate, is theoretically *both*: duties are to the river and the public, and flows are assessed and managed accordingly. Even so, these rights may be balanced in theory, but in practice can be ineffectual or insufficient to address the water politics of conflicting recognised rights and hierarchies of management. Jackson (2017) notes that while the Murray–Darling Basin Plan of 2012 contains an obligation to consult with Aboriginal peoples, and thus constitutes a right to be included in water governance, the ‘consideration of Aboriginal interests is one of many Plan objectives that sits alongside requirements to implement international agreements and meet the water requirements of ‘ecological assets.’” (pp.35). Inevitably, the social hydrology of indigenous livelihoods and culture is found at odds with the priorities of national water policy, which can include more ecocentric approaches to resource management. Rights jurisprudence that seeks to separate environmental entities from the socio-ecological system of resource-based and place-based interactions will come up against inevitable political tension, even if it is sufficiently justified as ecocentric. How this is to be resolved through new environmental law evolutions, and hydro-socio-legal innovation, is the matter the final part of this thesis seeks to discuss.

Chapter 6. Responsive water law

This chapter will draw together the identified water governance problems that have been identified through the case-studies and their conceptual evaluation. These include conflicts of interest between actors, institutional processes, and a lack of informational enrichment. It will raise some key theoretical perspectives that can be applied to such problems which have yet to be discussed in relation to these kinds of socio-legal phenomena. The purpose of this is to directly tie legal contentions into the political ecology of water governance, and solve for these strategically. Depending on the way institutions function, certain legal developments based on underlying socio-environmental norms may be possible, while others may be unfeasible or meaningless. For instance, it has previously been noted, in relation to the case-studies discussed, that having legal personhood without the constitutional or general political jurisprudence norms to support it will result in its neutralisation. Equally, environmental constitutionalism without matching community values ultimately generates non-compliance with the principles set out institutionally. This section seeks to illustrate how rights for water conceptions can be realised, given their jurisprudential importance in solving these water problems.

It must first be discerned as to what is meant by responsiveness in the context of problem-solving for the cases that have been evaluated herein. Nonet and Selznick (1978), in their seminar work on sociological jurisprudence, have made the case that, to avoid problems inherent in law running at different speeds to dynamic social institutions, law must have a degree of responsiveness. This is enabled by promoting social jurisprudence in lawmaking and legal decision-making. In relation to the position and status of institutions in the different case contexts, it is important to appreciate how governance mechanisms work through

interactional networks; how laws are designed and operate defines priorities from decision-makers and thus frames human-environmental interactions. This can be seen, for example, in the rise to prominence of the idea of landscape in conservation policy. Stephenson (2008) notes that ‘growing awareness of the need to sustain both cultural diversity and ecological diversity appears to be finding common ground in landscape’ (pp.128), as can be seen in landscape identification and protection approaches under the World Heritage Convention of UNESCO. Furthermore, Brown et al. (2005) presents the protected landscapes approach, which focuses on natural-cultural sustainability, emphasising the role that social norms and practices play over time in solidifying the status of natural systems. The need to balance human use of resources in line with ecosystem thresholds is a basic feature of a jurisprudence that affirms the social nature of the ecosystem. This recognition can be sourced from contextual legal geography: a conceptualisation of space and place in the eco-social realm that generates a variety of values. In terms of the human element of ecosystems, these values can range on a spectrum, causing tension between them. For instance, if a watercourse is conceived of as being a convenient depository for human waste (as is the case for many urban rivers), this may generate a valuation of that watercourse limited to this point of exploitation, clashing with a conception that values fishing rights, or bathing, in the same natural object. It is however nonetheless valid given that the criteria for legal personality is socially constructed, and therefore allowing for contest. In this way, the idea of water worlds (Orlove and Caton, 2010) in the anthropology literature can be seen to apply not just across a range of contextual settings, but also within one place/ecosystem/natural object.

Hydro-socio-legal regimes for “living” water entities

By putting tribal interests first over hydrological analysis, the benefit of their meta-ethical spiritualism is not manifested in evidenced based approaches to management, and thus their contribution to new forms of environmental jurisprudence is reduced. The presentation of legal personhood for natural objects must not be seen as merely an opportunity to propagate tribal intersectionality, but rather to effectively scale data-driven hydrological governance. Tribal relations with natural objects is further evidence that optimised small-scale social networks is conducive to the optimisation of social-ecological systems dynamics (Ostrom, 1990). The ecocentric approach to rights also misses the point by drawing a false distinction between humans and the environment: by approaching the relationship of humans with the environment as existing on relative terms with other organisms, and consequently evaluating conceptions of standing in line with this, the rights jurisprudence for natural objects becomes centred in a biological assessment paradigm for thresholds of integrity. This reaffirms the hydro-socio-legal nature of water regimes; dichotomous relationships between modern environmental protection principles, and alternative socio-cultural relationships with natural systems, need not exist. Rather, recognising socio-legal geographies as human ecosystems themselves could provide innovative jurisprudential weight to conceptions of legal personhood. In this way, harm to natural objects, defined empirically, can be integrated into community risk and losses, such that the harm is framed as socio-ecological itself (Bergin and Orlando, 2017). Applying rights to social-ecological systems as holistic entities, that have self-organised through consensus and interdependence, may be the solution required to prevent the legal case-studies examined from arising. Seminally, Zogheib et al (2018) have focused on exactly this problem, and have highlighted the need for new technological tools and data-driven methods for water governance in order to rectify major water issues in

contexts around the world. They also usefully combine principles of distributed governance to the application of these solutions. They note that polycentric governance implicitly relies on a series of key assumptions about data generation, collection, storage, transmission and communication. Enforcing resource and user boundaries in the case of a non-exclusive resource such as water is challenging, requiring at minimum a highly robust abstraction monitoring network. In addition, devising locally compatible usage rules requires a good understanding of system processes and trends, which may in turn necessitate the presence of continuous, long-term monitoring. Implementing user and resource monitoring in a polycentric system is more complex, but necessary for the social integration required of the hydro-socio-legal underpinning of responsive law. In the case of Integrated Water Resource Management (IWRM), the catchment-wide regulator typically has a clear legal responsibility to conduct all monitoring activities, such as to enforce water allocations and to characterise the overall quality and quantity of water resource for planning and optimisation purposes (Cosgrove and Laucks, 2015). Hence, data is usually concentrated amongst a few select institutions with a high degree of centralised control, which may negatively affect the flow, availability, and quality of knowledge amongst stakeholders. However, where multiple governance layers starting from the self-organised systems interact independently, it is often unclear how the legal right to monitor is attributed to given institutions or entities. In such circumstances, it is not so much the hydrological empiricism that is questionable (whether it is or not is a separate issue) but rather whether the monitors are seen as politically legitimate by the communities they serve. The issue of inclusivity and technological accessibility is a primary concern for eco-socio-legal informatics. The required community oriented responsibility that enables “living law”, and thus validation of new rights-based legal statuses, cannot be achieved unless water data is made meaningfully accurate.

In many regions of the world, acute data scarcity still limits our understanding of hydrological processes and how humans interact with the water cycle. This in turn is a major bottleneck for advancing more efficient management of water resources systems (Buytaert et al, 2016, pp.142).

For water regimes to become more responsive to the kinds of demands that have been shown as prominent in the examined case-studies, the hydro-socio-legal approach must be used in governance practice to change the way law and regulation operate. Whereas the focus of IWRM is on controlling or managing the water system to reach desired outcomes for society and the environment (Ioris, 2008), the focus of socio-hydrology is on observing, understanding and predicting future trajectories of co-evolution of coupled human-water systems (Konar et al. 2018). In this sense, one could say that socio-hydrology is a fundamental socio-physical science underpinning the practice of IWRM, as the nexus of valuations based on supply, demand, beliefs, and practices is the nexus in which the real regulatory calculus for water is found, and represents the combinatorial process of resource management formulation. If the scientific underpinning is neglected, the regulation may fail. As such, it is reasonable to integrate this approach to management with a realistic view of how real-world socio-hydrological networks operate in practice. By integrating these two approaches, the design and function of law in context can be evaluated not just from its eco-hydrological status, but also with an incorporation of more dynamic variables. This can be achieved by applying a holistic lens to jurisprudence that sees all parts of an actor-network. According to Latour (2005) an actor can enable and shift actions by their behaviour. The action itself can be as simple as a transfer of energy and as complex as human psychology; actors can be humans, objects, texts, technologies, organisations, ecological systems, defined geographies and so on. This is highly applicable for framing the legal concepts that arise from the evolution of the Rights of Nature discourse, in the context of the responsiveness required

to undergird/substantiate new forms of governance through the law. Furthermore, actors are constituted in their own relational networks, rather than existing in their own right (Law and Mol, 1995). Put differently, the ontology and function of an irrigator is a causal effect of the network actors she is connected to, as well as the meaningful practices she performs. These can be, for example, her fellow irrigators, the quality of the soil she waters, how water is transported, conduct at meetings, weather variations and more. Likewise water sources are constituted in networks that govern what they are. In the case studies presented, it is clear that considering these interactions is necessary if one is to understand the how and why of these radical declarations of ecological representation. Indeed, reasserting the realities of water anthropology means that this is imperative. Water must be appreciated for its deep complexity and interconnectedness with all life, and as a substance it is fundamentally involved with justice issues and power relations between all actors existent in a network (Balletero, 2019). When actors are part of different networks, the complexity of this interrelationship increases (Law 2004; Mol 2010). If actors are not in conceptual alignment, then governance systems, which depend on their function, legitimisation, and compliance, risk partial or total failure. This is very clearly the context for LEBOR and Te Awa Tupua; unconventional routes to legal representation were a response to having no path of recourse in the law to failed a regulatory environment.

Representation through informational enhancement

Legal responsiveness can only be achieved when the law seeks to merge with social governance of water, else resource system problems cannot be solved in the modern context. Taking the Lake Erie as an example case-study, large amounts of money has been spent attempting to curb pollution of the Lake across numerous administrations. However, recent

algae blooms are still crippling the hydro-ecosystem. Data insights from the likes of NOAA (such as Figure 2), though useful, have not provided legal frameworks with the empirical richness required to solve the problems that beset Lake Erie, even in the historical context of Federal policy schemes to address them. In light of this, and an evaluation of how the Lake Erie Bill of Rights was received, it is clear that there is a political data science to consider in legal representation dynamics, where the issues of scalar water governance that provide the backdrop to LEBOR are mapped onto access to and utilisation of data. Lankford and Hepworth point out that one could empirically argue for polycentric transition.

Such is the large number of institutional and infrastructural options available to fit the wide range of basin conditions observed, it is remarkable that the cathedral format should so monopolise policy and planning (2010, pp.97).

Returning to the concept of Water Worlds from the water anthropology literature introduced in Chapter 2, the notion from Hastrup (2013) of maintaining an appreciation of both the local context and the bigger picture in water anthropology has core relevance to how polycentric governance can function. Using the hydro-socio-legal approach, it can be convincingly argued that the legal advocacy for the rights of water are an action of community environmental governance assertiveness. Indeed, groups such as the Community Environmental Legal Defence Fund can be seen as responding to the failure of constitutional law, administrative law, and individual stewardship, to sufficiently curb damages to ecosystems. Proposing a new method of environmental stewardship in the face of economic power will always be a political move toward a new method of administration that subordinates wider economic activities to environmental health conditions across time. It is unclear what the consequences of polycentrism might be for coherence of decision making within social-ecological systems. Again, implementation and examination of polycentric

monitoring would afford greater understanding of whether and how systemic coherence over decision-making emerges over time. This consideration should be applied to the aforementioned discussions of how the current legal and regulatory status quo has failed in the case-studies evaluated. Currently, the empirical frame of reference for law is both insufficiently responsive, and also too place-specific. Returning to Hastrup's theorisation about the need for both generalised and localised representation of water systems, there is clearly a current imbalance between interests and issue prioritisation such that the necessary governance procedures cannot be enacted.

This emphasises the importance of having empirical knowledges from the social and hydrological context coalesce at the appropriate scales. Lankford and Hepworth (2010) analyse large (15–150,000 km) watersheds in sub-Saharan Africa with disparate environments, institutions, and communities. They found that instead of top-down regulatory processes, the reality of water governance on the ground was what could be interpreted as an actor-network: characterised by informal, localised decision-making based on ad-hoc, local knowledge and dialogue, aimed at finding flexible, incremental solutions to management challenges. They conclude that a decentralised, polycentric water resources management (PWRM) approach is more effective under such conditions. Significantly, in their analysis Lankford and Hepworth associate PWRM with data-scarce basins. Yet, the distributed nature and informality of citizen science-based monitoring would seem highly compatible with a polycentric governance model, given that any actor may take initiative to generate evidence to pursue a particular issue. As such, citizen science contributes to the scientific evidence base of localised and multileveled decision-making. Cantor et al. (2018) emphasise that the lack of basic numbers on water supply, demand, and quality limits the accuracy and completeness of information derived from those data. This, in turn, limits our use of data to

manage water and natural resources. Unmet data needs hinder efforts to characterise groundwater conditions, operate water supply infrastructure, achieve water conservation goals, reduce energy use, protect important ecosystems, and promote water transfers. All of these characterisations are relevant for law in making judgements and management decisions.

This informational capacity is directly relevant to the hydro-socio-legal nature of water regimes; enriched informationally to ensure responsiveness to real-world water issues. Returning to the notion of passive transactional capacity mentioned in earlier discussion of rights for nature, McCormick (2007) gives that possession of some passive capacity should be taken as the minimum condition of legal personateness. Where the environment is judged as sufficiently valuable for its own sake (such as functionally in the hydrological system context) it would be consistent for inanimate objects to granted personhood, such as large boulders which alter the watercourse flow-rate. Ultimately, the development and uptake of this in practice continues to depend on this conditionality, which is in turn dependent on applied water values. In relation to this, legal allocation tools such as rights mean little when it is not found in the context of social embeddedness (Cotterrell, 2017). This is particularly the case in the practice of hydrology, where the engineers who manage systems at community levels are socio-hydrologically embedded (Stensrud, 2019). Environmental ontology as a source of value is of core importance to understanding this, but it is important to conceive of this as blended with cultural ontology; ecological embeddedness applies to all societies, institutions and organisations, and it also holds true on the individual level, such that there are degrees of consensus and subjectivity involved in place-based interaction with water. Whiteman and Cooper (2000) explain this as follows: ‘To be ecologically embedded as a manager is to personally identify with the land, to adhere to beliefs of ecological respect, reciprocity, and care-taking, to actively gather ecological information, and to be physically

located in the ecosystem' (p.1). Heikkurinen et al (2016) identify that an important finding from the search for ecological organisations in different contexts and practices is that their degree of ecological embeddedness is linked to their managers' engagement in, and commitment to, a particular ecological praxis. Thus, instead of basing decision-making technical knowledge, 'which removes the knower from the process of knowing' (Purser et al., 1995, p.1060), embeddedness is related to ecosystem knowledge consisting of first-hand local experience. Such experiences can often incorporate superior practical management elements than sourcing from only the human context in which they reside, and in that sense are unbounded by the "social". They combine hydrological, social, and situational knowledges to generate a nuanced, empirically strong approach.

With respect to personhood attributions as an outcome of a lack of local interest representation in centralised management regimes, positioning in law becomes a matter of data corroboration as soon as the concept has legal function demanded of it. As already outlined in the conceptual evaluation of personhood, both in light of the recent relevant cases, the matter of defining and discerning damages to a legal person who holds the positive right to a particular maintenance of status (in nature's case, being the 'right to exist, persist, maintain and regenerate its vital cycles' (Global Alliance for the Rights of Nature, 2019, para. 1)) requires some kind of threshold analysis supported by a sufficiently high-resolution model of the hydrological status of the flow regime in question. In this manner, smart flow regimes backed by comprehensive, high quality data sets, and the nature of personhood as being applied to the dynamical complex system of the organisation are a good fit for each-other. The law seeks to govern worldly matters, which are in flux. Water is particularly difficult, as pollution and damage to hydrological entities (as seen in all three cases) is notoriously difficult to track causally. Bui et al. (2020), in presenting the case for using

hybrid machine learning algorithms to ascertain better water quality indices, that aside from a model's structure, one of the most important performance influencers is the determination of the best combination of input variables.

The effects of combining specific variables on the result isn't consistent from one catchment to the next due not only to the spatial complexity of processes in each catchment, but also because of the variety of point and non-point sources of pollution that cause nonlinear relationships between variables and water quality (para.24).

Returning to the concept of embeddedness discussed above in relation to water managers, social access can refer to a mix of professional knowledge and technical skills within a resourced network, to use technologies in such a way so as to enhance professional practices and social life. It can be seen just how important this is for water governance in a real-world resource network, where polycentric modes of institutional decision-making require the support of increasingly complex forms of ecological and geophysical data. With regard to large hydrological entities like the Vilcabamba River, the Whanganui River, and Lake Erie, the tensions arising between water science and jurisprudence become abundantly clear in their scale and detail; no matter the objective nature of the detriment to environmental health. In practice, the abilities of diverse organisations and people from different socio-cultural contexts to actually use these tools will be critical if they are to move from the laboratories and pilot projects into widespread use where they can enhance water governance. Social access for hydroinformatics is integral to the design and development of systems and services that are to be widely used across different societies, and integration with community practices is key. This could allow for stakeholders themselves to support socially embedded environmental water managers.

For example, farmers in Ohio could be connected to the river through live interfacing based on the smart placement of aquatic sensor-technology in close proximity to their land.

Citizen-based technological dispersal and basic operational knowledge could inclusively engage stakeholders to provide comparative metrics that allow higher resolution mapping of hydrochemistry, as well as real-time algae bloom spread. Both farmers and regulators could keep a better handle on the river's live health, and would allow data to be brought together for full regional hydrological system representation. There is already an initiative underway through the Cleveland Water Alliance (2019) that seeks to fill this gap, and the legal implications for Lake Erie could be significant. If certain farming businesses can be implicated as contributors to run-offs, penalties to such businesses can ensue, or at the very least fertiliser limits could be imposed in line with the empirical evidence of how it is affecting the watershed in real time.

For the Whanganui, there are opportunities to integrate new technologies into tribal life, such that data-driven governance is not seen as a form of colonial hydrological modernism (in the Latourian (1993) sense of modernism, as mentioned previously). Taking a hydro-socio-legal informatics approach to cultural water practices, therefore, means respecting both the empirical and non-empirical — the information interfacing and the metaphysical aspects of the watercourse. This could be approached in creative ways through platform design may be key to success: an application presented as “monitoring the personal health of the Te Awa Tupua”, in the Maori language could improve social access. This could then be used as powerful dynamic evidence in litigating for river health and guiding public policy from Maori communities. Such initiative has already been taken, for example by the Māori Innovation & New Technology Sector Cooperative (2013), and in combining recent reclamation of traditional waterways with such innovation, along with the concept of *kaitiakitanga* discussed in the previous chapter, may be the solution to solidifying Maori water governance as a new customary legal regime. This is particularly relevant for

indigenous representation in water governance discourse as a means of disseminating knowledge and empowering customary water jurisprudence internationally. It is worth mentioning that it has only been a recent development for international water governance discourses to take necessary extra steps to include them: only in September 2017 did the United Nations General Assembly adopt resolution A/RES/71/321 entitled *Enhancing the Participation of Indigenous Peoples' Representatives and Institutions in Meetings of Relevant United Nations Bodies on Issues Affecting Them*.

This approach is also highly relevant to Ecuador, with the origin of Sumak Kawsay/ Buen Vivir stemming from the presence and influence of national indigenous organisations, as previously outlined in the conceptual evaluation. The issues associated with the Vilcabamba case more specifically however, presents a different institutionally focused issue for environmental interaction; with planning regulations and regulatory oversight being required to provide coverage of all human economic activities that may affect the river, in line with the reverse burden of proof and the precautionary principle as both enshrined in the 2008 Constitution. The fact that a case such as *Wheeler & Huddle v. Attorney General of the State of Loja* [2011] was even necessary shows that environmental constitutionalism is not sufficient to protect the rights of nature. The prerequisite of environmental permits for construction projects was also insufficient, and actors like the Provincial Government of Loja should have been prevented from commencing such projects. Environmental constitutionalism has great advantages jurisprudentially, and in a context such as Lake Erie and LEBOR, this could be a political and legal game-changer. As it is, the challenges facing watercourses like the Vilcabamba and others in Ecuador are operating in a different actor-network, and require a joined up regulatory regime with appropriate oversight into planning and project management to enable constitutionalism to succeed.

Conclusion

This thesis as a piece of research set out to examine how rights for nature discourses have arisen and what problems they highlight with current approaches to water law, with reference to the most relevant real-world contexts. It has covered theoretical arguments on rights for nature to provide the basis of jurisprudential considerations and issue that arise from the progression of the discourse. The discussion on the nature of such rights and representation has been expanded upon in exploration of the case-studies, which are examples of significant hydro-socio-legal phenomena that occur as a result of failures in governance systems. These cases and their contextual variance demonstrates that law, as an instrument for social reaction, responds in a jurisprudentially similar manner to water problems when there is no other accessible solution for representation of ecocentric interests. When the objective facts about a hydrological entity's health requirements are not represented or adequately incorporated into regulatory frameworks, or if such frameworks do not work to curtail harms, social, cultural, and political jurisprudential strategies arise to take the place of the hydrological, pressing for legal action on those grounds instead. This is how personhood and rights attribution have arisen across all three cases; it is clear in comparative evaluation of these cases, all arising in just the last decade, that there are similarities in the positioning of water beyond conventional jurisprudence, and this is significant for how governance models should legitimately respond to the problem. This positioning requires development however, due to the uncertain theoretical/philosophical basis for rights of material, non-biological/biologically distinct entities. Scholars are still divided on how rights should be attributed to nature, or if they are even the right legal tool at all. By rooting an understanding of this issue in the influence of key socio-political tensions, and the conflicting interests of different actors

in human-water interactions, such epistemic uncertainty can be better understood, as can its relevance to legal evolution in the search for environmental justice.

As has been noted in the outset of this thesis, these are but three of a number of relevant cases in recent times of water being the subject of rights contestations. Analysing the economics of water through a critical lens emphasises the significance of various stakeholders in a water network and their own approach to water resources. A deeper social view has been shown to be useful in evaluating socio-environmental epistemology as it concerns the rise of rights for nature. The way nature, and also specifically hydrological entities within nature, is positioned in a legal regime has a major impact for the degree to which they can be embraced institutionally. This point has been made at length in Chapter 4. In exploring this positioning with appropriate detail, this thesis has sought to apply a critical environmental law perspective to new rights arrangements in law. In this approach, taking into account the governance options available for addressing these water problems that have arisen has been key in linking technological applications to a problem-solving approach. Critical legal scholars and jurists, by sufficiently considering the full network of actors and their ontologies, interactions, and influences upon social, economic, and institutional dynamics, can draw from this that significant change is required at the governance level. How social practices and relationships may inform governance approaches to natural resources is not a matter of abstract normative choices based on assumptions about what a “public interest” might be. Rather, a hydro-socio-legal perspective advocates taking into account how empirically a particular range of social practices and their associated relationships actually inform the legal status of water in context.

If water law is to develop proportionally to the complexity of water regulation and governance problems, its responsiveness must be sourced as much from dynamic social

realities as it is from dynamic hydrological realities. Rights of nature can be reserved in this process by matching the jurisprudential principles with expectations of law in action, such as having information systems that are computationally able, and dynamic enough, to represent the “living” nature of hydrological entities and the eco-systems they support. At the same time, the connectivity challenge among actors in a network, and the power-tensions therein, should not be underestimated, nor should the difficulties surrounding representation of interest in a governance framework that listens to all voices and seeks no prioritisation. What the discussion within this thesis has demonstrated is that truly responsive water law is a governance innovation that seeks to fairly, transparently, and inclusively operate within a water regime’s actor network while engaging with objective hydrological data for the assessment of watercourse health. Reinforcing qualitative and quantitative expectations about water’s status will lead to scalable confidence about allocating rights to natural hydro-ecological systems. Stakeholders in contexts like Ecuador, New Zealand, and Ohio USA demand this from the law, and legal status needs to match the specificities of socio-political dynamics of water stewardship and value. The pollution damage to a hydrological entity, be it the Vilcabamba River, the Whanganui River, or Lake Erie, is a symptom of a much larger technical issue with water governance systems which these three case studies serve to highlight particularly well. It has been shown from the case studies that neither public law nor public law jurisprudence adequately capture the hydro-socio-legal nature of human-water interactions and relationships. Water resources are both to be consumed and utilised in a private market/firm-oriented consumer approach, and also revered and protected in a public interest/community-oriented approach. The via media to this dichotomy has been presented in the concept and management technique of Environmental Water. For it to resolve tensions,

the jurisprudence undergirding concepts and approaches like environmental water must be highly embedded in the socio-hydrological context it seeks to govern.

Further work in this area, and particularly that which applies a hydro-socio-legal approach to governance issues that present challenges for jurisprudence, may seek to field-test certain solutions, such as consulting and collaborating with local water managers, connecting all stakeholders up to socially tailored and sophisticated water data interfacing systems, and evolving judicial process such that environmental health considerations are centrally considered in their decision-making at every stage. This may have to be further combined with significant shifts in regulatory policy to address compliance problems (as seen in both Vilcabamba River and Lake Erie particularly), so integration of regulatory studies for insights into institutional decision-making may be highly relevant scope for future work. In discussing this to a limited extent in this thesis, attention was given to a lack of convergence on legal principles for intrinsic environmental value, in the context of cosmovisions as features of customary jurisprudence. More work in international and comparative social policy may aid in improving understanding of how these communities envision water as a key element of social and cultural welfare, and how their representation and welfare fulfilment can be judged as a strong marker for their political and institutional power, particularly concerning which stakeholders are involved in legal processes and have more or less influence in a contextual actor-network (such as large agribusinesses that disproportionately contribute to nutrient-loading, or infrastructural contractors whose potentially clumsy machinery and operations are a threat to sensitive hydrological systems).

Overall, it is becoming increasingly clear that what this area of law requires is a dramatic re-enrichment of knowledge, from a wide range of crucial data sources. The subject of this thesis has therefore, in fact, been empirical legal theory. The demands of

environmental law, in the words of Fisher (2013), have always been “hot”, and the particular socio-hydrological considerations of legal decision-making across the case-studies herein represent a challenge that is not entirely new, but seems to demand new interdisciplinary, inclusive technical approaches for success that go beyond single concepts and seek to integrate a fair balancing of contextual rights and interests with what water health science can communicate, through independent, politically neutral regulatory mechanisms. In designing this governance system, lawmakers must step up to the challenge and engage seriously and empathically with the epistemic content of water issues.

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