COMMON HERITAGE AS PUBLIC TRUST: A PROPERTY LAW APPROACH TO MANAGING RESOURCES BEYOND NATIONAL JURISDICTION

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ABSTRACT

The search for rare minerals is taking us well beyond the bounds of national jurisdiction, and international law is struggling to keep up. In the 1970s states agreed that the deep seabed beyond national jurisdiction was the "common heritage of mankind," a doctrine that was ultimately codified in the United Nations Convention on the Law of the Sea. The common heritage doctrine has, from the outset, been something of a chimera. And fears over its association with redistributive economic policies led to the failure of an agreement regulating activities on the moon. Yet the doctrine exists as a going concern in international law. Deep seabed mining is on track to begin in 2024. The United Nations is presently considering international rules for asteroid and lunar mining. And efforts to protect marine biodiversity continue to rely on the idea that certain resources are our common heritage. If states are to deal productively with any of these issues, we need a revitalized approach to the common heritage doctrine.

Instead of embodying a static set of legal precepts, I argue for a flexible understanding of the common heritage doctrine rooted in theories of commons property that is sensitive to the peculiarities of specific natural resources. A fruitful exemplar of such an approach is the public trust doctrine of U.S. property law. Sharing with the common heritage doctrine a common foundation in Roman principles of common property, the public

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trust doctrine recognizes that governments hold certain natural resources in trust for the beneficial use of their citizens. By imposing this duty, and by limiting the purposes for which governments can use these resources, the public trust doctrine is a prototypical example of property as a set of governance rules. Drawing on the public trust doctrine's rich common law and scholarly history, I propose a four-part framework for a public trust approach to the common heritage doctrine.

To demonstrate the opportunities made available by this approach, I take outer space mining as a case study and I propose steps that states can take to incrementally govern resource extraction in a manner more likely to attract international consensus.

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INTRODUCTION

There is an inconvenient truth to our push towards a renewable energy future—it requires a stupendous amount of hard-to-find minerals. The growing fleet of electric vehicles, for example, all need high-capacity batteries that rely on lithium, nickel, cobalt, manganese, and graphite.[1] To be sure, we already mine for these minerals—the Energizer Bunny has been going for quite some time.[2] But future demand for them is unprecedented. The International Energy Agency has found that, since 2010, the average amount of rare earth minerals required for a unit of generated power increased fifty percent.[3] Based on current energy policies, demand for rare earth minerals will double by 2040.[4] And if we are to meet the goals of the Paris Climate Agreement to stabilize warming below a two-degree Celsius increase, demand will quadruple over the same timeframe.[5]

1. INT'L ENERGY AGENCY, THE ROLE OF CRITICAL MINERALS IN CLEAN ENERGY TRANSITIONS 5 (2021), https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf [https://perma.cc/M82S-EEQM].

2. The first dry-cell battery for consumer use was invented in 1896. The predecessor to the Energizer Holdings company was founded in the early 1900s. *Our Legacy*, ENERGIZER HOLDINGS, INC., https://www.energizerholdings.com/company/our-legacy [https://perma.cc/CVS2-PUBW].

3. INT'L ENERGY AGENCY, *supra* note 1, at 5.

4. *Id.* at 46, 50.

5. *Id.* at 8.

There are significant geopolitical ramifications to this shift in energy production. Mining for and refining rare earth minerals is, at present, highly concentrated. Sixty-nine percent of cobalt, for example, is produced in the Democratic Republic of Congo.[6] Fifty-eight percent of the world's lithium reserves are in Bolivia, Argentina, and Chile, and just over half of all current production is in Australia.[7] Other rare earth minerals are disproportionately concentrated within China.[8] All of which has led U.S. policymakers to prioritize diversifying this supply chain by providing substantial financial incentives to locate and develop domestic mineral production.[9]

This race to secure minerals is leading states and private industry to remote locales—areas "beyond national jurisdiction"—and particularly the deep seabed and celestial bodies. Under the law of the sea, areas of the seabed that are, at a minimum, 350 nautical miles from the coast are beyond national jurisdiction.[10] And in outer space law, all celestial bodies, including asteroids and the moon, are not susceptible to sovereign claims.[11] In July 2023, the international organization charged with regulating deep seabed mining[12] began accepting applications that may, by 2024, pave the way for the first commercial mining operation beyond national jurisdiction.[13] In April 2023, the most recent in a string of outer space mining startups launched a satellite to test equipment designed to refine metals mined from asteroids.[14] Another test, into deep space, is scheduled for late 2024.[15] Many states and private entities have near-term plans for human settlements on the

6. Luc Leruth, Adnan Mazarei, Pierre Régibeau & Luc Renneboog, *Green Energy Depends on Critical Minerals. Who Controls the Supply Chains?* 9 (Peterson Inst. for Int'l Econ, Working Paper No. 22-12, 2022).

7. *Id.* at 13.

8. *Id.* at 17 (finding that, in 2022, 56% of such production was concentrated within China, split between two state-owned enterprises).

9. *Fact Sheet: Securing a Made in America Supply Chain for Critical Minerals*, THE WHITE HOUSE (Feb. 22, 2022), https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/22/fact-sheet-securing-a-made-in-america-supply-chain-for-critical-minerals [https://perma.cc/86PC-WVCY].

10. *See infra* note 52. The United Nations Convention on the Law of the Sea has codified a rather nuanced (some might say confusing) regime of overlapping areas of maritime jurisdiction and sovereignty, discussed at greater length *infra* Part I.

11. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. 2, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

12. The International Seabed Authority, discussed in greater depth *infra* Part I.

13. *Timeline*, THE METALS CO., https://metals.co/timeline [https://perma.cc/ADT3-YN5M].

14. Chris Young, *Space Mining Startup CEO Says Asteroid Resources Can Save the Planet*, INTERESTING ENG'G (May 26, 2023, 7:41 AM), https://interestingengineering.com/innovation/space-mining-startup-asteroid-resources-can-save-planet [https://perma.cc/85GU-ACPV].

15. Matt Gialich & Jose Acain, *Firing on All Cylinders: Announcing $40M and Mission 3*, ASTROFORGE (Aug. 20, 2024), https://www.astroforge.io/updates/firing-on-all-cylinders-announcing-40m-and-mission-3 [https://perma.cc/9EPW-VASC].

moon.[16] Such settlements will necessarily rely on extracting lunar resources.[17] States take these developments seriously. The United Nations Committee on the Peaceful Uses of Outer Space ("UNCOPUOS") is in the midst of a five-year program to develop more detailed international rules for exploiting outer space resources.[18]

These first steps toward mining in areas beyond national jurisdiction are controversial. A coalition of states and non-profits are calling for a moratorium on deep seabed mining to forestall the attendant probable, and likely irreversible, environmental damage.[19] Similarly, there was significant international condemnation when the United States, in 2015, enacted domestic legislation recognizing the property rights of U.S. entities that extract resources from celestial objects.[20]

All of this supercharges a decades-old debate in international law—who owns the resources available in areas beyond national jurisdiction? One of the key legal innovations of the 1970s was to characterize such resources as the common heritage of mankind (now often referred to as the common heritage of humankind). Part XI of the 1982 United Nations Convention on the Law of the Sea ("UNCLOS") provides that resources of the seabed beyond national jurisdiction are the common heritage of mankind.[21] Similarly, the Outer Space Treaty provides that "[t]he exploration and use of outer space . . . shall be carried out for the benefit and in the interests of all

16. *See, e.g.*, *Artemis*, NAT'L AERONAUTICS & SPACE ADMIN., https://www.nasa.gov/specials/artemis [https://perma.cc/8KWR-9QZV] (demonstrating the U.S. government's objective to establish a permanent presence on the moon); *Mars & Beyond*, SPACEX, https://www.spacex.com/human spaceflight/mars [https://perma.cc/JZ2Y-9T7E] (articulating the private sector's goal to establish a permanent human presence on Mars); *China Wants to Start Using Moon Soil to Build Lunar Bases as Soon as This Decade*, REUTERS (Apr. 12, 2023, 4:40 PM), https://www.reuters.com/lifestyle/science/china-wants-start-using-moon-soil-build-lunar-bases-soon-this-decade-2023-04-12 [https://perma.cc/ETF9-MKWS] (explaining China's plans to establish a lunar base and use lunar resources for construction).

17. Mark J. Sundahl & Jeffrey A. Murphy, *Set the Controls for the Heart of the Moon: Is Existing Law Sufficient to Enable Resource Extraction on the Moon?*, 48 GA. J. INT'L & COMPAR. L. 683, 685 (2020) (noting that it is cost prohibitive to ship necessary resources from earth to the moon and that water and regolith will be necessary to sustain human life and to construct buildings).

18. *Working Group on Legal Aspects of Space Resource Activities*, UNITED NATIONS OFF. FOR OUTER SPACE AFFS., https://www.unoosa.org/oosa/en/ourwork/copuos/lsc/space-resources/index.html [https://perma.cc/8VDK-UA43].

19. Robin McKie, *Deep-Sea Mining for Rare Metals Will Destroy Ecosystems, Say Scientists*, THE GUARDIAN (Mar. 26, 2023, 04:00 AM), https://www.theguardian.com/environment/2023/mar/26/deep-sea-mining-for-rare-metals-will-destroy-ecosystems-say-scientists [https://perma.cc/H72Y-6YF7]; Maurizio Guerrero, *Opposition Grows Among Countries as Seabed-Mining Efforts Push Ahead*, PASSBLUE (Jan. 2, 2023), https://www.passblue.com/2023/01/02/opposition-grows-among-countries-as-seabed-mining-efforts-push-ahead [https://perma.cc/2RZ3-QY8T].

20. *See, e.g.*, Frans G. von der Dunk, *Asteroid Mining: International and National Legal Aspects*, 26 MICH. STATE INT'L L. REV. 83, 94–99 (2018).

21. U.N. Convention on the Law of the Sea pt. XI, *opened for signature* Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS].

countries . . . and shall be the province of all mankind."[22] More controversially, as no spacefaring nations have acceded to it, the Moon Agreement explicitly provides that "the moon and its natural resources are the common heritage of mankind."[23]

What does it mean for a territory or resource to be the common heritage of humankind? Attempts to pin down the concept as a matter of black letter international law are unsatisfying. At a minimum, it appears to mean that the territory is not susceptible to claims of sovereignty or jurisdiction and that the territory may only be used for peaceful purposes. Yet on myriad other fronts—whether the mining must be undertaken in a manner that particularly benefits developing economies, whether an international organization is required to administer access to resources, the terms on which access may be provided, and so forth—states and scholars have fundamentally disagreed for decades.

I propose rethinking the common heritage of humankind by analogizing to the public trust doctrine, a longstanding principle of U.S. property law. I am not the first to draw international resource management lessons from the public trust doctrine. Hope Babcock, for example, has argued that it is a helpful model for establishing an international legal regime for outer space mining.[24] I take this proposal one step further, to flesh out a four-part framework that states can use to adopt property rules sensitive to the particularities of disparate natural resources in areas beyond national jurisdiction.

The public trust doctrine is itself a controversial principle of U.S. property law. As I discuss in Part II, it has also been the subject of significant scholarly criticism and debate. In a nutshell, the doctrine provides that there are certain natural resources that, by sovereign right, State governments hold in a kind of public trust for general use and enjoyment. The doctrine was made famous by *Illinois Central Railroad Company v. State of Illinois*, wherein the Supreme Court found that the Illinois legislature's decision to completely alienate a portion of Chicago's waterfront for private development by the Illinois Central Railroad violated the public trust doctrine.[25] Although *Illinois Central* is often the first case discussed when explaining the public trust doctrine, it was not the first U.S. public trust doctrine case. The New Jersey Supreme Court first noted the State's trust

22. Outer Space Treaty, *supra* note 11, art. 1.

23. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies art. 11, Dec. 18, 1979, 1363 U.N.T.S. 3 [hereinafter Moon Agreement].

24. Hope Babcock, *The Public Trust Doctrine, Outer Space, and the Global Commons: Time to Call Home ET*, 69 SYRACUSE L. REV. 191 (2019).

25. Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 452–55 (1892).

duties with respect to navigable rivers, the coastline, and riverbeds in the early 1800s, drawing on English common law and principles of Roman property law.[26] The scope of the doctrine, however, expanded radically over time, impelled importantly by an intervention from Joseph Sax in 1970.[27] Although slightly different in each State,[28] in its most robust form the public trust doctrine provides citizens standing to object to State governments' decisions about water use and conservation and use of public lands.

Notwithstanding its variation across State lines, the public trust doctrine is a productive foundation from which to reimagine the common heritage of humankind. First, over the past forty years State supreme courts have productively used the doctrine to manage water consumption, particularly in Hawaii and California.[29] Second, and more generally, the public trust doctrine orients us to the range of substantive ends that a legal regime concerned with access to commons resources can achieve. Third, it attunes us to the relationships to which we must attend in creating these property law rules. And fourth, it moves us away from the entrenched debates over process and redistribution that have so stymied broader application of the common heritage doctrine.

My argument proceeds in four parts. Part I explains the problem: What is the common heritage of humankind, and why has it failed to meet the aspirations of its original proponents? Part II justifies using a public trust approach to the common heritage doctrine. I begin by setting out the contours of the public trust doctrine and arguing why a commons approach to managing resources in areas beyond national jurisdiction is appropriate. I go on to explain the shared historical roots of the two doctrines in Roman law, as well as what these shared roots should mean for our understanding of a public trust approach to the common heritage of humankind. I demonstrate the striking similarity in how these doctrines revolutionized their respective areas of law in the middle of the twentieth century. I argue that these similarities speak to a deep theoretical continuity between the doctrines and that a significant body of scholarship concerning commons property justifies using the public trust as a model for a modern common heritage doctrine.

26. Arnold v. Mundy, 6 N.J.L. 1, 3 (N.J. 1821). Also, in an attempt at clarity without clunky wording, I will distinguish U.S. States from international nation states through capitalization. When I refer to States as a unit of U.S. government, I will capitalize the S. When I refer to states as a unit of international relations, I will use a lower-case s.

27. Michael C. Blumm & Zachary A. Schwartz, *The Public Trust Doctrine Fifty Years After Sax and Some Thoughts on Its Future*, 44 PUB. LAND & RES. L. REV. 1, 2–3 (2021).

28. Both as to its legal foundations (whether in common law, constitutional law, or statutory law) and the resources and objects to which it applies.

29. *See infra* Section II.B.

Part III sets out the four-part framework for a public trust approach to the common heritage of humankind. This is a framework for institutional design, and accounts for: (1) the tangible objects to which the trust applies (that is, the *res*); (2) the beneficiary for whom the *res* is in trust; (3) the means by which the *res* is conserved and the entity committed to conserving it (that is, the trustee); and (4) the process by which the beneficiary may vindicate the trust if the trustee fails in its duties. Taken together, this framework moves away from particular normative visions for the common heritage of humankind to show the paths that can be taken to manage resources in areas beyond national jurisdiction. In Part IV, I use outer space mining as a case study to demonstrate how a public trust approach to the common heritage doctrine opens up fresh avenues for resource management. I then offer some brief thoughts for future work in conclusion.

I. DEFINING THE COMMON HERITAGE OF HUMANKIND

The common heritage doctrine, in many ways, persists in spite of itself. Notwithstanding its codification in UNCLOS and the Moon Agreement, the only real consensus on its parameters has been that there is no consensus.[30] Indeed, prior to widespread adoption of UNCLOS, many disputed that it was a legal, as opposed to a political, proposition.[31] In this Section I identify three core commitments we can reasonably ascribe to the common heritage doctrine: (1) common heritage territory is not subject to claims of sovereignty; (2) even in some de minimis way, exploitation of common heritage resources should benefit humanity writ large; and (3) common

30. *See, e.g.*, Graham Nicholson, *The Common Heritage of Mankind and Mining: An Analysis of the Law as to the High Seas, Outer Space, the Antarctic and World Heritage*, 6 N.Z. J. ENVT'L L. 177, 181 (2002) ("[I]t should not be assumed that the concept of a common heritage of mankind has a fixed or static meaning."); John E. Noyes, *The Common Heritage of Mankind: Past, Present, and Future*, 40 DENV. J. INT'L L. & POL'Y 447, 449 (2012) ("[I]ts meaning is less than clear, despite several decades of use of the principle in international law."); EDWIN EGEDE, AFRICA AND THE DEEP SEABED REGIME: POLITICS AND INTERNATIONAL LAW OF THE COMMON HERITAGE OF MANKIND 60 (2011) ("Due to the rather nebulous nature of the concept of [the common heritage of mankind], it is open to diverse interpretations as to its exact scope."); Stephen Gorove, *The Concept of "Common Heritage of Mankind": A Political, Moral, or Legal Innovation?*, 9 SAN DIEGO L. REV. 390, 400 (1972) (noting the various views of delegates in 1970 discussions leading up to UN General Assembly 1749); Yen-Chiang Chang & Chuanliang Wang, *A New Interpretation of the Common Heritage of Mankind in the Context of the International Law of the Sea*, 191 OCEAN & COASTAL MGMT. 1, 2 (2020); Babcock, *supra* note 24, at 214. *See generally* Rudolph Preston Arnold, *The Common Heritage of Mankind as a Legal Concept*, 9 INT'L L. 153 (1975); Christopher C. Joyner, *Legal Implications of the Concept of the Common Heritage of Mankind*, 35 INT'L & COMP. L.Q. 190 (1986).

31. *See, e.g.*, Joyner, *supra* note 30, at 199 ("[I]t is merely a philosophical notion with the potential to emerge and crystallise as a legal norm."); Arnold, *supra* note 30, at 155 (noting that others believe it should be understood as rule of joint property); C. WILFRED JENKS, SPACE LAW 193 (1965) [hereinafter JENKS SPACE] (arguing that, like the Constitution's general welfare clause, treaty references to the common heritage of humankind are "a continuing source of authority for new applications of the fundamental concept as further problems come into focus and call for solution on the basis of law").

heritage territories may only be used for peaceful purposes. I show why UNCLOS's tortured ratification history and the failure of the Moon Agreement prevent us from imputing much else to the doctrine. Finally, I identify three areas of confusion, essential for operationalizing the doctrine, that remain: (1) the territories or things to which the common heritage doctrine should apply; (2) the international mechanism, if any, required to implement it; and (3) the beneficiary of the doctrine and the benefit accruing to them.

The Vienna Convention on the Law of Treaties directs that treaty provisions be interpreted "in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in light of its object and purpose."[32] The Convention provides for an expansive search for a treaty's context, taking into account all treaty text and any agreements made between all parties regarding the treaty.[33] Further, the Convention directs that treaty interpretation should account for subsequent agreements and state practice in applying the treaty.[34]

A. PURPOSE OF THE COMMON HERITAGE DOCTRINE

There is a strong case that the original object and purpose of the common heritage doctrine was to concretely advance the redistributive economic agenda of the new international economic order. This is evident in what is often credited as the birth of the doctrine, a 1967 speech by Maltese Ambassador Arvid Pardo.[35] But even Ambassador Pardo would have admitted that the roots are, in fact, much older. Earlier in 1967, Ambassador Aldo Armando Cocca, in the context of the emerging field of outer space law, argued that "the international community had endowed that new subject of international law—mankind—with the vastest common property (*res communis humanitatis*) which the human mind could at present conceive of, namely outer space itself, including the Moon and the other celestial bodies."[36] Comments by U.S. officials during the 1960s endorsed a similar

32. Vienna Convention on the Law of Treaties art. 31, *opened for signature* May 23, 1969, 1155 U.N.T.S. 331.

33. *Id.* art. 31(2).

34. *Id.* art. 31(3).

35. U.N. GAOR, First Comm., 22nd Sess., 1515th mtg. at 1, U.N. Doc. A/C.1/PV.1515 (Nov. 1, 1967) [hereinafter First Committee, 1515th Meeting]. Ambassador Pardo's speech is often described in near-breathless terms. *See, e.g.*, Maria Fernanda Millicay, *The Common Heritage of Mankind: 21st Century Challenges of a Revolutionary Concept*, *in* LAW OF THE SEA, FROM GROTIUS TO THE INTERNATIONAL TRIBUNAL FOR THE LAW OF THE SEA 272, 272 (2015) ("On 1 November 1967, Ambassador Arvid Pardo of Malta made a historic statement before the First Committee of the General Assembly."); Saviour Borg, *The Common Heritage 1967-1997*, *in* COMMON HERITAGE AND THE 21ST CENTURY 83, 85 (R. Rajagopalan ed., 1997) (noting that Arvid Pardo picked up where Grotius left off).

36. Rüdiger Wolfrum, *The Principle of the Common Heritage of Mankind*, 43 ZEITSCHRIFT FÜR AUSLÄNDISCHES ÖFFENTLICHES RECHT UND VÖLKERRECHT 312, 312 n.1 (1982).

view.[37] Indeed, in the text of his 1967 speech Pardo noted the work of the 1967 World Peace Through Law Conference,[38] which resolved that the General Assembly should issue "[a] proclamation declaring that the non-fishery resources of the high seas, outside the territorial waters of any State, and the bed of the sea beyond the continental shelf, appertain to the United Nations and are subject to its jurisdiction and control."[39]

What differentiated these earlier statements from Pardo's speech, more than anything, was his concern that international law, as it existed, was not sufficient to meet the challenges of decolonization. His speech began by noting in exacting detail the deep seabed's unrealized commercial potential[40] and the strategic instability that would result from the unfettered militarization of the seabed.[41] Ambassador Pardo argued that existing international law doctrines concerning territorial acquisition were insufficient to protect newly liberated states.[42] Specifically, Pardo called for using the "financial benefits . . . derived from the exploitation of the sea-bed and ocean floor for commercial purposes" to assist "poor countries,

37. For example, President Lyndon B. Johnson, speaking at the commissioning of the research ship *Oceanographer* on July 13, 1966, said that "under no circumstances, we believe, must we ever allow the prospects of rich harvests and mineral wealth to create a new form of colonial competition among the maritime nations. We must be careful to avoid a race to grab and to hold the lands under the high seas. We must ensure that the deep seas and the ocean bottoms are, and remain, the legacy of all human beings." President Lyndon B. Johnson, Remarks at the Commissioning of the Research Ship Oceanographer (July 13, 1966) (transcript available at THE AM. PRESIDENCY PROJECT, https://www.presidency.ucsb.edu/node/238478 [https://perma.cc/XT6B-AUE2]). Similarly, Senator Frank Church, as a member of the U.S. delegation to the 21st session of the U.N. General Assembly, argued that "[b]y conferring title on the United Nations to mineral resources on the ocean floor beyond the Continental Shelf, under an international agreement regulating their development, we might not only remove a coming cause of international friction, but also endow the United Nations with a source for substantial revenue in the future." *The United Nations and the Issue of Deep Ocean Resources: Hearing on H.J. Res. 816 Before the Subcomm. on Int'l Orgs. and Movements, H. Comm. on Foreign Affs.*, 90th Cong. 10 (Sept. 22, 1967) [hereinafter Hearing on H.J. Res. 816] (statement of Sen. Frank Church).

38. First Committee, 1515th Meeting, *supra* note 35, ¶ 104, at 14.

39. *Id.* The Conference recited a similar list of policy reasons for making this determination. *Id.* ("[N]ew technology and oceanography have revealed the possibility of exploitation of untold resources of the high seas and the bed thereof beyond the continental shelf and more than half of mankind finds itself underprivileged, underfed, and underdeveloped, and the high seas, are the common heritage of all mankind.").

40. *Id.* ¶¶ 16–23 (pointing to silver and gold reserves, treasure from sunken ships and trillions of cubic feet of offshore natural gas reserves), 26–38 (especially vast quantities of metals, including manganese, zinc, and cobalt, as well as "calcareous oozes" and other valuable commodities).

41. *Id.* ¶¶ 47–55.

42. *Id.* ¶¶ 56–57 (highlighting five particular modes—cession, subjugation, accretion, prescription, and occupation). Although these modes of acquisition are often repeated as reflecting historical state practice, there is, in fact, considerable nuance in contemporary international law. For example, article 2, paragraph 4 of the U.N. Charter, which provides that "[a]ll Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state," undercuts legal support for a territorial claim based on "subjugation" (that is, forcible acquisition and annexation of another state's territory). U.N. Charter art. 2, ¶ 4.

representing that part of mankind which is most in need of assistance."[43]

These concerns were highly resonant of his political environment. The pace of decolonization quickened rapidly in the 1960s, and with it a widespread urgency to restructure basic premises of international politics.[44] This urgency partly manifested in the "new international economic order," an important goal of which was to reorient the law of the sea to benefit developing states more directly.[45] Indeed, a central tenet of the "new international economic order" was to reorient the law of the sea to benefit developing states through the common heritage doctrine.[46]

These overarching objectives continued to inform the doctrine's earliest textual articulations. General Assembly Resolution 2749, for example, declared that "the sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction . . . as well as the resources of the area, are the common heritage of mankind."[47] It went on to provide that this area is not "subject to appropriation by any means" and that "no State shall claim or exercise sovereignty or sovereign rights over any part thereof."[48] The resolution also reserved the area "exclusively for peaceful purposes" and noted that resource extraction in the area "be carried out for the benefit of mankind as a whole . . . taking into particular consideration the interests and needs of the developing countries."[49]

43. U.N. GAOR, First Comm., 22nd Sess., 1516th mtg. ¶ 13, U.N. Doc. A/C.1/PV.1516 (Nov. 1, 1967).

44. Nicholson, *supra* note 30, at 181.

45. *See, e.g.*, Elisabeth Mann Borgese, *The New International Economic Order and the Law of the Sea*, 14 SAN DIEGO L. REV. 584, 584–85 (1977).

46. *Id.*; *see also* Noyes, *supra* note 30, at 459 (arguing that "north-south" tensions that emerged during the first half of the twentieth century are essential to understanding debates concerning the common heritage of mankind in the 1960s and 1970s); Norma Araiza, The Deep Seabed Mining Legal Regime: The North-South Controversy from a Third World Perspective 1 (Spring 1983) (unpublished manuscript) (on file with the Harvard Law School Library) (finding that "[t]he New Law of the Sea is, without doubt, the most important step given by the international community in the context of the New International Economic Order"); Joanna Dingwall, *Commercial Mining Activities in the Deep Seabed Beyond National Jurisdiction: The International Framework*, *in* THE LAW OF THE SEABED: ACCESS, USES, AND PROTECTION OF SEABED RESOURCES 139, 142 (Catherine Banet ed., 2020); Bradley Larschan & Bonnie Brennan, *Common Heritage of Mankind Principle in International Law*, 21 COLUM. J. TRANSNAT'L L. 305, 306 (1983). Indeed, Arvid Pardo in his 1967 speech noted how adopting the common heritage doctrine to more equitably distribute the proceeds from revenues obtained from deep seabed mining could be used to replace development aid and create the foundation for a more sustainable development program. Noyes, *supra* note 30, at 459–60.

47. G.A. Res. 2749 (XXV), Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil Thereof, Beyond the Limits of National Jurisdiction, ¶ 1 (Dec. 17, 1970).

48. *Id.* ¶ 2.

49. *Id.* ¶ 7. Prior to the widespread adoption of the U.N. Convention of the Law of the Sea, which first incorporated the common heritage doctrine into treaty text, the legal value of this resolution was an important point of international debate. Araiza, *supra* note 46, at 22–23 (noting that the "first world" saw it only as a statement of policy—and a vague one at that—while the "third world" largely argued that it reflected a new provision of international law).

B. TEXTUAL ARTICULATIONS OF THE COMMON HERITAGE DOCTRINE

We can most vividly see how the common heritage doctrine failed to achieve these redistributive aims in the only two areas of international law in which the doctrine is incorporated into treaty text—the law of the sea and outer space law.

Efforts to codify the law of the sea in treaty form date to the mid-1950s.[50] We are concerned with the third conference on the law of the sea, which began in 1973 and ended in 1982 with the adoption of UNCLOS.[51] The common heritage doctrine is codified in part XI of UNCLOS, which concerns "the Area"—a region of the seabed beyond a state's exclusive economic zone and continental shelf.[52] UNCLOS provides that the "Area and its resources" are the common heritage of mankind.[53] It proceeds to track the three commitments noted above. First, activities in the Area must "be carried out for the benefit of mankind as a whole."[54] More specifically, hewing closer to the Pardian vision, these benefits must "tak[e] into particular consideration the interests and needs of developing States and of peoples who have not attained full independence."[55] Second, part XI prohibits any state from exercising "sovereignty or sovereign rights" over the Area or its resources.[56] Finally, it provides that the Area may only be used for peaceful purposes.[57]

The treaty then provides, in truly astonishing detail, an international bureaucracy designed to administer the Area for the benefit of humanity, with a particular emphasis on realizing the treaty's redistributive aims. I will sketch them only in brief. UNCLOS establishes two organizations to realize

50. There have been three UN conferences on the law of the sea. The first, beginning in 1957, successfully negotiated the first multilateral treaties on the law of the sea. EGEDE, *supra* note 30, at 7. The second, which began in 1960, failed to develop any consensus on the breadth of the territorial sea or a means for regulating fisheries. *Id.*

51. Millicay, *supra* note 35, at 277.

52. There are three zones of maritime jurisdiction that are especially important to understanding the common heritage doctrine. As listed here, they proceed from areas of the greatest entitlement to sovereign rights and jurisdiction for the coastal state to areas of more minimal entitlement: (1) a territorial sea, no greater than 12 nautical miles ("M"), that extends from a state's coastal baseline; (2) a contiguous zone, extending no greater than 24M, from a state's coastal baselines; and (3) an exclusive economic zone, extending no greater than 200M, that extends from a state's coastal baseline. States are also entitled to the mineral, non-living, and ("sedentary") living resources of a continental shelf that extends from a coastal state (to the extent one exists), as a general matter no greater than 350M from a state's coastal baselines. *See* UNCLOS, *supra* note 21, arts. 3, 33, 57, 76.

53. *Id.* art. 136.

54. *Id.* art. 140.

55. *Id.*

56. *Id.* art. 137(1).

57. *Id.* art. 141.

deep seabed mining—the International Seabed Authority ("the Authority")[58] and "the Enterprise."[59] While the Authority is charged with generally administering and setting mining regulations, the Enterprise is arranged to operate as an independent mining concern. UNCLOS provides that proceeds from mining approved by the Authority, or undertaken by the Enterprise, be provided to adversely affected land-based mineral producers, geographically disadvantaged states, and developing countries.[60] To maximize these proceeds, UNCLOS also provides myriad ways in which states must support the Enterprise particularly. Its operating budget comes from fees collected by the Authority,[61] voluntary payments from states parties, and loans.[62] States and private mining companies are also required to provide any technical support requested by the Enterprise.[63] To help the Enterprise identify areas for potential mining operations, UNCLOS establishes a banking system. Each time a state or private entity wants to apply to prospect or mine in the Area, they must provide two locations, one of which is reserved for the Enterprise.[64] On top of these institutional arrangements are a number of limitations on extraction and required financial distributions to underdeveloped economies. For example, UNCLOS prescribes a detailed mathematical formula for setting production limitations on seabed mining to protect the interests of states that rely on land-based mining.[65]

Developed economies strongly objected to this institutional apparatus.[66] Although the Nixon Administration had supported characterizing the Area as the common heritage of mankind, prohibiting sovereign claims, and establishing some mechanism for distributing profits "for international community purposes including economic advancement of developing countries," by the Carter Administration opposition to the regime was solidifying.[67] By 1983, with President Reagan in office, the United States registered its dissatisfaction with the Authority's governance structure, perceived preference for developing countries' interests, production limits,

58. *Id.* pt. XI, § 4(A)–(D).
59. *Id.* pt. XI, § 4(E).
60. *Id.*
61. These fees are substantial—UNCLOS requires a $500,000 application fee to operate in the Area and a $1 million annual fee from the date a mining contract enters into force. *Id.* annex III, art. 13(2).
62. *Id.* annex IV, art. 11(1), (2).
63. *Id.* annex III, art. 5(3).
64. *Id.* annex III, art. 8–9.
65. *Id.* art. 151; Wolfrum, *supra* note 36, at 332.
66. The United States objected to the informal composite negotiating text developed in 1976, six years before ultimately rejecting the treaty. Millicay, *supra* note 35, at 279; EGEDE, *supra* note 30, at 15.
67. Kathy-Ann Brown, The Status of the Deep Seabed Beyond National Jurisdiction: Legal and Political Realities 30 (Jan. 1991) (J.D. thesis, York University) (on file with the Harvard Law School Library).

and financial burdens by voting against the convention.[68] Most other developed economies followed suit.[69]

Recognizing that a deep seabed regime without participation from developed countries would amount to little, and in a moment of renewed interest in neoliberal economics after the fall of the Soviet Union, in 1990 the United Nations began to craft an agreement concerning part XI.[70] This process culminated in the 1994 Implementation Agreement—in actual fact a rewriting of part XI to convince developed states to join UNCLOS. The changes were significant. They struck out provisions requiring the transfer of technology to the Enterprise.[71] The Enterprise was directed to operate on "sound commercial principles," deprived of required contributions from states parties, and put in an indefinite "interim" status.[72] Complex models prescribing the rates that could be charged for mining contracts were replaced with general guidelines requiring "fair" rates comparable to those prevailing in land-based mining.[73] Representation on the Authority's Council was revised to ensure that the United States and other developed countries could stymie any proposed distribution of Authority or Enterprise funds to developing countries.[74] And the banking system was revised such that the entity applying for a mining permit now had the right of first refusal to enter into a joint venture with the Enterprise.[75] These changes were effective in getting developed states to adopt UNCLOS. The Convention has been ratified by 165 of 193 UN member states. Yet these changes eviscerated the redistributive aims actualized by the original text of part XI.

The common heritage doctrine's failure to launch in outer space law draws from these acrimonious UNCLOS debates. There are five international agreements regarding outer space activities: the Outer Space

68. Araiza, *supra* note 46, at 61; EGEDE, *supra* note 30, at 20.
69. Millicay, *supra* note 35, at 280.
70. *Id.* at 280–81; Tullio Scovazzi, *The Rights to Genetic Resources Beyond National Jurisdiction: Challenges for the Negotiations at the United Nations*, *in* THE LAW OF THE SEABED, *supra* note 46, at 213, 216.
71. Noyes, *supra* note 30, at 464.
72. *Id.*; Dingwall, *supra* note 46, at 144.
73. Dingwall, *supra* note 46, at 150.
74. Noyes, *supra* note 30, at 464.
75. Dingwall, *supra* note 46, at 150.

Treaty,[76] the Rescue and Return Agreement,[77] the Liability Convention,[78] the Registration Convention,[79] and the Moon Agreement.[80] Of these, the first four have been widely adopted by all spacefaring, and many non-spacefaring, states.[81] The Moon Agreement—the only one with an explicit reference to the common heritage doctrine—has been ratified by eighteen states, none of which have a significant, independent space program.

The Outer Space Treaty provides that the "exploration and use of outer space . . . shall be the province of all mankind."[82] There has been much debate as to whether the "province of all mankind" is substantively different from the "common heritage of mankind."[83] But looking to the remaining text of the Outer Space Treaty shows how, regardless of any difference in titles, the "province of all mankind" is strikingly similar to what remains of the common heritage doctrine after the 1994 Implementation Agreement. For example, article I provides that "[o]uter space . . . shall be free for exploration and use by all States without discrimination of any kind."[84] Article II similarly establishes that outer space "is not subject to national

76. Outer Space Treaty, *supra* note 11. Entered into force October 1967, this is the framework convention articulating broad principles regarding outer space activities.

77. Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, April 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119. Entered into force December 1968, this convention prescribes how states will aid and return to their home country astronauts in distress and that states will recover and repatriate space objects that return to Earth that are the property of another state.

78. Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S.187. Entered into force September 1972, this convention imposes a regime of strict liability for damage caused by space objects on Earth and provides a mechanism for settling claims for damages.

79. Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 28 U.S.T. 694, 1023 U.N.T.S. 15. Entered into force September 1976, this convention established in greater detail the process for registering space objects.

80. Moon Agreement, *supra* note 23. Entered into force July 1984, this agreement affirms many of the same principles provided in the Outer Space Treaty and, important for our purposes, establishes that the Moon and its resources are the common heritage of mankind.

81. *Status of International Agreements Relating to Activities in Outer Space*, UNITED NATIONS OFF. FOR OUTER SPACE AFFS., https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/status/index.html [https://perma.cc/R8AY-87PS] (providing a full record of states parties to all international space law legal instruments).

82. Outer Space Treaty, *supra* note 11, art. 1.

83. There has been much debate on this issue, though there is nothing particularly probative in the travaux préparatoires on the matter. *See, e.g.*, Larschan & Brennan, *supra* note 46, at 327 (finding that the meaning of "province of all mankind" has been contested by states parties from the outset); Nicholson, *supra* note 30, at 187 (arguing that, although the Outer Space Treaty does not use "common heritage of mankind," its provisions incorporate substantively the same principle); RICKY LEE, LAW AND REGULATION OF COMMERCIAL MINING OF MINERALS IN OUTER SPACE 217 (2012) (arguing that the province of all mankind means either "some practical form of collective or communal sovereignty and ownership on the one hand or merely an idealistic and declaratory statement intended to negate any possible exercise of sovereignty or appropriation on the other").

84. Outer Space Treaty, *supra* note 11, art. 1.

appropriation by claim of sovereignty, by means of use or occupation, or by any other means."[85] And article IV directs that "[t]he Moon and other celestial bodies shall be used by all States Parties . . . exclusively for peaceful purposes."[86]

At the same time that debates about the common heritage of mankind were dividing states during UNCLOS negotiations, states similarly turned to debate more detailed questions about the permissible uses of celestial objects. How may states use resources located on celestial bodies? What benefits must accrue to humanity through their use? What duties are incumbent on states when using them? With striking similarity to law of the sea debates, some called for the United Nations (or another, specially designed international agency) to be vested with authority over celestial objects, and granted the ability to provide leases or licenses for resource extraction.[87] But ultimately, just as in UNCLOS negotiations, intense disagreements over the common heritage doctrine[88] yielded contradictory text unacceptable to states concerned that they were signing up for an incoherent doctrine likely to develop in directions over which they would have little control.[89]

85. *Id.* art. II.

86. *Id.* art. IV. The article goes on to provide more specifically that military bases, installations, and fortifications, testing of any type of weapon, and conducting any military maneuvers "on celestial bodies" is forbidden.

87. *See, e.g.*, C. WILFRED JENKS, THE COMMON LAW OF MANKIND 396, 398 (1958).

88. LEE, *supra* note 83, at 263 (arguing that the failure to develop a coherent definition for the common heritage doctrine in the Moon Agreement resulted from disagreement as to whether it was a philosophical concept, legal principle, or narrow doctrine applicable solely to scientific or peaceful purposes).

89. Sundahl & Murphy, *supra* note 17, at 686 (arguing that the primary concern of spacefaring states was the subsequent development of a common heritage regime inconsistent with their national interests); LEE, *supra* note 83, at 268–69 (finding that the main concerns of industrialized states were the absence of clear property rights, the likelihood that without such rights there would be insufficient financial incentives to foster a space mining sector, the possibility of an international bureaucracy that would stymie development, the potential for compulsory technology transfers, the implication of a moratorium on mining until the framework was developed, and concerns about the potential scale of financial redistribution). Article 11 of the Moon Agreement provides only that states parties "hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible." Moon Agreement, *supra* note 23, art. 11, ¶ 5. But other provisions make a hash of what this might mean. Paragraph 4, for example, provides that states parties "have the right to exploration and use of the moon without discrimination of any kind." *Id.* art. 11, ¶ 4. And Paragraph 7 establishes that the "main purposes" of the forthcoming international regime are: orderly and safe "development of the natural resources of the moon," "rational management of those resources," "expansion of opportunities in the use of those resources," and "equitable sharing . . . in the benefits derived from those resources" with special consideration given to "the interests and needs of the developing countries." *Id.* art. 11, ¶ 7. Yet Paragraph 3 establishes that the surface and subsurface of the moon, or "any part thereof or natural resources in place" cannot "become the property of any State, international intergovernmental or nongovernmental organization, national organization or non-governmental entity or of any natural person." *Id.* art. 11, ¶ 3.

C. UNANSWERED QUESTIONS

This analysis of treaty text leaves three key doctrinal questions unanswered, each the subject of considerable scholarly debate. First, there is a vast volume of writing on the territories or objects to which the common heritage doctrine should apply (that is, the *res* of the doctrine). Some have identified a "broad" vision, one that applies to "atmospheric air, biodiversity, forests, drinking water margin[s], [and] cultural and natural heritage."[90] Efforts to use the common heritage doctrine to protect the environment[91] and the atmosphere (as a tool to combat climate change) date back at least to the 1980s.[92] Others have called for using the common heritage doctrine to protect rain forests and food systems,[93] fauna and flora of the deep seabed,[94] biodiversity,[95] and marine genetic resources.[96] Nearly all of these attempts have been opposed by, at a minimum, developed states in a variety of international contexts.[97]

Many states and scholars proposing a wider definition of the resources to which the common heritage doctrine applies also envision some formal, international enforcement mechanism (that is, the means by which the international community's interests may be vindicated). This is particularly

This has led to some pretty metaphysical debates about the nature of property and a state's right to extract resources, for private or public purposes. A number of commentators believe a state's right to extract resources to be fundamentally incompatible with the Outer Space Treaty's prohibition on sovereign claims. *See, e.g.*, Gorove, *supra* note 30, at 399 (questioning whether it is possible to reconcile them); Arpit Gupta, *Property Rights and Sovereignty Within the Framework of the Common Heritage of Mankind Principle*, 63 PROC. INT'L INST. SPACE L. 121, 126 (2020) (noting that Bin Cheng thought that any private property rights were incompatible with the Outer Space Treaty); JENKS SPACE , *supra* note 31, at 201 (arguing that only the United Nations is able to appropriate resources, though rights in the resources could be granted by the UN); Amanda Leon, *Mining for Meaning: An Examination of the Legality of Property Rights in Space Resources*, 104 VA. L. REV. 497, 536–38, 546 (2018) (finding that property rights and sovereign claims are incompatible notwithstanding significant uncertainty even after you consider context). Others are equally convinced that it is possible for both to coexist. *See, e.g.*, GBENGA ODUNTAN, SOVEREIGNTY AND JURISDICTION IN THE AIRSPACE AND OUTER SPACE 27 (2011) (noting that one could have property rights over a facility and yet not exercise, or intend to exercise, sovereignty).

90. Olexander Radzivill, Fedir Shulzhenko, Ivan Golosnichenko, Valentyna Solopenko & Yuri Pyvovar, *International Legal and Philosophical Aspects of the New Concept of the Common Heritage of Mankind*, 2 WISDOM 153, 154 (2020).

91. Arnold, *supra* note 30, at 158.

92. Radzivill et al., *supra* note 90, at 164 (noting that experts to the UN Environment Programme and World Meteorological Organization, in developing "Principles of Cooperation between States in the Field of Impact on the Weather" in 1980, suggested that the first principle be that "[t]he Earth's atmosphere is a part of the common heritage of mankind").

93. Noyes, *supra* note 30, at 450.

94. *Declaration of Malta*, *in* COMMON HERITAGE AND THE 21ST CENTURY, *supra* note 35, at 1, 10.

95. Joseph Warioba, *Opening Address*, *in* COMMON HERITAGE AND THE 21ST CENTURY, *supra* note 35, at 23.

96. Scovazzi, *supra* note 70, at 219.

97. *See, e.g.*, *id.* (noting that the United States has explicitly opposed denominating marine genetic resources in areas beyond national jurisdiction as the common heritage of humankind).

true for those states animated by a version of the common heritage doctrine born of the new international economic order movement.[98] The details of this proposed mechanism vary. One of the more inventive, proposed by Malta and endorsed by Kofi Annan during his time as UN Secretary General, is to repurpose the UN Trusteeship Council to be a forum for protecting common heritage resources.[99] An independent international body, like the Authority, is another option, though a variety of states, across ideological fault lines, have resisted such an approach. In the early days of the law of the sea conferences, for example, communist bloc states opposed the creation of an international organization like the Authority out of concern that it would not be truly democratic and only exacerbate the gaps between developed and developing economies.[100] Other states and scholars have similarly argued that creating a new international organization would be too unwieldy, instead endorsing a model whereby enforcement is left to individual states.[101] Certainly neither approach is fool-proof. The issues with international bureaucracy are evident in the fact that it has taken nearly forty years for the Authority to develop rules for deep seabed mining. And the potential for backsliding without a mechanism for international enforcement is readily apparent in many states' continued inability to meet emissions targets developed during UN climate change negotiations.[102]

How the benefits of the common heritage should, or must, be distributed is perhaps the most controversial aspect of the doctrine. Stepping back, this is part and parcel of a broader question concerning what duties pertain to states as trustees of humanity's interests. We saw this in the negotiating history of both UNCLOS and the Moon Agreement. The idea that benefits accruing to common heritage resources be distributed through direct payments that favor developing states[103] and requirements for technology

98. Joyner, *supra* note 30, at 193; Borg, *supra* note 35, at 87 (noting the states that believe some system of international management is required). On this question generally, see Nicholson, *supra* note 30, at 178 n.2.

99. *Declaration of Malta*, *supra* note 94, at 11 (noting in particular that such areas would include the oceans, atmosphere, and outer space); U.N. Secretary-General, *Renewing the United Nations: A Programme for Reform*, ¶¶ 84–85, U.N. Doc. A/51/950 (July 14, 1997); Noyes, *supra* note 30, at 450.

100. Gorove, *supra* note 30, at 396.

101. Wolfrum, *supra* note 36, at 317 (arguing that it was "possible to stick to a solution more in line with the existing structure of the international community of States which results in leaving the administration of the common heritage to the individual States. The States would then act not on their own but—in the absence of an international organization—in the capacity of an organ of the international community."); CLARK EICHELBERGER & FRANCIS CHRISTY, THE LAW OF THE SEA: OFFSHORE BOUNDARIES AND ZONES 304 (1967).

102. *See, e.g.*, *For A Livable Climate: Net-Zero Commitments Must Be Backed by Credible Action*, UNITED NATIONS, https://www.un.org/en/climatechange/net-zero-coalition [https://perma.cc/8F3P-YZGQ].

103. Richard Falk, *Meeting the Challenge of Poverty: Equity, Common Heritage and the*

transfer[104] have been particularly contentious. There has been equally vociferous debate about whether the common heritage doctrine creates a duty to conserve heritage resources.[105] At a more fundamental, if slightly metaphysical, level, scholars have also debated what, in fact, constitutes "humankind"—whether it refers to states, states on behalf of all people, or all people without interposition from any state.[106] Practically, it is difficult to imagine in the current international system any practical version of "humankind" that does not include, at least in a representative fashion, states.

The vision of the common heritage of humankind that first animated its inclusion in international treaty law greatly exceeded what remains of the doctrine in treaty text and actual practice today. We have seen the doctrine's contentious codification in the law of the sea, and we have witnessed how it foundered in outer space law. Taken together, we are left with a vision of the common heritage doctrine that is at once freighted by historical association with redistributive policies, and yet which, in practice, has few concrete hooks to advance these goals. This contradictory status quo does little to foster doctrinal clarity or productive negotiations about methods for managing resources in areas beyond national jurisdiction. In the remaining sections, I set out to sketch a new path.

II. JUSTIFYING A PUBLIC TRUST APPROACH TO THE COMMON HERITAGE DOCTRINE

If the common heritage doctrine is to become a meaningful proposition in international law, we need a new approach. In this Section, I argue why looking to the public trust doctrine is instructive. First, the doctrines share similar normative impulses, evinced over a long history, that make this analogy particularly apt. Proponents of the public trust and common heritage doctrines, for example, both trace their legal arguments back to the same provisions of Roman law. Moreover, the primary innovators of both doctrines in the 1960s and 1970s had a similarly instrumental vision for the

Development of Ocean Resources, *in* COMMON HERITAGE AND THE 21ST CENTURY, *supra* note 35, at 223, 223 (arguing that the common heritage doctrine requires using, in this case, ocean resources to assist the poorest states); Wolfrum, *supra* note 36, at 322 (noting that developed states, and principally the United States, have resisted the idea that distribution of funds is a necessary component of the common heritage doctrine).

104. *See, e.g.*, Barbara Heim, *Exploring the Last Frontiers for Mineral Resources: A Comparison of International Law Regarding the Deep Seabed, Outer Space, and Antarctica*, 23 VAND. J. TRANSNAT'L L. 819, 847 (1990).

105. *Compare Declaration of Malta*, *supra* note 94, at 8 *and* Falk, *supra* note 103, at 224 (arguing that the common heritage requires a duty to conserve and sustainably develop the resources), *with* Noyes, *supra* note 30, at 451–52 (articulating the United States approach that the common heritage doctrine primarily establishes a right of access, not of conservation).

106. Gorove, *supra* note 30, at 393.

legal framework they set out to establish—a vision more fully realized by the public trust doctrine. Second, the public trust doctrine provides a coherent approach to managing common pool resources in a manner that, at a practical and theoretical level, coheres with general principles of property law. And finally, although the public trust doctrine gained prominence primarily in domestic U.S. property law, it has gained international traction. As I propose to use it, the public trust doctrine provides a generalizable heuristic for devising rules to manage international resources.

This argument builds on a 2019 article by Hope Babcock, which discussed briefly the virtues of the public trust doctrine within a broader discussion of the many domestic property law doctrines that might be used to regulate outer space mining.[107] In particular, Babcock noted the practical benefits to adopting a duty to preserve resources, assure public access, and prevent alienation in the absence of a robust international ruleset for outer space mining.[108] I expand on this argument in three ways. First, I show that the public trust doctrine can inform our approach to the common heritage doctrine writ large, in contexts far beyond outer space. Second, I develop the historical and theoretical reasons why this analogy should be attractive to states looking for a more comprehensive approach to international resource management. Third, I explain in detail what a public trust approach to the common heritage means through a four-part framework, detailed in Part III.

A. WHY A COMMONS APPROACH TO INTERNATIONAL RESOURCE MANAGEMENT

Anyone advocating that we reinvigorate the common heritage doctrine must first justify why resources beyond the bounds of national jurisdiction should be treated as a commons. Why not, instead, simply divvy them up? This, after all, is the compelling insight proffered by Garrett Hardin in his work on the tragedy of the commons.[109] Hardin posits that, in a world of rational herdsmen, each with equal and unfettered access to a pasture, the "only sensible course for him to pursue is to add another animal to his herd. And another; and another."[110] Inexorably, Hardin tells us, "[r]uin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a

107. *See* Babcock, *supra* note 24, at 257–61. Babcock's intervention rests primarily on a number of the substantive similarities between the aspirations of the common heritage and public trust doctrines.

108. *Id.* at 260.

109. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968). The same point was raised in an earlier work documenting the causes of overfishing. *See generally* Anthony Scott, *The Fishery: The Objectives of Sole Ownership*, 63 J. POL. ECON. 116 (1955).

110. Hardin, *supra* note 109, at 1244.

commons brings ruin to all."[111] He was not the first to make this point. Aristotle also observed that "what is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest."[112]

But we know that this simple picture of a tragic commons and complete allocation of rights (whether through allocation of private property rights or government management) is incomplete. Michael Heller, for example, warns of the dangers of too much allocation of private rights in resources. In what he terms a tragedy of the anticommons, real property may be underutilized when too many users are granted the right to exclude others from a scarce resource if no hierarchy of privilege exists between these users.[113] Economic modeling has borne out this analysis,[114] though some have argued for a more precise articulation of the game theoretic problem appropriately denominated an anticommons.[115] But even this represents an overly narrow view of the practical ways in which resources are managed. Elinor Ostrom, for example, has empirically demonstrated how communities have developed private agreements to manage common pool resources, enforced by a variety of institutional mechanisms that go beyond simple division of property rights or government management.[116] Specifically, she notes that achieving Pareto-optimal equilibrium in the market for a particular resource through centralized resource management rests on assumptions that the government has completely accurate information about the resource, sophisticated capability to monitor and sanction compliance, and zero administration costs.[117] This does not mean that Ostrom denies any role for the government or an external monitor in managing common pool resources. For example, speaking to those who advocate for privatized rights, Ostrom notes that it can be practically infeasible with respect to nonstationary

111. *Id.*

112. ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 2 (2015) (quoting ARISTOTLE, POLITICS, bk. II, ch. 3).

113. Michael Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 624 (1997). Heller has reiterated these findings in a variety of other works. *See, e.g.*, Michael Heller, *The Tragedy of the Anticommons: A Concise Introduction and Lexicon*, 76 MODERN L. REV. 6 (2013); Michael Heller, *Commons and Anticommons*, *in* 2 THE OXFORD HANDBOOK OF LAW AND ECONOMICS 178 (Francesco Parisi ed., 2017).

114. James Buchanan & Yong Yoon, *Symmetric Tragedies: Commons and Anticommons*, 43 J.L. & ECON. 1 (2000).

115. Ronald King, Ivan Major, & Cosmin Marian, *Confusions in the Anticommons*, 9 J. POL. & L. 64, 70 (2016) (arguing that the anticommons should more precisely be defined as "those cases where . . . the combined maximizing behavior of non-cooperative strategic actors nevertheless leads to Pareto inefficiency, thereby generating a rational tragedy reciprocal in construction to the well-known tragedy of the commons").

116. *See, e.g.*, OSTROM, *supra* note 112, at 18.

117. *Id.* at 10.

resources, like water and fisheries.[118] Instead, she argues that there is no single solution to resource management.[119] Institutional design is difficult, time-consuming, and context dependent. More often than not, some mixture of private and public institutions is needed "to achieve productive outcomes in situations where temptations to free-ride and shirk are ever present."[120]

A commons approach to international resource management in areas beyond national jurisdiction is particularly appropriate for a number of the reasons outlined above. Although the mineral resources of the deep seabed are certainly stationary, the marine life of the high seas that these operations would disturb do not respect jurisdictional boundaries. On any reasonable assessment of the International Seabed Authority's track record, its role as a centralized arbiter of resource rights is far from cost free. In outer space, given how little we know about the productive uses of asteroids and other celestial objects, there is a real risk of dividing property rights so finely as to create an anticommons. Moreover, at least at present, there is no centralized authority empowered to penalize free riding, and the likelihood of establishing such an authority seems dim in our current geopolitical environment. Before adopting an entirely new system of property rights, it therefore seems reasonable to find a way to make a commons approach to managing resources beyond national jurisdiction work.

B. DEFINING THE PUBLIC TRUST DOCTRINE

Perhaps more than many common law principles in U.S. law, the public trust doctrine varies significantly from State to State. Put most simply, it provides that the State holds title to land under tidal waters in a form of trust for the people of that State, who "have the right to use the land and water for navigation, fishing, and recreational uses."[121] Two of the most far-reaching applications of the public trust doctrine were rendered by the California and Hawaii Supreme Courts. I will treat them both in turn, as demonstrations of the kind of work that the public trust doctrine does in modern U.S. property law.

In *National Audubon Society v. Superior Court*, the California Supreme Court addressed whether, and how, the public trust doctrine affected the State's system for prioritizing access to fresh water, with a particular focus on use of water from Mono Lake, a particularly distressed reservoir for fresh

118. *Id.* at 13.
119. *Id.* at 14.
120. *Id.* at 14–15.
121. RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 1.1 cmt. f (AM. L. INST. 2000).

water in the Los Angeles County area.[122] It found that the public trust doctrine did apply to these water resource decisions, and is an articulation of:

> [T]he state's authority as sovereign to exercise a continuous supervision and control over the navigable waters of the state and the lands underlying those waters. This authority applies to the waters tributary to Mono Lake and bars [the City of Los Angeles Department of Water and Power ("DWP")] or any other party from claiming a vested right to divert waters once it becomes clear that such diversions harm the interests protected by the public trust.[123]

This application of the public trust doctrine to California's system of water rights had significant effects on life in California, where, as the court acknowledged, "[t]he prosperity and habitability of much of the state required the diversion of great quantities of water from its streams for purposes unconnected to any navigation, commerce, fishing, recreation, or ecological use relating to the source stream."[124] Nevertheless, the court held that "before state courts and agencies approve water diversions they should consider the effect of such diversions upon interests protected by the public trust, and attempt, so far as feasible, to avoid or minimize any harm to those interests."[125] Just as significantly, the supreme court also held that California courts and the DWP have "concurrent jurisdiction" in adjudicating these public trust disputes.[126]

This decision had a significant practical effect on Mono Lake, which had experienced rapidly decreasing water levels since the State authorized DWP to divert flows from source streams in the 1940s.[127] By 2010, implementation of interim measures adopted in 1994 for lake and stream restoration and a final plan published in 1998 raised the lake's water level by ten feet.[128] And these regulatory changes established a system of water rights that ensured consideration of public trust interests when adjudicating private water rights in the State.[129]

122. Nat'l Audubon Soc'y v. Superior Court, 685 P.2d 709, 709–13 (Cal. 1983) [hereinafter Mono Lake].

123. *Id.* at 712.

124. *Id.*

125. *Id.*

126. *Id.* at 732.

127. *Id.* at 711.

128. Michael Blumm & Rachel Guthrie, *Internationalizing the Public Trust Doctrine: Natural Law and Constitutional and Statutory Approach to Fulfilling the Saxion Vision*, 45 U.C. DAVIS L. REV. 741, 756–57 (2011).

129. *Id.* at 758.

The Hawaii Supreme Court in *In re Water Use Permit Applications* faced a similar dispute about allocation of water rights, here between agricultural producers in the central plains of Oahu, down-stream users on the windward side of the island, and the stream's ecosystems.[130] The court held that the public trust doctrine, though having independent roots in common law, was a constitutional doctrine and applied to "all water resources without exception or distinction."[131] It further found that Hawaiian public trust purposes included resource protection,[132] domestic use (including drinking),[133] and "the exercise of Native Hawaiian and traditional and customary rights."[134] The court specifically found that the public trust should not consider interests in "private use for 'economic development.' "[135] Unsurprisingly, the court found that Hawaii had a continuing obligation to "preserve the rights of present and future generations in the waters of the state," though the courts did not require a one-size-fits-all prioritization of interests.[136]

Although the public trust doctrine is, in many jurisdictions, of rather limited application, the California and Hawaii examples show how it currently serves as a doctrine for resource management.

C. SHARED ROOTS OF THE COMMON HERITAGE AND PUBLIC TRUST DOCTRINES

In this Section, indebted to the work of J.B. Ruhl and Thomas McGinn, I unpack what the *res communis* meant.[137] I trace in brief how the public trust and common heritage doctrines developed this concept of the *res communis*. And I show how debates over the contours of the *res communis* demonstrate the necessary role of state action to preserve access to common resources. I do not, however, want to burden this connection with too much normative force. Particularly in the context of the public trust doctrine, some have relied on this Roman pedigree to justify the doctrine's place in modern property law.[138] But as we will see below, the modern common heritage and public

130. *In re* Water Use Permit Applications, 9 P.3d 409, 423 (Haw. 2000) [hereinafter Waiahole Ditch].

131. *Id.* at 445.

132. *Id.* at 448.

133. *Id.* at 449.

134. *Id.*

135. *Id.* at 450.

136. *Id.* at 453. For more analysis of the Court's decision, see Blumm & Schwartz, *supra* note 27, at 29–30.

137. Specifically, I am indebted to J.B. Ruhl & Thomas A.J. McGinn, *The Roman Public Trust Doctrine: What Was It, and Does It Support an Atmospheric Trust?*, 47 ECOLOGY L.Q. 117 (2020).

138. For a detailed overview of the many ways in which domestic courts, advocates, and academics have traded on this Roman pedigree, see *id.* at 126–34.

trust doctrines advertently moved beyond the idea of common property enshrined in Roman law. So, while the Roman origins of both doctrines does not make a public trust approach to the common heritage doctrine legally or normatively required, it is nonetheless useful to show how the doctrines are united by a higher-level conviction that there are certain resources that should be held in some form of trust for common use in a way that is not readily accommodated by private or government ownership.

1. Origins in Roman Property Law

Before we trace the public trust and common heritage doctrines to their Roman roots, a bit of background on the *res communis*—the Roman concept of common property to which both doctrines refer. The *res communis* stood for the proposition that certain things (at a minimum, the sea, seashore, and air) should remain accessible to all, primarily for resource extraction, and this access could be vindicated at law.

To understand the *res communis* we must begin with the restatement of Roman law provided in the *Corpus Juris Civilis*, promulgated by Emperor Justinian from 529 to 534 CE.[139] The *Corpus* has three main parts: the Institutes (an introductory guide to Roman law),[140] the Digest (a detailed guide for more advanced study),[141] and the Codex (a compilation of imperial legislative, judicial, and administrative enactments stretching from the reign of Emperor Hadrian to the Codex's publication).[142] Of the many ways in which the Roman jurists categorized types of property, the Second Book of the Institutes provides, for our purposes, the most important:

> Let us now speak of things, which either are in our patrimony, or not in our patrimony. For some things by the law of nature are common to all [i.e., *res communis*]; some are public [i.e., *res publicae*]; some belong to corporate bodies [i.e., *res universitatis*], and some belong to no one [i.e., *res nullius*]. Most things are the property of individuals, who acquire them in different ways, as will appear hereafter.[143]

Res communis is property outside our patrimony (i.e., *extra patrimonium*) and therefore incapable of private ownership.[144] The Institutes provides that the *res communis* includes, by natural law, "the air, running

139. HERBERT HAUSMANINGER & RICHARD GAMAUF, A CASEBOOK ON ROMAN PROPERTY LAW xvii, xx (George A. Sheets, trans., 2012).

140. Ruhl & McGinn, *supra* note 137, at 162.

141. HAUSMANINGER & GAMAUF, *supra* note 139, at xx.

142. *Id.*

143. J. INST. 2.1 (Sandars trans., 1865).

144. THOMAS COLLETT SANDARS, THE INSTITUTES OF JUSTINIAN WITH ENGLISH INTRODUCTION, TRANSLATION, AND NOTES 41–42 (3d ed. 1865) (explaining that "things common, or public, or dedicated to the gods, were *extra patrimonium*, i.e., could not become the subject of private property").

water, the sea, and consequently the shores of the sea."[145] The Digest attributes this rule to Marcian, a noted Roman jurist from the third century,[146] though Ruhl and McGinn have identified earlier articulations of the same or similar rule as early as the late republic.[147]

It is this definition of the *res communis* in the Institutes which most courts and scholars identify as the roots of the public trust and common heritage doctrines. Take, for example, *Arnold v. Mundy*,[148] one of the earliest cases in the United States on the public trust doctrine. Here, the New Jersey Supreme Court of Judicature found against a plaintiff's claim of trespass concerning oyster beds planted below the low-water line in a navigable river.[149] The Chief Justice reproduced this provision of the Institutes nearly verbatim—both in English and Latin.[150] The Supreme Court, over two decades later confronting nearly the same issue in New Jersey, adopted this reference to the Institutes.[151]

Closer to the present day, Justice Kennedy in *Idaho v. Coeur d'Alene Tribe of Idaho* and *PPL Montana, LLC v. Montana* also attributed the public trust doctrine to this portion of the Institutes, as incorporated into English

145. J. INST. 2.1.1 (Sandars trans., 1865). The Institutes goes on to provide that, "[n]o one, therefore, is forbidden to approach the sea-shore, provided that he respects habitations, monuments, and buildings, which are not, like the sea, subject only to the law of nations [i.e., *jus gentium*]." *Id.*

146. DIG. 1.8.2; (Marcian, Institutes 3) (Watson trans., 1998).

147. Ruhl & McGinn, *supra* note 137, at 165–66; Bruce Frier, *The Roman Origins of the Public Trust Doctrine*, 32 J. ROMAN ARCHAEOLOGY 641, 643–46 (2017).

148. Arnold v. Mundy, 6 N.J.L. 1 (N.J. 1821).

149. *Id.* at 78, 94.

150. *Id.* at 71 ("Those things not divided among the individuals still belong to the nation, and are called *public property*. Of these, again, some are reserved for the necessities of the state, and are used for the public benefit, and those are called '*the domain of the crown or of the republic*;' others remain common to all the citizens, who take of them and use them, each according to his necessities, and according to the laws which regulate their use, and are called *common property*. Of this latter kind, according to the writers upon the law of nature and of nations, and upon the civil law, are the air, running water, the sea, the fish, and the wild beasts.").

151. Martin v. Waddell's Lessee, 41 U.S. 367, 414 (1842) (holding that there is a "public and common right of fishery in navigable waters"). Indeed, we can attribute most early public trust doctrine jurisprudence in the United States to litigation over title to oyster beds in New Jersey. In 1823, Justice Washington (riding circuit) similarly upheld the confiscation of a fishing vessel piloted by a non–New Jersey resident in contravention of a New Jersey statute. Corfield v. Coryell, 6 F. Cas. 546 (C.C.E.D. Pa. 1823) (No. 3,230). Specifically, Justice Washington held that "[t]he *jus publicum* consists in the right of all persons to use the navigable waters of the state for commerce, trade, and intercourse." *Id.* at 551. Discussion of the Roman origins of American property law was not restricted to cases concerning public trust resources. In *Geer v. State of Connecticut*, 161 U.S. 519, 525 (1896), for example, the majority devoted a substantial portion of its opinion upholding Connecticut gaming laws to a discussion of the categories of property in Roman law (including a brief reference to the *res communis*: "Referring to those things which remain common, or in what [French jurist Polthier] qualified as the negative community, this great writer says: 'These things are those which the jurisconsults called *res communes*. Marcien refers to several kinds—the air, the water which runs in the rivers, the sea, and its shores.' ").

common law.[152] Scholars of the public trust doctrine make similar, even more frequent reference to the same.[153]

In international law, this Roman inheritance was used most famously by Hugo Grotius to argue that the seas, by their nature, were incapable of appropriation and therefore open to all for trade and fishing.[154] This greater emphasis on the freedom enjoyed at sea, rather than the guarantee of land access to the seas, is reflected in the relatively greater ambivalence taken toward the text by proponents of the common heritage doctrine. For example, as early as the 1830s, noted South American lawyer Andres Bello argued that a distinct legal regime was needed for objects that cannot be owned by any nation without harming others, what he called an "indivisible common patrimony" that was susceptible only to limited, non-exclusive use.[155] French jurist A.L. Pradelle came to a similar conclusion in 1898, arguing that the seas were the "*patrimoine commun de l'humanité*."[156] These innovations were noteworthy primarily because they rebutted Grotius's use of the *res communis*. Nevertheless, Ambassador Pardo, for example, cites this provision of the Institutes specifically in his proposal to establish the common heritage doctrine.[157] And other seminal works on the law of the sea

152. Idaho v. Coeur d'Alene Tribe of Idaho, 521 U.S. 261, 284 (1997) (citing both specifically to J. INST. 2.1.1 and Henry de Bracton, who incorporated—to varying degrees of precision—the same sources of Roman law, as transmitted by contemporaneous civil lawyers. Take, for example, the following provision from Bracton: "By natural law these are common to all: running water, air, the sea, and the shores of the sea, as though accessories of the sea. No one therefore is forbidden access to the seashore, provided he keeps away from houses and buildings [built there]." HENRY DE BRACTON, ON THE LAWS AND CUSTOMS OF ENGLAND 39–40 (Samuel Thorne trans., 1922)); PPL Mont., LLC v. Montana, 565 U.S. 576, 603 (2012) (writing for a unanimous Court that "[t]he public trust doctrine is of ancient origin. Its roots trace to Roman civil law and its principles can be found in the English common law on public navigation and fishing rights over tidal lands and in the state laws of this country").

153. *See, e.g.*, Ruhl & McGinn, *supra* note 137, at 121 (noting that from 1990 to 2007, over 420 law review articles noted the Roman origins of the public trust doctrine and in particular that these articles often cite to J. INST. 2.1.1).

154. *See, e.g.*, EGEDE, *supra* note 30, at 57; Borg, *supra* note 35, at 85; Brown, *supra* note 67, at 273. Indeed, this understanding of high seas freedoms largely persists to this day, codified in UNCLOS, *supra* note 21, and adopted by the International Court of Justice in the *Fisheries Jurisdiction* case. Larschan & Brennan, *supra* note 46, at 315 (citing Fisheries Jurisdiction (U.K. v. Ice.), 1974 I.C.J. 3, 97 (de Castro, J., concurring)). Hugo Grotius' magnum opus, *Mare Liberum*, was commissioned by the Dutch East India Company to rebut legal theories adopted by the Spanish, Portuguese, and Holy See supporting sovereign rights over the seas. *See, e.g.*, EGEDE, *supra* note 30, at 3.

155. Nicholson, *supra* note 30, at 178; *see also* U.N. OFF. OF LEGAL AFFS. DIV. FOR OCEAN AFF. AND THE L. OF THE SEA, THE LAW OF THE SEA: CONCEPT OF THE COMMON HERITAGE OF MANKIND—LEGISLATIVE HISTORY OF ARTICLES 133 TO 150 AND 311(6) OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 1 (1996) [hereinafter COMMON HERITAGE HISTORY].

156. Nicholson, *supra* note 30, at 178; COMMON HERITAGE HISTORY, *supra* note 155, at 1.

157. Arvid Pardo, *The Law of the Sea: Its Past and Its Future*, 63 OR. L. REV. 7, 7 (1984) (noting that "[t]he earliest formal pronouncements on the subject appear to go back to the second-century jurist Marcianus, who, in one of his decisions, declared that the sea and the fish in the sea were *communis omnium naturali jure*").

make similar references to these provisions of Roman property law.[158]

But what did it mean to designate the air, flowing water, sea, and shores of the sea as *res communis*, and how are these rights vindicated? There has been considerable debate on the topic; I will begin by discussing relevant provisions of the Digest and Institutes before turning to their interpretation by scholars.

First, various provisions of the Digest and Institutes note how designating territory as *res communis* guaranteed access to other resources that could be appropriated. So, for example, Florentinius characterizes the seashore as *res communis* and notes that "pebbles, gems, and so on which we find on the shore forthwith become ours by natural law."[159] Similarly, the Institutes provides that "[w]ild beasts, birds, fish, and all animals, which live either in the sea, the air, or on the earth, so soon as they are taken by any one, immediately become by the law of nations the property of the captor; for natural reason gives to the first occupant that which had no previous owner."[160] The Digest supports this proposition with a number of citations to even earlier legal opinion.[161]

Yet, as Ruhl and McGinn argue, the *res communis* appears to be about more than just providing unfettered access to the air, sea, and flowing rivers so that individuals can extract resources.[162] To understand why, we must appreciate longstanding doctrinal confusion about the difference between the *res communis* and *res publicae*.

Ulpian describes as *res publicae* "those things . . . that belong to the Roman people."[163] Similarly, Ulpian is quoted as providing that "[w]e do not regard as being 'public' those things which are sacred or hallowed or designed for public use but those things which are, as it were, the property of communities."[164] In this way, it seems we might make a rough distinction between property to which all are guaranteed access regardless of their political community (that is, *res communis*) and property owned and

158. *See, e.g.*, C. JOHN COLOMBOS, THE INTERNATIONAL LAW OF THE SEA 62 (6th ed. 1967) (finding that "Ulpian declares the sea to be open to everybody by nature, whilst Celsus refers to it as being, like the air, common to all men").

159. DIG. 1.8.3 (Florentinus, Institutes 6) (Watson trans., 1998).

160. J. INST. 2.1.X (Sandars trans., 1865).

161. DIG. 41.1.1 (Marcian, Institutes 3) (Watson trans., 1998) (quoting Gaius as providing that "all animals taken on land, sea, or in the air, that is, wild beasts, birds, and fish, become the property of those who take them."); *id* at 41.1.3 (quoting Gaius as providing that "[w]hat presently belongs to no one becomes by natural reason the property of the first taker. . . . Any of these things which we take, however, are regarded as ours for so long as they are governed by our control").

162. Ruhl & McGinn, *supra* note 137, at 167.

163. DIG. 50.16.15 (Ulpian, Edict 10) (Watson trans., 1998).

164. *Id.* at 50.16.17 (Ulpian, Edict 10).

preserved for the benefit of a particular group of peoples (that is, *res publicae*).

But this easy distinction is complicated by the many parts of the Digest that characterize flowing waters and the seashore (things considered *res communis*) as *res publicae*. First, with respect to flowing waters, the Digest in a number of places notes that rivers are public property.[165] And although the right to use riverbanks is said to be public,[166] there is also an admitted private right to privately own and construct private buildings on them.[167] A similar story can be told about the sea and the seashore. For although the sea is common to all, the Digest recounts that "just as a building erected in the sea becomes private property, so too one which has been overrun by the sea becomes public."[168] Muddying the waters even more, we are told that

> What a man erects on the seashore belongs to him; for shores are public, not in the sense that they belong to the community as such but that they are initially provided by nature and have hitherto become no one's property. Their state is not dissimilar to that of fish and wild animals which, once caught, undoubtedly become the property of those into whose power they have come.[169]

As Ruhl and McGinn demonstrate in detail, this overlap has bedeviled scholars since the middle ages.[170] From the eleventh through fifteenth centuries, for example, scholars reconciled these passages by holding that *res communis* resources were used, and not owned, by humans and animals, while *res publicae* resources were used only by humans.[171] Scholars in the nineteenth century adopted other methods to make this area of law coherent, again mostly aimed at creating more nuanced distinctions between what should truly be considered *res communis*.[172] Yet others in the twentieth century attribute the incoherence to revisions made by those compiling ancient sources of law.[173] And many more recent scholars, focusing on the

165. *See, e.g.*, *id.* at 1.8.4 (Marcian, Institutes 3) ("[A]lmost all rivers and harbors are public property.").

166. *See, e.g.*, *id.* at 1.8.5 (Gaius, Everyday Matters or Golden Words 2) ("The right to use river banks is public by *jus gentium* just as is the use of the river itself. And everyone is at liberty to run boats aground on them, to tie ropes on to trees rooted there, to dry nets and haul them up from the sea, and to place any cargo on them, just as to sail up or down the river itself.").

167. *Id.* ("But ownership of the [river] banks is in those to whose estates they connect. Accordingly, trees growing in them belong to those same proprietors.").

168. *Id.* at 1.8.10 (Pomponius, From Plautius 6).

169. *Id.* at 41.1.14 (Neratius, Parchments 5).

170. Ruhl & McGinn, *supra* note 137, at 146.

171. *Id.* at 146–47.

172. *Id.* at 150–51.

173. *Id.* at 153–54. Note that Ruhl and McGinn go to pains to note that this method of critique, though in vogue in the twentieth century among scholars of Roman law, has fallen out of the academic

less rigorously legal aspects of Marcian's work, have discounted the existence of the *res communis* entirely.[174] In fact, these critiques of the underlying Roman law sources, and their inconsistent application in English and early American case law, is the basis for many academic critiques of the public trust doctrine.[175]

Ruhl and McGinn instead reconcile this tension by focusing on Ulpian's earlier writings on the *res communis*. They find textual evidence that, as a practical matter, access to *res communis* property was protected in the same manner as that provided for the *res publicae*.[176] For this reason, they argue, the rules applicable to *res publicae* should be seen as equally applicable to *res communis*.[177]

There are important consequences that stem from this practical connection. As Ruhl and McGinn note, there are rules concerning uses of *res*

consensus. *Id.* at 149. For more on the disdain of Roman-history scholars concerning the concept of the *res communis*, particularly in the twentieth century, see, e.g., Frier, *supra* note 147, at 642.

174. Ruhl & McGinn, *supra* note 137, at 162.

175. *See, e.g.*, James L. Huffman, *Fish Out of Water: The Public Trust Doctrine in a Constitutional Democracy*, 3 ISSUES LEGAL SCHOLARSHIP 1, 8 (2003) (arguing that there is nothing resembling the modern idea of public trust in Roman law); Glenn J. MacGrady, *The Navigability Concept in the Civil and Common Law: Historical Development, Current Importance, and Some Doctrines that Don't Hold Water*, 3 FLA. ST. U. L. REV. 511, 567 (1975) ("[T]he multitude of courts that have announced the American rule[] have relied on an erroneous historical view of English fact and English law."). For more on MacGrady's critique of *Martin v. Waddell's Lessee* and *Arnold v. Mundy*, see *id.* at 590–91. Indeed, MacGrady goes to great lengths to argue that Bracton and Lord Hale neglected English fact in their own attempts to reconcile Roman law and the common law. *Id.* at 550, 556.

176. Ruhl & McGinn, *supra* note 137, at 165–66 (quoting from the 57th book on the Edict by Ulpian, "If someone prevents me from fishing in the sea or from dragging a net . . . , can I sue him for *iniuria*? There are those who think that I can sue him for *iniuria*, and so Pomponius. And most (believe) that this (offender) is like the person who does not permit (me) to bathe in a public bath, to occupy a seat in a public theater, or to conduct business in, sit in, or (simply) frequent some other place – or who does not allow me to use my own property. For he too can be sued for *iniuria*. Moreover, the pre-imperial jurists gave an interdict to the lessee, if he happened to have leased this (i.e., fishing rights) from the State, since the use of force against him must be prevented when it will impede him from enjoying his lease. But still, what is to be said if I should prevent someone from fishing in front of my house or my luxury seaside villa? Am I liable on a suit for *iniuria* or not? And, certainly, the sea is common to all, as are its shores, just like the air, and it has very often been laid down in imperial rescripts that no one can be prevented from fishing. The same rule applies to bird catching, except for the fact that someone can be forbidden to enter another person's land. Nevertheless, the claim has even been made, albeit without a legal basis, that anyone can be prevented from fishing in front of my house or my luxury seaside villa. Thus, if anyone is so prevented, a claim on *iniuria* can still be brought. I can however prevent someone precisely from fishing in a lake that is my property.").

177. *Id.* at 167. This appears consistent with the approach taken by Sandars, who, commenting on Gaius Institute II, Title I, Section 2 ("All rivers and ports are public; hence the right of fishing in a port, or in rivers, is common to all men."), notes that

> [t]he word *publicus* is sometimes used as equivalent to *communis*, but is properly used, as here, for what belongs to the people. . . . In this light even the shore of the sea was said, though not very strictly, to be a *res publica*: it is not the property of the particular people whose territory is adjacent to the shore, but it belongs to them to see that none of the uses of the shore are lost by the act of individuals.

SANDARS, *supra* note 144, at 168.

publicae resonant of the idea of a public trust.[178] For example, the Digest reports that Scaevola opined that although one could build on the seashore, such construction could not impede public use.[179] Likewise, Ulpian wrote at length about the actions that could be taken against individuals who impede public access to *res publicae*.[180] In an indirect way, these areas of overlap suggest an early recognition of the necessary role that government must play if any property is to be considered common to all, and not just open to access by a particular political community (that is, *res communis*). It is unsurprising, then, that UNCLOS established an international organization through which states would preserve the deep seabed under the common heritage doctrine. And it suggests that future applications of the common heritage doctrine will be difficult to enforce without a similar international mechanism, or state duty, for vindicating humanity's interests.

2. Common Twentieth Century Doctrinal Innovation

The middle of the twentieth century was critical to the modern incarnations of the common heritage and public trust doctrines. In this Section, I show how two protagonists—Ambassador Arvid Pardo and Professor Joseph Sax—expanded upon existing conceptions of common heritage and public trust to achieve their normative ends. They were both unabashedly instrumental—both saw these doctrines as convenient procedural vehicles to curing what they saw as deficiencies in their respective political environments. What emerges is a common appreciation of the flexibility that Elinor Ostrom noted as one of the signal characteristics of commons governance.[181]

We have already canvassed Ambassador Pardo's revolutionary vision for the common heritage doctrine in Part I. Joseph Sax laid out a similar vision for the public trust doctrine, at around the same time, from the pages of the *Michigan Law Review*.[182]

178. Ruhl & McGinn, *supra* note 137, at 168.

179. DIG. 43.8.4 (Scaevola, Replies 5) (Watson trans., 1998).

180. *See id.* at 43.8.2.8 (Ulpian, Edict 68) ("Against anyone who has built a breakwater out into the sea this interdict may validly lie in favor of anyone who should happen to be harmed by it."); *id.* at 43.8.2.9 ("If anyone is prevented from fishing or navigating in the sea, the interdict will not serve him, any more than it will the person who is prevented from playing on the public sports ground, washing in the public baths, or being a spectator in the theater. In all these cases, an action for injury must be employed."); *id.* at 43.8.2.11 ("It is held that damage is suffered by anyone who loses any kind of benefit whatever that he derived from a public place."); *id.* at 43.12.1 ("The praetor says: 'You are not to do anything in a public river or on its bank, nor put anything into a public river or onto its bank, which makes the landing or passage of a boat worse.' ").

181. OSTROM, *supra* note 112, at 14–15 (noting the hybrid, resource-specific arrangements that have been necessary for successful commons regimes).

182. Joseph Sax, *Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

To understand the power of this vision, we must understand the public trust doctrine as it developed prior to Sax's intervention. Up until *Illinois Central*, the public trust doctrine was a relatively constrained proposition, used chiefly to manage access to navigable rivers and the stationary resources (for example, oysters) on the riverbed. Chief Justice Taney in *Martin v. Waddell's Lessee* may have been among the earliest to use the term "public trust" when, in denying a patent to an oyster fishery bed, he found that the kings of England held navigable waters "as a public trust."[183] Importantly, he held that derogating from this right required "clear[] indicat[ion] by appropriate terms; and would not have been left for inference from ambiguous language."[184] Just over a decade later the Supreme Court reaffirmed this approach in *The Volant*, finding that soil below the low-water mark "is held by the State, not only subject to, but in some sense in trust for, the enjoyment of certain public rights, among which is the common liberty of taking fish."[185] Again, for this reason, the Court held that states "may forbid all such acts as would render the public right less valuable, or destroy it altogether."[186]

Justice Field, in *Illinois Central*, expanded the doctrine by articulating a more robust role for the courts to limit the legislature's discretion to alienate public trust resources. Specifically, Justice Field found that "[t]he control of the State for the purposes of the trust can never be lost, except as to such parcels as are used in promoting the interests of the public therein, or can be disposed of without any substantial impairment of the public interest in the lands and waters remaining."[187] This standard was controversial, and did not flow naturally from at least some States' approaches to the public trust doctrine. In the dissent's words, "if the State of Illinois has the power, by her legislature, to grant private rights and interests in parcels of soil under her navigable waters, the extent of such a grant and its effect upon the public interests in the lands and waters remaining are matters of legislative discretion."[188]

The extent of this shift is most vividly displayed in *Morris v. United States*.[189] Here, the Supreme Court rejected a claim to land added to the riverbank by a rapid shifting of the course of the Potomac River.[190] In doing so, the Court applied a straightforward understanding of the *Illinois Central*

183. Martin v. Waddell's Lessee, 41 U.S. 367, 411 (1842).
184. *Id.* at 416.
185. Smith v. Maryland (*The Volant*), 58 U.S. 71, 74–75 (1855).
186. *Id.* at 75.
187. Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 453 (1892).
188. *Id.* at 467 (Shiras, J., dissenting).
189. Morris v. United States, 174 U.S. 196 (1899).
190. *Id.* at 291.

test that the public trust could not be entirely alienated for private use.[191] Yet, as the Court acknowledged, this flatly contradicted the approach taken by Maryland courts dating back to 1821. For example, in *Browne v. Kennedy*,[192] Chief Justice of the Maryland Court of Appeals Jeremiah Chase held that the Maryland legislature could sell land "covered by a navigable river" so long as the private use did not "interfer[e] with or affect[] the public or common right[s to] . . . navigation and fishing."[193] The Supreme Court's rather startling response to this contradiction was to note the myriad ways in which the *Kennedy* Court had misinterpreted prior Maryland case law.

Thereafter, the Court was inconsistent in how aggressively it hewed to Justice Field's approach in *Illinois Central*. To name just a few, the Court later affirmed an Alabama statute granting tidewater rights to the city of Mobile,[194] upheld a Chicago ordinance requiring that a railroad dismantle a tunnel built pursuant to an earlier ordinance so that the riverbed could be dredged,[195] and upheld a New York Court of Appeals decision to strike down a statute incorporating a development company that did not provide a mechanism for the State to vindicate public trust rights.[196] Indeed, it was only in 1926 that this inconsistent approach to legislative treatment of trust resources was resolved by the Supreme Court determining that, though "the general principle" of *Illinois Central* had been "recognized the country over," in its particulars, the holding was "necessarily a statement of Illinois law."[197]

It was into this commercial understanding of the public trust doctrine, rooted in Roman concerns for open access, that Joseph Sax launched his now famous article on the public trust doctrine. It is beyond dispute that Sax's article sparked a sea change in the way State courts approached the public trust doctrine. From 1970 to 1985 alone there were nearly one hundred cases concerning the public trust doctrine, many of which cited Sax's article.[198] And States have taken up Sax's invitation to unshackle the doctrine from its historical roots in concerns over navigability and fisheries.[199] By the mid-

191. *Id.* at 240 (finding that Maryland case law articulating a legal standard regarding navigable waters at odds with the public trust scheme established in *Illinois Central* did not bind the Court as a matter of federal law).

192. Browne v. Kennedy, 5 H. & J. 195 (Md. 1821).

193. *Id.* at 202.

194. Mobile Transp. Co. v. Mobile, 187 U.S. 479, 491 (1903).

195. W. Chi. St. R.R. Co. v. Illinois *ex rel.* Chicago, 201 U.S. 506, 201–02 (1906).

196. Long Sault Dev. Co. v. Call, 242 U.S. 272, 280 (1916).

197. Appleby v. City of New York, 271 U.S. 364, 395 (1926).

198. Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 644 (1986).

199. *See generally* Joseph L. Sax, *Liberating the Public Trust from Its Historical Shackles*, 14 U.C.

1980s, courts had extended the public trust to include marine law, sand and gravel in water beds, dry sand areas of the beach, rural parklands, battlefields, wildlife generally, archaeological remains, and (in Louisiana) all natural resources, including air and water.[200] Sax was similarly influential in identifying the mechanisms that State courts have adopted to enforce this expanded public trust. These include requiring that government action satisfy the public trust's purpose, mandating that government action be preceded by an assessment of any adverse impact on trust resources, and searching for specific legislative authorization for agency actions that affect trust resources.[201] While some of these had hooks in early public trust case law, many were relatively novel applications of judicial power.

Sax's role here is substantially similar to that of Ambassador Pardo and his contemporaries, acting only a few years earlier. Like Ambassador Pardo, Professor Sax makes an unabashedly normative argument, and I do not mean this as a critique. This undermines arguments made by later scholars who criticize Sax's public trust doctrine as disconnected from English and Roman law sources. Sax states that he is in "search for some broad legal approach which would make the opportunity to obtain effective judicial intervention [for environmental protection] more likely."[202] In particular, he is looking for a doctrine that satisfies three criteria: (1) "some concept of a legal right in the general public" that is (2) "enforceable against the government" and (3) "capable of an interpretation consistent with contemporary concerns for environmental quality."[203] Indeed, Sax owns up to the state of the law as he found it:

> [O]nly the most manipulative of historical readers could extract much binding precedent from what happened a few centuries ago in England. But that the doctrine contains the seeds of ideas whose importance is only beginning to be perceived, and that the doctrine might usefully promote needed legal development, can hardly be doubted.[204]

DAVIS L. REV. 185 (1980) [hereinafter Sax, *Liberating*] (arguing that the public trust doctrine should not be limited to questions of water law and instead reflect more generalizable concerns about expectations held in common).

200. Lazarus, *supra* note 198, at 649–50.

201. *Id.* at 650–51. Others have characterized the mechanisms as different, but substantively similar, terms. *See, e.g.*, Michael Blumm, *Public Property and the Democratization of Western Water Law: A Modern View of the Public Trust Doctrine*, 3 ISSUES LEGAL SCHOLARSHIP 1, 4 (2003) [hereinafter, Blumm, *Democratization*] (identifying four mechanisms through which the public trust doctrine acts: as a public easement guaranteeing access to trust resources, as a restrictive servitude insulating public regulation against constitutional takings claims, as a rule of statutory and constitutional construction disfavoring terminations of the trust, and as a requirement of reasoned administrative decision-making).

202. Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 474 (1970) [hereinafter Sax, *Public Trust*].

203. *Id.*

204. *Id.* at 485.

Like Ambassador Pardo and his contemporaries, Professor Sax treats with, but advertently moves beyond, the *res communis*[205] to achieve his environmental ends.

The bulk of Sax's article is a detailed review of the public trust doctrine in the States, noting how particular cases might provide a hook for expanding judicial appetite for protecting environmental interests. So he praises Massachusetts courts for requiring that administrative agencies identify a "specific, overt approval of efforts to invade the public trust"[206] and lauds Wisconsin courts for asserting the independent authority to assess whether State actions are consistent with public trust interests.[207] These various strategies are united by a common desire to root the public trust doctrine in the protection of majority interests (which are asserted to be consistent with environmental protection) from regulatory capture by a powerful minority.[208] And here again there is striking similarly between Ambassador Pardo's call for using the wealth of the common heritage to advance the interests of newly decolonized states and Sax's argument that "[p]ublic trust problems are found whenever governmental regulation comes into question, and they occur in a wide range of situations in which diffuse public interests need protection against tightly organized groups with clear and immediate goals."[209]

Taken together, what emerges from this history is a tale of two doctrines that have much in common, both in their history and their aims. They both emerged from an understanding, rooted in antiquity, that there are certain resources not amenable to private or government ownership that nevertheless are of communal interest. As such, in their deepest past, both doctrines can trace to a common concern about access to resources. Both doctrines were similarly revolutionized by prominent intellectuals of the twentieth century, who themselves built on a growing wave of change that can be traced to the

205. Sax adopted two different approaches in his work on the public trust doctrine. His first piece notes the Roman and English common law roots of the doctrine and discusses the degree of doctrinal confusion that characterized some of the Roman sources but does not substantially rely on these sources in his argument. *Id.* at 475–76. A later piece engages with these sources more substantively and suggests a more significant reliance on the precedential value of these roots. *See generally* Sax, *Liberating*, *supra* note 199 (mining the detailed history of medieval law concerning commons properties in particular).

206. Sax, *Public Trust*, *supra* note 202, at 498.

207. *Id.* at 513.

208. *Id.* at 560–61 (arguing that the problem to be addressed through the public trust doctrine is one of a "diffuse majority . . . made subject to the will of a concerted minority," and that the "fundamental function of courts in the public trust area is one of democratization"). I am not the first to highlight these goals. *See, e.g.*, Blumm, *Democratization*, *supra* note 201, at 4 (finding that Sax's approaches to the public trust doctrine had the "unifying theme of promoting public access—access both to the resources impressed with the public trust as well as to decision makers with power to allocate those resources among competing users").

209. Sax, *Public Trust*, *supra* note 202, at 556.

nineteenth century. Each seeking to address inequities in power, Professor Sax and Ambassador Pardo sketched out an instrumental vision for the public trust and common heritage doctrines that gained widespread popularity on an incredibly short timeline. More than sharing a common history, this Section shows that these doctrines are united by a common concern—managing resources seen as necessary for the public in a manner more accountable and more equitable than had thus far been achieved.

D. THE PUBLIC TRUST DOCTRINE AS A USEFUL FRAMEWORK FOR RESOURCE MANAGEMENT

In this Section, I address the most common critiques of the public trust doctrine to show why it provides an approach to managing common pool resources that coheres with general principles of property law. Namely, I show how its substantive flexibility is consistent with scholarly work arguing that the nature (and indeed changing nature) of property rights can be profitably explained through the social values they produce and reproduce.

1. Criticism of the Public Trust Doctrine

Sax's redefinition of the public trust doctrine has spawned a seemingly endless academic debate. Distilled to the most salient points, scholars contest three issues: (1) whether the public trust doctrine is a necessary, or constructive, tool for environmental protection;[210] (2) whether the public trust doctrine is sufficiently well-defined, by reference to its historical roots or modern case law;[211] and (3) whether the public trust doctrine comports

210. The chief debate here has been between Lazarus and Blumm. For Lazarus, the public trust doctrine, while useful in an era of minimal statutory means for environmental protection, has outworn its welcome. Lazarus, *supra* note 198, at 633. Indeed, he finds that it distracts from the more pressing task of vindicating environmental rights through statute, particularly at the federal level. *Id.* at 658. Blumm, on the other hand, argues that Lazarus's critique offers a blinkered, and perhaps overly optimistic, view of the role of federal statutory law in protecting the environment. Blumm, *Democratization*, *supra* note 201, at 16 n.99.

211. Reams of paper have been dedicated to critiquing the elastic scope of the public trust doctrine and its relationship to Roman conceptions of the *res communis*. Typical of this critique is that offered by Deveney, who argues that judges and scholars have significantly overblown the Roman law roots of the public trust doctrine. *See, e.g.*, Patrick Deveney, *Title, Jus Publicum, and the Public Trust: An Historical Analysis*, 1 SEA GRANT L.J. 13, 21, 57–58 (1976) (reserving particular vituperation for the *Arnold* and *Martin* courts, which "introduce[ed] into the mainstream of American law an unhistorical and unwieldy distinction between a sovereign and a proprietary mode of possession"). Deveney also notes examples of how Roman practice may not have comported with the *res communis* doctrine provided in the Institutes or Digest. *Id.* at 33 (explaining the extensive practice of granting exclusive rights in *res communis* areas, like monopolies for fishing and shellfish gathering). Jan Stevens is a prototypical example of the kind of scholarship for which Deveney has little patience. Jan S. Stevens, *The Public Trust: A Sovereign's Ancient Prerogative Becomes the People's Environmental Right*, 14 U.C. DAVIS L. REV. 195, 223 (1980).

We have already discussed work by experts on Roman law showing that the reality of Roman jurisprudence, while not clean, lends some credence to an account of the *res communis* that comports

with democratic and rule of law principles. I will address the last of these debates, as it is most important for our purposes.

Huffman sees the public trust doctrine as an unprincipled property right that, by relying on shifting judicial notions of the *res*, confounds public expectations and thereby undermines democratic principles.[212] He is similarly concerned by the fact that the public trust doctrine, by asserting a right incident to State sovereignty that predates any possible private rights, eviscerates protections afforded by the Takings Clause.[213]

There have been at least three responses to this critique. One flows from what Sax identified as the role of courts in combating agency and legislative capture by minority interests—in effect, an argument that seemingly democratic processes are, in fact, anything but.[214] A second argues that changes in the scope of the public trust doctrine is quite normal in a common law system.[215] And a third points to the fact that courts, even when exercising a form of continuing review of State action, rarely impose a substantive outcome. Instead, they use the power afforded by judicial review to require that State instrumentalities meaningfully take into account public trust interests[216] (though, of course, there may be significant overlap between requiring a substantive outcome and insisting on a method of agency decision-making).

with the idea of a public trust. More to the point, however, is the fact that, even if the scope of the *res communis* were entirely settled, as a matter of current law it is largely irrelevant. The public trust doctrine, in its various forms, is a thoroughly American legal doctrine, and Sax, in his earliest work, explicitly recognized his break with Roman and English precedent.

212. Huffman, *supra* note 175, at 27.

213. *Id.* at 25–26 ("By confusing the property rights character of the public trust doctrine with concepts of trust law, constitutional rights, judicial review and governmental power, the courts and commentators have opened the door to dramatic expansion of governmental power with resultant intrusions upon individual rights.").

214. For a work restating a particularly direct version of this view, see Stevens, *supra* note 211, at 217 (praising the fact that "courts will not be bound by patently inaccurate declarations of public purposes for legislation having as its goal the destruction of public waters for private profit"). Variants of this view also critique Huffman's prioritization of property owners as opposed to the, by their view, more numerous citizenry that benefits from protection of trust resources. *See* Blumm, *Democratization*, *supra* note 201, at 19 n.108; *see also* Michael C. Blumm, *Two Wrongs? Correcting Professor Lazarus's Misunderstanding of the Public Trust Doctrine*, 46 ENV'T L. 481, 489 (2016) [hereinafter Blumm, *Two Wrongs?*] (arguing that the public trust doctrine is an antidote for government inaction, "preventing privatization and calling for protection of select resources to preserve them for the beneficiaries: the public, including future generations").

215. Blumm, *Democratization*, *supra* note 201, at 19 n.108, 23.

216. Blumm, *Two Wrongs?*, *supra* note 214, at 484–85, 487.

2. The Public Trust Doctrine as a Coherent Approach to Managing Common Pool Resources

These concerns about the changing scope of the public trust doctrine and its use by courts to invalidate State actions point to broader debates about the role of common property doctrines in U.S. property law. Carol Rose addressed this tension most succinctly when she observed that the public trust doctrine and other common property regimes are radical because of "their seeming defiance of classic economic thinking and the common law doctrines so markedly mirroring that theory."[217] She points to a few of the most telling tensions—the prioritization of public access over a right to exclude,[218] and the wholesale withdrawal of some objects from the possibility of private appropriation.[219] These moves are not easily reconciled by Demsetz's economic theory for the emergence of property rights (i.e., a process of privatizing the commons made possible when the benefits of internalizing the externalities of using land exceed the costs).[220]

But Rose and others show how the public trust and related doctrines are, in fact, consistent with the greater corpus of property law. Henry Smith, for example, has identified two dimensions of property rights: the "compositional" (i.e., the physical resource that is the object of the rights) and the "organizational" (i.e., the range of activities allowed with respect to the resource).[221] Conceived along a spectrum, Smith identifies two methods for communicating this information—(1) straightforward rules of exclusion and (2) more informationally-intensive rules of governance.[222] Seen in this light, one defense of the public trust doctrine is that it represents a form of property that just relies more on governance rules than exclusion.[223]

Even this account, however, does little to defend the changing *res* as a feature of the public trust doctrine. Here, we can look to work arguing that

217. Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 716 (1986).

218. *Id.*

219. *Id.* at 717.

220. Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 356 (1967). It is difficult to overstate the impact of Demsetz's views on the development of property forms on the legal academy. For a flavor of the ways in which he has done so, see generally Thomas W. Merrill, *Introduction: The Demsetz Thesis and the Evolution of Property Rights*, 31 J. LEGAL STUD. S331 (2002); Terry L. Anderson & Peter J. Hill, *Cowboys and Contracts*, 31 J. LEGAL STUD. S489 (2002); Harold Demsetz, *Toward a Theory of Property Rights II: The Competition Between Private and Collective Ownership*, 31 J. LEGAL STUD. S653 (2002). Even those partial to an economic form of analysis in conceiving of property rights, however, have noted that the picture of unidirectional movement from commons to private property is untenable. *See, e.g.*, Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453, S483 (2002).

221. Smith, *supra* note 220, at S454.

222. *Id.* at S455.

223. *Id.* at S485.

the nature (and indeed changing nature) of property rights can be profitably explained through the social values they produce and reproduce. Rose again provides a useful starting point. She finds that "service to commerce was a central factor in defining as 'public' such properties as roads and waterways" and argues that public use of such properties produced significant (even "akin to infinite") returns to scale.[224] Expanding the categories of resources subject to a common access property rule, therefore, can be consistent with a benefit-maximizing approach to property law. Indeed, Rose notes how private ownership of resources traditionally considered "inherently public," such as roadways, create holdout and monopoly if privatization is allowed to run free.[225]

But Rose also notes how these common access regimes are consistent with an understanding of property law that goes beyond pure economics. She notes, for example, how eighteenth and nineteenth-century scholars viewed the commercial functions enabled by inherently public property as also serving important socializing functions.[226] Taking this as a starting point, Rose argues that substantive visions for what constitutes a socializing function can, and almost certainly will, change. Therefore, it would be quite natural for the nature of "inherently public property" to also change with time.[227] As Rose notes, this account fits quite well with the changing *res* of the public trust doctrine, particularly if recreational and environmental interests are understood as serving, in modern times, a socializing function similar to that once seen as inherent to commerce.[228]

Rose's socializing account is consistent with the work of Joseph Singer, who argues that property forms (which, particularly in the domain of real property, are notably few)[229] embody "a set of norms and values that defines the legitimate social relationships that can be recognized in a free and

224. Rose, *supra* note 217, at 723.

225. *See id.* at 749–53 (discussing the profitable role of eminent domain in vindicating public interests in the face of minority opposition). It is interesting to note that Rose touches on the same distinction between public property as state property and public property as property of an unorganized public that was central to so many debates about the difference between the *res publicae* and *res communis*. *See id.* at 739 (noting how the public trust doctrine has been characterized as vested both in the "public as governmental authority" and the unorganized public).

226. *Id.* at 775.

227. *Id.* at 778.

228. *Id.* at 779–80.

229. *See generally* Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000) (identifying the economic efficiencies accrued through the limited number of real property forms afforded by the numerus clausus principle); Henry E. Smith, *Property as the Law of Things*, 125 HARV. L. REV. 1691 (2012) (arguing that many features of property law are best understood as mechanisms for decreasing the cost of communicating information about the nature of tangible objects).

democratic society."[230] As Singer goes on to argue, "the structure, shape, and definition of . . . bundled rights in the property law system must reflect our considered judgments about the legitimate contours of the social order."[231] This work in turn builds on that of Alexander, who has argued that multiple-owner property (which he calls "governance property"[232]) develops virtues (like community, cooperation, trust, and honesty), which in turn promote human flourishing.[233]

The fact, then, that the public trust *res* has shifted over time is perfectly consistent with a change in the social values that underpin our system of property rights. Of course, questions of institutional competence remain. But in the international system, this challenge to U.S. courts' roles in shaping the scope of the public trust doctrine just is not germane. There is no world court of common law jurisdiction capable of unilaterally deciding the scope of what comprehends the common heritage doctrine.

There is much that unites the public trust and common heritage doctrines: common roots in Roman property law, doctrinal innovation in the middle of the twentieth century, and heated disagreements about their scope and wisdom as legal doctrines. By understanding how the public trust doctrine coheres with a broader category of inherently public property and an understanding of property rules as conduits for reinforcing social values, we can begin to build a renewed framework for the common heritage doctrine.

E. REALPOLITIK AND A PUBLIC TRUST APPROACH TO THE COMMON HERITAGE DOCTRINE

Finally, I am not advocating for the international community to adopt a substantive vision of U.S. property law. As will be clear by the end of Part III, a public trust approach to the common heritage doctrine provides a framework for devising property rules by focusing on the values that states wish to foster. It does not itself determine what those values should be. We can see the benefits of this approach in the degree to which non–U.S. jurisdictions have adapted Sax's vision of the public trust doctrine.[234] These effects have been most direct, and most striking, in India.

230. Joseph William Singer, *Property as the Law of Democracy*, 63 DUKE L.J. 1287, 1301 (2014).

231. *Id.* at 1308.

232. Not to be confused with Smith's governance strategy, which as Alexander notes, is focused outward on communicating to third parties the terms under which they might use a resource. *See* Gregory S. Alexander, *Governance Property*, 160 U. PENN. L. REV. 1853, 1855 n.3 (2012).

233. *Id.* at 1859. For more on the literature regarding the "human flourishing" theory of property rights, see *id.* at 1856 n.7.

234. Blumm & Guthrie, *supra* note 128, at 760.

The Supreme Court of India, in *MC Mehta v. Kamal Nath*, struck down a ninety-nine year government lease of protected forest to build a motel and declared as incompatible with the public trust a proposal to redirect an adjoining river to prevent the proposed resort from flooding.[235] In its decision, the Court cited *Illinois Central*, California's *Mono Lake* decision, and Sax's article to establish the common and natural law roots of the public trust doctrine.[236] Indian courts have reaffirmed and, in interesting ways, expanded the public trust doctrine in the years since this decision.[237] For example, they have extended the public trust to include "ensuring a fair distribution of the revenues produced from publicly owned resources, such as natural gas leases," and a distribution that "includes concerns for intergenerational equity."[238] The similarities with Pardo's redistributive vision for the common heritage doctrine are inescapable. But more to the point, we can see how the public trust doctrine suggests a way of thinking about and a process for protecting the public values we want to achieve by preserving certain resources for public use. This approach need not reflect the particular values of any given U.S. State.

III. A PUBLIC TRUST PERSPECTIVE FOR THE COMMON HERITAGE OF HUMANKIND

I propose a four-part framework for this public trust approach to the common heritage of humankind, informed by the structure of common law trusts.[239] The four lines of inquiry consider: (1) the property held in trust (i.e., the *res*), (2) the beneficiary of the trust, (3) the trustee and the means by which the trustee may treat the trust, and (4) mechanisms by which the beneficiary may vindicate their interests against the trustee.

235. *Id.* (citing M.C. Mehta v. Kamal Nath, (1997) 1 SCC 388 (1996) (India)).

236. *Id.* at 761; David L. Callies & Katie L. Smith, *The Public Trust Doctrine: A United States and Comparative Analysis*, 7 J. INT'L & COMP. L. 41, 65 (2020).

237. Blumm & Guthrie, *supra* note 128, at 762 (noting that, in *M.I. Builders Private Ltd. v. Radhey Shayam Sahu*, the Supreme Court of India found that the public trust doctrine protected a park at risk of development and asserted a constitutional hook for the doctrine as well, and that more recent cases have asserted that the state governments are trustee of "all natural resources" and that the public is the beneficiary of interests in the "sea-shore, running waters, airs [*sic*], forests, and ecologically fragile lands"). In a similar manner the Supreme Court of Sri Lanka has deemed the public trust doctrine, as reflected in *Illinois Central*, as inadequate, instead adopting a doctrine of "shared responsibility" that establishes a more general duty for the government to protect natural resources for the benefit of the people. Callies & Smith, *supra* note 236, at 68 (citing Bulankulama v Secretary, Ministry of Industrial Development [2000] 3 Sri LR 243, 256).

238. Blumm & Guthrie, *supra* note 128, at 765.

239. RESTATEMENT (THIRD) OF TRUSTS § 2 (AM. L. INST. 2003) ("A trust . . . is a fiduciary relationship with respect to property, arising from a manifestation of intention to create that relationship and subjecting the person who holds title to the property to duties to deal with it for the benefit of charity or for one or more persons, at least one of whom is not the sole trustee.").

A. THE *RES*

The rapid pace with which the *res* considered subject to the public trust has changed suggests that an approach to the common heritage of humankind that takes as a starting point specific resources largely misses the point. Instead, as Rose and others have demonstrated, we should focus on the theory of the *res*—that is, the social objectives we are trying to achieve by incorporating specific resources into a legal regime of common access. Put another way, the resource matters less than the reason why we think it should be incorporated into a common access regime, and the purposes for which we think such a regime should exist.

We have already seen how these higher-level concerns dominate debates about the common heritage doctrine. Take, for example, opposition to the Moon Agreement. One of the central concerns of the United States and other space powers was how exactly the doctrine would be meted out under the contradictory principles provided in the Moon Agreement.[240] The same can be seen in the law of the sea. Industrialized states only acceded to UNCLOS after extracting concessions in the 1994 Implementation Agreement to concentrate power in the International Seabed Authority's Council through an allocation of seats that ensured their ability to block regulations that implemented a redistributive vision for the common heritage doctrine.[241] Securing a consensus at this theoretical level can be incredibly difficult in large-scale international negotiations. But, as a matter of negotiation strategy, sticking with such difficult issues can itself be profitable.[242] And as I will show in Part IV, in particular negotiation contexts there can be practical ways to refine the scope of this debate to increase the likelihood of success.

There are four theories of the *res* that we can most immediately discern from our discussion thus far: (1) an access theory; (2) a socializing theory; (3) an ecological theory; and (4) an intergenerational equity theory. I will address each in turn. Of course, these categories represent ideal types—there certainly may be profitable areas of overlap between them.

1. Access Theory

This theory of the *res* would incorporate those resources for which we expect the economic benefits of general use to be greater than those gained through individual appropriation.

240. *See supra* Section I.B.

241. *See supra* Section I.B.

242. Christopher Mirasola, *The Role of Secretariats in International Negotiations: The Case of Climate Change*, 24 HARV. NEGOT. L. REV. 213, 247–48 (2019).

This is the approach most evident in the underlying Roman sources and early U.S. case law. Here, property is characterized as a common heritage to prevent any one entity from monopolizing access to it. So, as was provided in *Morris v. United States*, land under tide waters is a "public trust for the benefit of the whole community, to be freely used by all for navigation and fishery, and not as private property, to be parceled out and sold for . . . individual emolument."[243] Another example of this approach is evident in the Supreme Court's decision in *Shively v. Bowlby*, where it found that land under tide waters "are of great value to the public for the purposes of commerce, navigation and fishery. Their improvement by individuals, when permitted, is incidental or subordinate to the public use and right."[244]

A similar policy sentiment bears forth in the Roman sources. For example, Ulpian finds that a claim may be brought against the owner of a seaside villa where the villa's owner, in any way, obstructs the public's right to fish in the seas.[245] This is consistent with Rose's observation that the common law designated properties as "public" where their use by all-comers yields commercial benefits that could not accrue if their use were restricted to a single owner.[246]

2. Socializing Theory

We might alternatively call this the Rose theory of the *res*. Here, we characterize as common those properties the use of which advances interactive, social virtues.[247] So, for example, Rose identifies free speech, alongside commerce, "as a socializing practice for our society—a practice with infinite returns to scale, whose necessary locations might be subject to a public trust."[248] She likewise argues that the same is true of recreation.[249] So, under this theory, resources considered public (or, in our lexicon, common) might be utility poles on which political fliers are posted,[250] or beaches on which the public may learn to get along by coming together for recreation.[251]

243. Morris v. United States, 174 U.S. 196, 227 (1899) (denying Justice Marshall's heir a claim to patent an avulsion of the Potomac River in an area now part of the District of Columbia).

244. Shivley v. Bowlby, 152 U.S. 1, 57 (1894) (upholding the legality of a title to tidewater lands granted by the State of Oregon).

245. *See supra* note 176.

246. *See, e.g.*, Rose, *supra* note 217, at 768.

247. *Id.* at 776.

248. *Id.* at 778.

249. *Id.* at 779.

250. *Id.* at 778.

251. *Id.* at 780.

As Rose admits, notions of what constitutes a socializing activity are nearly infinitely contestable.[252] And particularly in an international and multi-cultural setting, developing a consensus about beneficial social interaction may be even more difficult. Yet this kind of inquiry is not unprecedented in international lawmaking. Take, for example, the Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property.[253] This treaty, ratified by 143 states, identifies eleven categories of cultural property for protection through various export and import controls.[254] Notable among the policy purposes for the Convention is the belief that "the interchange of cultural property among nations for scientific, cultural and educational purposes increases the knowledge of the civilization of Man, enriches the cultural life of all peoples and inspires mutual respect and appreciation among nations."[255]

3. Ecological Theory

An ecological approach to the common heritage doctrine would prioritize protection of the environment to identify resources that should be incorporated into the *res*. We see this approach most clearly in the work of Sax, who, as we have discussed, focused in a rather utilitarian fashion on the public trust doctrine because of its promise as a procedural means for environmental protection.[256] A similar animating principle emerges from scholarship[257] and litigation urging courts to identify the atmosphere as another subject of the public trust.[258] And so, for example, youth plaintiffs have urged courts to consider the federal government's failure to curb air pollution as a violation of a public trust that inheres in the atmosphere.[259]

252. *Id.* at 781.

253. Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, Nov. 14, 1970, 823 U.N.T.S. 231.

254. *See, e.g.*, *id.* art. 1 (defining the categories of "cultural property" that states identify as important for archaeologic, historic or prehistoric, literary, artistic, or scientific reasons); *id.* art. 5 (providing that states parties will establish entities to protect such property); *id.* art. 6 (providing one of many means by which such properties will be documented for protective purposes).

255. *Id.* at 232. Again, noteworthy is the fact that this convention was adopted in 1970.

256. *See supra* Section II.C.2. and accompanying footnotes.

257. The scholarship on this count is voluminous. *See, e.g.*, Michael C. Blumm & Mary Christina Wood, *"No Ordinary Lawsuit": Climate Change, Due Process, and the Public Trust Doctrine*, 67 AM. U. L. REV. 1 (2017); Mary Christina Wood & Charles W. Woodward IV, *Atmospheric Trust Litigation and the Constitutional Right to a Healthy Climate System: Judicial Recognition at Last*, 6 WASH. J. ENV'T L. & POL'Y 634 (2016).

258. Indeed, Sax himself identified the atmosphere as a profitable avenue for expansion of the public trust *res* in his 1970 paper. *See* Sax, *Public Trust*, *supra* note 202, at 556–57.

259. Blumm & Schwartz, *supra* note 27, at 35–37.

In some ways, the vociferous disagreement at the International Seabed Authority concerning regulations for extractive mining is a conflict between two theories of the *res*—the access theory and the ecological theory.[260] Both, in a way, have a hook in UNCLOS. Article 140 provides that the financial proceeds of seabed mining will be provided to developing and other disadvantaged states,[261] which assumes commercialization of seabed resources. Article 145, on the other hand, provides that measures will be taken to "ensure effective protection for the marine environment from harmful effects which may arise from such activities."[262] Yet even these measures presuppose the existence of extractive activities, which may account for the fact that mining operations are set to begin in 2024 notwithstanding significant environmental concern.

4. Intergenerational Equity Theory

The new international economic order movement represents one example of how to conceive of common heritage *res* in a way that prioritizes equity concerns. We can see this in the words of Ambassador Pardo, who argued that the deep seabed should be characterized as a common heritage primarily as a means for redressing disparities between newly decolonized states and developed economies.[263] And it remains alive in the work of scholars like Egede, who identifies the redistributive potential of the Enterprise's as a necessary component of the common heritage doctrine in the law of the sea.[264] As noted previously, this is also the theory of the *res* that likely faces the most resistance from developed economies, and which was significantly undermined by the 1994 Implementing Agreement.[265]

B. THE BENEFICIARY CLASS

There are at least two primary parts to any inquiry into the common heritage doctrine's beneficiary population. First is whether the population should be defined as that of a specific political community or humanity writ large. The second is whether the population should be defined as only those persons currently alive or also as including future generations. I will address each in turn.

260. *See supra* Introduction.

261. UNCLOS, *supra* note 21, art. 140, ¶ 2 ("The Authority shall provide for the equitable sharing of financial and other economic benefits derived from activities in the Area through any appropriate mechanism, on a non-discriminatory basis, in accordance with article 160, paragraph 2(f)(i).").

262. *Id.* art. 145.

263. *See supra* Section I.A.

264. EGEDE, *supra* note 30, at 245.

265. *See supra* Section I.B.

We have already seen how debate over the first dimension can be traced all the way to the Roman law antecedents of the public trust and common heritage doctrines.[266] As Ruhl and McGinn posited, as a practical matter, it may be impossible to enforce a *res communis* regime without acknowledging some role for the government (i.e., in a manner quite similar to the government's responsibilities regarding *res publicae*).[267] This approach is implicit in nearly every public trust doctrine case. For example, the Supreme Court in *McCready v. Virginia* found that "the States own the tide-waters themselves, and the fish in them, so far as they are capable of ownership while running. For this purpose the State represents its people, and the ownership is that of the people in their united sovereignty."[268] Justice Washington made this connection equally clear in what appears to be the earliest public trust case to have reached the bench of a Supreme Court justice.[269]

Contemporary public trust cases have been most direct in identifying that the beneficiary class should be understood to include future generations. For example, the Supreme Court of India in *MC Mehta* was clear in identifying the public trust doctrine as one that protected natural heritage in the interest of future generations.[270] The Supreme Court of Hawaii has been similarly forthright in its attention to future generations, holding that "the public trust relating to water resources [is] the authority and duty 'to maintain the *purity and flow* of our waters for future generations *and* to assure that the waters of our land are put to *reasonable and beneficial* uses.' "[271] This does not mean, however, that any conception of the common heritage must include consideration of future generations. There appears to be no such stipulation in any of the federal public trust cases in the years before *Illinois Central*, for example. And the Roman sources are equally silent on the question of future interests.

266. *See supra* Section II.C.1.

267. *See supra* Section II.C.1.

268. McCready v. Virginia, 94 U.S. 391, 394 (1876) (upholding a Virginia law regulating the planting and harvesting of oysters in riverbeds located within the state).

269. Corfield v. Coryell, 6 F. Cas. 546, 551–52 (C.C.E.D. Pa. 1823) (No. 3,230). Justice Washington noted that "the *jus publicum* consists in the right of all persons to use the navigable waters of the state for commerce, trade, and intercourse," and further, that the citizens of the state are "tenants in common of this property; and they are so exclusively entitled to the use of it." *Id.* (emphasis added).

270. *See supra* Section II.E.

271. *In re* Water Use Permit Applications, 9 P.3d 409, 450 (Haw. 2000).

C. THE TRUSTEE AND MEANS OF PROTECTION

1. Trustee

There are three distinct considerations to keep in mind here. First, there is deciding whether the beneficiaries should be identified as members of a political community or humans as an aggregated whole. Second, there is identifying a trustee. Finally, there is deciding whether an institutional actor outside the beneficiary class is empowered to ensure that the trustee is acting in the beneficiary class's interests. In the domestic public trust cases, this has largely centered around debates over the proper role of the courts in reviewing legislative action. We have seen a wide range of models. On one end are some of the earliest cases from Maryland, wherein the courts entirely deferred to the legislature's decision to alienate trust property.[272] On the other end of the spectrum is the California Supreme Court's assertion of continuous, coequal jurisdiction to impose something akin to a hard-look review of agency action.[273] As we have discussed, it was this potential for a strong judicial role that most attracted Sax to the public trust doctrine as a means for protecting the interests of a silent, disperse majority.[274] These are, of course, ideal types, as the Supreme Court's inconsistent approach to deferring to legislative actions in the wake of *Illinois Central* makes abundantly clear.[275]

2. Means of Protection

One could imagine an almost infinitely long list of the ways by which a trustee might protect the *res* in the interest of the beneficiary. These means would be in significant degree contingent on answers to the questions posited above. So, for example, the theory of active stewardship required by the California Supreme Court can be seen as a necessary product of an ecological theory of the *res* where the beneficiary class includes future generations. Looking across the case law we have surveyed, three broad categories emerge. Again, these exist along a spectrum from least to most permissive and should only be seen as ideal types.

First, there is the absolute prohibition on alienation or use. This has the least precedent in American public trust case law, as courts almost always recognize some ability for a legislature to divest of, or allow limited use of, trust resources.[276] Expanding our notion of the public trust somewhat, this

272. *See supra* Section II.C.2.
273. *See supra* Section II.B.
274. *See supra* Section II.C.2.
275. *See supra* Section II.C.2.
276. *See, e.g.*, Blumm, *Two Wrongs?*, *supra* note 214, at 484.

model would be akin to the protection afforded under the Endangered Species Act.[277] A second, less robust, means of protection would be a requirement that the trustee be an active steward of the trust resource. The California Supreme Court adopted something analogous to this approach when it held that the public trust "imposes a duty of continuing supervision over the taking and use of [] appropriated water."[278] A third, and by far most common approach in U.S. case law, is to require that use or alienation of the *res* be consistent with trust principles. As noted previously, this too exists along a spectrum. In this way, the Supreme Court's more skeptical approach in *Illinois Central* and the early approach of Maryland courts are all variations of this same model.[279]

D. VINDICATING THE BENEFICIARY'S INTERESTS

Finally, a public trust framework for the common heritage of humankind considers the means by which the beneficiary class can vindicate its interests if the trustee fails in its duties. This is by far the most difficult to analogize across the domestic and international contexts. In U.S. case law, one of the signal virtues of the public trust doctrine, as told by its proponents, is the fact that it provides standing to sue the government for failure to protect trust resources.[280] Yet there currently exists no international tribunal by which any citizen might vindicate rights under UNCLOS, for example. UNCLOS provides something of a proxy in the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea.[281] Yet even here, the chamber's jurisdiction is limited to disputes between states parties, entities created by UNCLOS concerning seabed mining, and private parties who have entered into mining contracts with the Authority.[282] This is, in actuality, quite a robust mechanism for enforcing the duties imposed by UNCLOS. On the other end of the spectrum would be the norm-based enforcement of climate change goals arrived at under the UN Framework Convention on Climate Change.[283]

There are a number of benefits to applying the public trust framework to the common heritage of humankind. First, and perhaps most importantly,

277. Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884.
278. Nat'l Audubon Soc'y v. Superior Ct., 685 P.2d 709, 728 (Cal. 1983).
279. *See supra* Section II.C.2.
280. *See supra* Section II.C.2.
281. UNCLOS, *supra* note 21, pt. XI, § 5.
282. *Id.* art. 187.
283. *See, e.g.*, Paris Agreement to the United Nations Framework Convention on Climate Change art. 4, Dec. 12, 2015, T.I.A.S. No. 16-1104, 3156 U.N.T.S. 79 (providing that states parties will individually determine, and have the right to at any time revise, emission reduction targets but also providing no international mechanism for enforcing these targets).

it provides a more detailed lexicon for articulating what we mean when we debate the common heritage doctrine. Second, it recognizes that social values are at the core of debates about the common heritage of humankind, and it demonstrates the wide range of values that we might seek to advance. And third, it connects this higher-level debate about values to a more practical discussion of particular governance rules.

IV. CASE STUDY: OUTER SPACE MINING

It is particularly appropriate to assess how a public trust approach to the common heritage doctrine might help the international community develop rules for managing outer space mining. There are many existing proposals, often developed after the United States enacted domestic legislation concerning asteroid mining in 2015. Although promising, these proposals are largely a grab-bag of analogies to existing domestic and international legal regimes. Applying a public trust approach to the common heritage doctrine can help us build on these proposals in a way that is incremental and sensitive to geography and changing technology.

A. EXISTING PROPOSALS

Member states of the UN Committee on the Peaceful Uses of Outer Space ("UNCOPUOS") have addressed outer space resource extraction every year since 2015.[284] Beginning in 2022, UNCOPUOS has embarked on a more rigorous, five-year process for developing international rules for outer space mining. In significant part, this five-year endeavor was born of the plethora of states enacting domestic laws recognizing the property rights of private parties that extract abiotic resources from celestial objects. This list now includes the United States, Luxembourg, Japan, and the United Arab Emirates.[285] A 2022 call for views uncovered a few areas of broad agreement. First, most states agreed to exclude discussion of access to orbits and radio frequencies from these debates, since both issues were already addressed in forums like the International Telecommunications Union.[286] Many states likewise looked to develop a framework that would ensure predictability, safety, sustainability, and the peaceful uses of outer space.[287]

284. Irmgard Marboe, *Reviewing the Moon Agreement or Amending the Outer Space Treaty? – Views of UNCOPUOS Member States*, 62 PROC. INT'L INST. SPACE L. 399, 405 (2019).

285. *See* Sundahl & Murphy, *supra* note 17, at 684; Maquelin Pereira, *Commercial Space Mining: National Legislation vs. International Space Law*, 63 PROC. INT'L INST. SPACE L. 47, 52 (2020).

286. Comm. on the Peaceful Uses of Outer Space, Summary by the Chair and Vice-Chair of Views and Contributions Received on Mandate and Purpose of the Working Group on Legal Aspects of Space Resource Activities, ¶ 9, Legal Subcomm., 62nd Session, U.N. Doc. A/AC.105/C.2/120 (2023).

287. *Id.* ¶ 14.

The United States has taken the lead in cultivating a group of like-minded states in favor of outer space mining. Executive Order 13914 propelled this initiative by directing that NASA foster international support for outer space resource extraction.[288] NASA has primarily executed on this task through a series of identical bilateral agreements with other states called the Artemis Accords—a set of principles established to encourage cooperation in future lunar activities.[289] In relevant part for our purposes, the Artemis Accords provide that "the extraction of space resources does not inherently constitute national appropriation under article II of the Outer Space Treaty."[290]

The most-cited proposals for managing such resource extraction are provided by the so-called Hague "Building Blocks." Developed by a group of leading scholars from 2016 through 2020,[291] these Building Blocks address a wide range of outer space activities. In pertinent part, they recommend establishing a registry-based system for resource extraction "priority rights."[292] Upon registering the geographic scope and period of time for any given prospecting operation, a safety zone around the activity would also be established commensurate with the type of activity that is proposed.[293] The Hague Building Blocks adopt many of the uncontested elements of the common heritage doctrine—resource extraction would be carried out only for peaceful purposes "for the benefit and in the interests of all countries and humankind irrespective of their degree of economic and scientific development."[294] Although the precise contours of this benefit are left largely undefined, the Building Blocks do provide that states should share benefits by promoting "participation in space resource activities by all countries, in particular developing countries."[295] Such promotion might include, for example, assisting in developing space science and technological capacity, cooperation on training and education, providing open access to scientific information, incentivizing joint ventures, exchanging expertise and

288. Laura C. Byrd, *Soft Law in Space: A Legal Framework for Extraterrestrial Mining*, 7 EMORY L.J. 801, 805 (2022) (citing Exec. Order No. 13,914, 85 Fed. Reg. 20,381 (Apr. 6, 2020)).

289. *Id.*; NASA, THE ARTEMIS ACCORDS: PRINCIPLES FOR COOPERATION IN THE CIVIL EXPLORATION AND USE OF THE MOON, MARS, COMETS, AND ASTEROIDS FOR PEACEFUL PURPOSES (n.d.) [hereinafter THE ARTEMIS ACCORDS], https://www.nasa.gov/wp-content/uploads/2022/11/Artemis-Accords-signed-13Oct2020.pdf?emrc=653a00 [https://perma.cc/R7QP-S6TB].

290. Byrd, *supra* note 288, at 822 (citing THE ARTEMIS ACCORDS *supra* note 289, § 10(2)).

291. Sundahl & Murphy, *supra* note 17, at 686.

292. *Id.*; BUILDING BLOCKS FOR THE DEVELOPMENT OF AN INTERNATIONAL FRAMEWORK FOR THE GOVERNANCE OF SPACE RESOURCE ACTIVITIES: A COMMENTARY 10 (Olavo de O. Bittencourt Neto et al. eds., 2020) [hereinafter BUILDING BLOCKS].

293. BUILDING BLOCKS, *supra* note 292, at 10.

294. *Id.* at 9.

295. *Id.* at 12.

technology on a mutually agreeable basis, or establishing an international development fund with the proceeds of mining activities. The Building Blocks also advocate ensuring that rights over extracted resources "can lawfully be acquired through domestic legislation, bilateral agreements and/or multilateral agreements."[296]

This approach is typical of a wider range of commentary urging states to adopt an outer space mining regime modeled off the International Telecommunication Union's first-in-time, first-in-right registration system.[297] More libertarian versions of this proposal call for the international community to do nothing—relying instead on a rule of first possession and ad hoc recognition of an entity's on-the-ground mining operations as they develop.[298]

Another set of proposals suggests establishing some common baseline of resource entitlements. In this vein, some have recommended partitioning the moon geographically between states and allowing each to develop its own system for prioritizing extraction activities within their respective zones.[299] A similar variant would adopt the concept of the exclusive economic zone from the law of the sea to achieve a similar end, while also being in less apparent tension with the Outer Space Treaty's prohibition on sovereign claims.[300] Yet others would establish a system of tradable credits, where each state received some baseline allocation of resource rights that could be sold to other states.[301]

296. *Id.* at 10.

297. *See, e.g.*, Sundahl & Murphy, *supra* note 17, at 693; Byrd, *supra* note 288, at 809; Daniel Porras & P.J. Blount, *Get Your Filthy Hands Off My Asteroid: Priority and Security in Space Resources*, 62 PROC. INT'L INST. SPACE L. 425, 426 (2019).

298. *See* Byrd, *supra* note 288, at 829; Babcock, *supra* note 24, at 227; Rand E. Simberg, *Multilateral Agreements for Real Property Rights in the Solar System*, PROC. INT'L INST. SPACE L. 449, 457 (2019).

299. Karl Leib, *State Sovereignty in Space: Current Models and Possible Futures*, 13 ASTROPOLITICS 1, 16–17 (2015).

300. Babcock, *supra* note 24, at 251.

301. *Id.* at 253; Vinicius Aloia, *Regulation of Commercial Mining of Space Resources at National and International Level: An Analysis of the 1979 Moon Agreement and the National Law Approach*, 62 PROC. INT'L INST. SPACE L. 459, 469 (2019).

A final group of proposals seek to adapt various doctrines of domestic property law. In this way, some have advocated entrusting an international body with all extraterrestrial property rights and granting to private entities a defeasible fee interest for mining operations.[302] Similarly, others propose adopting a condominium model, with each state being granted fee simple to particular territories that are subject to a more general management scheme.[303]

This is only a flavor of the wide range of schemes proposed by states, scholars, and activists. All have their benefits and drawbacks, depending on your normative views. But, with the possible exception of the Hague Building Blocks, none provide a holistic framework for thinking about outer space mining.

B. THE PUBLIC TRUST APPROACH

A public trust approach to the common heritage doctrine does not prescribe a particular vision for outer space mining. Instead, it provides a more structured framework for thinking about the values that we seek to advance in using resources on celestial objects. By employing the public trust framework to outer space mining, two key distinctions emerge—the locations on which mining operations will occur and their probable timelines.

1. Defining the *Res*

To understand why these distinctions matter, we can begin by considering how states might apply a theory of the *res* to outer space mining. Take, for example, Rose's socializing theory. This, again, is the idea that we should treat as common those resources the use of which produces some interactive, social virtues.[304] Let us imagine that mining operations were to start tomorrow—there are a few categories of objects that, under this theory, should be characterized as a common heritage. The first might be objects of cultural heritage—the first Apollo landing site, for example, or Neil Armstrong and Buzz Aldrin's footsteps at Tranquility Base. Even with a relatively minimal presence on the moon, preserving such sites would be a reminder of humanity's shared journey of exploration and our years of shared, peaceful cooperation in civilian space programs. This is by no means a novel idea—the U.S. government has already expressed an interest in

302. Babcock, *supra* note 24, at 229, 231.

303. *See generally*, Chelsey Denney, *Compromise, Commonhold and the Common Heritage of Mankind*, 63 PROC. INT'L INST. SPACE L. 197 (2020) (proposing this system for dividing property rights and delineating how such rights might be allocated to members of the international community).

304. *See supra* Section III.A.2.

preserving these historical artifacts.[305] Another might be locations and communication equipment, whether on the moon or in the moon's orbit, necessary to relay communications from the far side of the moon to Earth.[306] These resources are fundamental to communication in the same way that Rose posited utility poles are a cornerstone of political speech.[307]

These examples just do not apply to asteroid mining. There are no such cultural heritage sites, and if the asteroid is small enough, they are unlikely to ever exist. Asteroids are also unlikely to be so large as to frustrate ready communication with Earth. All of which is to say that location matters. And an approach to outer space mining that is sensitive to these differences in location may more readily lead to consensus on practical rules of the road.

Returning to our thought experiment about mining on the moon, we could imagine significantly different socializing interests at different time horizons. Let us again take the socializing theory as a heuristic. Aside from the cultural objects and communications sites noted above, if mining were to start tomorrow, there are relatively few other resources the use of which might lead to any kind of interaction—there are likely to just be too few people on the moon. But if we cast our minds some decades down the line, when state and private industry plans to have permanent lunar settlements might be realized, the situation is quite different. Like Rose's public roadways,[308] we could imagine there being commonly used routes connecting settlements the private appropriation of which would frustrate socializing settlements to each other. We could also imagine use of the moon's limited water resources as another locus of important socialization. NASA has found there to be 1/100th of the amount of water in the lunar soil on the sunlit side of the moon as exists in the Sahara.[309] To the extent that permanent human settlements need to rely on these water sources, their private use without some general use scheme could well lead to resource conflicts—certainly not a socializing use of water resources. For those who

305. Vladimir Savelev & Albert Khayrutdinov, *Space Heritage: International Legal Aspects of Its Protection*, 63 PROC. INT'L INST. SPACE L. 57, 63 (2020); Dennis O'Brien, *Legal Support for the Private Sector: An Implementation Agreement for the Moon Treaty*, 63 PROC. INT'L INST. SPACE L. 213, 216 (2020).

306. These communications require a relay because the moon blocks radio waves from reaching the Earth. The Chinese government used a satellite at one of a limited number of locations at a fixed orbit to communicate with their rover on the far side of the moon. *How Do Spacecraft Communicate from the Farside of the Moon?*, ASTRONOMY (Sept. 18, 2020), https://www.astronomy.com/observing/how-do-spacecraft-communicate-from-the-farside-of-the-moon [https://perma.cc/PJN5-XGR7].

307. *See* Rose, *supra* note 217, at 778.

308. *See generally*, Rose, *supra* note 217 (noting the society-wide benefits that accrued from the public access historically provided to, inter alia, certain roadways).

309. *NASA's SOFIA Discovers Water on Sunlit Surface of Moon*, NASA (Oct. 26, 2020), https://www.nasa.gov/press-release/nasa-s-sofia-discovers-water-on-sunlit-surface-of-moon [https://perma.cc/CL5T-FBMF].

adopt a socializing theory of the *res*, therefore, it would be useful to adopt now a precautionary approach to using these resources which, in a foreseeable future, are important to incorporate into the commons. Such a precautionary approach might, for example, limit present use of water resources only to what is necessary to sustain human life for research stations, and not stations established just for mining activities.

Once again, these future concerns are less likely to exist on a relatively small asteroid where there is no practical ability to have a human settlement, even in a future where there are more humans who live or operate in outer space. In this case, there may be fewer practical reasons to adopt a precautionary approach to any water resources that might exist on the asteroid—paving the way to more extensive private use.

Finally, choosing between different theories of the *res* is largely a normative decision. But as this discussion shows, there is a geographic component that is at play. Over any time horizon, the socializing interests implicated in mining an asteroid are significantly fewer than might pertain on the moon. The same would not be true if we adopt an access theory of the *res*, which prioritizes opening access to outer space resources. While this does not help us choose between theories, it does help us identify those locations on which there is likely to be less disagreement among states. If we imagine a bilateral negotiation between one state that supports an access theory and another that adopts a socializing theory, they should begin their negotiations by developing a legal regime for mining asteroids. There are likely to be fewer areas of disagreement simply because the possible uses of asteroids, now or in the future, are more limited than the possible uses of different parts of the moon.

Distinctions based on location and timeframe are important to considering each of the remaining lines of inquiry for a public trust approach to outer space mining. In the remaining sections, I will briefly demonstrate why.

2. Defining the Beneficiary

As a general matter we can imagine three possible beneficiary classes. The first are those who live near the mining operation (this necessarily requires imagining a future with a permanent human presence, for example, on the moon). Second are those who live on Earth (the only class we could imagine today, for example). And the third would be to combine these two groups. An approach to the common heritage that benefits only those who live near the mining operation would be fundamentally different from one that also considers the interests of those on Earth. For example, if we adopt an ecological theory of the *res*, there might be significant environmental

effects to mining that are purely local. So, operations that eliminate access to lunar groundwater or destroy a particularly attractive landscape simply wouldn't matter to an earth-bound beneficiary class. Instead, maximizing the benefits that accrue to the mining (so that the proceeds could be redistributed, for example) would be far more important to this class of beneficiaries.

The question of determining the beneficiary class is largely theoretical for the time being. Presently, it is difficult to imagine any beneficiary class other than all of humanity, politically represented by states as the primary subjects of international law. But this thought experiment does suggest that there will be a difficult future task in determining the degree of preference, if any, that these beneficiary groups should enjoy from extracting resources. Difficult, but not unprecedented. Fundamentally, it is no different than the task faced by the Supreme Court in its early public trust cases: Can we impose regulations on oyster fishing in a manner that benefits the citizens of one state over those of another?[310] And for those who believe in the virtue of including non-Earth-bound beneficiaries into the common heritage of certain extraterrestrial resources, these distinctions would again counsel in favor of adopting a precautionary approach to mining now.

Together with the theory of the *res*, defining the beneficiary class will also raise questions about what benefits should accrue to the beneficiaries. Much of the debate about sharing technology, information, and financial proceeds from outer space mining has focused on this question. Fundamentally, like all these inquiries, it is normative and defies any necessary legal answer. Taking this public trust approach as a starting point, those advocating for preferences that would accrue to less developed countries should emphasize theories of the *res* that prioritize an intergenerational, equity-based approach and an understanding of the beneficiary class that extends beyond the political community of the state that engages in mining activities.

3. Trustee and the Means of Protection

As was the case in negotiations concerning the law of the sea, much of the current debate in outer space law concerns whether, and how, to create an international organization to manage mining operations. A public trust approach to the common heritage doctrine, however, suggests that this debate necessarily depends on decisions made about the theory of the *res* and

310. *See generally* Corfield v. Coryell, 6 F. Cas. 546 (C.C.E.D. Pa. 1832) (No. 3,230) (upholding regulations limiting the fishing of oyster beds to citizens of the State); Smith v. Maryland, 58 U.S. 1 (1855) (affirming the State's right to regulate uses of the riverbed); McCready v. Virginia, 94 U.S. 391 (1876) (upholding a Virginia law regulating the planting and harvesting of oysters in riverbeds located within the state).

the beneficiary class. States would do well to think critically about the history of the International Seabed Authority—the mere existence of a detailed international bureaucracy has guaranteed neither redistributive benefits for less-developed countries nor guaranteed swift access to the ocean floor.

We have already canvassed many of the institutional arrangements that states can develop to constitute a trustee and the associated means by which the trust is protected. Again, differences in location and timeframe are important. For locations where future human habitation is possible, some standing adjudicatory body may one day be necessary. But in the interim, proposals for a registry operated by some entity like the International Telecommunications Union[311] appear to be sufficient. The members of such a body can use the forum to develop regulations that ensure non-interference, prioritize resource rights, and develop safety standards. So long as states can agree on the theory of the *res* before such a model is adopted, the risks of significant future changes in the scope of the common heritage doctrine would also be meaningfully minimized.

To the extent that states are interested in adopting a precautionary approach to mining for any of the reasons discussed above, a few options exist. One would be to limit prospecting for resources indefinitely or for some period of years. These limits could be tailored to specific locations (for example, applying to particular areas of the moon or the moon writ large), types of resources (for example, water), or the purposes for which the resources are used (for example, to sustain life). States could determine these limits in a variety of consultative fora, whether that be UNCOPUOS or some smaller body of concerned states, much like the Arctic Council.

4. Vindicating the Beneficiary's Interests

The design choices made in Section IV.B.3 significantly determine the ways in which a beneficiary class might vindicate their rights. In the immediate future, there are two choices for how beneficiaries might vindicate their rights.[312]

At one end, states might create an international tribunal along the lines of the Seabed Disputes Chamber of the International Tribunal of the Law of the Sea. Much like under UNCLOS, such a tribunal could have jurisdiction

311. *See supra* Section IV.A.

312. It seems to be unnecessarily speculative to discuss the ways in which a beneficiary class composed only of those who live, for example, on the moon might vindicate their common heritage interests. In short, I will note only that this would seem to lend itself most directly to what we see in the domestic public trust doctrine, particularly if there is a standing adjudicatory body to handle resource disputes.

over states parties and private entities with mining operations and be empowered to enforce agreed-upon regulations. As a practical matter, I am pessimistic about the likelihood of any major spacefaring state acceding to this kind of jurisdiction. There has been enough action to unilaterally assert mining rights, by the United States and Luxembourg particularly, that establishing such a tribunal would likely be seen as a concession with little apparent benefit.

It seems more likely that states would continue using informal conciliation and negotiation to enforce compliance with mining regulations. This would operate in much the same way as states "enforce" the nationally determined emissions targets agreed upon under the UN Framework Convention on Climate Change.[313] Such an approach necessarily entails significant potential for backsliding. Some of this risk, however, could be mitigated if states are able to agree on some of the more fundamental questions discussed earlier in this section, and particularly on the theory of the *res* pertinent to a particular location. By more narrowly defining the problem set and establishing more detailed consensus, there may be less of an incentive for states to backslide on their commitments.

V. CONCLUSION

The common heritage of humankind contains great promise as a framework for understanding and managing resource challenges in areas beyond national jurisdiction. Its potential, however, has been stymied by its close association with the politics and economic disputes of the Cold War. Taking lessons from the development of the public trust doctrine in domestic U.S. law, the common heritage can be liberated from these political battles and applied to a wide range of contemporary problems. Future work, for example, might use this four-part framework to develop a more detailed mechanism to protect and use marine genetic resources or protect marine biodiversity.[314] Contemporary international politics has, in many ways, returned to a pattern of Cold War alliances and territorial conflict. Our approach to the international law for managing resources in areas beyond national jurisdiction can remain practical and resist a similar turn to the past.

313. *See supra* note 283 and accompanying text.

314. A draft marine-biodiversity treaty already references the common heritage of humankind. Intergovernmental Conf. on an Int'l Legally Binding Instrument Under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond Nat'l Jurisdiction, Further Refreshed Draft Text of an Agreement Under the United Nations Conventions on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction, art. 5(b), U.N. Doc. A/CONF.232/2023/2 (Dec. 12, 2022).