Perceptions of Water Rights and Reforming Water Law in Integrated River Systems: A User-Stakeholder Orientated Research Methodology

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ABSTRACT

This article proposes a research methodology developed for use in studying the role that water users and the stakeholders must play in the reform of water law at three institutional levels: that governing the individual, the national, and the international. The centre-piece of the article presents a pilot study in which the proposed research methodology was used in the Murray-Darling Basin system of Australia, and reflects upon how it must be refined for further broad-scale use in integrated river systems wherever they are found.

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I. INTRODUCTION

Recent events along America's two great rivers, the Mississippi and the Colorado, demonstrate the impact that humans have on water and the

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impact that water has on humans. Climate change is driving environmental effects experienced everywhere in the world,[1] resulting in altered conditions[2] on both rivers—from the highest floodwaters seen in decades on the Mississippi,[3] to the worst and persistent drought affecting the flow of the Colorado.[4] The same challenges face people the world over[5]—in the last decade, the River Murray, the largest river catchment system on the Australian continent, has lurched from drought to flood with frightening and remorseless speed.[6] Similar problems beset those nations bordering major international rivers—the Mekong, the Columbia, the Rhine, the Nile, and the Danube, to name only a few.[7] These and other experiences ought to give lawmakers pause for thought about the human relationship to water, and the way in which that relationship is mediated by law.

The system of law for managing water resources occurs, or happens, at three levels: the individual, the national, and the international. As *Diagram 1* shows, each of those levels corresponds to a particular field of law—for the individual, property, the national, some form of constitutional law, and at the international, international law.[8]

1. *See, e.g.*, Bill McKibben, *Looking at the White House Through Wildfire Smoke*, THE NEW YORKER (June 8, 2023), https://perma.cc/83M4-SUP6.

2. *See, e.g.*, Dana Goodyear, *The Superbloom Is a Glimpse of California's Past*, THE NEW YORKER (May 12, 2023), https://perma.cc/J6HJ-C2C4.

3. William Brangham & Courtney Norris, *Communities along Mississippi River struggle with highest floodwaters seen in decades*, PBS NEWSHOUR (May 2, 2023), https://perma.cc/J3YW-CCNV.

4. Stephanie Sy & Lena I. Jackson, *Persistent drought and overdevelopment cause record low water levels for tens of millions*, PBS NEWSHOUR (March 13, 2023), https://perma.cc/AT8F-ZV59.

5. *See UNECE @ COP27: Strengthened cooperation between countries key to successful climate change actions and ensuring water security*, UNECE (Nov. 8, 2022), https://perma.cc/KNH8-KAZF.

6. Gabrielle Chan & Mike Bowers, *Drought and flooding rains: the Murray-Darling Basin water rights balancing act*, GUARDIAN AUSTL. (Mar. 5, 2023), https://perma.cc/97UQ-YEY2 .

7. *See generally What if Water Shortages Destabilise China?*, THE ECONOMIST (July 4, 2020), https://perma.cc/J2NT-H54K .

8. *See generally* Isabelle Blacketer, Fiona Luu & Paul Babie, *The 21st Century Challenges of Transboundary Water Management and the Limits of International Water Law*, 2022 MICH. ST. L. REV. 611 (2022) [hereinafter *21st Century Challenges*]; Paul Babie, Paul Leadbeter, and Kyriaco Nikias, *Federalism Fails Water: A Tale of Two Nations, Two States, and Two Rivers*, 35 J. ENV'T. LAW AND LITIGATION 1 (2020) [hereinafter *Federalism Fails Water*]; Paul Babie, Paul Leadbeter & Kyriaco Nikias, *Property, Unbundled Water Entitlements, and Anticommons Tragedies: A Cautionary Tale from Australia*, 9 MICH. J. ENV'T. & ADMIN. L. 107 (2020) [hereinafter *Anticommons Tragedies*].

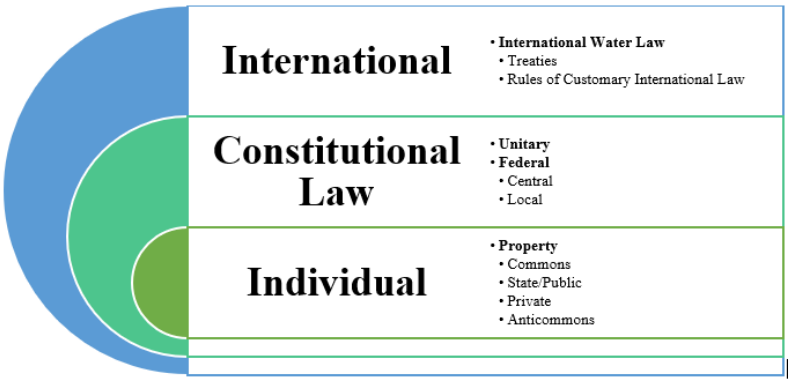

DIAGRAM 1
WHERE WATER LAW HAPPENS

As a whole, this schema provides a complete picture of water law, working up from the smallest political entity, the individual, to the intermediate, the nation, and finally to the largest, the international community.[9] The analytical relationship of the three levels might be characterized as a hierarchical structure where each level influences and interacts with others forming a multi-layered framework for water governance. However, while this might be true analytically, the actual operation of water law suggests otherwise. Instead, the three levels operate quite independently of one another and rarely interact with the other levels in the design and operation of water law and policy. As such, there is opportunity for failure at each level of water governance.

This short Article has four objectives. Part II demonstrates, briefly, how and why water law fails at each of the three levels. Part III proposes a research methodology which we have developed for studying the role that the user and the stakeholder must play in the reform of water law at all three levels. Part IV presents a pilot study in which the research methodology was used in the Murray-Darling Basin system of Australia. Part V reflects upon how the methodology must be refined for further broad-scale use in integrated river systems wherever they are found.

II. WATER LAW FAILS[10]

A. Individual

At the level of the individual, water law defines rights for the control and use of water; and such law, whatever a given legal system might call

9. *21st Century Challenges*, *supra* note 8; *Federalism Fails Water*, *supra* note 8; *Anticommons Tragedies*, *supra* note 8.

10. This part draws upon *21st Century Challenges*, *supra* note 8; *Federalism Fails Water*, *supra* note 8; *Anticommons Tragedies*, *supra* note 8.

it, is really a way of describing a system of property. While there is no univocal or standard definition of property, this much can be said about it: constructed and enforced by the state, property confers upon individuals three fundamental rights—use, exclusivity, and alienability[11]—which, taken together, constitute ownership of whatever the thing in question is. It is often said that these three rights can be divided and "bundled", and so held in various ways. Thus, property is always about fragmentation of control over a resource—some have one bundle of rights in relation to the resource, while others have another bundle, and still others another bundle; put another way, the rights of use, exclusivity, and alienability are almost never absolutes but points on a continuum, to some extent limited and contingent. One must always examine the nature and extent of the rights that the individual or group holds in order to understand the corresponding control over the resource.

Property typically requires that whatever is subject to its rights can be controlled, held, or, in the legal vernacular, possessed by an individual. Yet, for obvious reasons, water repels attempts at possession. As such, in England, because 'water is incapable of being owned',[12] the law came to the conclusion that "[i]nland water (whether a river or lake) is considered to be merely 'a species of land . . . covered with water."[13] Thus, the ownership of land came with the water that flowed over or covered it. This was the system of riparian rights, which treated water flowing over land as if it were simply land, and conferred two rights in respect of such landholding: flow[14] and abstraction.[15] The right to such water was limited by a reasonable use principle: the use which any one riparian owner could make of water was subject to downstream owners' riparian rights to receive waters undiminished in flow and quality.[16]

Riparian rights worked well in water rich England,[17] but proved unadaptable to some of those places into which the common law flowed, most notably arid and semi-arid regions such as the southwestern United

11. Margaret Jane Radin calls these three rights the "liberal triad." Margaret Jane Radin, *The Liberal Conception of Property: Cross Currents in the Jurisprudence of Takings*, 88 COL. L. REV 1667, 1668 (1988).

12. KEVIN J. GRAY, ELEMENTS OF LAND LAW 25, note 11 (2nd ed., 1993) (citing *Alfred F. Beckett, Ltd. v. Lyons*, [1967] Ch. 449 (Eng.); *Attorney-General ex rel. Yorkshire Derwent Trust Ltd. v. Brotherton* [1992] 1 AC (HL) 425, 441 (Eng.); WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND 14 (1753)).

13. *Id.* at 25, note 12 (citing BLACKSTONE, *supra* note 12, at 18).

14. SIR ROBERT MEGARRY & H. W. R. WADE, THE LAW OF REAL PROPERTY 66 (5th ed. 1984).

15. *Id. See also* A. S. WISDOM, THE LAW OF RIVERS AND WATERCOURSES (4th ed. 1979).

16. MEGARRY & WADE, *supra* note 14, at 66.

17. ALASTAIR R. LUCAS, SECURITY OF TITLE IN CANADIAN WATER RIGHTS 1-15 (1990).

States and most of Australia.[18] In such places, strict adherence to riparian rights would have resulted in much land going entirely without water.[19] For that reason, systems of allocation emerged which allowed water to be used on non-riparian land.[20] In the United States, for instance, a system known as "prior appropriation" took root in the southern and western states.[21] Other places adopted a hybrid of riparianism and prior appropriation.[22] Australia, along with some American states such as California,[23] established a system of "state ownership" that largely, but not entirely, replaced riparianism.[24]

Two immediate problems emerge at this point. First, a legal system might allocate the use and control of water according to one of two polar opposite forms of property: either, at one extreme, open access property—where no user has the right of exclusion—or, at the other end, private property—where many users have exclusionary rights. Two specific difficulties can arise from the use of one or the other form of property. In open access systems, a "tragedy of the commons" results from unrestrained use.[25] Conversely, a "tragedy of the anticommons" can follow the extreme fragmentation of the use with exclusionary rights.[26] Anticommons property is essentially private property on steroids, it is "a property regime in which multiple owners hold effective rights of

18. *Id.*; 1 SANDFORD D. CLARK & IAN RENARD, THE LAW OF ALLOCATION OF WATER FOR PRIVATE USE, 51-112 (1972).

19. LUCAS, *supra* note 17, at 1-15.

20. *Id.*

21. *See* DAVID H. GETCHES, WATER LAW (3rd ed. 1997); *Water Law: An Overview*, NAT'L AGRIC. L. CTR. (last visited Nov. 20, 2023), https://perma.cc/U4W4-QPZS; *see generally* A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881 (2000).

22. *See generally* David R. Percy, *Responding to Water Scarcity in Western Canada*, 83 TEX. L. REV. 2091 (2005).

23. Cal. Water Code § 102.

24. *See Thorpes Ltd. v Grant Pastoral Co.* (1955) 92 CLR 317 (Austl.); *ICM Agriculture Pty. Ltd. v Commonwealth* (2009) 240 CLR 140 (Austl.). *See also* Sandford D. Clark & Ian A. Renard, *The Riparian Doctrine and Australian Legislation*, 7 MELBOURNE UNIV. L. REV. 475 (1970); D. Patrick James and Hubert Chanson, *One Hundred Years+ of Riparian Legislation in New South Wales*, 3 AUSTL. ENV'T L. NEWS 39 (2000); Sandford D. Clark, *The River Murray Question: Part I – Colonial Days*, 8 MELBOURNE UNIV. L. REV. 11 (1971); Sandford D. Clark, *The River Murray Question: Part II – Federation, Agreement and Future Alternatives*, 8 MELBOURNE UNIV. L. REV. 215 (1971); Ian A. Renard, *The River Murray Question: Part III – New Doctrines for Old Problems*, 8 MELBOURNE UNIV. L. REV. 625 (1972).

25. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1244 (1968). Note that Hardin is not describing a common but a system of open access. *See* Elinor Ostrom, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION (1990) (providing an overview of open access commons).

26. *See generally* Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998).

exclusion in a scarce resource,"[27] which in turn inhibits effective and efficient use. The second problem that emerges is balancing the individual right, whatever it is, against the community interest, including, but not limited to, such goals as protecting the environment and providing for cultural flows of First Nations peoples. Property thus involves a tension between individual right and community benefit, and the state is charged with mediating the interplay between the two, attempting to navigate a course between commons and anticommons tragedies.

B. National

If property at the level of the individual is a means of allocating power over the use of water, then at the intra-state level, water law involves the allocation of power or control upon the state to create the individual system of use. This happens in all states, but it is most apparent in those which have a federal structure. Federalism establishes "a system of associated governments with a vertical division of governments into national and regional components having different responsibilities."[28] This process is known as the "division of powers" between the national and regional levels of government.[29] Any federal system, such as those in the United States, Canada, Switzerland, and Australia, divides power, and thereby fragments[30] responsibility between one national and multiple local governments.

But which unit of government decides about the establishment of the resource allocation systems, and which unit of government can best handle those higher-level challenges which transcend formal geographic, and thus jurisdictional boundaries, such as the environment and water? A river certainly cannot be broken up along arbitrary geographic and jurisdictional boundaries; a unitary, integrated, single entity, a river is in turn part of the unitary, integrated, single entity that is nature, the environment itself. A river therefore defies the borders, boundaries, and the management "solutions" imposed upon it by something as arbitrary as federalism.[31]

Looking at a specific federal system provides no clear answers. The U.S. Constitution nowhere expressly mentions water or the governmental control over its allocation. As such, the powers enjoyed by the federal and state governments must be found either within an express delegation of power, or from those powers granted to the federal government which may reasonably be implied to touch upon the allocation and use of water. While

27. *Id.* at 667 (emphasis in original omitted).
28. *Federal*, BLACK'S LAW DICTIONARY (10th ed., 2014).
29. *Id. Division of Powers*.
30. LAURENCE H. TRIBE, AMERICAN CONSTITUTIONAL LAW 124 (3rd ed., 2000).
31. Cristy Clark et al., *Can You Hear the Rivers Sing? Legal Personhood, Ontology, and the Nitty-Gritty of Governance*, 45 ECOLOGY LAW QUARTERLY 787, 791 (2018).

the federal government enjoys paramount power in respect of any such powers conferred upon it,[32] those either not expressly granted to the federal government or implied from such powers are reserved by the Tenth Amendment[33] to the states or to the people,[34] making water largely a matter of state competence.[35] But when the Federal government legislates within its sphere of competence, the Supremacy Clause ensures that such law is the "supreme law of the land."[36] As such, in the absence of any federal law, a state law will operate, but only until such time as the federal government might legislate.

The Australian Constitution divides power over water in ways similar to the US Constitution. Sections 98 and 100[37] appear to create a conflicting federal power: on the one hand, Section 98 confers the power to make laws with respect to trade and commerce, including relating to navigation and shipping; while on the other hand, Section 100 seems to limit that power in respect of the water itself. The High Court has never resolved this conflict.[38] What is clear, however, as in the US, is that the federal power is paramount,[39] exercisable only by the federal parliament.[40] Nonetheless, absent federal action pursuant to these conflicting powers, Sections 106 through 108 of the Constitution leave "the management of water resources largely in the hands of the states" as a consequence of their plenary legislative power over natural resources.[41] And over the course of Australia's federal history, the states have exercised and continue to

32. *M'Culloch v. Maryland*, 17 U.S. 316, 405 (1819). *See also* 3 PRESIDENT'S WATER RESOURCES POLICY COMMISSION REPORT: WATER RESOURCES LAW 70-71 (1950).

33. U.S. CONST. amend. X.

34. PRESIDENT'S WATER RESOURCES POLICY COMMISSION REPORT, *supra* note 32, at 5-6, 70-72 (1950). *See also* Ernest A. Engelbert, *Federalism and Water Resources Development*, 22 LAW AND CONTEMP. PROBLEMS 325, 326-328 (1957).

35. See SCOTT S. SLATER, CALIFORNIA WATER LAW AND POLICY vol. 1, at § 1.02[2]-[7], §§ 1.10-1.11; vol. 2, at § 12.02 (2019).

36. U.S. CONST. art. VI, cl. 2.

37. For an overview of these powers, and the federal and state powers concerning water resources considered in this part, *see* JOHN PYKE, GOVERNMENT POWERS UNDER A FEDERAL CONSTITUTION: CONSTITUTIONAL LAW IN AUSTRALIA (2017).

38. CHRIS GUEST, SHARING THE WATER: ONE HUNDRED YEARS OF RIVER MURRAY POLITICS 15, 89-91, 123 (2016).

39. *Australian Constitution s* 109.

40. *See Victorian Stevedoring & Gen. Contracting Co. v Dignan* (1931) 46 CLR 73, 101 (Dixon, J.) (Austl.); *Amalgamated Soc'y of Engr's v Adelaide Steamship Co.* (1920) 28 CLR 129 (Austl.).

41. Paul Kildea & George Williams, *The Constitution and the Management of Water in Australia's Rivers*, 32 SYDNEY L. REV. 595, 602 (2010); *see also* Jennifer McKay, *Water Law in the Australian Federation: The Move Towards Centralism* 5 (2008), https://perma.cc/MM74-B3D9 (last visited Nov. 6, 2023).

exercise these powers extensively and aggressively, establishing a body of law to replace riparian rights.[42]

The federal splitting of authority over the water resource in both the United States and Australia renders "any unilateral legislative action by the [Federal government] in this area . . . necessarily . . . partial";[43] as such, "[o]ver the years, a high degree of cooperation has evolved between various agencies of the federal government and the states in the formulation and administration of water plans."[44] This is a fundamental, and indeed necessary, adjunct of "[f]ederalism [which] is . . . consistent with any degree of common or cooperative or parallel action between the unit governments, provided it is in a substantial degree voluntary."[45] The best example of cooperative or flexible federalism in the US is the Colorado River Compact of 1922[46] and in Australia, the Murray-Darling Basin Agreement, which was incorporated into the *Water Act 2007* (Cth) and the National Water Initiative (NWI).[47]

The problem, of course, is the necessity of cooperation. Can cooperation, even voluntary and with a will to cooperate, ever allow for the effective, comprehensive management of the entirety of the integrated whole of the water resource? Rexford G. Tugwell, writing in 1974, said of federalism generally that:

> The advocate of federalism has a difficulty in his subject. This, of course, is duality. When authority is divided, proprietors of both allocated powers feel themselves challenged to enlarge their shares, and this issue will always be a favourite of politicians. The possibility of creating a cause is attractive because it so easily takes on the characteristics of a crusade. However earnestly the original arrangers may have tried to establish a stable situation, dissatisfaction is apt to gnaw at unhappy minorities. Parties form around them or are held together by their attraction. Only the most disinterested and prescient

42. *See generally* P.N. Davis, *"Nationalization" of Water Use Rights by the Australian States*, 9 UNIV. QUEENSLAND L. J. 1 (1975).

43. Kildea & Williams, *supra* note 41, at 602.

44. Engelbert, *supra* note 34, at 337; Sandford D. Clark, *The Murray-Darling Basin: Divided Power, Co-Operative Solutions?*, 22 ARELT 322 (2003).

45. GEOFFREY SAWER, AUSTRALIAN FEDERALISM IN THE COURTS 2 (1967).

46. *See* Hinderlider v. La Plata & Cherry Creek Ditch Co., 304 U.S. 92 (1938) (using the federal common law to interpret the nature of cooperation between the states pursuant to the Colorado River Compact).

47. *Intergovernmental Agreement on a National Water Initiative between the Commonwealth of Australia and the Governments of New South Wales, Victoria, Queensland, South Australia, the Australian Capital Territory and the Northern Territory*, AUSTL. GOVT.: DEP'T OF CLIMATE CHANGE, ENERGY, THE ENVIRONMENT AND WATER (June 25, 2004), https://perma.cc/X4EX-WVDY.

> original arrangement can prevent this sort of division and continuing acrimony. It has never yet happened.[48]

And the challenges facing the use of water are great: overallocation in the context of the necessity of environmental or ecological flows of water; First Nations cultural flows of water; international obligations concerning water; and, the consequences of climate change.

Cooperative or flexible federalism, far from a solution, only reveals the strains and fractures that are both inherent to and a consequence of federalism—a system which struggles to keep pace with the ever-increasing demands on water, notwithstanding the amplifying demands that climate change will continue to place on it. The flaws continue to reveal themselves almost every day. On May 22, 2023, for instance, an agreement was reached, but only after extensive disagreement and threatened legal action, between California, Arizona, and Nevada to use less Colorado River water pursuant to the Colorado River Compact,[49] and the agreement must still be ratified, which, experts suggest, will take significant time.[50] And exacerbating the difficulties created by the constitutional fragmentation of power, the Supreme Court recently limited the power of the EPA to regulate wetlands,[51] further fragmenting management of complex riparian ecosystems. The Court also rejected a claim brought by the Navajo Nation that the federal government has an obligation to secure water rights to that community,[52] adding further complexity in the already complex interplay of federal and state power. Similar issues face Australia's Murray-Darling Basin,[53] including inter-state conflict,[54] and the necessity of securing cultural flows for First Nations Peoples.[55]

48. REXFORD G. TUGWELL, THE EMERGING CONSTITUTION 89 (1974).

49. *The Colorado River Basin States Representatives of Arizona, California, and Nevada, Agreement to Conserve Colorado River Water in the Lower Basin*, U.S. DEP'T. OF INTERIOR (May 22, 2023), https://perma.cc/2FX5-A8X6.

50. Mike Easterling, *Water official says Colorado River agreement still has long way to go to become reality*, FARMINGTON DAILY TIMES (June 7, 2023), https://perma.cc/7B46-SSHZ.

51. Sackett v. EPA, 598 U. S. 651, 684 (2023).

52. Arizona v. Navajo Nation, 599 U. S. 555, 570 (2023); *see also* Crystal Owens, *Navajo Will Continue to Seek Water Rights Despite Ruling*, LAW360 (June 23, 2023), https://perma.cc/FGQ4-YM6K.

53. *Climate and River Health: Water Quality*, MURRAY-DARLING BASIN AUTHORITY, https://perma.cc/V65F-R8BV (last visited on Nov. 20, 2023).

54. Declan Gooch et al., *Murray-Darling Basin war of words over northern irrigators extracting water from potential river flows*, ABC NEWS (Feb. 7, 2020), https://perma.cc/TW2F-6J3U.

55. AUSTRALIAN GOVERNMENT, DEPARTMENT OF CLIMATE, ENERGY, THE ENVIRONMENT AND WATER, FIRST NATIONS WATER POLICY, https://perma.cc/J7WE-DVEP.

C. International

If water law at the individual and nation-state level is a matter of the allocation of power over water, then, as with those other two levels, it is the same at the international level. International water law, international watercourse law, or the international law of water resources comprises "those legal rules that regulate the use of water resources shared by two or more [nations]" and which "can be found in numerous international treaties and are reflected also in rules of customary international law, which is based on State practice."[56] The majority of the world's 261 river basins are shared by more than one nation,[57] governed by somewhere between 300-400 of these transboundary water agreements or treaties.[58] The American experience with the Colorado River, the basin of which covers two nations, provides an example.

The 1944 Treaty for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Treaty) allocated Colorado River water to Mexico, which was otherwise completely ignored by the Colorado River Compact of 1922 (the 1922 Compact), which had apportioned the flow of the Colorado among the seven US states party to the Compact. Yet, as a consequence of that 1922 apportionment, the Colorado rarely flows its entire course to reach Mexico and empty into the Gulf of California. Long before it reaches the Gulf, the water has been extracted to slake the ever-growing thirst of the seven 1922 Compact states. In an attempt to rectify that imbalance, and supply Mexico with some of the Colorado's water, in November 2012, the parties to the 1944 Treaty added Minute 319, establishing a five-year trial to allow one percent of the historic flows of the Colorado to reach the Gulf of California, rejuvenating native flora and fauna.[59] A successor agreement of 2017, Minute 323, established the ongoing principles upon which the two basin nations share the Colorado's waters.[60]

But even if a treaty is in place, it may not deal with all of the issues that can arise in shared transboundary watercourses.[61] The lessons of

56. PATRICIA K. WOUTERS ET AL., SHARING TRANSBOUNDARY WATERS: AN INTEGRATED ASSESSMENT OF EQUITABLE ENTITLEMENT: THE LEGAL ASSESSMENT MODEL 2 (2005).

57. Heather Cooley & Peter H. Gleick, *Climate-proofing Transboundary Water Agreements*, 56 HYDROLOGICAL SCIENCES J. 711, 713 (2011).

58. *Id.*

59. International Boundary and Water Commission (IBWC), Mex.-U.S., Nov. 20, 2012, Minute No. 319; Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Mex.-U.S., Feb. 3, 1944, T.S. No. 944.

60. Extension of Cooperative Measures and Adoption of a Binational Waters Scarcity Contingency Plan in the Colorado River Basin, International Boundary and Water Commission (IBWC), Mex.–U.S., Sept. 21, 2017, Minute 323.

61. Cooley & Gleick, *supra* note 57, at 713.

federalism apply also to the international arena: national boundaries create the same sorts of problems of allocation, and those problems prove to be as intractable as they do within a single nation.[62] International law seems incapable of providing workable and enforceable solutions for governance and management of integrated transboundary water resources. In fact, the problem may be international law itself. Unlike the domestic law of nations, international law typically lacks the attributes that make such law enforceable—"an international legislature, courts with compulsory jurisdiction, and centrally organized sanctions."[63] Instead, the enforcement of international law depends on "self-help—the coercive violence of the legal subjects themselves."[64] In short, if one seeks binding and enforceable obligations in the allocation, control, and management of transboundary water resources, international law struggles.[65]

III. USER-STAKEHOLDER CENTERED RESEARCH METHODOLOGY

The existing water law, while clearly interconnected analytically, is anything but in its actual operation. Proposed solutions to the failings identified at each level of law almost always involve some variant of 'cooperation'—cooperative federalism, adaptive governance,[66] intra- and inter-state cooperation, international water law, which is nothing more than a form of cooperation among nations, but only when it suits the parties. There is some support for cooperation among users to solve intractable resource allocation problems that typically assume the absence of transaction costs; property law, in fact, serves as a means, albeit imperfect, by which a legal system attempts to reduce if not neutralize transaction costs.[67] In the case of water, however, allocations have long been established, and cooperation, be it among individual, intra-national or international stakeholders, has proved difficult, if not impossible, in attempts to address the challenges.[68]

What is really needed, at least at the individual level, is not further refinement of the meaning of existing rights, but a solution that begins

62. *See* FLAVIA LOURES ET AL., EVERYTHING YOU NEED TO KNOW ABOUT THE UN WATERCOURSES CONVENTION 1 (2008), https://perma.cc/9A2V-A8HB.

63. H.L.A. HART, THE CONCEPT OF LAW, 214, 213-237 (3rd ed., 2012).

64. China Miéville, *The Commodity-form Theory of International Law* in INTERNATIONAL LAW ON THE LEFT: RE-EXAMINING MARXIST LEGACIES 92-132, 116 (Susan Marks ed., 2008).

65. *See* CHINA MIÉVILLE, BETWEEN EQUAL RIGHTS: A MARXIST THEORY OF INTERNATIONAL LAW 9-43 (2005).

66. *See* Carina A. Wyborn et al., *The Politics of Adaptive Governance: Water Reform, Climate Change, and First Nations' Justice in Australia's Murray-Darling Basin*, 28 ECOLOGY & SOC'Y, https://perma.cc/23VJ-VLG2.

67. R. M. Coase, *The Problem of Social Cost*, 3 J. L. & ECON. 1 (1960).

68. *See 21st Century Challenges*, *supra* note 8; *Federalism Fails Water*, *supra* note 8; *Anticommons Tragedies*, *supra* note 8.

from the perspective of obligation; only once the obligations that come with water use are specified can the right be framed in such a way as to take account of those responsibilities. Similarly, with federalism, while solutions which determine those decisions which should be taken at a national level and which at a local level may help[69]—something along the lines of translocalism and transnationalism[70]—the only real solution is to rethink federalism itself. Judith Resnick argues that:

> It is time to depart from the history of dichotomous alternatives (of either a state or a federal government) so as to investigate ongoing, and to imagine new, institutional arrangements that embody the interdependence of participants within and beyond the [federal structure]. Neither the kind of jurisdiction nor the territorial space occupied by a polity produces rights of a particular kind. Renouncing a claim of a jurisdictional imperative . . . is likely to disappoint nationalists and federalists, sovereigntists and internationalists alike.[71]

And the same may be true at the international level. David W. Kennedy writes that rather than constitutionalism or existing international law, we might strive for global governance, which involves:

> *Experimentation* and *institutional diversity*, protected by a re-activated sovereignty . . . In such a vision, we might strengthen and defend small pockets of public sovereignty in cities and churches and corporations and nations which have the capacity to experiment, as shields for the weak, guarantors of policy diversity and arenas for democratic political life. Perhaps the new politics will be about *mobility* . . . linking free trade in goods, free movement of capital, with free movement of persons . . . globally.[72]

Alternatively, he goes on:

> [P]erhaps a new politics will be about building a *transnational political will*. Imagine sovereignty as an open-ended promise of inclusion . . . . Imagine every citizen holding three votes to cast in any election in the world. If the new politics is to be about *empowerment*, we might imagine citizens not only informed, consulted, their polling data serving as base lines for expert management, but actually

69. Larry Kramer, *Political Organization and the Future of Democracy* in THE CONSTITUTION IN 2020 167-178, 172-175 (Jack M. Balkin & Reva B. Siegel eds., 2009).

70. Judith Resnick, *What's Federalism For?* in THE CONSTITUTION IN 2020 269-284, 276-277 (Jack M. Balkin & Reva B. Siegel eds., 2009).

71. *Id.* at 281-82.

72. David W. Kennedy, *The Mystery of Global Governance*, 34 OHIO N.U. L. REV. 827, 859-60 (2008).

> *deciding*. Imagine international policy juries—citizens empowered to decide for war or peace, for poverty here or poverty there.[73]

Indeed, one possibility involves the very concept of the "nation" receding, to be replaced with "cosmopolitan democracy",[74] or "global governance",[75] or "democratic governance",[76] or "liberal cosmopolitanism."[77] Each of these phrases means essentially the same thing: "a new kind of world order—a cosmopolitan world order—going beyond the old Westphalian world order which was characterized by the absolute rights of states."[78] This might not be as far-fetched as it sounds. For some time now, scholars have advocated a global resources trusteeship, along the lines of a public trust doctrine,[79] or the declaration of legal personhood for rivers, based upon cooperation at the international level that no longer depends upon the existence of the nation as a governmental entity.[80]

What tends to occur in solutions sought within the existing paradigm of water law is a disconnect between policy-maker and stakeholder or user conceptualization of the rights to use water. Policy predicated on a misconception of what stakeholders and users value and seek to optimize is much more likely to produce unintended consequences. As such, any proposed solutions must take account of not merely the top-down considerations inherent in the existing paradigm, but also the full range of both these perceptions and any regulatory issues. Whatever solution is adopted, at whatever level, it seems clear that a system of water law must account for the interconnectedness of the resource, and that greater cooperation within the existing paradigms of property, federalism, and international law provides few solutions to meet that challenge.

Solutions must begin, then, at least in part, with the perceptions and attitudes of water users and stakeholders—that is, those who use water and who are affected by its flows, and who are often overlooked in discussions regarding the way in which law should allocate water use and respond to

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73. *Id.*

74. *See* DANIELE ARCHIBUGI AND DAVID HELD, COSMOPOLITAN DEMOCRACY (1995); *see also* LAW WITHOUT NATIONS (Austin Sarat et al. eds., 2011).

75. *See* David W. Kennedy, *The Mystery of Global Governance* in RULING THE WORLD?: CONSTITUTIONALISM, INTERNATIONAL LAW, AND GLOBAL GOVERNANCE 37-68 (Jeffrey L. Dunoff & Joel P. Trachtman eds., 2009).

76. *See* GLOBAL GOVERNANCE REFORM PROJECT, REIMAGINING THE FUTURE: TOWARDS DEMOCRATIC GOVERNANCE (2000).

77. Peter Gowan et al., *The State, Globalisation and the New Imperialism: A Roundtable Discussion*, 9 HISTORICAL MATERIALISM 3, 4 (2001).

78. *Id.* at 4-5.

79. Robert Swann, *World Resources Trusteeship*, SCHUMACHER CENTER (Jan. 1977), https://perma.cc/Q9VK-9JWJ.

80. Greg Watson, *The World Grid and New Geographies of Cooperation*, SCHUMACHER CENTER (July 19, 2022), https://perma.cc/R5HW-2542.

the needs of those who use or hold a stake in how it is used. Gauging the relevant attitudes and beliefs of all users requires an empirical research methodology useful to scholars who study water law as well as for those who must develop new law and policy to be applied to the allocation and use of such water; such a methodology will be amenable to use in any integrated river system currently found internationally or nationally. Put another way, the methodology need not be jurisdiction specific.

Indeed, governments are beginning to recognize that the reform of existing water law and policy must involve a process that integrates every level of user—the individual, the national, and the international. The U.S. Department of the Interior, for instance, recently announced that it would begin a review process aimed at protecting the Colorado River; in doing so, it proposed the use of a robust collaboration between the Colorado basin states, First Nations peoples, water use stakeholders, and Mexico.[81] This announcement represents a timely validation of the methodology proposed here.

The research methodology we propose, then, seeks to examine a primary question: are there gaps between stakeholders' beliefs about water rights and foundational assumptions about property rights which are embedded in water allocation policies and mechanisms? The findings of such a study can provide pragmatic insights for the development of future generations of water policy that will facilitate the collaborative and innovative solutions urgently needed in integrated, transboundary river systems. Other benefits to such a methodology include new data about stakeholder and user attitudes, new knowledge about the application of property concepts to water uses, and broader stakeholder support for water policy.

We conducted a small-scale experimental pilot survey using this methodology in December 2020 to explore the understanding of Murray-Darling Basin (MDB) water users about water allocation policy and water use rights and to investigate their beliefs about the nature and extent of ownership in water use rights. The next section assesses the outcomes derived and lessons learned.

81. Press Release, U.S. Dep't of Interior, *Interior Department Initiates Process to Develop Future Guidelines and Strategies for Protecting the Colorado River: Robust collaboration includes Basin states, Tribes, stakeholders and Mexico* (June 15, 2023), https://perma.cc/R3DW-ZR2M; Notice of Intent to Prepare Environmental Impact Statement and Notice to Solicit Comments and Hold Public Scoping Meetings on the Development of Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead, 88 Fed. Reg. 39455 (June 16, 2023); *Interior Department Begins Process to Protect Colorado River*, THE MIRAGE (June 15, 2023), https://perma.cc/8RTW-AQ25.

IV. SMALL-SCALE PILOT STUDY: AUSTRALIA'S MURRAY-DARLING BASIN

The Murray-Darling Basin ("MDB") is the single most important geographic domain for Australian agriculture.[82] The availability of water is a central constraint on the capacity of the region to generate socio-economic benefits for Australia. If future climate change results in increased water scarcity, the value of innovative cooperative solutions to optimize the effective use of water will be indispensable for Australia's economic welfare. The viability of communities in the region will be dependent on efficiency of water use.[83] As evidence of the pressure to further develop water policy, in 2019 the Australian government directed the Australian Competition and Consumer Commission (ACCC) "to undertake a public inquiry into the Murray-Darling Basin water markets. The ACCC was asked to recommend options to enhance markets for tradeable water rights, including options to enhance their operations, transparency, regulation, competitiveness and efficiency."[84]

It comes as little surprise that water rights issues in the MDB continue to generate political disputation and social and commercial conflict, with dozens of press articles[85] reporting disagreement between stakeholders which generate conflict and confrontation. Conflict often involves calls for significant change to the MDB Plan[86] and suggestions that individual states are contemplating exiting the Plan.[87] Scenes of farmers burning copies of the MDB draft water plan in October 2010 made headlines around Australia.[88] Outcomes such as these attest to the strength of feeling that property issues can provoke, but these outcomes are also suggestive of stakeholders' concerns about processes by which policies relating to property rights are designed and implemented. Prior empirical research shows, perhaps contrary to expectations, that stakeholders are not inflexibly self-oriented—quite the contrary, it has shown that stakeholders can be simultaneously both individualistically- and socially-orientated.[89]

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82. *Why the Murray-Darling Basin Matters*, MURRAY-DARLING BASIN AUTHORITY, *https://perma.cc/2B9M-LZSY* (last visited on Nov. 20, 2023).

83. *See Federalism Fails Water*, *supra* note 8.

84. *Murray-Darling Basin water markets need comprehensive and focused reform*, THE MIRAGE (Mar. 26, 2021), https://perma.cc/QF3A-RYAZ.

85. *See, e.g.*, Gabrielle Chan & Mike Bowers, *Drought and flooding rains: the Murray-Darling Basin water rights balancing act*, GUARDIAN AUSTL. (Mar. 5, 2023), https://perma.cc/R59Q-JH9X.

86. *Murray-Darling Basin Plan 2012* (Cth) (made under para 44(3)(b)(i) of the *Water Act 2007* (Cth) (Aug. 5, 2021)).

87. Chan & Bowers, *supra* note 85.

88. Patrick J. Byrne, *Angry Farmers Burn Draft Murray-Darling Plan*, NEWS WEEKLY (Oct. 30, 2010), https://perma.cc/89WK-USCF.

89. *See, e.g.*, JEREMY CHEESMAN & SARAH ANN WHEELER, SURVEY OF WATER ENTITLEMENT SELLERS UNDER THE RESTORING THE BALANCE IN THE MURRAY-DARLING

Working from the primary research question proposed for user-stakeholder centred studies of water use in Part III, our pilot survey asked whether there remains a gap between stakeholders'—those affected by the use of MDB water: holders of use rights, Indigenous interests and/or environmental concerns, and those of the wider socio-political-economic community—beliefs about water property rights and foundational assumptions about allocation/property rights embedded in current water allocation policies and mechanisms. We contend that it is only through broad acceptance by all stakeholders that water policy will be stable and effective; and only through a belief that policy is fair and reasonable will cooperative and innovative solutions emerge that constitute effective responses to Australia's characteristic and ongoing water scarcity.

As such, the central objective of the pilot study was to investigate stakeholder beliefs about water rights so that such beliefs can be built into future generations of water policy. The premise of the research was that a primary, if not *the* primary source of conflict over water policy is a sense, among at least some stakeholders, that current arrangements represent some form of injustice. In other words, unless stakeholders believe that policy conforms to some minimum level of justice, they will be extremely resistant to accepting these interventions. They will likely, instead, adopt non-cooperative, confrontational positions which substantially impede the evolution of the collaborative and innovative water management solutions that Australia needs. We contend, and the study was intended to demonstrate, that perceptions of what is just, fair, and reasonable on the part of stakeholders ultimately depend upon what stakeholders believe are the nature of their property rights in relation to water. For emphasis, our position is that a deeper understanding of beliefs about water property

BASIN PROGRAM, FINAL REPORT PREPARED FOR THE DEPARTMENT OF SUSTAINABILITY, ENVIRONMENT, WATER, POPULATION AND COMMUNITIES (2012); R. Quentin Grafton, James Horne, & Sarah Anne Wheeler, *On the Marketisation of Water: Evidence from the Murray-Darling Basin, Australia*, 30 WATER RESOURCES MANAGEMENT 913 (2016); Cameron Holley, *Public Participation, Environmental Law, and New Governance: Lessons from Empirical Research for Designing Effective Participation Processes*, 27 ENVIRONMENTAL AND PLANNING LAW JOURNAL 360 (2010); Cameron Holley & Darren Sinclair, *Compliance and Enforcement of Water Licences in NSW: Limitations in Law, Policy and Institutions*, 15 THE AUSTRALASIAN JOURNAL OF NATURAL RESOURCES LAW AND POLICY 149 (2012); Cameron Holley & Darren Sinclair, *Non-Urban Water Metering Policy: Water Users' Views on Metering Upgrades in New South Wales, Australia*, 16 THE AUSTRALASIAN JOURNAL OF NATURAL RESOURCES LAW AND POLICY 101 (2013); Cameron Holley & Darren Sinclair, *A New Water Policy Option for Australia?: Collaborative Water Governance, Compliance and Enforcement and Audited Self-Management*, 17 THE AUSTRALASIAN JOURNAL OF NATURAL RESOURCES LAW AND POLICY 189 (2014); CAMERON HOLLEY & DARREN SINCLAIR, WATER EXTRACTION IN NSW: STAKEHOLDER VIEWS AND EXPERIENCE OF COMPLIANCE AND ENFORCEMENT – A REPORT OF A SURVEY OF WATER USERS (2015); Camerson Holley & Darren Sinclair, *Rethinking Australian Water Law and Governance – Successes, Challenges and Future Directions Introduction*, 33 ENVIRONMENTAL AND PLANNING LAW JOURNAL 275 (2016).

rights is an inescapable and necessary requirement for designing durable and effective policy solutions.

Such research must seek to develop new, pragmatically useful insights about both processes and beliefs in relation to property rights policies that will assist in reducing conflict and in arriving at solutions that are acceptable to all stakeholders will inform the development of future generations of water resource management policy based on a 'bottom-up' understanding of stakeholder beliefs about and attitudes towards water rights. The goal of a resulting better-informed policy will be wider acceptance by stakeholders and reduced conflict leading ultimately to more productive positive-sum outcomes. Using this premise, we investigated the idea that the national socioeconomic and environmental benefits created by the MDB Plan can be maximized only by designing water management policy that minimizes disagreement and conflict because it conforms, as far as possible, to a shared stakeholder sense of justice. A durably successful plan requires that allocation arrangements are perceived by all stakeholders to be as fair and reasonable as possible given external constraints and necessary compromises.

Given the nature of a pilot study, our survey was not intended to obtain quantitative data and was, in any case, too small[90] to produce statistically significant quantitative results. There are fundamental challenges to this undertaking, for example, quantitative willingness to conduct surveys in settings where respondents have strong incentives to over- or under-state responses and where they may wish to "send a message". Respondents were a mix of farmers, horticulturalists, government workers involved with water policy and administration, community association members, and private water trading firm employees.

The objective of the survey, then, was to gather respondent sentiments and articulations of water policy issues. We wanted to ascertain the type of reasoning respondents engaged in when thinking about water issues and thereby gain insights into their attitudes to property rights in water. In particular, we were interested in their attitudes to trade-offs between individual rights and broader social interests; trade-offs which must be navigated in the specification and enforcement of property rights in water. For example, consider the following response to an open-end question seeking general comments on water policy:

> Water rights should be tradeable from land but within more local areas. Moving 500 GL [gigalitres] from the Goulburn Valley to Sunraysia is inefficient from a resource management perspective but also completely disruptive to the social fabric. At least if the water and

90. The sample size here was limited to 30 individuals.

> economic activity is moved in a more local area, the money and opportunities are still there, if not on your land. Governments have cherry-picked third-party impacts as a result of trade and willfully ignored environmental damage to rivers, the resource inefficiencies of moving water vast distances and the impacts to social fabric.

Such a comment demonstrates a holistic conceptual framework for thinking about water policy to an extent that might surprise some policy makers and politicians.

In general, the respondents supported water trading in principle: almost 80% responded "Strongly agree" or "Agree" to the statement: "It is good policy and good practice to separate water rights from land rights and allow water rights to be separately traded." Respondents were also protective of their water rights—almost 70% disagreeing with the statement: "The Government should have the right to compulsorily acquire water rights." Only around 23% of respondents, however, disagreed with the statement: "The only acceptable rationale for government to compulsorily acquire water rights is to use the water to benefit the whole community." This is suggestive of a preparedness to trade individual interests for the social good.

A preparedness to trade with resulting social benefit does not, however, mean altruism. Over 85% agreed with the statement: "I ought to be compensated if the government reduces my water entitlement." Over 92% disagreed with the statement: "The government should have the right to acquire water rights in order to increase general government revenue." This appears to be somewhat inconsistent with the response to the effect that compulsory acquisition is acceptable where it increases community benefits, unless respondents, on average, are skeptical that governments can transform additional revenue into community benefits.

In responses to other questions, survey participants indicated strong agreement with the proposition: "I have a responsibility for cultivating crops that are ecologically sustainable for my region" and similarly strong agreement with "Climate change makes developing more effective and efficient water management in the Murry Darling Basin more important." Around 82% agreed with "Ecological or environmental flows are an important consideration and should be taken into account when determining water allocations."

While we cannot draw conclusions about whole populations based on our very small survey—because without a larger scale study, any conclusions are highly speculative—it seems safe to conclude that respondents appear to be clear-eyed about their own interests. They are positive about trading in water rights per se while being similarly keen to see their interests and rights protected within trading systems. They are highly resistant to arbitrary compulsory acquisition of water rights but

significantly less so if such acquisition can be shown to be in the public interest. And respondents evince knowledge of and an interest in a broad range of social and ecological issues and a willingness to incur some individual losses in the pursuit of these broader interests. These conclusions support, therefore, our contention that the solutions to existing water allocation challenges at every level, individual, national, and international, must begin with those who understand the challenges best: water users and stakeholders.

But more importantly, the results of this pilot study suggest that water policy should not be based on the assumption that the various stakeholders are narrowly focused individualistic optimizers but rather that they are economic agents with an understanding of and sympathy for competing and complementary interests at the regional and national levels. While they are highly concerned with threats to their long-term economic viability, they are also prepared to compromise in relation to other environmental and economic objectives. They are focused on local economic vitality and viability more than they are on more geographically distant economic concerns.

What will perhaps matter most, then, in the ongoing reform of law and in the development of policy is communication: If stakeholders are well informed about the nature of the various objectives of policy and the associated trade-offs, they are more likely to be willing to make compromises to the extent they believe other objectives are in the broader social or environmental interest.

V. REFLECTIONS FOR FUTURE USE

Two challenges, however, confront the use of the methodology we propose. First, it will be necessary to find methods for communicating the value of this approach to law and policy makers in a way conducive to reform. This may have been a significant challenge until very recently due to the dominance of instrumental rationalization and systems of knowledge and power that privilege metrics.[91] But the recent decision of the U.S. Department of the Interior to use a robust approach to gathering stakeholder perceptions at the individual, national, and international level may signal a shift in approach by governments facing water allocation challenges that have so far proved impervious to ease of solution. Still, this remains a matter requiring further reflection and modification.

The second challenge in using our methodology involves not jurisdiction, but culture. While the methodology attempts to transcend the

91. *See, e.g.*, John Gerring et al., *Impact Metrics*, *in* THE PRODUCTION OF KNOWLEDGE: ENHANCING PROGRESS IN SOCIAL SCIENCE 371-400 (Colin Elman et al. eds., 2020).

former, future studies may require some account to be taken of cultural differences. One would reasonably expect or anticipate, for example, that norms articulated in Arizona might be distinct from those in rural South Australia. Similar differences might exist as between farmers and First Nations Peoples. Future studies must be sensitive to such differences and find ways to ensure that results are interpreted in ways that take account of subtle or nuanced differences around culture.

These challenges notwithstanding, the main benefit to be derived from our proposed methodology derives from its potential to uncover the socio-cultural, economic, and historical factors that influence people's perceptions and behaviors regarding water. This in turn allows researchers to explore the nuances and complexities of local contexts, including cultural practices, beliefs, power dynamics, and social norms that shape water use and management. Understanding how water users and stakeholders think and feel about water adds a human dimension to the study of water management. This enables researchers and decision-makers to incorporate social, cultural, and emotional considerations into policies and practices, promoting more inclusive and sustainable approaches to water governance.