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COMPARATIVE LATIN AMERICAN AND UNITED STATES WATER LAW

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Introduction

This chapter provides an overview of water law development in Latin America, with a concise discussion of the US system for comparison. 'Law' here includes legislation (constitutions, codes and statutes) and jurisprudence (reported judicial decisions), both of which impose obligations with respect to surface and underground water. The narrative begins with the Roman tradition as the ancestor of both English common law and continental civil law. It then examines US and Spanish colonial allocation systems before focusing on water law in seven Latin American republics – Chile, Colombia, Peru, Mexico, Argentina, Venezuela and Brazil – with greater attention to the first four of these. A final section investigates the use of Spanish and Mexican water law within US jurisprudence, illustrating the extent to which these systems have converged.

As water is a species of property, its governance can be addressed within the 'ownership paradigm' model created by Agustín Parise: civil law jurisdictions in the Americas began with the colonial 'allocation paradigm' phase (royal grants of use rights), moved to the 'liberal paradigm' in the nineteenth century (absolute individual property), and culminated with the twentieth century 'social function paradigm' (government management for public benefit).[1] Parise's work focuses on land rather than water and is based primarily on legislative sources, but his approach is a useful construct for this comparative study of natural resource governance, which assesses the applicability of his categories to a new context.

Roman water law

The legal system of ancient Rome during the Republic (501-31 BCE) and the Empire (31-476 CE) is the predecessor of both common and civil law. A Byzantine era treatise, Justinian's Institutes (533 CE) condensed judicial decisions and scholarly interpretations from

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[1] *See* AGUSTÍN PARISE, OWNERSHIP PARADIGMS IN AMERICAN CIVIL LAW JURISDICTIONS: MANIFESTATIONS OF THE SHIFTS IN THE LEGISLATION OF LOUISIANA, CHILE, AND ARGENTINA (16TH-20TH CENTURIES) (2015). Arguably there is a fourth 'international paradigm' of property, encompassing universal human rights to health and natural resources. *See* M.C. Mirow, *Rerum Novarum: New Things and Recent Paradigms of Property Law,* 47 PAC. L.J. 183 (2016). Since this new concept has appeared primarily in government regulation, it will be treated here as an aspect of 'social function.'

various periods of Roman history.[2] The Institutes sets forth a complex combination of public and private rights relating to water: Flowing water, the seashore and riverbanks could be used by anyone for fishing and navigation, but ownership of the banks was vested in the adjacent landowners.[3] Individuals could transport water over others' land and allow cattle to drink there under 'aqueduct' and 'rustic' servitudes.[4] Gradual changes in a river's location would alter property boundaries, while rapid movement would not.[5] This distinction came to be known as 'accretion' versus 'avulsion.'[6] In practice, some government regulation was necessary to secure water access and resolve disputes, as when the municipality of Tusculum allocated the rights of Cicero and other landowners to an irrigation aqueduct by specifying the hours of water allowed to each.[7] Such time-sharing was organized around mandatory cleaning and maintenance of channels, and assumed neighbors had information about each other's activities. But when cooperation failed, litigation ensued.[8]

The degree to which civil as opposed to common law jurisdictions followed these traditions diverged in the nineteenth century, with the former system tracking Roman law more closely. For example, France maintained the Roman approach letting government set liability standards for one landowner's rainwater runoff that damaged another's land. In contrast, England and the United States addressed the same problem as the tort of nuisance – whether a party unreasonably interfered with his neighbor's land use.[9]

United States water law

This chapter discusses US water law before focusing on that of Latin America because most English language readers will be more familiar with the former and will better understand the latter in contrast. The US regime is primarily a system of judicial natural resource allocation system among private users, rather than a legislative or otherwise government ordered scheme, and is further decentralized into 50 state versions.[10] Regarding surface water rights, those states may be categorized as riparian or prior appropriation regimes or a blending of both. Yet they all developed primarily via case law codified in constitutions or statutes.

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[2] O.J. ROBINSON, THE SOURCES OF ROMAN LAW: PROBLEMS AND METHODS FOR ANCIENT HISTORIANS 20-21 (1997). Justinian's contemporaneous Digest was a more elaborate compilation of juristic writings. *Id.* at 20.
[3] JUSTINIAN'S INSTITUTES 2.1.1., 2.1.2, 2.1.4 (Peter Birks & Grant McLeod trans., 1987) (533).
[4] *Id.* at 2.3.1., 2.3.2.
[5] *Id.* at 2.1.20, 2.1.21.
[6] FRITZ SCHULZ, CLASSICAL ROMAN LAW 363 (reprint 1992) (1951).
[7] K.D. WHITE, ROMAN FARMING 158 (1970).
[8] CYNTHIA J. BANNON, GARDENS AND NEIGHBORS: PRIVATE WATER RIGHTS IN ROMAN ITALY 89, 113-114 (2009).
[9] *See* ALAN WATSON, THE EVOLUTION OF WESTERN PRIVATE LAW: EXPANDED EDITION 138-92 (2001).
[10] *See* Amy K. Kelley, *Waters And Water Rights 4 Subpart B (State Surveys)* (3d ed. 2004). *See also* Joseph W. Dellapenna, *United States: The Allocation of Surface waters, in* THE EVOLUTION OF THE LAW AND POLITICS OF WATER 189 (Joseph W. Dellapenna & Joyeeta Gupta eds., 2008).

In the relatively wet eastern United States, riparian doctrine provides every landowner along a watercourse the reasonable use of the water for local agricultural or industrial purposes.[11] Riparianism drew from English common law, which gave riverbank proprietors the right to uninterrupted use of a river's 'natural flow.'[12] However, early nineteenth century US courts altered this doctrine, holding in *Tyler v Wilkinson* (1827) that an upstream mill owner could not deprive those downstream of reasonable use of the water.[13] Subsequent case decisions followed this rule, defining reasonableness in specific circumstances.[14] Thirty-five states currently follow some version of the riparian rule, of which 20 regulate use via permits requiring consistency with the state's water management goals.[15]

Prior appropriation, adopted in the more arid western states, grants an absolute, exclusive right to surface waters and flowing underground streams to the first 'beneficial' (productive) user.[16] Miners and irrigators in California, Colorado and other mountainous and desert states in the West saw riparianism as impractical, especially where water had to be conveyed over long distances.[17] Thus, decisions like the Colorado Supreme Court's *Coffin v Left Hand Ditch Co* (1882) gave water rights to first users for an economically valuable purpose regardless of their riparian status.[18] California incorporated elements of both the riparian and prior appropriation systems.[19] Eight western states currently follow Colorado's strict priority approach, while seven others have adopted variations of California's hybrid model.[20]

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[11] BARTON H. THOMPSON, ET AL., LEGAL CONTROL OF WATER RESOURCES: CASES AND MATERIALS 27-39 (6th ed. 2018).

[12] JOSHUA GETZLER, A HISTORY OF WATER RIGHTS AT COMMON LAW 43-45 (2004).

[13] 24 F. Cas. 472 (C.C.R.I. 1827).

[14] *See* Snow v. Parsons, 28 Vt. 1856 (holding that the unreasonableness of an upstream debris release is a fact-based inquiry); Borough of Westville v. Whitney Home Builders, 122 A. 2d 23 (N.J. Super. Div. 1956) (balancing necessity of construction company's pond pollution against public recreation harm). For a lively debate over the extent to which reasonable use departed from common law, *compare* MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW 34-53 (Tyler and its progeny abandoned natural flow to encourage industries like milling that interfered with traditional pastoral uses) *with* WATSON, *supra* note 9, at 138-92 (reasonable use was assumed in common law because all riparian activities affected a river's flow).

[15] THOMPSON, *supra* note 11, at 140-41.

[16] *Id.* at 173-74.

[17] *Id.*

[18] 5 Colo. 443 (1882). For different perspectives on the effects of prior appropriation, *compare* Donald J. Pisani, *Enterprise and Equity: A Critique of Western Water Law in the Nineteenth Century,* 18 W. HIST. Q. 15 (1987) (privileging first users resulted in corporate control of vast estates) *with* DAVID SCHORR, THE COLORADO DOCTRINE: WATER RIGHTS, CORPORATIONS, AND DISTRIBUTIVE JUSTICE ON THE AMERICAN FRONTIER (2012) (the priority rule distributed water rights widely by breaking riparian owners' land monopolies). *See also* Carol M. Rose, *Riparian Rights, in* 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 344 (Peter Newman ed., 1998) (distinguishing riparianism's emphasis on instream uses from prior appropriation's encouragement of consumption).

[19] THOMPSON, ET AL., *supra* note 11, at 205-14.

[20] *Id.* at 203, 214.

Regulation of groundwater, typically defined as percolating waters rather than a stream's subflow (running below the surface), follows five different rules depending on jurisdiction. First, under the 'rule of capture,' landowners have an unlimited right to withdraw any water they can access from beneath their land.[21] The 'correlative rights' doctrine gives landowners a proportional interest in groundwater based on the ratio of their surface acreage to an aquifer below.[22] Two versions of 'reasonable use' have been applied to groundwater, based on the degree of harm the pumping party inflicts on others.[23] Other state courts employ a 'prior appropriation' rule similar to that used for surface water.[24] In addition to these five common law doctrines, some local jurisdictions, notably in California, have implemented government allocation of subsurface basins.[25]

The public trust doctrine, guaranteeing general access to riverbanks and seashores, is one of the Roman legacies remaining in US water law.[26] Initially, US courts limited this right to commercial and navigational uses, but ultimately broadened it to encompass ecological conservation as well.[27] The California Supreme Court has held that a city's prior appropriation right may be restricted in order to protect environmental interests.[28] In Hawaii, the public trust has been extended to protect groundwater from excessive withdrawals that would harm customary Indigenous practices, including small family farming.[29]

A further Roman survival in US water jurisprudence resides in the accretion/avulsion distinction for determining river boundaries.[30] Along with the other doctrines discussed above,

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[21] *Id.* at 473-77; Sipriano v. Great Spring Waters of America, 1 S.W. 3d 75 (Tex. 1999).
[22] *Id.* at 483-87; Katz v. Walkinshaw, 74 P. 766 (Cal. 1903).
[23] THOMPSON, ET AL., *supra* note 11, at 477-83, 487-90.
[24] *Id.* at 490-93.
[25] WILLIAM A. BLOMQUIST, DIVIDING THE WATERS: GOVERNING GROUNDWATER IN SOUTHERN CALIFORNIA (1992).
[26] MICHAEL G. BLUMM & MARY CHRISTINA WOOD, THE PUBLIC TRUST DOCTRINE IN ENVIRONMENTAL AND NATURAL RESOURCE LAW 57 (3d ed. 2021). *See also* EUGENE FITCH WARE, ROMAN WATER LAW (1905) (translating Justinian and other sources on water use).
[27] *Compare* Illinois Central RR. Co. v. Illinois, 146 U.S. 387 (1892) (state legislature could not grant away business district's waterfront) *with* Marks v. Whitney, 491 P.2d 374 (Cal. 1971) (public has easement over privately owned tidelands for scientific study and habitat preservation).
[28] National Audubon Society v. Superior Court of Alpine County, 658 P.2d 709 (Cal. 1983) (Los Angeles prevented from damaging Mono Lake ecosystem by diverting water for urban use). *But see* Mineral County v. Lyon County, 136 Nev. Adv. Op. 58 (2020) (agricultural diversions lowering lake level allowed despite ecological collapse because Nevada public trust doctrine does not permit reallocation of adjudicated water rights).
[29] In re Water Use Permit Application for the Waiãhole Ditch, 9 P.3d 409 (Haw. 2000). For more detailed discussion of this and other public trust water cases, *see* BLUMM & WOOD, *supra* note 26, at 197-248). *See also* Shelley Ross Saxer, *The Fluid Nature of Property Rights in Water,* 21 DUKE ENVTL. L. & POL'Y F. 49 (2010) (arguing that all water should be held by the state in trust for the public good).
[30] *See supra* notes 5, 6 and accompanying text. A classic mid nineteenth century study detailed this distinction, with English and US citations. JOSEPH KINNICUT ANGELL, A TREATISE ON THE LAW OF WATERCOURSES 51-63 (1854).

accretion/avulsion conforms to the US legal pattern of ordering private water relationships while taking the public interest into account. Applying Parise's ownership model, US water law fits the 'liberal' paradigm, tempering absolute rights with 'social' goals, as seen in riparian permits and ecological limits on prior appropriation.[31]

Latin American water law

Geography

Chilean poet Pablo Neruda explained the terrain confronting European conquerors of the New World when he wrote, 'Before the wig and the dress coat there were rivers, arterial rivers.'[32] This lyrical depiction of Latin America based on its aquatic resources is justified by the region's current production of half the world's water supply while containing only 13 percent of its land mass.[33] At the same time, its water is unequally distributed – the Amazon basin has far greater rainfall than northern Mexico.[34] Population growth and uses such as agriculture, irrigation, stock-raising, hydro-power, navigation and fishing have increasingly competed for access to the resource, which is further exacerbated by quality problems.[35] Recently, climate change has prompted cycles of excess and scarcity, making supply even more unpredictable.[36] In the river shaped environment Neruda observed, these pressures have generated continual water disputes, a recurrent problem for each county's legal system.

Indigenous water law

Pre-Columbian civilizations illustrate some of the possibilities for human adaptation to the area and created mechanisms that survived partially into the post conquest era. In the semiarid highlands of central Mexico, Aztec engineers built a centrally controlled, communal irrigation system of canals and levees to grow crops on *chinampas,* or artificial lake islands.[37] The Inca empire in what is now Peru and Bolivia adapted to the even drier Andes with social units to allocate labor, land and water: the higher ranking *panacas*, governed by royalty, and the lower *ayllus* of commoners.[38] The Spanish takeover of these civilizations left much of the prior

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[31] Beyond water law per se, the 1972 Clean Water Act and other US environmental legislation further restrict the scope of private water use. *See* Sandra Zellmer, *United States: The Emergence of Environmental Considerations, in* EVOLUTION, *supra* note 10, at 205.
[32] PABLO NERUDA, CANTO GENERAL 117 (Catedra 1990) (1950).
[33] WATER FOR FOOD SECURITY AND WELL-BEING IN LATIN AMERICA: SOCIAL AND ENVIRONMENTAL IMPLICATIONS FOR A GLOBALIZED ECONOMY 29 (Bárbara A. Willaarts, et al. eds., 2014).
[34] *Id.* at 28; *See also* VLADIMIR ARANA, WATER AND TERRITORY IN LATIN AMERICA 56 (2016) (distinguishing subregions based on water availability).
[35] WATER FOR FOOD SECURITY, *supra* note 33, at 41.
[36] *Id.* at 47-50.
[37] LA AGRICULTURA CHINAMPERA: COMPILACIÓN HISTÓRICA (Teresa Rojas Rabiela ed. 1993).
[38] Jeanette E. Sherbondy, *Water and Power: The Role of Irrigation Districts in the Transition from Inca to Spanish Cuzco, in* IRRIGATION AT HIGH ALTITUDES: THE SOCIAL ORGANIZATION OF

water regimes intact, especially at the local administrative level, although catastrophic demographic decline and ecological destruction weakened the effectiveness of Indigenous irrigation.[39] In certain regions of Mexico and the Andes, traditional water allocation customs still survive, mixed with a variety of usages introduced at different periods.[40]

Spanish and colonial regimes

While the Roman tradition influenced US water law, it played a far more central role in Latin American water legislation and judicial decisions. *Las Siete Partidas,* the major code of thirteenth century Spain, echoed Justinian in making rivers and seashores accessible to common use and granting one person a permit to convey water over, or draw from sources on, another's land.[41] The Spanish crown's legislation governing its New World colonies, codified in the *Recopilación de Leyes de los Reynos de las Indias* (1680, revised 1791), adopted these principles.[42] For example, the *Recopilación* provided that 'pastures, forests, and waters of the Indies are common to those living nearby . . . [who] can enjoy them freely . . .'[43] As part of the centralized colonial governance structure, this legislation specified that judges be appointed to 'allocate water to the Indians, so that they can irrigate their gardens, orchards, and farms, and give drink to their cattle.'[44] At the local level, royal officials implemented these rules by adjudicating water disputes according to a variety of customary criteria, including just title, prior use, need, avoiding injury, purpose, and stakeholders' interests.[45] Parise considers that Spanish colonial property law is characterized by the 'allocation paradigm' of government control and distribution, and water clearly fits within this pattern.[46]

Independent national regimes

The first third of the nineteenth century saw the Spanish and Portuguese colonial empires split into independent nation states which adopted constitutions, civil codes and other

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WATER CONTROL SYSTEMS IN THE ANDES 69-97 (William P. Mitchell & David Guillet eds. 1994).

[39] *See id.* at 86; ALEJANDRO TORTOLERO VILLASEÑOR, EL AGUA Y SU HISTORIA 32-34 (2006).

[40] *See* Braulio Robles, et al., *The Chinampa: An Ancient Mexican Sub-Irrigation System,* 68 IRRIGATION AND DRAINAGE 115 (No. 1, December 2018), https://onlinelibrary.wiley.com/doi/full/10.1002/ird.2310; Rutgerd Boelens, *Aguas diversas. Derechos de agua y pluralidad legal en las comunidades Andinas,* 66 ANUARIO DE ESTUDIOS AMERICANOS 23 (julio-dic. 2009).

[41] 3 LAS SIETE PARTIDAS title XXVIII, laws IV, V (Robert I. Burns ed. 2001).

[42] *See* J.M. OTS CAPDEQUÍ, EL ESTADO ESPAÑOL EN LAS INDIAS 123-55 (1941) (summarizing colonial Spanish property law, including water rights. Portuguese ordinances for Brazil are discussed *infra* text accompanying note 121).

[43] 2 RECOPILACIÓN DE LEYES DE LOS REYNOS DE LAS INDIAS book IV, title XVII, law V (Facsimile ed. Consejo de la Hispanidad 1943) (1791).

[44] 1 *id.* book III, title II, law LXIII.

[45] MICHAEL C. MEYER, WATER IN THE HISPANIC SOUTHWEST: A SOCIAL AND LEGAL HISTORY 1550-1850 145-67 (1984).

[46] *See* PARISE, *supra* note 1, at 149-77.

legislation.[47] The code drafters' mental universe clearly included the Roman tradition of rationalizing disparate sources.[48] Thus legal scholar Andrés Bello, principal author of the 1855 Chilean Civil Code, condensed Justinian and other Roman water doctrines in an 1843 treatise.[49]

This chapter concentrates on four Latin American nations – Chile, Colombia, Mexico, and Peru – which display a range of topographies and fully developed water law regimes.[50] Significantly, all four carried out extensive agrarian reform programs in the twentieth century, aiming to distribute land and guaranteeing water access to beneficiaries. Three other countries – Argentina, Brazil and Venezuela – receive briefer treatment. Together, these seven largest states in the region in area and population provide a good sample of how Latin American legal perspectives on water have changed over time.

Before examining each country, a word on methodology is in order. In the civil law system prevalent in Latin America, jurists and scholars have traditionally emphasized statutes, regulations and customary rules as setting forth 'the law,' with court decisions playing a secondary, nonbinding role.[51] This approach contrasts with that in the US and other common law countries, where appellate rulings serve as precedent and so are given greater weight.[52] However, even in civilian systems, decisions can reveal doctrinal development as well as extrinsic influences on courts. Indeed, reviewing them has become increasingly prevalent in scholarly analyses of Latin American water law.[53] This chapter examines both legislation and examples of judicial interpretation in each country.

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[47] *See* M.C. MIROW, LATIN AMERICAN LAW: A HISTORY OF PRIVATE LAW AND INSTITUTIONS IN SPANISH AMERICA 97-106 (2004) (discussing governance documents in the independence context). *See also* Agustín Parise, *Owning the conceptualization of ownership: American civil law jurisdictions and the origins of 19th-century code provisions, in* COMPARATIVE LEGAL HISTORY 432-64 (Olivier Moréteau, et al. eds. 2019) (explaining how republican codes balanced colonial government centered property allocation with liberal absolute ownership).

[48] *See* ROGELIO PÉREZ-PERDOMO, LOS ABOGADOS DE AMÉRICA LATINA; UNA INTRODUCCIÓN HISTÓRICA 14 (2004) (Roman style source consolidation was carried over from the colonial period and was simplified by new legislation).

[49] *See* ANDRÉS BELLO, DERECHO ROMANO 45-46, 59 (Casa de Bello, 1981) (1843) (summarizing material on water uses and servitudes). *See also* IVÁN JAKSÍC, ANDRÉS BELLO: SCHOLARSHIP AND NATION-BUILDING IN NINETEENTH-CENTURY LATIN AMERICA 170-74 (2001) (detailing Bello's advocacy for teaching Roman law).

[50] Some of their water policies have already been studied comparatively. *See, e.g.,* AGUA Y DISPUTAS TERRITORIALES EN CHILE Y COLOMBIA (Astrid Ulloa & Hugo Romero-Toledo eds. 2018). These four have also been grouped based on shared characteristics other than water governance, such as possessing the most stable and prosperous economies in the region. JOHN E. SPILLAN, ET AL., BUSINESS OPPORTUNITIES IN THE PACIFIC ALLIANCE: THE ECONOMIC RISE OF CHILE, PERU, COLOMBIA, AND MEXICO v (2017).

[51] JOHN HENRY MERRYMAN & ROGELIO PÉREZ-PERDOMO, THE CIVIL LAW TRADITION: AN INTRODUCTION TO THE LEGAL SYSTEMS OF EUROPE AND LATIN AMERICA 64 (4th ed. 2019).

[52] *Id.* at 34. *See generally* LLOYD BONFIELD, AMERICAN LAW AND THE AMERICAN LEGAL SYSTEM (2006).

[53] *See, e.g.*, Peter L. Reich, *El derecho de agua en la Suprema Corte de Justicia de la Nación durante la época posrevolucionaria: 1918-1946, in* William J. Suárez-Potts, et al., ESTUDIOS SOBRE LA SUPREMA CORTE DE JUSTICIA REALIZADOS EN ESTADOS UNIDOS 119 (2017);

Chile

Chile's water law regime, one of the most comprehensive in Latin America, has served as a model for the region, even while its legislation has been less consistent than its private rights oriented jurisprudence.[54] The country's first civil code, drafted under the direction of Andrés Bello and effective in 1855, separated waters into those dedicated to public use, such as rivers in their natural courses, and private ones flowing only within the same parcel or through artificial conveyances.[55] In 1951 the first water code continued the tradition of balancing regulation and property rights, but also permitted individual users to acquire permanent ownership of specified amounts of water previously in the public domain.[56] A revised water code went into effect in 1967 as part of Chile's agrarian reform (1965-72), nationalizing all watercourses and allowing expropriation of private rights, and empowered the executive with authority to fix the volume permitted for various purposes, such as irrigation.[57] When the Augusto Pinochet dictatorship came to power in 1973, water law swung in the opposite direction: The 1981 Water Code made rights easily acquired and freely transferable, and gave owners wide discretion over use.[58] Although a 2005 modification to the 1981 code authorized denial of a new water request if it threatened water deemed 'essential,' Chile has privatized water to a greater extent than any of its neighbors.[59]

In fact, water jurisprudence in Chile has long emphasized the protection of private rights, even before the 1981 Water Code. As early as 1874, a regional appellate court required a landowner using a servitude to water animals on neighboring property to provide an 'external

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Alejandro Vergara Blanco, *Regularización de derechos consuetudinarios de aguas: crítica a la jurisprudencia vacilante de la Corte Suprema,* 151 ESTUDIOS POLÍTICOS 59 (2018).

[54] For general surveys, *see* COMENTARIOS AL CÓDIGO DE AGUAS (2 vols., Ana Herrera Donoso coord. 1960); PEDRO LIRA URQUIETA & LORENZO DE LA MAZA, RÉGIMEN LEGAL DE LAS AGUAS EN CHILE (1940). For more recent developments, *see* CARL J. BAUER, SIREN SONG: CHILEAN WATER LAW AS A MODEL FOR INTERNATIONAL REFORM (2004); Alejandro Vergara Blanco & Daniela Rivera Blanco, *Regulación de las aguas en Chile: esquema general, gestion y conflictos actuales, in* LECTURAS DE DERECHO DE AGUAS 43 (Julián Pimiento Echeverri & Gerardo GarcÍa Álvarez coords. 2021). For a regional study based on local court records, *see* DANIEL L. STEWART, EL DERECHO DE AGUAS EN CHILE: ALGUNOS ASPECTOS DE SU HISTORIA Y EL CASO DEL VALLE DE ILLAPEL (1970).

[55] Cód. Civ. arts. 595, 837 (Chile 1855).

[56] Cód. Aguas arts. 12, 17 (Chile 1951).

[57] Cód. Aguas arts. 94, 101, 105 (Chile 1967). *See also* Michael T. Lyon, *Modifications in the Water Law of Chile Contained in the New Agrarian Reform Law,* 4 LAND & WATER L. REV. 431 (1969) (analyzing 1967 Water Code in relation to land distribution policies).

[58] Cód. Aguas arts 5, 6, 13 (Chile 1981). *See also* BAUER, *supra* note 54, at 118-36 (the 1981 Water Code encouraged some infrastructure investment but did not make use more efficient nor benefit poor farmers).

[59] Chile, Reforma del Código de Aguas, 11 Mayo 2005, Ley No. 20.017. *See also* ANNA BERTI SUMAN, THE HUMAN RIGHT TO WATER IN LATIN AMERICA: CHALLENGES TO IMPLEMENTATION AND CONTRIBUTION TO THE CONCEPT 72-82 (2018) (criticizing Chilean neoliberal water model for encouraging maldistribution and hampering contingency planning).

sign' as notice that he was doing so.[60] A quarter of a century later, the Chilean Supreme Court broadly interpreted the Civil Code to hold that water usually flowing within a parcel remained the owner's even if it was augmented by rain causing an overflow beyond the plot.[61] Nor was a landowner liable for damage to others' land for blocking excessive drainage or stormwater flooding.[62] Once a grant of water use was provisionally approved, the grantee had possessory rights superior to those of anyone else, even parties unaware of the proceedings.[63]

After the more regulatory agrarian reform phase in the late 1960s and early 1970s, the 1981 Water Code's neoliberal swing has created what Chilean water scholar Alejandro Vergara Blanco calls 'vacillation' – the courts' zigzagging between incentivizing private rights and protecting customary ancestral ones, particularly of Indigenous people.[64] The future direction of water law and policy is uncertain, although a recent presidential pronouncement suggests that the market approach will be modulated with an attempt to replenish aquifers and foster reuse.[65] Like the US water regime, that of Chile is primarily 'liberal,' particularly in its jurisprudence, with even less leavening by the 'social function' paradigm.[66]

Colombia

Like Chile, Colombia has an extensive water regime, but in contrast has never elaborated its legislative provisions into a specific code and has consistently displayed a more statist approach.[67] Colombia's 1887 Civil Code, article 677 is taken almost verbatim from the Chilean

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[60] Gaceta De Los Tribunales [G.T.] no. 1173, p. 557 (Corte Curicó 1874).
[61] Revista De Derecho Y Jurisprudencia [R.D.J.] vol. III, p. 207 (Corte Suprema 1905).
[62] R.D.J. vol. XXXVI, no. 2, p. 348 (Corte Suprema 1938); R.D.J. vol. XXXVI, no. 2, p. 460 (Corte Suprema 1939).
[63] R.D.J. vol. vol. LI, no. 2, p. 361 (Corte Santiago 1954).
[64] Vergara Blanco, *supra* note 53, at 108-11.
[65] Gabriel Boric, Keynote Address at IX Summit of the Americas, UCLA Session (June 8, 2022). In July, 2022, a proposed new constitution reflected a move towards greater regulation through the establishment of a 'National Water Agency' with the capacity to authorize and revoke specific uses. Propuesta Constitución Política de la República de Chile de 2022, art. 144, Chapter III, Nature and Environment, https://upload.wikimedia.org/wikipedia/commons/5/5a/Propuesta_Constituci%C3%B3n_Pol%C3%ADtica_de_la_Rep%C3%BAblica_de_Chile_2022.pdf. But that September a national plebiscite refused to adopt the document. *Chile votes overwhelmingly to reject new, progressive constitution,* THE GUARDIAN, Sept. 4, 2022, https://www.theguardian.com/world/2022/sep/05/chile-votes-overwhelmingly-to-reject-new-progressive-constitution.
[66] *See* BERTI SUMAN, *supra* note 59, at 79 (US water market is more heavily regulated than Chile's to protect environment and other uses).
[67] For general surveys, *see* VALERIO BOTERO ISAZA, RÉGIMEN LEGAL DE LAS AGUAS EN COLOMBIA (2 vols. 1926, 1936); HERNANDO DEVIS ECHANDÍA, EL RÉGIMEN DE LAS AGUAS EN EL DERECHO COLOMBIANO (1944); JOSEPH R. THOME, BRIEF HISTORY OF COLOMBIAN WATER LEGISLATION AFFECTING IRRIGATION (1964). For recent developments, *see* REFLEXIONES SOBRE EL DERECHO DE AGUAS EN COLOMBIA (Antonio Embid Irujo & María del Pilar García Pachón eds. 2016); Julián A. Pimiento Echeverri, *Las aguas como bienes públicas y como sujetos de*

Civil Code, considering rivers and all waters running in natural courses to be for public use and those confined to parcels to be private.[68] Successive agrarian reform laws in 1936 and 1961 distributed land to some of the peasantry and underlined the need to supply adequate water to rural areas.[69] Consistent with these statutes, a 1940 presidential decree asserted national government authority as the 'supreme administrator' granting water rights, licensing canal building and revising regulations based on changed circumstances.[70] Significantly, the later land reform of the 1960s was far more successful in acreage distributed and agricultural productivity than that of the 1930s.[71] The closest Colombia has come to consolidating its various water provisions is the 1974 Natural Resources Code, which regulates hydrologic basins by controlling access and promoting efficient use.[72] More recently, the 1991 Constitution set forth general goals that have been applied to water, including guarantees of sustainable development, a healthful environment and good quality of life.[73]

Colombia's jurisprudence has reinforced its legislation's regulatory approach. In 1918, the supreme court held that a riparian railway company's water use was limited by the requirement that it not harm its neighbors through overflow onto their properties.[74] Similarly, a municipality could control a factory's use of water to power its mill to the full extent necessary to avoid damage to other riparians.[75] Interpreting Civil Code article 677, a later supreme court panel ruled that if water originally contained within a parcel mixed with that of other owners, all became subject to public use.[76] Extending this decision, the court held that water flowing through several plots is public even if one person becomes the proprietor of all.[77] Under the 1991 Constitution, the *acción de tutela* (a claim challenging interference with fundamental rights) has

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derecho. Algunas ideas acerca de las recientes transformaciones de las aguas en el derecho colombiano, in LECTURAS, *supra* note 54, at 309. A regional study of judicial responses to water reduction effects of climate change can be found in Hector Dassán Bastidas & Juan Pablo Andrade Martínez, *Desarrollo legal y jurisprudencia constitucional en Colombia sobre la protección del medio ambiente y los recursos hídricos,* 18 REVISTA JURÍDICA PIÓLOGUS 63 (julio-dic. 2019).

[68] C.C. art. 677 (Colom. 1887).

[69] *See* ALBERT O. HIRSCHMAN, JOURNEYS TOWARD PROGRESS: STUDIES OF ECONOMIC POLICYMAKING IN LATIN AMERICA 107-58 (1963) (1936 law criticized for not ensuring irrigation, while 1961 law incentivized water infrastructure projects).

[70] Decreto-Ley no. 1381, art. 15 (Colombia 1940). *See also* BERNARDO URIBE HOLGUÍN, LAS AGUAS ANTE EL DERECHO POSITIVO COLOMBIANO (1942) (discussing critiques of the decree as excessively bureaucratic).

[71] ÁLVARO BELCAZAR, ET AL., COLOMBIA: ALCANCES Y LECCIONES DE SU EXPERIENCIA EN REFORMA AGRARIA (2001).

[72] Cód. Nac. Rec. Nat. Y Prot. Med. Amb. (Colom. 1974).

[73] C.P. arts. 8, 79, 366 (Colom. 1991). *See* Oscar Darío Amaya Navas, *La protección del agua en Colombia dentro del marco de la Constitución Política y ecológica de 1991, in* Gloria Lucía Álvarez Pinzón, et al., 1 DERECHO DE AGUAS 101 (2003) (analyzing supreme court decisions applying constitution to water controversies).

[74] Gaceta Judicial [G.J.] vol. 26, p. 301 (Colom. 1918).

[75] G.J. vol. 31, p. 133 (Colom. 1924).

[76] G.J. vol. 52, p. 582 (Colom. 1941).

[77] G.J. vol. 92, p. 74 (Colom. 1960).

been invoked to obtain judicial protection against water polluters, including an asphalt plant, the Medellín metro, a coal mining company, a chemical processor and a pig-raising facility.[78] Even though Chile's Civil Code article on water served as the model for that of Colombia, the latter's jurisprudence preferred public rather than private interests, and so falls within the 'social function' rather than the 'liberal' ownership paradigm.

Peru

Peru consolidated its water law in a specific code in 1902, far earlier than Chile or Colombia, and has favored strong government control in both its legislation and jurisprudence.[79] The 1902 Water Code comprehensively covered all sources, which it placed in the public domain unless originating and remaining in a private parcel.[80] Other provisions regulated official grants, policing and irrigators' communities.[81]

This system was completely replaced by the 1969 General Water Law accompanying the agrarian reform of the same year.[82] The state was now given sole ownership of all waters, private rights were abolished, and uses could be justified only if they were 'in harmony with social interest and national development.'[83] In contrast to the previous system of water charges according to irrigated area, the authorities incentivized efficient use by supplying and regulating water based on volume needed in each parcel.[84] In times of extreme scarcity, the government could strictly limit distribution, giving preference to domestic uses.[85] A new agency, the Administración Técnica de Distrito de Riego, was empowered to resolve legal disputes based on input from local irrigation commissions.[86] The reform regime was reorganized in 2009 with a national umbrella structure, the Sistema Nacional de Gestión de Recursos Hidraúlicos, providing for stakeholder representation, but preserved tight control over the granting and monitoring of concessions.[87]

Peru's judicial decisions reflect the deference to government power seen in its legislation. In 1872, the supreme court upheld the city of Lima's ban on residential owners dumping

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[78] *See citations in* Carolina Montes Córtes, et al., *La protección judicial del agua en Colombia, in* Álvarez Pinzón, et al., *supra* note 73, at 243.

[79] For general surveys, *see* MANUEL A. CHÁVEZ MICHIELI, LEGISLACIÓN DE AGUAS E IRRIGACIÓN (1954); DAVID VALDERRAMA, LAW & LEGAL LITERATURE OF PERU: A REVISED GUIDE (1976). For recent developments, *see* Ramón Huapaya Tapia & Santos Ernesto Mendoza Flores, *El régimen jurídico de los títulos habilitantes del uso de agua en el Perú, in* LECTURAS, *supra* note 54, at 249.

[80] Cód. Aguas arts. 4, 5 (Peru 1902).

[81] *Id.* arts. 158, 183, 228 (Peru 1902).

[82] *See* David Guillet, *Canal Irrigation and the State: The 1969 Water Law and Irrigation Systems of the Colca Valley of Southwestern Peru, in* IRRIGATION AT HIGH ALTITUDES, *supra* note 38, at 167 (assessing water reform implementation in one region).

[83] Cód. Aguas art. 1 (Peru 1969).

[84] *Id.* arts. 43, 48.

[85] *Id.* art. 17.

[86] *Id.* arts. 133, 136.

[87] Huapaya Tapia & Mendoza Flores, *supra* note 79, at 255-56, 269-73.

wastewater in the municipal aqueduct.[88] The court regulated in the rural context as well, ruling in 1921 that a farmer who had long drawn from a spring on his neighbor's land could not be blocked from doing so.[89] Intervening during a drought, the justices ordered an appropriate rent reduction for an agricultural tenant when conditions prevented him from irrigating the entire leased area.[90] Similarly, a landowner could not build an irrigation canal that would deprive families of water relied upon for domestic use.[91]

Following the 1969 Water Law's channeling of disputes into the administrative resolution process, judicial water decisions appear to have diminished markedly.[92] The statist orientation of Peruvian legislation and jurisprudence, particularly given the late twentieth century diversion of conflict from the courts to a bureaucratic mechanism, puts this regime squarely within the 'social function' camp.

Mexico

Of the national water systems considered here, that of Mexico has been the most consistently linked with agrarian reform policies.[93] Immediately prior to the 1910 revolution, Mexico's congress passed a statute broadly stating that 'direct and indirect tributaries' of rivers, lakes, estuaries and ravines were under federal jurisdiction, and authorizing the government to grant use concessions.[94] Not long after, article 27 of the 1917 Constitution inaugurated agrarian reform by nationalizing all watercourses and empowering the executive to expropriate private land to distribute it for collective ownership by communities (*ejidos*).[95] A 'small property' of 50 hectares (123.5 acres) or fewer was exempted from seizure, if under limited conditions.[96] Land rights often included water rights, and from the beginning of the agrarian reform in the 1920s the

[88] Anales Judiciales Del Perú [A.J.P.] vol. 2, p. 36 (Peru 1872).
[89] Anales Judiciales De La Suprema Corte De Justicia (A.J.) vol. 17, p. 190 (Peru 1921).
[90] A.J. vol. 45, p. 127 (Peru 1949).
[91] Revista De Jurisprudencia Peruana [R.J.P.] vol. 13, p. 1934 (Peru 1955).
[92] *See* Guillet, *supra* note 82, at 182 (water management turned over to local commissions). The author did not find any supreme court water rulings during the decade following the 1969 agrarian reform.
[93] For general surveys, *see* LUIS ABOITES AGUILAR, EL AGUA DE LA NACIÓN: UNA HISTORIA POLÍTICA DE MÉXICO 1888-1946 (1997); URBANO FARÍAS, DERECHO MEXICANO DE AGUAS NACIONALES (1993). For recent developments, *see* THALÍA DENTON NAVARRETE, EL AGUA EN MÉXICO. ANÁLISIS DE SU RÉGIMEN JURÍDICO (2006); AGUA: ASPECTOS CONSTITUCIONALES (Emilio O. Rabasa & Carol B. Arriaga García cords. 2011). For regional studies of water disputes, *see* USOS E HISTORIAS DEL AGUA EN MÉXICO: RIEGO, CIUDAD Y LEGISLACIÓN (Sergio Rosas Salas, et al., coords. 2018).
[94] Ley sobre Aprovechamiento de Aguas de Jurisdicción Federal, arts 1, 17 (Mex. 1910).
[95] Constitución Política de los Estados Unidos Mexicanos [CPEUM] art. 27 (Mex. 1917).
[96] *Id.* For a detailed discussion of article 27's legislative history, *see* E.V. NIEMEYER, REVOLUTION AT QUERÉTARO: THE MEXICAN CONSTITUTIONAL CONVENTION OF 1916-17, 134-65 (1974). *See also* STANLEY E. SHADLE, ANDRÉS MOLINA ENRÍQUEZ: MEXICAN LAND REFORMER OF THE MEXICAN REVOLUTIONARY ERA 26 (article 27 extended the *Siete Partidas* principle of common water use to the revolutionary project of private property redistribution).

government promoted construction of dams and irrigation works.[97] In 1930 a revised version of the 1910 statute incorporated the constitution's sweeping authority over water.[98]

These land and water programs had mixed success. Although by 1940 *ejidos* owned 47 percent of cultivated land and accounted for 51 percent of the value of national agricultural output, *ejidatarios* (*ejido* members) increasingly had to compete with private growers for credit and scarce water.[99] In the 1940s, developmentalist policies initiated a period of accelerated commercial food production during which non-*ejido* exporters benefited from the water infrastructure in their areas.[100] Article 27 was revised in 1946 to allow landowners greater legal recourse against expropriation, as well as to increase the parameters of the 'small property' exemption from seizure.[101] The 'Green Revolutions' of the 1950s and 1960s enhanced productivity further via pesticides, intensive irrigation, and new high yield crops.[102] In 1992, article 27 was amended again, permitting *ejidos* to privatize, and a new water law facilitated the sale or exchange of rights.[103] These measures, along with the North American Free Trade Agreement, effectively ended agrarian reform by incentivizing the sale of *ejido* land and thereby primarily benefitting export-oriented agribusiness.[104] The recent presidency of Enrique Peña Nieto (2012-18) increased water concessions to private users, often overlooking environmental restrictions.[105]

Mexican water jurisprudence has tracked the evolution of its constitutional and statutory rules from a regulated to a privatized system.[106] During the 1920s and 1930s, most supreme

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[97] SUSAN WALSH SANDERSON, LAND REFORM IN MEXICO: 1910-1980 7 (1984).
[98] Ley de Aguas de Propiedad Nacional y Su Reglamento (Mex. 1930).
[99] Alan Knight, *The Rise and Fall of Cardenismo, c. 1930-c.1946, in* MEXICO SINCE INDEPENDENCE 241, 258-261 (Leslie Bethell ed., 1991); CYNTHIA HEWITT DE ALCÁNTARA, LA MODERNIZACIÓN DE LA AGRICULTURA MEXICANA 21 (1978).
[100] *Id.* at 312.
[101] *See* BLANCA TORRES RAMÍREZ, HACIA LA UTOPIA INDUSTRIAL 60 (1979).
[102] *See generally* Billie R. DeWalt & David Barkin, *Mexico's Two Green Revolutions: Feed for Food, in* ANTHROPOLOGY AND FOOD POLICY: HUMAN DIMENSIONS OF FOOD POLICY IN AFRICA AND LATIN AMERICA 12 (Della E. McMillan ed., 1991).
[103] Scott Whiteford & Francisco A. Bernal, *Campesinos, Water, and the State: Different Views of La Transferenica, in* REFORMING MEXICO'S AGRARIAN REFORM 223 (Laura Randall ed., 1996); Ley de Aguas Nacionales [LAN] (Mex. 1992). For a detailed analysis of the 1992 Water Law and its 2004 revision *see* Gustavo Armando Ortiz Rendón, *Evolución y perspectivas del marco jurídico del agua en México: nuevos retos y oportunidades para la gestion integrada del recurso hídrico, in* AGUA: ASPECTOS CONSTITUCIONALES, *supra* note 93, at 17.
[104] Willem Assies & Emilio Duhau, *Land Tenure and Tenure Regimes in Mexico: An Overview, in* LEGALISING LAND RIGHTS: LOCAL PRACTICES, STATE RESPONSES, AND TENURE SECURITY IN AFRICA, ASIA AND LATIN AMERICA 355, 382 (Janine M. Ubink, et al. eds., 2009).
[105] Gonzalo Hatch Kuri, et al., *El agua en México. ¿Hacia donde se dirige la Cuarta Transformación en materia de agua?,* 24 PROFMEX WEBJOURNAL (No. 13, Winter 2019), http://www.profmex.org/webjournal.html
[106] Judicial intervention in water disputes has taken place when parties challenge specific government actions using Mexico's *amparo* remedy, a request that a law, court judgment or official act be nullified; grants of *amparo* usually do not have a precedential effect. *See generally* Héctor Fix Zamudio, *A Brief Introduction to the Mexican Writ of Amparo,* 9 CAL.W. INT'L. L.J.

court decisions favored *ejidos* as the beneficiaries of agrarian reform. A 1925 ruling disallowed a hacienda owner's challenge to an *ejido* that had been granted a local stream, and the following year the court denied a paper manufacturing company's claim that several *ejidos* should not be able to use the local water even while the factory was not operating.[107] When a landowner sought *amparo* against the government for expropriating his water rights and awarding them to an *ejido,* the court held in 1936 that 'supposed rights to private property must give way to Article 27's absolute precept regarding agrarian matters.'[108]

Yet, by the 1940s, the supreme court's water decisions began to lean increasingly pro-landowner. In 1940, the court ruled in favor of a sugar plantation operating a mill on a river which also flowed through an *ejido* because the latter had not proved harm and because it was deemed necessary to respect 'private property as set out in the Constitution.'[109] Nor could an *ejido* claim stormwater overflow that it had used only temporarily and sporadically, according to a 1948 holding.[110] A 1954 decision prevented local officials from allowing *ejidatarios* to interfere with hydraulic works that would block their water access and favor a landowner.[111] According to the Parise paradigms, Mexican water law had moved from the social function regime of the revolution back to a liberal system, though in an evolution more gradual than Chile's rapid shifts.

Argentina

Even a brief foray into Argentina's water regime situates it within a federal structure designed to contain interprovincial rivalries that had erupted into civil wars in the early nineteenth century.[112] Thus the 1853 Constitution prevents any province from dominating another, and ordains the supreme court to resolve disputes.[113] Concerning water, there are unifying principles, including 1869 Civil Code provisions that distinguish public and private uses

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306 (1979). For a detailed analysis of twentieth century water cases based on *amparo, see* Peter L. Reich, *The Food-Water Nexus in the Post-Revolutionary Mexican Supreme Court, in* Michael T. Roberts, RESEARCH HANDBOOK ON INTERNATIONAL FOOD LAW 148 (2023).

[107] Respectively, Amparo administrativo Revisión del incidente de suspension. Pleno de la Suprema Corte de Justicia [SCJN], Semanario Judicial de la Federación y su Gaceta [SJFG), Quinta Época, t. XIX, Febrero de 1925, Tesis IIII/20, Página 430 (Mex.); Amparo administrativo en revision. Pleno de la SCJN, SJFG, Quinta Época, t. IX, Agosto de 1926, Tesis 1322/24, Página 266 (Mex.).

[108] Amparo administrativo en revision. Segunda Sala de la SCJN, SJFG, Quinta Época, t. LXIX, agosto de 1936, Tesis 2536/75, Página 1141 (Mex.).

[109] Amparo administrativo. Revisión incidente de suspension. Segunda Sala de la SCJN, SJFG, Quinta Época, t. LXV, julio de 1940, Tesis 1209/40, Página 102 (Mex.).

[110] Amparo administrativo en revision. Segunda Sala de la SCJN, SJFG, Quinta Época, t. XCVII, septiembre de 1948, Tesis 2541/48, Página 2300 (Mex.).

[111] Amparo administrativo en revision. Segunda Sala de la SCJN, SJFG, Quinta Época, t. CXX, junio de 1954, Tesis 3584/53, Página 883 (Mex.).

[112] For general surveys, *see* Ignacio M. de la Riva & Carlos José Laplacette, *Problemática de las cuencas interjurisdiccionales en el regimen federal argentino, in* LECTURAS, *supra* note 54, at 175; LILIAN DEL CASTILLO, LA GESTIÓN DEL AGUAS EN ARGENTINA (2007).

[113] Constitución Nacional [Const. Nac.] art. 4 (Arg. 1853).

(most recently updated in 2015) and a 1994 constitutional article requiring all provinces to provide a minimum of environmental protection.[114] Applying these rules, the supreme court held in a recent series of decisions that the provinces of Mendoza and La Pampa had to use a shared river reasonably and equitably, as well as maintain a certain level of flow.[115] This limited treatment suggests that the imposition of national judicial control over regional conflicts places Argentina's water regime within the social function paradigm at the highest level, combined with degrees of liberal ownership, varied by local politics, within each province.

Venezuela

From the mid nineteenth century through the end of the twentieth, Venezuela had a decentralized though essentially public water regime.[116] The 1862 Civil Code, like Colombia's of 1887, was modeled after that of Chile. But it limited national waters to 'great rivers' navigable by 100 ton ships, defining any smaller streams as owned by adjacent municipalities and usable by local inhabitants.[117] Under the socialist government of Hugo Chávez, though, the constitution of 1999 entirely transformed this system, making all waters property of the nation.[118] A 2004 supreme court decision clarified that the provision extended to insular, maritime, surface and sub-surface water.[119] In short, like Argentina's provincial federalism, Venezuela's pre-1999 regime hovered between the liberal and social function paradigms, depending on how tightly municipalities controlled water in their jurisdictions. As of the last two decades, however, the highly centralized government owns all water, has eliminated local regulatory autonomy, and at least in theory manages the resource for the public benefit.

Brazil

Brazilian water law has long been a partially decentralized system, which in the late twentieth century incorporated uniform environmental sustainability standards.[120] Governed as a

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[114] Cód. Civ. Arts. 2340, 2343, 2350 (Arg. 1869); Cód. Civ. Y Com. arts. 235, 239 (Arg. 2015); Const. Nac. art. 41 (Arg. 1994). *See also* María Florencia Pinedo, *El dominio del agua en el nuevo Código Civil y Comercial de la Nacíon,* IV CURSO DE POSGRADO SOBRE DERECHO AGRARIO Y AMBIENTAL Y JORNADA INTERNACIONAL CUIA-UNLP (2018), http://sedici.unlp.edu.ar/bitstream/handle/10915/68673/Documento completo.pdf-PDFA.pdf?sequence=1&isAllowed=y (discussing the 1994 Constitution's influence on the 2015 Civil and Commercial Code).

[115] *See* 1987, 2017, and 2018 cases cited in De la Riva & Laplacette, *supra* note 112, at 201-03.

[116] For a general survey, *see* FRANCISCO MEAÑO, RÉGIMEN LEGAL DE LAS AGUAS EN VENEZUELA (1979). Recent developments are detailed in Victor Hernández-Mendible, *El régimen de las aguas en Venezuela, in* LECTURAS, *supra* note 54, at 76.

[117] Cód. Civ. arts. 18, 22, 27 (Ven. 1862).

[118] Const. art. 304 (Ven. 1999).

[119] *See* 2004 case *cited in* Hernández-Mendible, *supra* note 116, at 86-87.

[120] For general surveys, *see* Paulo José Leito Farias, *Brazil: The Evolution of the Law and Politics of Water, in* EVOLUTION, *supra* note 10, at 69 (Joseph W. Dellapenna & Jayeeta Gupta eds., 2009); CID TOMANIK POMPEU, DIREITO DE ÁGUAS NO BRAZIL (2d ed. 2010). For state level

Portuguese royal colony, Brazil was subject to the *Ordenações Filipinas* (1603), by which the crown owned all rivers and allocated use permits as had the Spanish empire.[121] After independence in 1822, royal prerogatives were transferred to the government, and the 1916 Civil Code classified water as a public good, with federal, state and local jurisdictions sharing control over use.[122] The Getulio Vargas dictatorship (1930-54) enacted the Water Code of 1934, which considered waters either federal or state property except when entirely inside private parcels, as had other Latin American countries.[123] Due to Vargas's developmentalist orientation, water rights were granted as concessions to agribusiness and industry.[124]

In 1981, the National Environmental Policy Act required consideration of ecological values in all spheres of government – federal, state and local.[125] The 1997 National Water Act explicitly applied this principle to water, making its human and animal consumption an absolute priority for jurisdictions experiencing shortages.[126] The act is implemented by river basin committees formed of users (riparian and non riparian) and government representatives who determine river flow levels and irrigated acreage limits.[127] Judicial decisions have traditionally focused on water code interpretation, and more recently the courts have addressed issues beyond basin committee purview, such as water pollution and municipal control within specific jurisdictions.[128] Like those of Argentina and Venezuela, Brazil's water system fits within an evolving combination of the liberal and social function paradigms: The 1934 Water Code privileged individual rights through concessions, while the post 1997 ecological and river basin approach evinces a 'common good' managerialism.

Convergence examples

After this survey of US and Latin American water law, it is appropriate to examine the extent to which these systems have converged, particularly regarding Spanish and Mexican law in the United States. Upon US territorial expansion into the Southwest – Mexico's former North – the natural resource regime of its former sovereigns became relevant, although judges did not

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regulation, *see* SENADOR ERNARDO CABRAL, LEGISLACÃO ESTADUAL DE RECURSOS HÍDRICOS (2 vols. 2006).

[121] *Cited in* Leite Farias, *supra* note 120, at 71.

[122] *Id.*; C.C. art. 81 (Braz. 1916).

[123] C.AG. arts. 1-8 (Braz. 1934).

[124] Leite Farias, *supra* note 120, at 73.

[125] *Id.* at 74.

[126] Lei do Plano Nacional de Recursos Hídricos, art. 1 (Braz. 1997).

[127] Leite Farias, *supra* note 120, at 77-79. *See also* Raymundo Garrido, *Brazilian Water Management: A Panoramic View, in* INTEGRATED RIVER BASIN MANAGEMENT: THE LATIN AMERICAN EXPERIENCE 107 (Asit K. Biswas & Cecilia Tortajada eds., 2001) (institutional fragmentation impedes planning cooperation between government and communities).

[128] *See cases cited in* TOMANIK POMPEU, *supra* note 120, at 425-30; Carla Liguori, *The Principal Foundations of the National Water Policy and the Role of the Judicial Branch in Brazil, in* PRINCIPAL TRENDS ON BRAZILIAN ENVIRONMENTAL LAW 213 (Marcelo F. Dias ed., 2023), at 226.

always apply Hispanic law accurately.[129] Under the 1848 Treaty of Guadalupe Hidalgo, property rights based on Mexican law were to be protected in the conquered area that included current California, Arizona, New Mexico, and portions of Utah, Nevada and Colorado.[130]

Considering water as a species of property under the treaty, the California Supreme Court held that Spanish and Mexican *pueblos* (municipalities), including Los Angeles and San Diego, had an absolute and exclusive right to all water flowing within their limits, which interest descended to their US successor cities and can expand indefinitely to meet urban needs.[131] This 'pueblo water right' has been criticized as an intentional misinterpretation of Hispanic law and the treaty guarantee – the judges were well aware of documentation proving that pre annexation water allocation was based on equitable apportionment among all users – but the doctrine is still good law in California.[132] New Mexico initially followed the rule with respect to its city of Las Vegas, but ultimately rejected it, as did Texas regarding Laredo's absolute claim to the Rio Grande.[133] In a parallel misconstruction, Arizona courts maintained for 80 years that prior appropriation derived from Mexican law, until finally admitting the error in 1968.[134]

Contrasting with these judicial distortions to justify absolute rights, an international tribunal and other state courts have accurately applied Hispanic water doctrine. The traditional Roman distinction between gradual accretion and rapid avulsion of river boundaries, a feature of both US and Latin American systems, became the basis for the International Boundary and Water Commission (IBWC) settlements of disputes between the United States and Mexico over ownership of *bancos* (sandbar islands).[135] In another example, the Texas Supreme Court held that since the Spanish colonial legal system did not automatically allow riparian irrigation from the Rio Grande, but required a grant from the Crown to prevent overuse, contemporary riverbank

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[129] For discussions of US state court application, and misapplication, of water doctrine, *see* Peter L. Reich, *Mission Revival Jurisprudence: State Courts and Hispanic Water Law Since 1850,* 69 WASH. L. REV. 869 (1994); Peter L. Reich, *The 'Hispanic' Roots of Prior Appropriation in Arizona,* 27 ARIZ. ST. L.J. 649 (1995).

[130] Treaty of Peace, Friendship, Limits, and Settlement with the Republic of Mexico, Feb. 2, 1848, U.S.-Mexico, art. 8, 9 Stat. 929. Texas, also a former Mexican province, had been previously annexed in 1845. Despite the treaty's formal guarantee, as a practical matter many former citizens of Mexico lost their land due to inability to prove title, lawyers' fees or squatters. *See* RICHARD GRISWOLD DEL CASTILLO, THE TREATY OF GUADALUPE HIDALGO: A LEGACY OF CONFLICT 72-86 (1990).

[131] Vernon Irrigation Co. v. City of Los Angeles, 39 P. 762 (Cal. 1895) (LA absolute right to Los Angeles River); City of San Diego v. Cuyamaca Water Co., 287 P.475 (Cal. 1930) (SD absolute right to San Diego River); City of Los Angeles v. City of San Fernando, 537 P.2d 1250 (Cal. 1975) (LA absolute right affirmed based on stare decisis and reliance despite harm to neighboring cities).

[132] *See* Reich, *Mission Revival Jurisprudence, supra* note 129, at 882-906.

[133] State v. City of Las Vegas, 89 P.3d 47 (N.M. 2004); In re Contests of City of Laredo, 675 S.W.2d 257 (Tex. Ct. App. 1984).

[134] Clough v. Wing, 17 P. 453 (Ariz. 1888); England v. Ally Ong Hing, 446 P.2d 480 (Ariz. Ct. App. 1968). *See* Reich, *'Hispanic Roots,' supra* note 129.

[135] Peter L. Reich, *Border of Water, Border of Law: Río Bravo/Rio Grande Boundary Adjudications Since 1884,* 33 MD. J. INT'L L. 205 (2018).

landowners could not monopolize its water.[136] And in *Lobato v Taylor* (2002), Colorado's Supreme Court awarded grazing, timber and water rights on former common lands to successors in interest to 1843 land grantees, based in part on the incorporation of Mexican law and custom into the Guadalupe Hidalgo treaty's property guarantee.[137]

Thus convergence of US and Latin American water law has taken place when courts correctly applied legal doctrine; in contrast, the consciously romanticized distortion of Hispanic water governance served to rationalize urban expansion at the expense of less powerful water users.[138] The mischaracterization of Hispanic law in the pueblo water cases and in Arizona bolstered attempts to manufacture absolute rights, consistent with the liberal paradigm, while the more accurate boundary, irrigation and common use decisions advanced the social function of providing public benefits.

Conclusion

Agustín Parise's ownership paradigm illuminates US and Latin American water regimes, although their placement in its 'allocation,' 'liberal' and 'social function' categories has played out differently depending upon context. Historically, Chile swung from the liberal to the social function paradigm and back again, while Mexico gradually evolved from the revolution's social focus to the current pro-agribusiness policy. In the countries more closely examined here, both legislation and court decisions display the extent and pace of agrarian reform, with the Colombian judiciary supporting a strong governmental role in water disputes while that of Peru has been supplanted by a completely state-run administrative structure.

Further investigation, particularly in jurisprudence, would shed light on the water regimes of the nations briefly surveyed and others not discussed. Repositories like the Los Angeles County Law Library collect Latin American court reports, digests and other materials. These sources can facilitate comparative studies beyond constitutions and statutes to show how water law is applied on the ground.[139] Such research is essential as water in the Americas and elsewhere becomes an increasingly precious and threatened resource, and we must, and should, look across borders for equitable and effective solutions.

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[136]Valmont Plantations v. State, 355 S.W.2d 502 (Tex. 1962).

[137] Lobato v. Taylor, 71 P.3d 938, 943 (Colo. 2002). Full disclosure: the author wrote an *amicus* brief presenting evidence of Mexico's natural resource law in the 1840s. Brief of Amici Curiae Bi-National Human Rights Commission, et al., Lobato v. Taylor (2002).

[138] *See generally* Reich, *Mission Revival Jurisprudence, supra* note 129.

[139] *See, e.g.*, COMPARATIVE CONSTITUTIONAL LAW IN LATIN AMERICA, (Rosalind Dixon & Tom Ginsburg eds., 2017) (comparing constitutions from variety of approaches, including textual, quantitative and case analysis).